Assesment of the Action Plan and of regional instruments, Deliverable 3.1

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Assesment of the Action Plan and of regional instruments

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Executive Summary

According to the *Global Status Report on Road Safety 2015* of WHO (WHO, 2015), "road traffic injuries claim more than 1.2 million lives each year and have a huge impact on health and development". Using WHO classification of regions, there has been a further deterioration in road fatality rates in the WHO Africa region from 24.1 fatalities per 100,000 populations in 2010 to 26.6 fatalities per 100,000 in 2013. Over the same period, there was a further improvement in road fatality rates in the WHO Europe region. Road trauma in Africa is expected to get worse, with fatalities per capita projected to double over the period 2015-2030 (Small and Runji, 2014).

SaferAfrica project aims at establishing a Dialogue Platform between Africa and Europe focused on road safety and traffic management issues. It will represent a high-level body with the main objective of providing recommendations to update the African Road Safety Action Plan and the African Road Safety Charter, as well as fostering the adoption of specific initiatives, properly funded.

The main objective of work package 3 is to assess the implementation of the Action Plan 2011–2020 (AU-UNECA, 2010). This assessment has been supported by SWOT and PESTEL analysis completed at different geo-political scales (continental, regional economic communities/corridors and country). The second main objective is to define some initiatives for different topics designed to foster the implementation of the Action Plan. The initiatives will be based on the outputs of WP3, WP4, WP5 and WP6 and will address technical, administrative and economic concerns. The aim is to prepare turnkey project for the Dialogue Platform Management Board. The objective of Task 3.1 on which is based this deliverable is the Assessment of the implementation of the Action Plan and of regional instruments. The analysis has been realized at different spatial levels, country, corridor and continental levels.

For the continental level the choice is made to focus the analysis on the recommendations issued from the mid-term review of the African Road Safety Action Plan (ARSAP) (AU-UNECA, 2015a, 2015b) and on SWOT and PESTEL approaches by pillar of the Action Plan. For the country level, 5 countries are chosen for a detailed evaluation: Burkina Faso, Cameroon, Kenya, South Africa and Tunisia. For these countries the analysis is based on results of the country on each of the five pillars and on results and knowledge of partners in charge of these countries, for example through Capacity Reviews realized in WP5. Regional analyses are made on Corridor Abidjan-Lagos, involving 5 countries: Ivory Coast, Ghana, Togo, Benin and Nigeria.

Data has been collected through questionnaires distributed by WP4 and international databases (mainly WHO data). A specific process of data validation has been proposed and realized by partners in order to reinforce quality of the information and of the analysis.

Based on those data and methodological choices, results allow us to highlight recommendations that were proposed by mid-term review of the ARSAP and which are still reliable and new recommendations which seem important in order to improve Road Safety in Africa. These recommendations will be discussed through the dialog platform.

1 Introduction

According to the *Global Status Report on Road Safety 2015* of WHO (WHO, 2015) "road traffic injuries claim more than 1.2 million lives each year and have a huge impact on health and development".

Figure 1 - Road traffic fatality rates per 100 000 population, by region (WHO, 2015)

The risk of road traffic mortality rates varies significantly by region (Figure 1), and the disparity in road safety results is increasing (WHO, 2015). Using WHO regions, there has been a further deterioration in road fatality rates in the WHO Africa region from 24.1 fatalities per 100,000 populations in 2010 to 26.6 fatalities per 100,000 in 2013. Over the same period, there was a further improvement in road fatality rates in the WHO Europe region from 10.3 fatalities per 100,000 populations in 2010 to 9.3. Road trauma in Africa is expected to get worse, with mortality rates projected to double over the period 2015-2030 in Sub-Saharan Africa (Small and Runji, 2014).

Road traffic accidents resulting in deaths and injuries have an enormous impact on public health and the economy in Africa. The road safety target in the 2015 UN Sustainable Development Goals (SDG's) and African Road Safety Action Plan to reduce by 2020 the number of global deaths and injuries by 50%, is a major challenge, which implies some innovations and new initiatives in terms of public policy for making this ideal a reality. For Africa, this would translate into a saving of more than 130.000 deaths per year and a reduction of millions of injuries per year.

Several actions are already on-going and important policy documents are already in place in Africa. The African Union (AU) and United Nations Economic Commission for Africa (UNECA), on the basis of the UN "2011-2020 a Decade of Action for Road Safety", defined the **African Road Safety Action Plan 2011-2020** (ARSAP)**,** organized in five pillars with specific objectives:

- **Road safety management**. To build institutional capacity, improve capacity building at local government level, develop local research and road safety monitoring.
- **Safer roads and mobility**. To properly consider road safety in infrastructure development and introduce or improve facilities for pedestrians and other vulnerable road users.
- **Safer vehicles**. To review safety standards for vehicles and safety equipment.
- **Safer road users**. To review standards and rules for the provision of license to private, commercial and public transport drivers and strengthen the law enforcement.
- **Post- crash response**. To improve capacities in term of on-site care, transport of the injured to appropriate medical facilities, and trauma care.

In 2015, UNECA conducted a Mid-term Review of the Action Plan in order to assess the progress made by each country. The "*Roadmap for accelerating the implementation of the African Road Safety Action Plan*", which is the result of the review that identifies four main challenges to be addressed with higher priority by policy makers in order to facilitate the implementation of the actions identified in the Action Plan and reach the UN 2020 target:

- Data Collection, Analysis & Reporting
- Funding Road Safety
- Road Safety and Traffic Management
- Capacity Building and knowledge transfer

As highlighted in a working paper by SSATP (Small and Runji, 2014), too often low capacity levels in Africa lead to strategy tasks being outsourced, without a dedicated process allowing the transfer of sufficient knowledge and the development of critical road safety management expertise in a country.

In this context, European experience in Road Safety and willingness of African countries for Road Safety, suggest that Europe could play an important role for supporting African countries in improving their road safety and traffic management conditions to achieve better performance.

In this respect, the general objective of *SaferAfrica* consists in creating favourable conditions and opportunities for effective implementation of actions on road safety and traffic management in African countries, by setting up a Dialogue Platform between Africa and Europe.

Dialogue Platform is at the heart of SaferAfrica Project, aiming to involve experts in a Dialogue. Dialogue Platform is operating through periodic meetings and also on-line thanks to a web tool that represents the modern key of the project. According to Platform Statute (Deliverable 2.1) the Platform is made by a decision-making level comprising a Management Board of prominent institutions (WHO, UNECA, IRU, FIA, PIARC, IRF, IRTAD, WB, AfDB) and by a technical/operational level comprises government institutions (both European and African), international institutions, research institutions (both European and African) and representative organisations of African Stakeholders. Those not involved in the project as partners will constitute the Stakeholder Group.

Thus, the objectives of the Dialogue Platform are to produce knowledge; to influence road safety funding, policies and interventions in Africa; to encourage and facilitate a constructive engagement and dialogue of policy makers, researchers and other stakeholders on road safety in Africa.

The Dialogue is elaborated in the periodic meetings and on line thanks to the Dialogue Platform web tool, which is an online collaborative Platform. The Dialogue Platform web tool:

- Allows Management Board members to comment on recommendations about a particular topic within a consultation;
- Allows Stakeholders to suggest, vote for, rank, or comment on ideas about a particular topic within a consultation;
- Stakeholders can interact and build relationships with others;
- SaferAfrica findings and products can be disseminated within communities;
- Check on-going consultations/ Open an on-going consultation;
- Check new consultation requests.

Each member of the Dialogue Platform (actors involved: Management Board; Working groups: Project partners; Stakeholder Groups) has unique access to the reserved area of the Dialogue

Platform Web tool. On the basis of the different roles of the Dialogue Platform, the contents and the tools available in the reserved area are distinguished according to three user groups: Working Groups Members (mainly project partners), Stakeholders Group Members, Management Board Members. For now (at the moment of this deliverable is written), the actors involved are Management Board (13 members) and Stakeholders group (122 members from 29 countries). However, according to the Task 2.3 Network Expansion the aim is to enlarge more and more the list of participants.

Therefore, the Platform could strategically constitute the "link" between the activities of AU and UNECA and the Africa – EU Partnership. The Platform will also promote and support the inclusion of selected countries to the International Traffic Safety Data and Analysis Group (IRTAD). The Dialogue Platform will also be used as a network framework for activating Twinning Programs on specific issues.

SaferAfrica, through the implementation of the Dialogue Platform, will create the conditions and opportunities for an effective implementation of actions on road safety and traffic management. Related weaknesses and strengths existing in the continent will be analysed and the criticalities in socio-economic, organisational and operational dimensions will be identified. The analysis will be conducted at different scales (continental, national, local) with the objective of identifying the needs in the most effective way.

This deliverable is not focused on the Dialog Platform, but main results presented here will be discussed with the Dialog Platform.

SaferAfrica project has been organized into 9 work packages, which interrelations are shown in Figure 2.

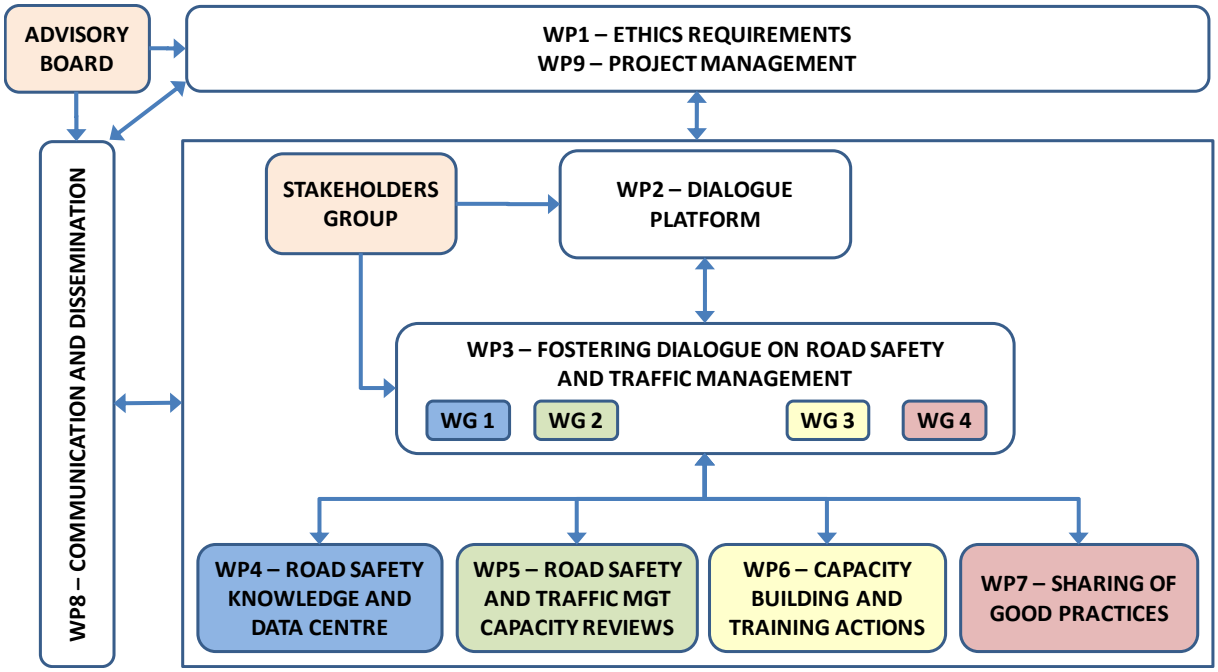


Figure 2: Graphical presentation of SaferAfrica components

One of them, WP3, aims at fostering dialogue between African and European stakeholders on Road Safety and traffic management.

The main objective of work package 3 is to contribute to the assessment of the implementation of Action Plan 2011–2020 and to contribute to the final evaluation of the Action Plan by UNECA. UNECA realized a mid-term evaluation of that plan (AU-UNECA, 2015a, 2015b). That evaluation then was an intermediary one. Indeed, there is a need for assessing the efforts accomplished by the countries and taking into consideration the evolution at different levels since the last review. As explained in details in the methodology section (Chapter 2), this assessment has been supported by SWOT and PESTEL analysis completed at different geo-political scales (continental, regional economic communities/corridors and country). SWOT and PESTEL combined analysis make possible to identify the weakness, the strengths, the assets and the dynamics a country face for the different levels of intervention in the road safety field according the political, economic, social, technical, environment and legal dimensions. The second main objective is to define initiatives for different topics designed to foster the implementation of the Action Plan and to contribute to a better situation in terms of road safety. The initiatives will be based on the outputs of WP3, WP4, WP5 and WP6 and will address technical, administrative and economic concerns. The aim is to prepare project for the Dialogue Platform Management Board.

The objective of Task 3.1 on which is based this deliverable is the assessment of application of the Action Plan and of regional instruments. The analysis has been realized at different spatial levels: country, corridor and at continental levels.

For the African continent, the choice was made to focus the analysis on the recommendations issued from the mid-term review of the African Road Safety Action Plan (ARSAP). Such recommendations are organised through 5 different pillars for which some items (objectives) are defined. The analysis proposes also an application of the SWOT and PESTEL approaches to the pillars of the Action Plan. More concretely, it implies the identification of favourable and unfavourable characteristics for each country. For instance, more available fund dedicated is a positive element of context, while the lacking of trained staff for the road safety intervention is a negative one.

For the country level analysis, 5 countries were chosen (see chapter 2) for a detailed evaluation: Burkina Faso, Cameroon, Kenya, South Africa and Tunisia. Those country were chosen because they are representative from a linguistic influence (French, Spanish and English), some regions of Africa (North, South, Central, West and East parts) and for which some valuable contacts were established. For these countries the analysis is based on results of the country questionnaire obtained for each of the five pillars and on results and knowledge of partners in charge of these countries, for example through Capacity Reviews realized in WP5. Regional analysis was made on Corridor Abidjan-Lagos, involving 5 countries: Ivory Coast, Ghana, Togo, Benin and Nigeria.

Data were collected through questionnaires distributed by WP4 and international databases (mainly WHO data). A specific process of data validation was proposed and realized by partners in order to reinforce quality of the information and of analysis (see chapter 2).

Based on these data and methodological choices, results allow us to highlight some recommendations that were proposed by the mid-term review of the ARSAP and which are still reliable and new recommendations which seem important in order to improve Road Safety in Africa. These recommendations will have to be discussed with African stakeholders in charge of Road Safety, each country and UNECA. The Dialog Platform developed in SaferAfrica project will be the tool to support these discussions.

Methodology for the assessment of application of the Action Plan and of regional instruments is explained in Chapter 2, Methodology.

Before analysing in details pillars and country cases, a global picture of road safety data, data collection systems and definitions for Africa is presented through a dashboard in chapter 3.

Chapter 4 presents the results of the analysis of assessment and evaluation per pillars. ARSAP mid-term recommendations are discussed and completed by new ones, which could be discussed through the Dialog Platform.

Chapter 5 presents the detailed analysis made for the five countries: Burkina Faso, Cameroon, Kenya, South Africa and Tunisia. The objective of this chapter is to confront main recommendations of the continental level to the country cases and try to analyse why these recommendations have been, or not implemented. As previously explained and in order to analyse road safety management issues at regional level, the choice was made to work on the Corridor Abidjan-Lagos, involving 5 countries: Ivory Coast, Ghana, Togo, Benin and Nigeria. This analysis is presented in chapter 6.

Finally, general conclusion (Chapter 7) will synthesise main results concerning the assessment of application of the Action Plan and of regional instruments.

2 Methodology for the assessment of implementation of the Action Plan and of regional instruments

In 2015, UNECA conducted a Mid-term Review of the Action Plan in order to assess the progress made by each country the road safety field. Instead of providing a new and different evaluation, the choice was made to take into account the recommendations from this mid-term evaluation and to assess them and to determine if they were applied at different scales: region, country, and corridor.

The choice of continuing with the assessment of the application the Mid-term Review of the Action Plan implies to use the same items previously followed-up by this review. Thus, the choice was made to assess through the five pillars of road safety management previously identified:

- Road safety management,
- Safer roads and mobility,
- Safer vehicles,
- Safer road users,
- Post-crash response.

Concerning the methodological framework for understanding road safety policies, as described in SaferAfrica project, the analysis of the assessment of application of the Action Plan and of regional instruments could be undertaken at three different layers: institutional, organisational and operational. This approach in terms of layers rests upon a broad scientific literature and some applications to road safety issues (Hill and Hupe, 2009 ; Carnis, 2017). The first layer can be defined as the institutional layer; this concerns the systemic considerations and constraints that road safety issues must face (e.g. economic development, social and demographic constraints, geographic issues, etc.). The second layer is concerned with the organizational dimension: how road safety is organized, what organizations are involved, etc. The last level deals with the operational dimension: how road safety actions are concretely implemented, how they work at the local level. Each layer benefits from some interactions with the two others. For instance, the vote of a new regulation is not limited to the definitions of new enforcing obligations; it can also define the body in charge of the enforcement and the conditions of enforcement, etc.

The approach through the layer has to be completed with some other characteristics of the environment of the country or some interventions. Indeed, their nature and their contributory impact have to be taken into consideration. Consequently, each layer has to be coupled with SWOT and PESTEL approaches. The SWOT matrix makes possible to identify the contributory effect of the measure or a phenomenon, while the PESTEL matrix characterises the nature of the latter, that is to say it belongs to the legal dimension or the economic field, etc.

This framework permits definitions of how road safety subsystems work and facilitate the identification of failures. The objective is to assess the effectiveness and consistency of road safety solutions adopted by countries committed to the Action Plan. Assessing other regional instruments will provide inputs for completing the analysis, understanding whether and how different instruments are correlated to the Action Plan, and addressing standards (e.g. on vehicles, road design, traffic, public transport, overloading, hazardous materials, etc.). This methodological framework is described in Section 2.1.

This methodological framework is then applied to each pillar of the ARSAP (road safety management, road user, roads, vehicles and post-crash response). Data collected are based mainly on material

provided by WP4 questionnaire. So, based on the SWOT and PESTEL methodological approach a selection of items and sub-items was made for each pillar among questions of WP4 questionnaire. In the same time some items from the WP4 questionnaire were selected to be able to assess the mid-term ARSAP recommendations. Proceeding through pillar, part of the work consisted in linking questions of the WP4 questionnaire or international databases with ARSAP recommendations. An excel template has been produced per pillar which permits to calculate a score for each item and each pillar. This tool is presented in Section 2.2.

The information was collected through questionnaires distributed among the network of African partners and stakeholders (WP4 questionnaire). African partners from 21 countries answered the questionnaire (see Deliverable 4.1). When the different inputs were received and analysed through our pillar analysis it became clear that a lot of answers were lacking or brought some doubt concerning their reliability. Data were completed by international databases information and a process of data validation has been endorsed in order to reinforce quality of the information and of analysis. This question quality of data is presented in Section 2.3.

In Section 2.4 an approach through corridor is presented. The aim is to take into consideration the particularity of structuring road infrastructure.

2.1 Methodological Framework for Understanding Road Safety Policies

A three level and intertwined approach was used. These are SWOT, PESTEL and governance layers levels.

2.1.1 SWOT

The first level is inspired by a SWOT approach (FME, 2013a). SWOT meaning, strengths, weaknesses, Opportunities and threats. A tentative reformulation to adapt the model of our issue is necessary. Indeed, this mode is originally conceived for organisations, so that it could be easily interpreted the event outside and inside the organisation.

Consequently, the distinction between inside/outside dimension could be a non-sense, when dealing with governance problematic where the system could be considered as the whole. . Applied to a country, exterior and interior delimitations become meaningless so that they need a new and appropriate formulation. It is then preferred a new distinction between positive and negative assets included in such a system. Moreover, the distinction threats/opportunity is here reformulated as a dynamic dimension which characterized the system: it is constituted by elements, actors, changes with positive or negative setting. Consequently, a new matrix could be defined:

	Positive	Negative
Assets	Strengths	Weaknesses
Dynamics	Opportunities	Threats

Figure 3: Swot level matrix

2.1.2 Governances Layers

An approach with a breakeven of institutional layers could provide important insights related to the system of governance of road safety policies as showed by Carnis (2017). It raised also an important point that some interventions can impact different layers. It means that that a particular measure concerning the institutional level requires that actions are done to translate it at the lowest levels: organisational and operational to be implemented.

Three layers could be distinguished:

- The institutional layers dealing with strategic dimensions, institutional framework, definition of responsibilities and relationships between actors, which could be defined through the rule of law, constitution, political and administrative organization, etc.
- The organizational dimension concerns the activity of organizations, their specialization, the strategy of operation, their funding and means such dedicated police organization, deployment of red light cameras, inter-ministerial organization
- The operational dimension is related to the characteristics of people dealing with the implementation of road safety policy, such trained civil officers, dedicated police officers, the collection of data, etc.

Consequently, an intervention consisting in increasing the level of enforcement of Highway Code is quite simple to implement (because only the operational level is concerned) compared to the setting-up a new enforcement policy based on speed cam for instance (requiring the vote of new legislation, the definitions of prerogatives for the body in charge of the action, and the formulation of organizational dimensions).

Each layer could be applied to each cell of the SWOT matrix; it means each layer could be considered as an asset or it could present a dynamic aspect of the governance system analysed. Moreover those assets and dynamics have to be specified for their contributory effect (positive or negative.

Consequently with such an approach a first refinement could be introduced in the analysis. Indeed, it then becomes possible to identify some positive or negative nodes inside the governance system and to specify their origins (ie. the lacking of financial resource for implementing effectively regulation (operational weakness) while the lacking of a lead agency could be interpreted as an institutional weakness, etc.

	POSITIVE	NEGATIVE
ASSETS *Institutional* *Organizational* *Operational*	*Strenghts*	*Weakness*
DYNAMICS *Institutional* *Organizational* *Operational*	*Opportunities*	*Threats*

Figure 4: Governance layer level matrix

2.1.3 PESTEL

PESTEL is already recognized as a complementary tool to the SWOT one (FME, 2013b). PESTEL refers to different dimensions such as the political, economic, social, technological, environmental and legal ones. Each dimension could and has to be detailed in order to grasp the complexity of the situation.

Political dimension refers to the political organisational of the country (centralisation, decentralisation, regionalisation, etc.) and its political stability for instance.

Economic dimension could refer to the business cycle, economic development stage, the dynamics of revenue and car market, the oil price, and so one.

Social dimension concerns the characteristics of population (youth, aging, etc.), the level of poverty and education, etc.

Technology dimension deals here with the access to car ownership, the standard of vehicles, but also some other technology related to enforcement or the modelling of crashes, etc.

Environmental dimension aims at taking into consideration the climate, topography and the size of the country and the importance of population. Some present a quite small scale, while some others are very broad.

Legal dimension concerns the existence of the rule of law, the existence of regulation, the protection of rights of individuals, etc.

Each dimension then could take a room inside the governance system and in each governance layer. Again the previous matrix could be updated and take the final shape below.

	POSITIVE						NEGATIVE					
ASSETS	Strengths						Weaknesses					
	P	E	S	T	E	L	P	E	S	T	E	L
Institutional												
Organizational												
Operational												
DYNAMICS	Opportunities						Threats					
	P	E	S	T	E	L	P	E	S	T	E	L
Institutional												
Organizational												
Operational												

Figure 5: Pestel matrix

Such an approach implies that 72 dimensions have to be scrutinized. Obviously some dimensions are interdependent and some can be missed in such framework, because of unavailability of information or non-pertinent dimension for explaining the frame. For instance, some economic factors could influence simultaneously the three governance layers, but in different ways (positive and negative simultaneously) and could constitute an asset and a dynamic factor too. Indeed, economic growth could mean additional resources for improving the standard of road infrastructure, while increasing the road risk exposure with more mileage and additional vehicles available (Bougueroua and Carnis, 2016).

The analysis consists in identifying the different factors, their relationships and their intensity. The frame will then be composed of different interactions between dimensions and could provide an understanding of main issues and characteristics of the situation.

2.2 A Matrix tool to analyse the assessment of the Action Plan per pillar

Based on previous Matrix approach, a template was developed for each pillar. Each template was tested on Kenya case before a full application to the other countries. Data used were collected through WP4 questionnaire answers, international databases information and expert opinion.

Each template focuses on the two main inputs:

- Selection of items linked to Matrix approach;
- ARSAP mid-term recommendations.

2.2.1 A matrix for the assessment of the Action Plan

Each pillar includes some items (or categories), which contains sub-items. For instance, the road safety management pillar includes 6 different items, while the institutional organization and coordination item has 9 sub-items (as indicated by its max score of 9) and key road safety resources item contains 11 sub-items (as indicated by its max score either). For this item, the max score is 57. Items and sub-items are presented in detail in Appendix 1.

Table 1: Item details for each pillar

Pillar 1: Road safety management (maximum score 57)

	Yes	No	NaR
Institutional organization and coordination (max score 9)			
Policy Formulation and adoption (max score 9)			
Policy Implementation and Funding (max score 11)			
Monitoring and Evaluation (max score 11)			
Scientific support and Knowledge and capacity building (max score 6)			
Key road safety resources (max score 11)			

Pillar 2: Safer roads and mobility (maximum score 28)

	Yes	No	NaR
Institutional dimension (max score 7)			
Organizational dimension and Monitoring (max score 10)			
Key road safety resources (max score 3)			
Road safety data and measures (max score 8)			

Pillar 3: Safer vehicles (maximum score 25)

	Yes	No	NaR
Institutional dimension (max score 6)			
Organizational dimension and Monitoring (max score 8)			
Key road safety resources (max score 8)			
Regulation (max score 3)			

Pillar 4: Safer road users (maximum score 28,5)

	Yes	No	NaR
Institutional dimension (max score 5)			
Organizational dimension and Monitoring (max score 6)			
Key road safety resources (max score 5)			
Regulation (max score 12,5)			

Pillar 5: Post-crash response (maximum score 17)

	Yes	No	NaR
Institutional dimension (max score 5)			
Organizational dimension and Monitoring (max score 5)			
Key road safety resources (max score 5)			
Regulation (max score 2)			

Then it is possible to calculate a score per item based on the number of Yes obtained on each item (taking into account weighting in some cases, see Appendix 1). The reliability of each score should also be analysed in connection with the Non answer Response (NaR) score. A low number of NaR give more reliability to the score of the item. Indeed a score of 2 for a max score of 9 could be considered as a weak performance (if NAR is low meaning a high rate of answer), while a same score with a high NaR could not be discussed reasonably.

Concerning the performance of the item and its uncertainty level, a colour code was defined as below in Table2 and applied to each pillar and for all the investigated countries.

Table 2: Colour code for score and NaR

Colour code for score: Number of yes divided by total number of items	[0 – 25 [	[25 – 50 [	[50 – 75 [	[75 – 100]
	Red	Orange	Blue	Green
Colour code for NaR: Number of NaR divided by total number of items	[0 – 15 [	[15 – 30 [	[30 – 50 [	[50 – 100]
	Green	Blue	Orange	Red

The results can then be presented for the investigated countries as shown in table 3.

Table 3: Example of results with score and Nar, with colour code for twenty African countries studied

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NAR																				

2.2.2 A matrix for the assessment of recommendations

In addition to the previous matrix per pillar, recommendations of the ARSAP mid-term evaluation have also been identified for each pillar.

As for the previous matrix, each item has been linked to a question of the WP4 questionnaire (if possible) or to information available in international databases, mainly WHO Database. When the information was not available in WP4 questionnaire or in international databases, we have taken in account the input of our "experts" as explained in session section 2.3.

The recommendations of the mid-term review of the ARSAP are presented in Table 4:

Table 4: Recommendations of the ARSAP mid-term review for African Countries

	Yes	No	NaR
Pillar 1: Road Safety Management			
Establish/strengthen Lead			
Set road safety targets			
Develop knowledge management portals on road safety			
Allocate 10% of road investment to road safety			
Allocate 5% of road maintenance resources to road safety			
Allocate sufficient financial / human resources to road safety			
Improved Management of Data			
Enforce mandatory reporting, use standardized data and provide sustainable funding for road safety			
Build capacity for road safety data management			
Promote road safety research as well as the use of best practices			
Establish/strengthen/harmonize injury data system for health facilities			
Establish internationally harmonized baseline data on road safety			
Develop/Strengthen Partnership and Collaboration			
Establish national association of accident victims and survivors			
Pillar 2: Safer Roads and Mobility			
Develop road safety audit and inspection guidelines			
Pillar 3: Safer Vehicles			
Introduce incentives for importation of safer vehicles			
Pillar 4: Safer Road Users			
Establishing or strengthening of Road Safety Clubs in Schools			
Promoting the use of child restraints			
Pillar 5: Post-Crash Response			
Introduce emergency medical services coordination centres at strategic locations			
Provide fully equipped ambulances with medical supplies, and crash extraction and rescue equipment			
Develop capacity for long term hospital trauma care and rehabilitation			
Introduce health facilities along main highways			

2.3 The question of data reliability and validation

The question of reliability of the data is a very difficult question for all countries in the world and particularly in Africa, because it needs financial and human resources and of course priority on the political agenda of Governments. Even in main international databases (IRTAD, WHO) some information should be considered with caution. As presented in Chapter 3, data also differ depending on the source. For example, in few countries, national Data and international database information for the same country may differ.

In SaferAfrica project, the choice of launching a big questionnaire (See deliverable 4.1) which would be used by all partners and different work packages was decided. The data is then the results of answers to WP4 questionnaire sent by colleagues from African Countries (See deliverable 4.1 for a complete description of the questionnaire and first results).

One difficulty appeared for our evaluation concerning the type of answer. For each item (or sub-item) based on WP4 questionnaire, it was possible to have three possible answers: Yes, No, NaR (No answer Response). In some cases the simple choice between these three answers was not sufficient. However, it was not possible to launch a new complete questionnaire among our African colleagues.

So, the original data was completed with the results of the review undertaken by other partners of the project. The criteria considered are the followings:

- An input assuring that the answer is Yes has been used to replace previous answers of NA or Not, since in both cases may reflect the lack of knowledge of the person originally answering the questionnaire or the lack of data of other sources.
- Because of the same reason, if during the review any NA was replaced by No that also was taken into account.
- The questions related to vehicle registration within "Organisational dimension and Monitoring" were added after the questionnaire produced by WP 4 was circulated, and therefore they have got a low amount of answers. Since registration of passenger cars and heavy duty vehicles is a common practice all around the world, all answers are "Yes" for both questions.
- Any of the criteria above has not been applied if specific knowledge of the situation of a country ensured other kind of question.

When information was not available or sufficient in WP4 we have used international databases.

So, based on these choices the matrix per pillar was tested on Kenya and then filled for the all 21 countries.

Our material (answers to the WP4 questionnaire), even completed by data issued from international databases, was still questionable in few cases. So, a data validation process have been proposed and realized. As among SaferAfrica partners, some of them have a very good knowledge of some countries, they were asked to check data produced per pillar for a country based on their expert knowledge (see Appendix 1).

So, our final material (data of each matrix) is the result of answers to the WP4 questionnaires completed and modified by information from international databases and expert's knowledge of SaferAfrica's project members.

2.4 The choice of countries and corridor

The evaluation at the African region level is based on the 21 countries for which answers to the WP4 questionnaire were completed.

As the quality of Data was too questionable for South-Sudan, it was decided not to take into account this country. The global evaluation for the five pillars has then been realized on 20 countries presented in Figure 6.

Figure 6: Countries investigated

To complete the regional analysis, it was also decided to make an in-depth evaluation at country level for at least five countries, form different regions.

The five countries are:

- Burkina Faso
- Cameroon
- Kenya
- South-Africa
- Tunisia

The five countries have been chosen on different criteria (regional location, speaking language, availability of data, existing studies or research, for example Capacity Review proposed for WP5). The last criterion was also important because SaferAfrica budget did not permit to realise additional local analysis. Angola was chosen in a first step, even if this country was not part of our sample of 20 countries, because it is a Portuguese-speaking country. But, it was not possible to get good data for.

The methodology proposed for the in-depth evaluation of a country was of course linked to our global evaluation per pillar and is presented here:

1. Each partner in charge of a country yielded a global evaluation for the attributed country.

2. A global evaluation was produced based on a synthesis approach by analysing the 5 pillars of the African Road Safety Action Plan and through a global picture standpoint (approach by a country or the national level).

3 Thus, the 5 matrix were completed for each country. The required information could have been extracted first from the WP4 questionnaire, but mainly from other sources of information for each country. Each country leader has also found additional sources of information and information to complete the questionnaire (interviews, validated information, Capacity reviews, etc.).

Finally, in order to have a regional level of analysis, it was decided to investigate road safety policies for a specific corridor for which common approach seemed possible: the Abidjan-Lagos corridor. As for previous five countries, the analysis was made by using the answers to the five pillar questionnaires of the five countries on a subset of the most relevant questions for coordinated road safety management along the corridor.

3 Survey results: Road safety data, data collection systems and definitions

3.1 Introduction

Road crashes resulting in deaths and injuries have an enormous impact on public health and the economy in Africa. The road safety target in the 2015 UN Sustainable Development Goals (SDG's) (United Nations, 2015) to reduce by 2020 the number of global deaths and injuries by 50 %, is a major global challenge. For Africa this would translate into a saving of more than 130.000 deaths per year (baseline World Health Organisation (WHO) death estimates for 2013 see: Section 3.2) and a reduction of millions of injuries per year.

The "Decade of Action for Road Safety 2011-2020, African Action plan", which will be further referred here to as: African Road Safety Action Plan (ARSAP), was developed by the African Union (AU) and the United Nations Economic Commission for Africa (UNECA) (AU-UNECA, 2010). The objective of the ARSAP is to reduce road accidents (defined as "road traffic crashes" in the ARSA plan) in Africa by 50% by the year 2020. The ARSAP is organized around the 5 pillars: road safety management, safer roads and mobility, safer vehicles, safer road users and post-crash response and contains many activities and monitoring indicators (see Chapter 3).

Objectives of this chapter are 1) to perform an analysis of the Road Safety problem in Africa in view of the ambitious target of 50% reduction target for road accidents included in the ARSAP and 2) to assess the status of road safety measures taken in Africa for activities included in the ARSAP. An additional and related objective of this chapter is to present two databases for Africa: one related to accident data (the African Accident database) and one related to road safety measures taken in Africa (The dashboard of road safety measures in Africa). Both databases are available for the SaferAfrica partners and can be made part of the road safety observatory if considered relevant. This dashboard contains information on 50 safety performance indicators for 46 African countries. Main source for information for this study were the 2013 and 2015 WHO global status reports, which contain road death data for the years 2010 and 2013 resp. allowing an analysis of trends for deaths from 2010 to 2013.

The methodology used for this study consists of a review and analyses of data in literature concerning the road safety problem in Africa and efforts to reduce the problem. Main source for information for this study were the 2013 and 2015 WHO global status reports (WHO, 2013; WHO, 2015) which contain road death data for the years 2010 and 2013 resp. allowing an analysis of trends for deaths from 2010 to 2013.

In Section 3.2 we will present the accident data database and an analysis of the data included in the database. In Section 3.3 we will select, based on the actions included in the ARSAP, a number of indicators for inclusion in the dashboard of road safety measures in Africa, and present the resulting dashboard, mainly for the status of measures in 2013 and perform a brief analysis of the data included in the dashboard. Section 3.4 concludes this study with a summary of findings, discussions and recommendations.

3.2 Road Safety in Africa

3.2.1 Accident database

The objective of the ARSAP is to reduce road accidents in Africa by 50% by the year 2020 (AU-UNECA, 2010). The ARSAP does not define what the monitoring indicators to measure the reduction of road traffic crashes, like the number of deaths per year, number of injuries per year or deaths per 100.000 capita. To monitor the progress in Africa on these indicators an accident database has been set up. The data included in the accident database are largely derived from the information included in the WHO Global Status Report on Road Safety 2013 and 2015 (WHO, 2013; WHO, 2015), as well as a IHME/World Bank study (World Bank, 2014). The data in the WHO 2013 and 2015 status reports were collected with help of different sectors. For details on the methodology we could refer to (WHO, 2013; WHO, 2015) as well as deliverable D4.1 of the SaferAfrica project.

The data in the 2013 report are for the year 2010 and in the 2015 report for the year 2013. Data presented in 2014 by the Global Road Safety Facility at the World Bank in cooperation with the Institute for Health Metrics and Evaluation (IHME/World Bank) (2014) are based on the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 ("GBD 2010"). The data are for the same year 2010 as the WHO 2013 status report. The GBD 2010 quantified the comparative magnitude of health loss due to 291 listed diseases and injuries, including direct consequences of disease and injury and risk factors for 20 age groups and also covered both sexes. It produced estimates for 187 countries and 21 regions and assessments of the burden of road injuries as well as the burden that can be attributed to outdoor air pollution. For a description of the methodology used, see (World Bank, 2014) and 7 papers in the Lancet in 2012 (Wang et al., 2012; Lozano et al., 2012 ; Salomon, Vos et al., 2012 ; Salomon, Wang et al., 2012 ; Vos et al., 2012 ; Murray et al., 2012 ; Lim et al., 2012).

There are also other sources for accident data, but they cover less countries then the WHO and GBD databases. International Traffic Safety Data and Analysis Group (IRTAD) database (ITF, 2016) contains (non-validated) data for 3 African countries: Morocco, South Africa and Nigeria. The World Roads Statistics (WRS) (IRF, 2018) prepared by the International Road Federation (IRF) has accident data for a part of the African countries for the period from 2000-2014. For 11 African countries there are no accident data in this database and for most countries the data are not available for all years in the period 2000-2014. For about half of the African countries (23 countries) data for both 2010 and 2013 are available. For details on the IRF data and a comparison with the WHO data see D4.1 of the SaferAfrica project.

The African countries included in the WHO and GBD accident database are listed in Table 5. The countries are divided in 5 regions in Africa according to the division used in the GBD 2010 study. The following countries were not included in the database due to the limited number of inhabitants (all less than 1 million inhabitants): Equatorial Guinea, Comoros, Djibouti, Seychelles, São Tomé and Príncipe, Cape Verde. Also Burundi has not been included due to lack of data for the year 2013. In total the database contains 46 African countries.

The following data have been included in the accident database:

- Population in 2010 (WHO, 2013)
- Deaths in 2010 and 2013 based on official national statistics (WHO, 2013; WHO, 2015)

- Deaths in 2010 and 2013 based on WHO estimates + 95th confidence interval for 2013 (WHO, 2013; WHO, 2015)
- Deaths/100000 pop. for 2010 and 2013 based on WHO estimates(WHO, 2013; WHO, 2015)
- Deaths, injuries (all and hospital admissions) based on the GBD study (World Bank, 2014)
- Deaths/100.000 pop. for 2010 based on the GBD study (World Bank, 2014)
- Number of registered Vehicles, vehicles/1000 pop. + WHO death estimates/10000 vehicles for 2010 (WHO, 2013)
- Percentage of% deaths among pedestrians, motorized 2-3 wheelers and cyclists for 2013 (WHO, 2015)
- Gross Domestic Product GDP per capita in US$ in 2010 based on World Bank data

Since for certain parameter information for several years are included (namely for 2010 and 2013) the database allows to absorb trends in in the realization of some of the monitoring indicators.

The resulting database is shown in Table 6. Not included in this Table are the death percentages for vulnerable road users, which were not available for all countries. For 4 countries no WHO death estimates were available for the year 2010: Algeria, Libya, Eritrea and Somalia. In the database these data are based on GBD data (indicated by a grey cell in Table 6). The WHO estimates and GBD estimates are using a different methodology and due to this the GBD death estimates (as well as deaths per 100.000) for 2010 are not the same as the WHO estimates for this year. For some countries the WHO estimates are smaller than the GBD estimates, while for others they are larger. Deviations on a country basis sometimes are more than 100% between the two estimates as is shown in Table 6. For the total number of deaths in Africa the difference between the 2 estimates however is relatively small: the GBD death estimate (250.179 deaths) is 9% larger than the WHO death estimate for 2010 (230.469 deaths). The average number of deaths per 100.000 for Africa in 2010 is estimated 22.8 by the WHO and 24.8 by the GBD.

The further analysis in this chapter will be mainly based on the data (estimates as well as official country data) presented in the WHO status reports since the WHO data is considered the most complete global set of data available and since they contain data for different years, so that trends can be observed. Specifically, for road traffic injuries where no WHO estimates on a country level are available, GBD data will be used.

Table 5: Countries and regions in Africa included in the database

Western Africa
Benin
Burkina Faso
Cameroon
Chad
Côte d'Ivoire
Gambia
Ghana
Guinea
Guinea-Bissau
Liberia
Mali
Mauritania
Niger
Nigeria
Senegal
Sierra Leone
Togo

Northern Africa
Algeria
Egypt
Libya
Morocco
Tunisia

Central Africa
Angola
Central African Republic
Congo
Demo Rep. Of the Congo
Gabon

Southern Africa
Botswana
Lesotho
Namibia
South Africa
Swaziland
Zimbabwe

Eastern Africa
Eritrea
Ethiopia
Kenya
Madagascar
Malawi
Mauritius
Mozambique
Rwanda
Somalia
Sudan
Tanzania
Uganda
Zambia

Table 6: Overview accident database

Region	Population [WHO 2013]	GDP per capita US$ 2010	Death 2010 Off. Stat [WHO 2013]	Death 2010 estimates [WHO 2013]	Death 2013 Off. Stat [WHO 2015]	Death 2013 estimates [WHO 2015]	95th Confidence interval 2013 [WHO 2015]		Death 2010 estimates per 100000 [WHO 2013]	Death 2013 estimates per 100000 [WHO 2015]	Hospital Admissions in 2010 [GBD]	Total number of nonfatal injuries 2010 [GBD]	Registered Vehicles 2010 [WHO 2013]	Veh/per 1000 Pop in 2010 [WHO 2013]	Death/100 00 Veh. In 2010 [WHO 2013]	Death estimates 2010 [GBD]	Death 2010 estimtes per 100000 [GBD]
Algeria	35.691.667	4.473	-	4.283	4.540	9.337	7.985	10.689	12,0	23,8	51.649	432.149				4.283	12,0
Angola	19.081.912	3.886	4.042	4.407	5.591	5.769	4.626	6.912	23,1	26,9	17.608	184.103	212467	11,1	207,4	9.408	49,3
Benin	8.849.892	690	816	2.119	708	2.855	2.398	3.312	23,9	27,7	10.624	91.918	25613	2,9	827,3	1.726	19,5
Botswana	2.006.945	6.244	385	417	399	477	412	542	20,8	23,6	1.962	18.242	394548	196,6	10,6	283	14,1
Burkina Faso	16.468.714	574	966	4.566	1.461	5.072	4.064	6.080	27,7	30,0	14.308	144.032	884750	53,7	51,6	5.585	33,9
Cameroon	19.598.889	1.147	1.353	3.933	1.063	6.136	5.035	7.236	20,1	27,6	20.934	205.855	443018	22,6	88,8	6.951	35,5
Centr. African R.	4.401.051	-	145	644	58	1.495	1.169	1.821	14,6	32,4	4.357	44.557	4781	1,1	1347,0	1.911	43,4
Chad	11.227.208	896	3.226	3.339	1.527	3.089	2.420	3.756	29,7	24,1	11.096	102.518	243644	21,7	137,0	2.765	24,6
Congo	4.042.899	2.953	269	692	206	1.174	976	1.373	17,1	26,4	3.236	35.686	25202	6,2	274,6	1.916	47,4
Côte d'Ivoire	19.737.800	1.236	699	4.121	844	4.924	4.043	5.805	20,9	24,2	19.363	188.795	474873	24,1	86,8	6.536	33,1
D. R. of Congo	65.965.796	311	332	13.764	498	22.419	17.966	26.872	20,9	33,2	82.668	678.838	350000	5,3	393,3	7.733	11,7
Egypt	81.121.080	2.668	9.602	10.729	8.701	10.466			13,2	12,8	116.416	964.142	5853728	72,2	18,3	11.708	14,4
Eritrea	5.226.087	451	-	1.202	148	1.527	1.249	1.805	23,0	24,1	5.966	54.463				1.202	23,0
Ethiopia	82.949.544	342	2.506	14.606	3.362	23.837	18.528	29.146	17,6	25,3	65.191	642.113	377943	4,6	386,5	21.520	25,9
Gabon	1.505.463	9.388	327	338	45	383	316	450	22,5	22,9	1.172	14.868	195000	129,5	17,3	1.267	84,2
Gambia	1.728.394	562	94	325	115	544	438	650	18,8	29,4	2.016	17.906	17416	10,1	186,6	387	22,4
Ghana	24.391.823	1.323	1.966	5.407	2.240	6.789	5.877	7.701	22,2	26,2	32.905	281.393	1122700	46,0	48,2	4.844	19,9
Guinea	9.981.590	430	503	1.956	629	3.211	2.640	3.781	19,6	27,3	12.295	105.831	33943	3,4	576,3	1.869	18,7
Guinea-Bissau	1.515.224	519	134	472	117	468	387	548	31,2	27,5	186	15.686	54153	35,7	87,2	443	29,2
Kenya	40.512.678	992	2.966	8.484	3.191	12.891	10.809	14.974	20,9	29,1	48.022	427.257	1389864	34,3	61,0	7.820	19,3
Lesotho	2.171.318	1.088	362	616	327	584	491	677	28,4	28,2	2.362	19.535				232	10,7
Liberia	3.994.122	327	78	760		1.448	1.144	1.752	19,0	33,7	5.091	42.338	1030951	258,1	7,4	561	14,0
Libya	6.295.238	11.934	-	1.322	4.398	4.554	3.973	5.136	21,0	73,4	9.136	76.161				1.322	21,0
Madagascar	20.713.819	414	422	3.805	791	6.506	5.361	7.650	18,4	28,4	25.756	217.814	166112	8,0	229,1	3.405	16,4
Malawi	14.900.841	366	976	2.904	977	5.732	4.606	6.858	19,5	35,0	16.259	154.318	173800	11,7	167,1	4.867	32,7
Mali	15.369.809	621	739	3.544	529	3.920	3.193	4.648	23,1	25,6	14.787	131.881	211906	13,8	167,2	3.133	20,4
Mauritania	3.459.773	1.208	163	970	204	952	788	1.116	28,0	24,5	3.090	30.463	388305	112,2	25,0	1.016	29,4
Mauritius	1.299.172	7.772	158	158	136	152			12,2	12,2	1.841	14.819	384115	295,7	4,1	123	9,5
Morocco	31.951.412	2.783	3.778	5.759	3.832	6.870	5.831	7.910	18,0	20,8	42.311	339.187	2791004	87,4	20,6	2.857	8,9
Mozambique	23.390.765	416	2.549	4.315	1.744	8.173	6.502	9.843	18,4	31,6	26.996	238.575	380343	16,3	113,5	7.154	30,6
Namibia	2.283.289	5.139	292	571	400	551	474	628	25,0	23,9	2.107	18.961	229806	100,6	24,8	222	9,7
Niger	15.511.953	351	703	3.673	1.047	4.706	3.741	5.670	23,7	26,4	18.891	156.679	155115	10,0	236,8	2.078	13,4
Nigeria	158.423.184	2.315	5.279	53.339	6.450	35.641	27.949	43.332	33,7	20,5	154.369	1.608.482	12545177	79,2	42,5	74.548	47,1
Rwanda	10.624.005	554	438	2.118	526	3.782	3.022	4.541	19,9	32,1	12.724	111.807	93632	8,8	226,4	2.492	23,5
Senegal	12.433.728	956	277	2.421	356	3.844	3.214	4.474	19,5	27,2	14.528	114.598	326352	26,2	74,2	645	5,2
Sierra Leone	5.867.536	446	357	1.323	220	1.661	1.334	1.988	22,5	27,3	7.063	61.334	45006	7,7	294,0	1.095	18,7
Somalia	9.468.182	-	-	2.083	201	2.664	2.092	3.237	22,0	25,4	10.805	95.810				2.083	22,0
South Africa	50.132.820	7.390	14.804	15.995	13.802	13.273			31,9	25,1	51.312	422.129	9587781	191,2	16,7	4.479	8,9
Sudan	43.551.940	1.422	3.562	10.935	2.281	9.221	7.746	10.697	25,1	24,3	27.318	273.830	116711	2,7	936,9	10.278	23,6
Swaziland	1.186.056	2.957	216	277	191	303	263	343	23,4	24,2	906	9.055	153013	129,0	18,1	218	18,4
Tanzania	44.841.224	712	3.582	10.162	3.885	16.211	13.116	19.307	22,7	32,9	51.035	464.028	977468	21,8	104,0	9.404	21,0
Togo	6.027.798	496	742	1.037	1.044	2.123	1.719	2.526	17,2	31,1	6.958	62.337	49378	8,2	210,0	1.401	23,2
Tunisia	10.480.934	4.212	1.208	1.974	1.505	2.679	2.346	3.012	18,8	24,4	12.578	113.041	1489075	142,1	13,3	2.719	25,9
Uganda	33.424.683	567	2.954	9.655	2.851	10.280	7.820	12.739	28,9	27,4	37.368	332.414	635656	19,0	151,9	7.365	22,0
Zambia	13.088.570	1.456	1.348	3.117	1.797	3.586	2.914	4.257	23,8	24,7	14.883	131.637	337513	25,8	92,4	2.798	21,4
Zimbabwe	12.571.454	677	1.777	1.832	1.787	3.985	3.319	4.652	14,6	28,2	10.477	96.577	862756	68,6	21,2	3.527	28,1
Total or average	1.009.468.281		77.135	230.469	86.724	276.264			22,83	25,50	1.102.925	9.988.162	45.234.518	44,81	50,95	250.179	24,78

not available from WHO 2013, derived from GBD 2014

3.2.2 Analysis of accident data

3.2.2.1 WHO estimates versus official country reported death data

Figure 7 shows a comparison between WHO death estimates and official country death statistics for the year 2013. For many countries the WHO estimates are much higher than the official reported

country data, indicating a potential underreporting in the death data. For instance in Nigeria the difference between the two values is more than a factor 5. For other countries like South Africa, Egypt, Angola and Libya the difference between estimates and official data is small.

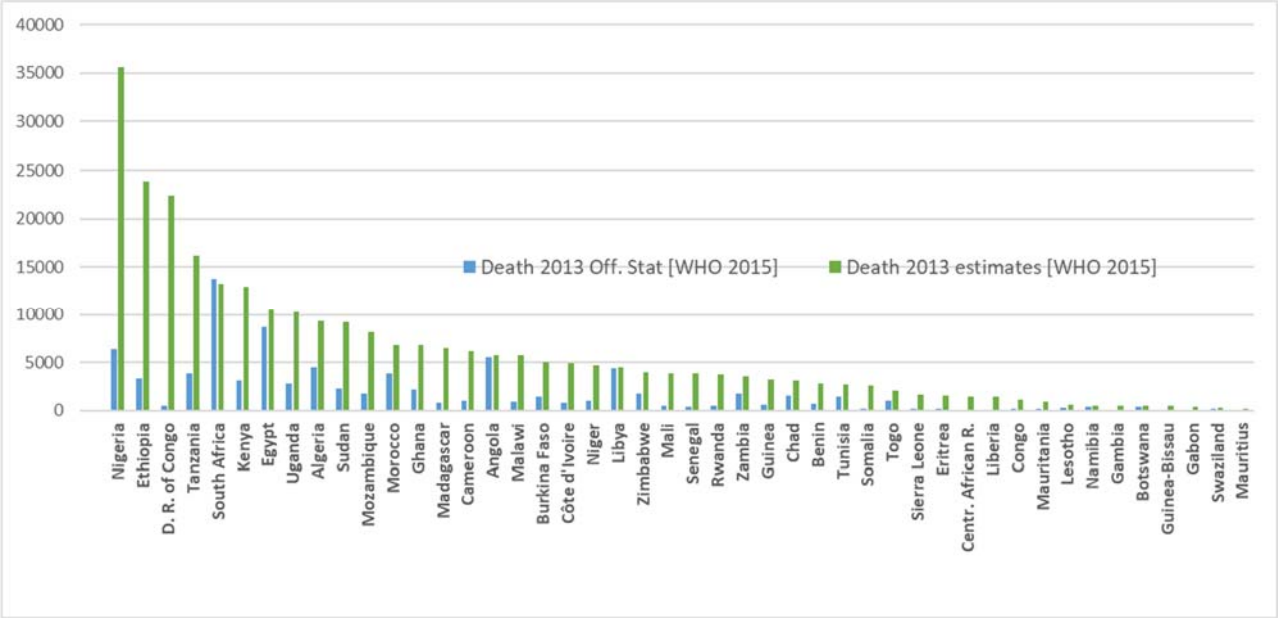


Figure 7: Comparison of WHO road death estimates and official country death statistics for the year 2013 (WHO, 2015)

3.2.2.2 Comparison between deaths in 2010 and 2013

The objective of the ARSA Plan is to "reduce road accidents in Africa by 50% by the year 2020". A first impression on the realisation of this goal can be achieved by a comparison of the road deaths in the year 2010 and 2013 (the latest years for which currently data for the whole of Africa are available). The comparison will be made on a country bases using WHO estimates as well as official country data reported by WHO. Also a comparison on a regional level will be made.

Figure 8 shows a comparison between 2010 and 2013 based on the official country data. Note that for 4 countries no data for 2010 were available: Algeria, Libya, Somalia and Eritrea and for Liberia no data for 2013 were available. 24 Countries (out of 41) show an increase in deaths while the others show a decrease.

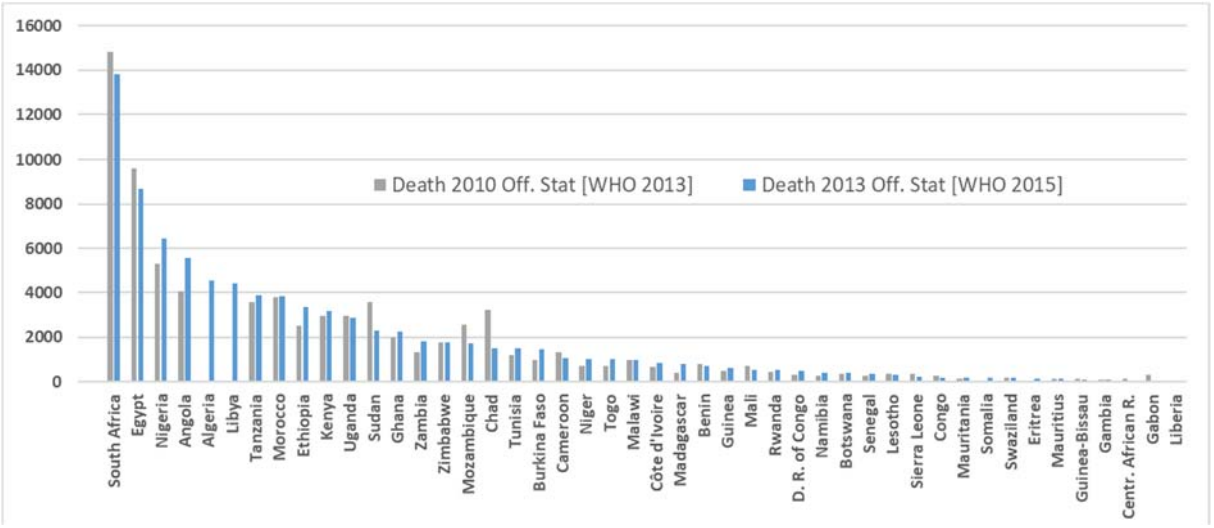


Figure 8: Comparison of official country death statistics for the years 2010 and 2013 (WHO, 2013; WHO, 2015)

A similar figure showing a comparison of WHO death estimates for 2010 and 2013 is shown in Figure 9. 36 Countries (out of 46) show an increase in deaths from 2010 to 2013, while the other 10 countries show a decrease.

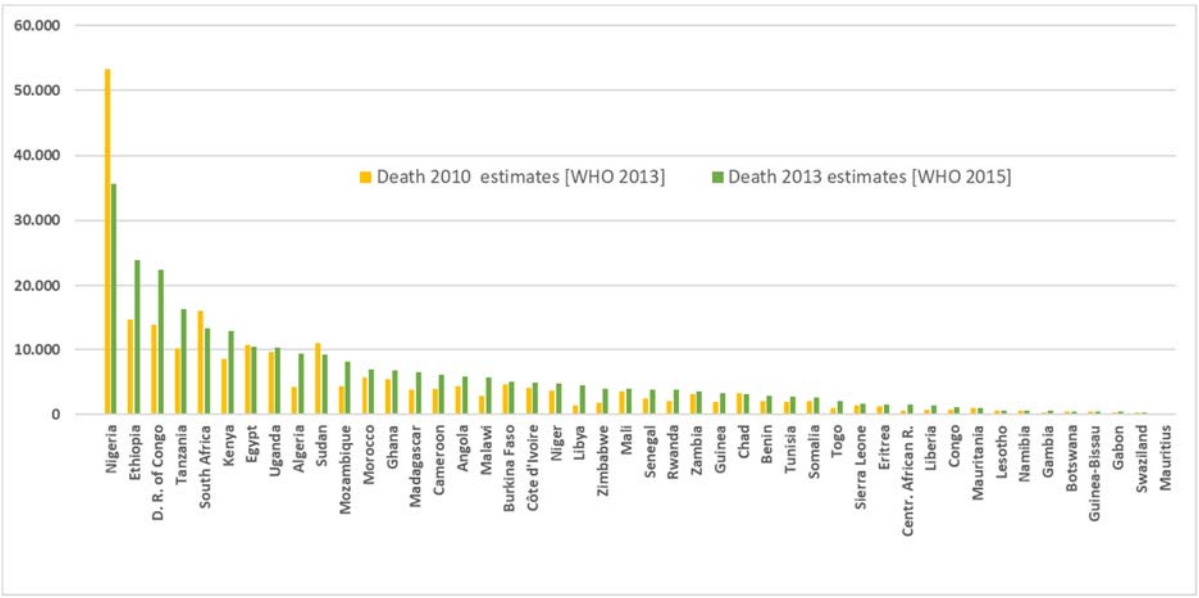


Figure 9: Comparison of WHO death estimates for the years 2010 and 2013 (WHO, 2013; WHO, 2015)

Figure 10 shows the trends in road deaths from 2010 to 2013 on a regional level based on resp. official statistics and WHO estimates. In case of the official statistic countries with no data for 2010 or 2013 (Algeria, Libya, Somalia and Eritrea and Liberia) are excluded in the regional total values. However in the WHO estimates these countries are included. The official statistics show a small increase in road deaths in Central Africa and Western Africa and a small decrease in Southern Africa and Northern Africa. The total for Africa is hardly changed based on the official statistics.

WHO estimates however show a significant increase from 2010 to 2013 in road deaths in Central Africa, Eastern Africa and Northern Africa and a decrease in Western and Southern Africa. For Africa as a whole a significant increase (20%) in road deaths from 2010 to 2013 can be observed.

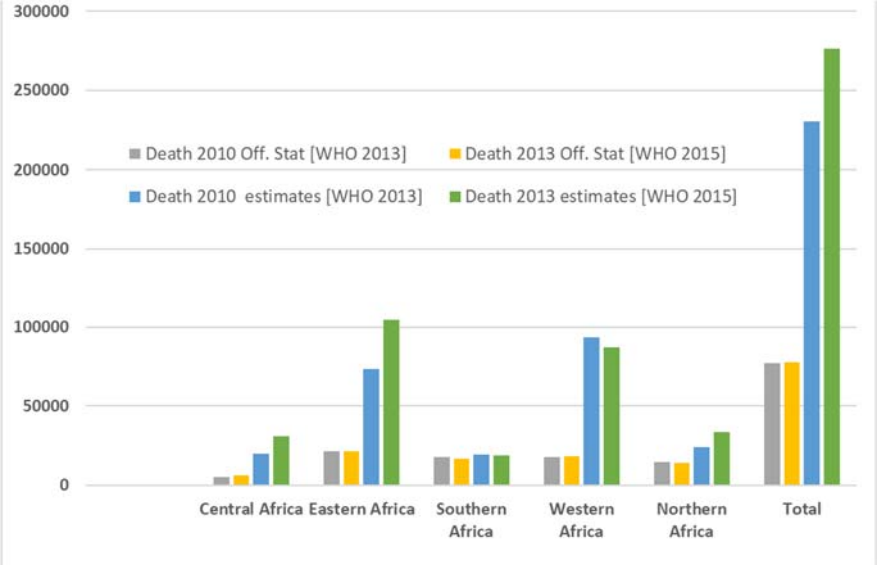


Figure 10: Comparison of WHO death estimates and official statistics on a regional basis and Africa in total for the years 2010 and 2013 (WHO, 2013; WHO, 2015)

These trends from 2010 to 2013 are also shown in the number of deaths per 100,000 inhabitants, which are summarized for the various countries in Fig 5 and for the regions and Africa in total, in Figure 11. Note that for 4 countries (Algeria, Libya, Somalia and Eritrea and Liberia) the data for 2010 are based on GBD which may make a trend comparison less reliable. The worst performing country in 2013 was Libya with more than 70 deaths per 100,.000. Egypt and Mauritius perform the best in Africa with about 12 deaths per 100,.000. The average global death rate is 17.4 per 100,.000, so most African countries are above this rate. Many countries (34 out of 46 countries) in Africa show an increase in death rate from 2010 to 2013 which indicates that realizing the 50% accident reduction target by 2020 will be very challenging for Africa. On the other hand, it may be not impossible to reach this 50% reduction target, considering the relatively low death rate which has been realized in Europe where the 5 best performing countries have a death rate below 3.1 (EC, 2017).

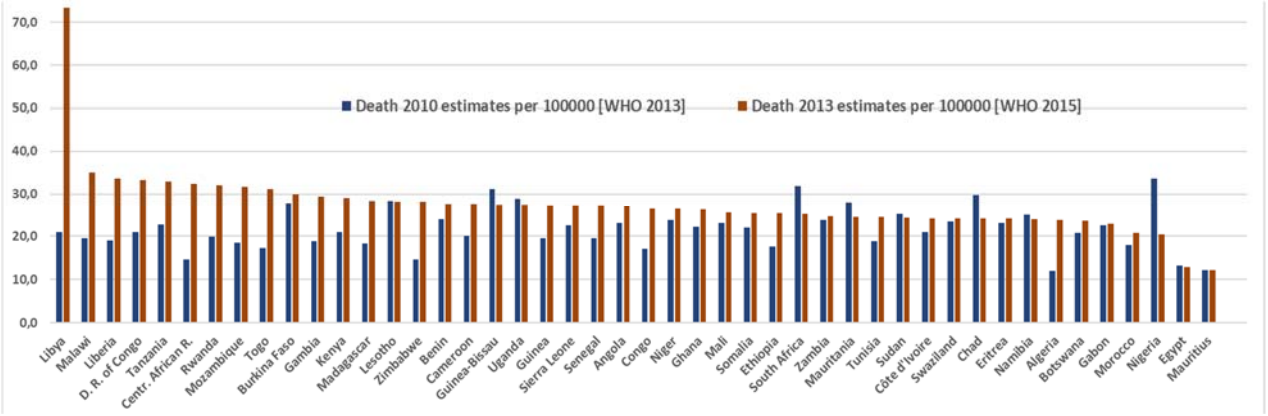


Figure 11: Comparison of WHO death estimates per 100.000 inhabitants for various countries between 2010 and 2013 (WHO, 2013; WHO, 2015)

On a regional level a decrease in road deaths per 100,000 can be seen in Western and Southern Africa from 2010 to 2013 and an increase in the other regions in Africa. Also Africa as a whole shows an increase in deaths per 100,000 (see Figure 12).

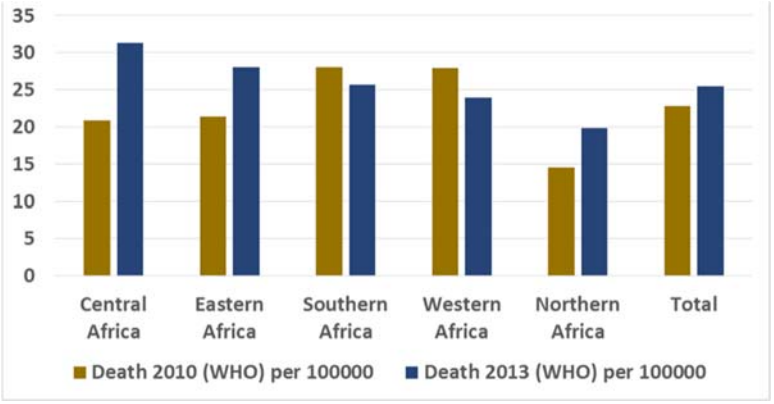


Figure 12: Comparison of WHO death estimates per 100.000 inhabitants for various regions in Africa and for Africa in total, between 2010 and 2013 (WHO, 2013; WHO, 2015)

3.2.2.3 Injuries

The database shown in Table 8 includes GBD estimates for 2010 of all non-fatal injuries as well as injuries requiring hospital admission (World Bank, 2014). Such estimates are not available from the WHO. In 2010 there were almost 10.000.000 road injuries in Africa and more than 1,000,000 of them requiring hospital admission. From the data we have calculated the number of injuries per 100,000 inhabitants in each country and the resulting values are shown in Figure 13. Note that people with sustained injuries requiring hospital admission in reality not always may have entered a hospital for instance due to absence of an adequate hospital in the area. The estimate for hospital admissions in Guinea-Bissau by GBD is so small compared to the estimates for the other countries that this is probably an error. There is about a factor 2 difference in the worst performing countries (all in Northern Africa) and the best performing country Sudan.

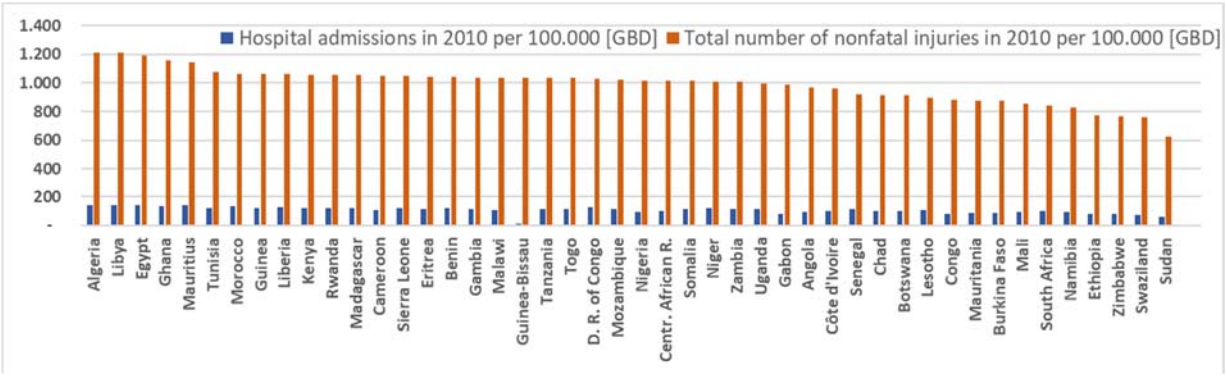


Figure 13: GBD estimates for 2010 of all non-fatal injuries due to road accidents as well as injuries requiring hospital admission

3.2.2.4 Vulnerable road users

Vulnerable road users (pedestrians, cyclists and motor cyclists combined) have a high share in road traffic deaths in many countries in Africa as it is shown in Figure 14. This figure shows, for those African countries (24 countries) for which data were available in the Global Status Report 2015 (WHO, 2015), the percentage of pedestrians, cyclists, and riders of motorized 2 and 3- wheelers that were killed in road accidents. Globally about 50% of all crash victims are pedestrians, cyclists, and motorcyclists. But as can be seen this percentage is much higher in a number of the African countries. In 3 countries (Benin, Uganda and Mauritius) the percentage is above 75%. This is largely due to the relatively high number of deaths among motorized 2 and 3- wheelers in these countries. Also in some other African countries 2- and 3 wheelers have a relatively large share like for example Tanzania, Morocco and Tunisia. In most countries the share of pedestrians among road deaths is above 30% with the largest share in Malawi with almost 50%.

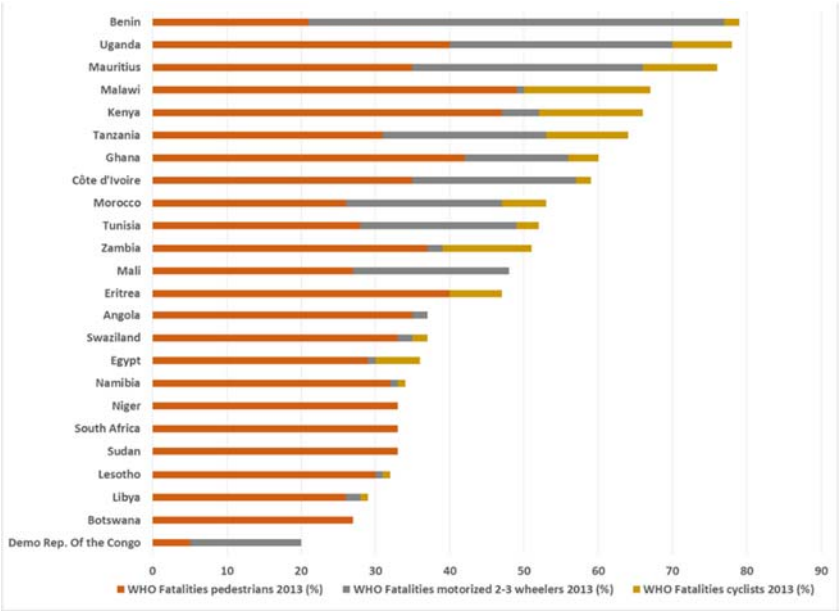


Figure 14: Deaths in 2013 for vulnerable road users by road user category in % of total number of road deaths (WHO, 2015)

3.3 Traffic Safety Measures in Africa

3.3.1 The ARSA plan and selection of related WHO safety performance indicators

The ARSAP is organised around the 5 pillars: road safety management, safer roads and mobility, safer vehicles, safer road users and post-crash response (AU-UNECA, 2010). For each of the pillars a number of expected accomplishments are defined in the ARSA Plan, together with a number of activities. A selection of these accomplishments and activities is shown in Table 7 (in column 1 and 2 resp.). The selection in this Table concerns those activities that have some link to the road safety performance indicators for the African countries as included in the WHO Global status report on road safety 2015 (WHO, 2015). The performance indicators are shown in column 3 of Table 7. Note that the WHO 2015 global status report concerns the year 2013, but some of the indicators may concern earlier years (see Global status report for details). On the basis on the selected performance indicators a dashboard of road safety measures in Africa has been developed that will be presented in the next section.

Table 7: Selection of expected accomplishments and activities in the ARSA Plan together with related performance indicators included in the WHO 2015 Global Status Report

ARSAP		**WHO 2015 Global Status Report**
Expected Accomplishment	***Selection of Activities***	***Related Performance Indicators***
PILLAR 1: ROAD SAFETY MANAGEMENT		
Established/strengthened Lead Agencies	• Establish/strengthen national road safety lead agency with legal, financial and human backing • Prepare & approve a Road Safety Policy/Strategy • Set realistic and attainable RS targets • Establish self-standing RS Financing	• A lead agency is present • The Lead Agency is funded • National Road Safety (NRS) strategy present • Funding available to implement NRS Strategy • Fatality reduction target
Improved Management of Data	• Develop and implement a sustainable and accurate national database on RS crashes • Establish/strengthen and harmonize injury data system to be recorded by Health Facilities	• Registration of total number of vehicles • Good death registration data
PILLAR 2: SAFER ROADS AND MOBILITY		
Safer Roads Infrastructure for all road users	• Develop & implement Africa wide and Regional RS audits and inspection Guidelines • Develop & implement National RS audit and inspection guideline • Carry out road safety inspection/audit of priority corridors • Provide facilities for non-motorised/ vulnerable road users in urban and sub urban areas	• Formal audits required for new road construction projects • Regular inspections of existing road infrastructure • Policies to promote walking or cycling • Policies to encourage investment in public transport • Policies to separate road users and protect VRUs
PILLAR 3: SAFER VEHICLES		
Road Worthiness of Vehicles (Vehicle Safety)	• Develop and implement motor vehicle and related equipment safety standards; • Implement or strengthen enforcement in accordance with good practices (note: see also PILLAR 4)	Vehicle standards for: • Seat Belts • Seat Belt anchorages • Frontal impact • Side Impact • Electronic Stability Control

		• Pedestrian protection • Child seats
PILLAR 4: SAFER ROAD USERS		
Use of Helmets	• Develop or amend an appropriate helmet law for motorcycle riders and their passengers; • Promote public awareness campaign on benefits of helmet; • Publicity on legislation and penalties for non-compliance	• National Motorcycle Helmet law? • Applies to Drivers and Passengers? • Helmet to be fastened? • Helmet standard? • Enforcement level (0 …. 10) • Wearing rate % drivers or All • Wearing rate % passengers
Seat Belts	• Issue and enforcement regulations to wear seat belts; • Compulsory wearing of seat belt wearing for front seat occupants and encouragement for back seat occupants; • Promote use of child restraints • Issue and enforce regulations for all imported vehicles or domestic productions to be equipped with seat belts	• National seat belt law • Applies to front and rear seat occupants • Enforcement level (0 … 10) • Seatbelt wearing rate, front, drivers or all in % • Seatbelt wearing rate rear seat occupants in % • Law for use of child restraints in cars • Enforcement of child seat restraints?
Alcohol	• Set rules to reduce alcohol and drug related crashes and injuries; and seek compliance with drink-driving laws and evidence-based standards • Set inspection target to inspect drivers under the influence of drug and alcohol; • Regulation prohibiting driving under the drug and alcohol	• National drink-driving law? • BAC limit • Random Breath testing? • Enforcement level drunk-driving (0 …. 10) • % death involving drunk driving
Speeding	• Campaign against speeding • Clear speed limit regulated	• National speed limit law • Urban speed limit km/hr • Rural speed limit km/hr • Motorway speed limit km/hr • Speed Enforcement (0 ….10)
Mobile Phone Use	• Regulation against use of mobile phone	• National Law mobile phone use during driving?
PILLAR 5: POST-CRASH RESPONSE		
Emergency Care	• Increase coverage of emergency assistance systems for road traffic victims to cover all urban areas and regional corridors; • Establish emergency medical services coordinating centers at strategic locations • Implement universal three digit emergency telephone communication system • Acquire fully equipped ambulances with medical supplies and crash extraction and rescue equipment • Develop long term hospital trauma care and rehabilitation capacity	• Universal access telephone number(s) • Estimated % seriously injured patients transported by ambulance • Training in emergency medicine available for doctors • Emergency-room based injury surveillance system • Vital registration system exists • Estimated % road traffic crash victims with permanent disability

3.3.2 Dashboard of road safety measures in Africa

Table 9 contains 50 road safety performance indicators defined by the WHO as included in the 2015 Global Status report on road safety. The dashboard of road safety measures in Africa is a Table that summarizes the status for these performance indicators for the 46 African countries that have been specified in section 3.2.1 (Table 5). The resulting dashboard is shown in Tables 8 and 9 (Dashboard of road safety measures in Africa, part 1 and part 2). Dependent on the nature of the performance indicator colours are used or digital values, for example to indicate speed limits (km/h), enforcement levels or % wearing rates of safety devices. Red colour usually means that this measure has not been applied yet in this country in 2013 or before. Green means that the measure is applied and White usually unknown. Yellow implies partially implementation and blue that implementation may have taken place on a sub-national level. Enforcement levels are indicated on a scale from 0 – 10 where 0 means: no enforcement and 10 a high level of enforcement.

Tables 8 and 9 show for the indicator "death reduction target", targets for the countries for which data are available in the WHO global status report.

Table 8: Dashboard of road safety measures in Africa (part 1)

Expected Accomplishment in UNECA African Action Plan	Related WHO indicator according to Global Status report on road safety 2015	Algeria	Angola	Benin	Botswana	Burkina Faso	Cameroon	Centr. Afric. Rep.	Chad	Congo	Côte d'Ivoire	D. R. of the Congo	Egypt	Eritrea	Ethiopia	Gabon	Gambia	Ghana	Guinea	Guinea-Bissau	Kenya	Lesotho	Liberia	Libya
PILLAR 1: ROAD SAFETY MANAGEMENT																								
Established or strengthening of Lead Agency	A lead agency is present																							
	The Lead Agency is funded																							
	National Road Safety (NRS) strategy present																							
	Funding available to implement NRS Strategy																							
	Fatility reduction target (see also separate Table)																							
Improved Management of Data	Registration of total number of vehicles																							
	Good death registration data																							
PILLAR 2: SAFER ROADS AND MOBILITY																								
Safer Roads Infrastructure for all road users	Formal audits required for new road construction																							
	Regular inspections of existing road infrastructure																							
	Policies to promote walking or cycling																							
	Policies to encourage investment in public transport																							
	Policies to separate road users and protect VRUs																							
PILLAR 3: SAFER VEHICLES																								
Road Worthiness of Vehicles (Vehicle Safety)	Vehicle standards for:																							
	Seat Belts																							
	Seat Belt anchorages																							
	Frontal impact																							
	Side Impact																							
	Electronic Stability Control																							
	Pedestrian protection																							
	Child seats																							
PILLAR 4: SAFER ROAD USERS																								
Use of Helmets	National Motorcycle Helmet law?																							
	Applies to Drivers and Passengers?																							
	Helmet to be fastened?																							
	Helmet standard?																							
	Enforcement level (0 …. 10)	5	4	3	6	1	1	3	4	3	2	3	5	8	1	6		4	2		4	5		1
	Wearing rate % drivers or All		60	15		9								95				34						
	Wearing rate % passengers		40	1										90				2						
Seat Belts	National seat belt law																							
	Applies to front and rear seat occupants																							
	Enforcement level (0 … 10)	10	8		7	0	4	7	2	3	4	4	8	6	8	7	10	5	3		6	3		3
	Seatbelt wearing rate, front, drivers or all in %	90	90										14	60	1			18						
	Seatbelt wearing rate rear seat occupants in %		15											10										
Alcohol	National drink-driving law?																							
	BAC limit																							
	Random Breath testing?																							
	Enforcement level drunk-driving (0 …. 10)	7	5		6	1	2	5	1	3	3	3	6	6	1	2	1	3	2	1	5	3	0	4
	% death involving drunk driving				10										4		2			5				2
Speeding	National speed limit law																							
	Urban speed limit km/hr	50	60		60	50	60	60	60	60	60	60	60	60	60	60	no	50		60	50	50	40	50
	Rural speed limit km/hr	100	90		80	90	100	110	110	110	110	90	90	100	70	110	no	90		no	100	80	56	85
	Motorway speed limit km/hr	120	120		120	no	no	no	no	no	120	120	100	no	100	no	no	100		no	110	no	72	100
	Speed Enforcement (0 ….10)	8	5		7	3	2	5	3	3	6	3	5	5	3	3	5	4		2	6	4	1	2
Mobile Phone Use	National Law mobile phone use during driving?																							
Child restraints	Law for use of child restraints in cars																							
	Enforcement of child seat restraints?		4		2									1	1		1							
PILLAR 5: POST-CRASH RESPONSE																								
Emergency Care	Universal access telephone number(s)																							
	Estimated % seriously injured patients transported by ambulance	> 75	< 11	11..49	11..49	> 75	< 11	< 11	< 11	< 11	11..49	< 11	< 11	11..49	< 11	< 11	< 11	11..49	< 11	< 11	< 11	0*	< 11	< 11
	Training in emergency medicine available for doctors																							
	Emergency-room based injury surveillance system																							
	Vital registration system exists																							
	Estimated % road traffic crash victims with permanent disability								5,0											5,0				

	Yes
	No
	Partially
	Subnational
0*	No ambulance service available

Table 9: Dashboard of road safety measures in Africa (part 2)

Expected Accomplishment in UNECA African Action Plan	Related WHO indicator according to Global Status report on road safety 2015	Madagascar	Malawi	Mali	Mauritania	Mauritius	Morocco	Mozambique	Namibia	Niger	Nigeria	Rwanda	Senegal	Sierra Leone	Somalia	South Africa	Sudan	Swaziland	Tanzania	Togo	Tunisia	Uganda	Zambia	Zimbabwe
PILLAR 1: ROAD SAFETY MANAGEMENT																								
Established or strengthening of Lead Agency	A lead agency is present																							
	The Lead Agency is funded																							
	National Road Safety (NRS) strategy present																							
	Funding available to implement NRS Strategy																							
	Fatility reduction target (see also separate Table)																							
Improved Management of Data	Registration of total number of vehicles																							
	Good death registration data																							
PILLAR 2: SAFER ROADS AND MOBILITY																								
Safer Roads Infrastructure for all road users	Formal audits required for new road construction																							
	Regular inspections of existing road infrastructure																							
	Policies to promote walking or cycling																							
	Policies to encourage investment in public transport																							
	Policies to separate road users and protect VRUs																							
PILLAR 3: SAFER VEHICLES																								
Road Worthiness of Vehicles (Vehicle Safety)	Vehicle standards for:																							
	Seat Belts																							
	Seat Belt anchorages																							
	Frontal impact																							
	Side Impact																							
	Electronic Stability Control																							
	Pedestrian protection																							
	Child seats																							
PILLAR 4: SAFER ROAD USERS																								
Use of Helmets	National Motorcycle Helmet law?																							
	Applies to Drivers and Passengers?																							
	Helmet to be fastened?																							
	Helmet standard?																							
	Enforcement level (0 …. 10)	5	8	2	2	9	8	3	4	6	6	10	3	8		5	5	8	5	7	3	3	9	9
	Wearing rate % drivers or All			18			43		12				54									49		
	Wearing rate % passengers						8						14									1		
Seat Belts	National seat belt law																							
	Applies to front and rear seat occupants																							
	Enforcement level (0 … 10)	5	4		4	8	7	4	5		8	8	5	9		2	8	6	6	7	2	3	8	8
	Seatbelt wearing rate, front, drivers or all in %					97	50		55		87					33								
	Seatbelt wearing rate rear seat occupants in %					1			1		10													
Alcohol	National drink-driving law?																							
	BAC limit																							
	Random Breath testing?																							
	Enforcement level drunk-driving (0 …. 10)	5	3	2	8	5	2	5	2	4	2	8	2	4	1	4	6	5	4	4	4	4	7	4
	% death involving drunk driving					24	3				1			40		58						1		
Speeding	National speed limit law																							
	Urban speed limit km/hr	50	50	50	80	90	60	60	60	50	50	40	no	50	40	60	50	100	50		50	50	50	60
	Rural speed limit km/hr	no	80	90	100	90	100	120	120	no	80	80	90	80	60	100	90	100	no		90	100	100	120
	Motorway speed limit km/hr	no	100	120	100	110	120	no	120	no	100	no	110	no	no	120	no	100	no		110	no	no	120
	Speed Enforcement (0 ….10)	5	5	3	3	7	6	4	7	5	6	6	3	3	2	3	6	6	4		4	5	8	7
Mobile Phone Use	National Law mobile phone use during driving?																							
Child restraints	Law for use of child restraints in cars																							
	Enforcement of child seat restraints?			1				3	1		2			6									6	
PILLAR 5: POST-CRASH RESPONSE																								
Emergency Care	Universal access telephone number(s)																							
	Estimated % seriously injured patients transported by ambulance	< 11	0*	> 75	11..49	> 75	> 75	0*		> 75	11..49		> 75	11..49	< 11	50..74	11..49	11..49	< 11	> 75	< 11	< 11	< 11	< 11
	Training in emergency medicine available for doctors																							
	Emergency-room based injury surveillance system																							
	Vital registration system exists																							
	Estimated % road traffic crash victims with permanent disability																					2,8		

	Yes
	No
	Partially
	Subnational
0*	No ambulance service available

Table 10: Death reduction targets included in the National road safety plans from different African countries (WHO, 2015)

	Death reduction target
Algeria	10% 2013– 2018
Benin	50% 2011–2020
Botswana	50% 2011– 2020
Burkina Faso	25% 2011–2020
Cameroon	50% 2011–2020
Chad	From 4.41% to 2% by 2018
Côte d'Ivoire	50% pedestrian fatalities 2012–2020
Egypt	5% annually 2011–2020
Eritrea	5% 2012–2016
Ethiopia	50% 2011–2020
Ghana	50% (2011–2020)
Kenya	50% (2009–2014)
Lesotho	50% (2013–2015)
Libya	3–5% annually (2008–2011)
Madagascar	5% (2014–2016)
Malawi	20% (2014–2019)
Mali	50% (2011–2020)
Mauritania	25% (2012–2016)
Mauritius	30% (2011–2020)
Mozambique	50% (2011–2016)
Namibia	5% (2011–2020)
Nigeria	50% reduction in crash fatalities by 2015 (Accra Declaration); Reducing RTC fatalities by 2020 (UN
Rwanda	50% (2008–2015)
Senegal	35% (2012–2022)
Sierra Leone	50% (2013–2015)
South Africa	50% (2011–2015)
Sudan	20% (2011–2016)
Zambia	50% (2014–2020)

3.3.3 Analysis of the dashboard of road safety measures in Africa

3.3.3.1 Road safety management

All countries, except Congo, Liberia and Tanzania have a designated lead agency on road safety. The name of this agency is included in the WHO status report. For 33 countries there is available funding for this lead agency. Thirty eight countries have developed a National Road Safety Strategy (NRS) but full funding for implementation of this NRS is available in only few countries (Angola, Botswana, Kenya, Mauritius, Morocco and Zambia). Many of the countries with a national road safety strategy have introduced targets for death reduction as was shown in Table 9. Often a 50% target is adopted like in the ARSAP and the UN SDG, with target year 2020. Some countries have even more ambitious

targets like Kenya, Lesotho, Mozambique and Nigeria, while others have less ambitious targets like Algeria and Namibia. Note that Nigeria has several targets specified in different plans according to the WHO Global status report.

Concerning management of data all countries, except Cameroon, have a registration for the total number of vehicles and for most of the countries a division is available (not shown in the dashboard) for the type of vehicles (bus, truck, 2-3 wheelers etc.). A good road death registration system is lacking in most countries.

3.3.3.2 Safer roads and mobility

Formal audits for new road construction projects are required in 35 countries and regular inspections of existing road infrastructure in 33 countries. Policies to promote walking or cycling exist in only a few countries on a national level: Angola, Eritrea, Morocco, Nigeria, Uganda and Zambia. Policies to encourage investments in public transport are available in almost 50% of the countries (sometimes on a sub-national level) and policies to separate road users and protect Vulnerable Road Users (VRUs) in 11 countries on a national level and an additional 7 countries on a sub-national level.

3.3.3.3 Safer vehicles

The dashboard includes information on the status of introduction in 2013 of the following United Nations Economic Commission for Europe (UNECE) vehicle standards: seat belts, seat belt anchorages, frontal impact, side Impact, electronic stability control, pedestrian protection and child seats. As it can be seen only Egypt has introduced all these standards and South Africa, 4 of the standards: for seat belt anchorages, electronic stability control, pedestrian protection and child seats. In all other countries in 2013 no UNECE vehicle standards were introduced yet. Note that the UNECE requirements are minimum requirements and usually less demanding than requirements in New Car Assessment Programs (NCAP), like the various NCAP programs worldwide. In Africa no NCAP program has been introduced yet.

3.3.3.4 Safer road users

Helmets

Most African countries except Gambia, Guinee-Bissau, Liberia and Somalia have helmet laws for motorcycles. For helmet laws to be effective they should among others (WHO, 2015):

- apply for both drivers and passengers (not the case as shown in the dashboard for Libya, Senegal, Tanzania and Zimbabwe).
- specify that helmets need to be always fastened, which is the case in 14 countries
- require helmets to meet an adequate helmet standard like ECE 22 (UNECE, 2017a), which is the case in 17 countries. Without an adequate standard, the risk of using a helmet without sufficient protection increases.

The wearing rate for helmets is available for 10 countries and appears to vary from for very low (below 20% for drivers) in 4 countries to very high (95% for drivers) in Eritrea. The enforcement level for using a helmet is available for most of the countries and is high (7 or higher) in 10 countries.

Seat belts

Most countries have a national seatbelt law except Benin, Guinee-Bissau, Liberia, Mali, Niger and Somalia and in most countries this law applies for both front and rear seat occupants, except for Libya, Senegal, Tanzania and Zimbabwe. The wearing rate for seatbelts in the front is available for 11 countries and in the rear seat for 5 countries. Wearing rates in the front are high (> 80%) in 4 countries: Algeria, Angola, Mauritania and Nigeria. For the rear seat they are low in all 5 countries (15% or less). The enforcement level for wearing a seat belt is available for most of the countries and is high (7 or higher) in 17 countries. In 9 countries the enforcement level is very low (3 or less).

Alcohol

Drunk-driving laws exist in all countries except in Benin. Thirty-three countries have specified Blood Alcohol Concentration (BAC) limits and most countries that have BAC limits also perform random breath testing, except 5 countries: Chad, Congo, Guinea, Liberia and Tunisia. The enforcement level for drunk-driving is available for most countries and is high (7 or higher) for only 4 countries: Angola, Mauritania, Rwanda and Zambia and very low (3 or less) in 21 countries. The percentage of deaths involving drunk driving is known for 11 countries and varies from 10% or less in 8 of the countries, to 24% in Mauritania, 40% in Sierra Leone and even higher (58%) in South-Africa.

Speeding

High speed is the most important risk factor. Most countries have national maximum speed laws except for Benin, Guinea and Togo. A distinction is made in maximum speed limits for roads in urban areas, in rural areas and highways. In urban area the max speed is usually specified at 50 or 60 km/hr, but 3 countries have also a lower level of 40 km/hr. Mauritius has a maximum national speed limit in urban areas of 90 km/hr and Swaziland of 100 km/hr. Gambia has no national maximum speed limits for any of the 3 road categories. On rural roads maximum national speeds limits of up to 120 km/hr can be seen and some countries have no national speed limits for this road type. Also on Motorways the highest maximum speed level is 120 km/hr but note that 20 countries have no speed limits on motorways, which partially can be explained probably due to the absence of motorways in the country. The enforcement level for speeding is available for most countries and is high (7 or higher) for only 6 countries and very low (3 or less) in 16 countries.

Mobil phones

Thirty-eight countries have a national law for mobile phone use during driving, which in most countries prohibits hand-held mobile phone use.

Child restraints

Child restraint systems for cars are required in 13 countries, but the enforcement level is very low (3 or less) in 8 countries and the maximum enforcement level is 6 in Sierra Leone and Zambia.

3.3.3.5 Post-crash response

Universal access telephone number(s) have been introduced in 36 countries. For most countries an estimated percentage of seriously injured patients that are transported by ambulance is available. The countries are subdivided in 4 groups: <11 %, 11-49 %, 49-75 % and >75 % transported by ambulance. In 25 countries the percentage is below 11% and in 8 countries more than 75 %. In 29 countries training in emergency medicine is available for doctors and 18 countries have an

emergency-room based injury surveillance system. In 38 countries a vital registration system is available. Finally for 3 countries estimation is available for the percentage of road traffic crash victims with permanent disability. This percentage is 5% in Chad and Guinea-Bissau and 2,8 % in Uganda.

3.4 Discussions and conclusions

The first objective of this study was to perform an analysis of the Road Safety problem in Africa in view of the ambitious target of 50% reduction target for road accidents included in the African Road Safety action plan (ARSAP). For this purpose a database of accident data was developed on the basis of data from the World Health Organisation and the Global Burden of Disease study (GBD).

An analysis of this database resulted in the following findings:

- Estimates for road accident deaths from the WHO are for many countries in Africa much higher than the official reported country data, indicating a potential underreporting in the death data.
- The total number of road accident deaths in 2013 in Africa is estimated by WHO as more than 230.000, which is about 20% of the total number of deaths globally.
- The official statistics show that the total number of road deaths in Africa hardly has changed from 2010 to 2013, but based on the WHO estimates a significant increase (20%) in road deaths from 2010 to 2013 can be observed for Africa.
- Western and Southern Africa (GBD region definitions) show a decrease in road deaths from 2010 to 2013, which is also reflected in the number of road deaths per 100.000 population, but the other regions show an increase in this period and due to this also Africa as a whole shows an increase in road deaths (22.8 deaths per 100.00 in 2010 and 25.5 deaths per 100.00 in 2013).
- The above trend from 2010 – 2013 indicates that realizing the 50% accident reduction target in the ARSAP by 2020 will be very challenging for Africa.
- The GBD study contains estimates for the number of injuries due to road accidents for each country in Africa including injuries requiring hospital admission. Such estimates are not available from the WHO. In 2010 there were almost 10.000.000 road injuries in Africa and more than 1.000.000 of them requiring hospital admission according to the GBD study
- Vulnerable road users (pedestrians, cyclists and motor cyclists combined) are particular at risk in Africa. In some of the African countries the number of vulnerable road users is more than 75% of all road deaths which is partly due to the large involvement of 2-3 wheelers in road accidents.

The 2nd objective of this study was to assess the status of road safety measures in Africa for activities included in the ARSAP. This was done on the basis of road safety performance indicators in the WHO 2015 global status report on road safety. In total 50 performance indicators were selected which resulted in a dashboard for the 46 countries in Africa that have been included in the database. Note that the status of these indicators is mostly for the year 2013, but sometimes they may concern an earlier year.

An analysis of this dashboard was carried out and resulted in the following observations:

- Most countries have a lead agency on road safety and have developed a national road safety strategy (NRS). Many of the African countries also have set death reduction targets, often similar to the 50% reduction target for 2020 from the ARSA Plan and the UN SDG. A good road death registration system however is lacking in most countries.
- In about 75% of the countries formal audits for new road construction projects are required and are regular inspections of existing road infrastructure carried out. Policies on a national level to separate road users and protect vulnerable road users are available in about 25% of the countries and policies to encourage investments in public transport in 50% of the countries.
- With the exception of Egypt and South-Africa, none of the African countries had introduced in 2013 UNECE vehicle safety standards (UNECE, 2017a).
- Most countries have introduced laws for wearing helmets and seatbelts and have introduced drunk-driving laws, maximum speed limits and a law for mobile phone use during driving. But child restraint systems for cars are required in only 13 countries and 17 countries require a helmet to meet a helmet standard
- The wearing rate of helmets and seatbelts is available for less than 25% of the countries and is low compared to many other parts of the world.
- Information on enforcement of laws for helmets, seatbelts, speeding and drunk-driving is available for most countries. Seventeen countries have a high level of enforcement (level 7 or higher) in case of seat belt wearing on the front seat. In less than 25% of the countries there is high level of enforcement for helmet usage (10 countries), speeding (6 countries) and drunk-driving (4 countries)
- About 75% of the countries have a universal access emergency telephone number. In most countries ambulances are available for transport of road accident victims to the hospital, but the actual number of victims that are transported by ambulance is low: in more than 50% of the countries even less than 10%.

The data included in the accident database are for the years 2010 and 2013. For the dashboard they concern the year 2013. It is recommended to perform a similar analysis as soon as a new WHO global road safety status report is published containing data for 2015 (expected in 2018) in order to make a trend analysis. If available also an analysis of new GBD data could be included in such an analysis or any other data sources that contain road safety related data for a majority of African countries.

4 Analysis per Pillar

The methodological section (chapter 2) showed how the overall analysis was realized through the five pillars of the ARSAP identifying main items of Raid Safety governance and evaluating main recommendations issued form the ARSAP mid-term review (AU-UNECA, 2015a, 2015b).

The 5 pillars are:

- Road safety management,
- Safer roads and mobility,
- Safer vehicles,
- Safer road users,
- Post-crash response.

The recommendations proposed by ARSAP mid-term review are:

Pillar 1: Road Safety Management

- *Establish/strengthen Lead*
    - Agencies with sustained funding
    - Set road safety targets
    - Develop knowledge management portals on road safety
    - Allocate 10% of road investment to road safety
    - Allocate 5% of road maintenance resources to road safety
    - Allocate sufficient financial / human resources to road safety
- *Improved Management of Data*
    - Enforce mandatory reporting, use standardized data and provide sustainable funding for road safety
    - Build capacity for road safety data management
    - Promote road safety research as well as the use of best practices
    - Establish/strengthen/harmonize injury data system for health facilities
    - Establish internationally harmonized baseline data on road safety
- *Develop/Strengthen Partnership and Collaboration*
    - Establish national association of accident victims and survivors

Pillar 2: Safer Roads and Mobility

- Develop road safety audit and inspection guidelines

Pillar 3: Safer Vehicles

- Introduce incentives for importation of safer vehicles
- Introduce periodical inspection of vehicles

Pillar 4: Safer Road Users

- Establishing or strengthening of Road Safety Clubs in Schools
- Promoting the use of child restraints

Pillar 5: Post-Crash Response

- Introduce emergency medical services coordination centres at strategic locations
- Provide fully equipped ambulances with medical supplies, and crash extraction and rescue equipment
- Develop capacity for long term hospital trauma care and rehabilitation
- Introduce health facilities along main highways

4.1 Pillar 1: Road Safety Management

The 5 pillars were analysed through a matrix approach, the Road Safety Management pillar included. That latter one is composed of 5 sub-matrixes, which were filled in for each country. 21 countries were investigated. That approach was built upon a large questionnaire and with a selection of appropriate questions for checking the ARSAP components. South Soudan was excluded from the below analysis, because the uncertainty of answers remains too high, so that it was not possible to obtain useful outcomes. Each questionnaire benefits from a validation from an external expert. It helps in completing some information or to correct some of them.

The sub-matrixes are the following ones with different number of items for categorizing them:

1. Institutional organization and coordination (9 items)
2. Policy formulation and adaptation (9 items)
3. Policy implementation and funding (10 items)
4. Monitoring and Evaluation (11 items)
5. Scientific support and knowledge and capacity building (11 items)
6. Key road safety resources (11 items)

The different sub-matrixes make possible to give an appropriate overview of the road safety management situation for the investigated African countries and to propose a rough evaluation of the ARSAP by having some items corresponding to the ARSAP dimensions.

4.1.1 Institutional, organization and coordination

The different items were selected from the questionnaire provided by WP2 of SaferAfrica project for scoring the administrative capabilities of African countries in terms of organization and coordination. Table 10 provides the outcomes issued from the coding of the answers for the questionnaires for some countries. Those items deal mainly with the existence of a lead agency, its role, its responsibilities, and the institutional framework. Institution organizational and coordination items are:

- Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS?
- Does it operate under the Head of the State or the Parliament?
- Is the high-level decision-making institution meeting regularly?
- Does Parliament have a prominent role in initiating decision-making on road safety orientations or directions?
- Has a Lead Agency been formally appointed to take responsibility for road safety (direct the national road safety effort)?
- Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?
- Is the technical inter-sectoral institution endowed with a statutory (law or decree established) budget for fact finding or implementation RS measure?
- Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)?

- Are the legislative instruments defining inter-sectoral road safety management functions periodically reviewed and reformed?

First, the rate of non-answer remains quite low for the whole countries, while it amounts to a too high level for some of them (Cameroon, Guinea, Botswana and Benin). It means the outcomes reach a good level of confidence for their interpretation.

Table 11: Institution organizational and coordination matrix outcomes for pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Second, 70 % of countries show a good level of performance (above the average), while Cameroon and Gambia underperform. At large, the countries having answered to the questionnaire show that organization and coordination framework exist and operate for producing potentially road safety outcomes.

4.1.2 Policy Formulation and adoption

The different questions, which were selected for scoring the administrative capabilities of African countries in terms of policy formulation and adaptation are showed with the below items. Table 12 provides the outcomes issued from the coding of the answers for the questionnaires for some countries. Those items deal mainly with the existence of NGO, stakeholders and their role of policy formulation. Some other items concern the role of local authorities, the formulation of a national strategy, the setting of road safety targets and a road safety program. Policy formulation and adaptation Items are:

- Are some government agencies actively advocating the need for taking road safety action?
- Are there NGOs actively promoting road safety?
- Are regional authorities consulted as to the part they are called to play in national road safety policy?
- Are local authorities (municipalities, counties) consulted as to the part they are called to play in national road safety policy?
- Has a national "vision" for improved RS performance in the long term officially been set?
- Have national medium-term (four to ten years) quantitative targets been set for improved safety performance?
- Are the targets based on morbidity indicators?
- Have sectoral quantitative targets or performance indicators also been set to mobilize RS actors?
- Has a national medium term road safety programme been elaborated?

The rate of non-answer is quite correct for that sub-matrix. Guinea reaches a high level of non-answer, meaning that the results cannot be interpreted easily and be taken into consideration for interpretation.

Table 12: Policy formulation and adaptation matrix outcomes for pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Concerning the performance of countries, 60 % of them perform above average. Gambia, Guinea and Lesotho show below average performance. Senegal, Benin, Botswana and Kenya need to improve their performance. At large, the performance obtained and related to public formulation and adaptation shows a good score.

4.1.3 Policy Implementation and Funding

The different items dealing with policy implementation and funding are presented below. More especially, they concern the existence of partnership with the private sector, budget consideration, the existence of dedicated funding, the mechanism for funding road safety policy and the adequate allocation of resources. Table 13 provides the outcomes for those items. Policy Implementation and Funding Items are:

- Have partnerships or agreements been established at the national level with the private sector?
- If a national road safety program has been elaborated and adopted has the budget needed for program implementation been estimated?
- Has a high level engagement (decision) been taken to ensure availability of a budget for road safety?
- Does the government allocate the product of fines (or any funds collected from RS measures) to road safety interventions or related activities?
- Is there a budget specifically allocated to road safety activities, interventions and capacity building from the national budget (Treasury)?
- Is there a sustainable funding structure for road safety, independent from the Treasury (RS Fund, RS Foundation)?
- Are there formal resource allocation procedures to support road safety management tasks and interventions?
- Are the funds allocated sufficient to implement the program or policy components of the RS policy?
- Are the legislative instruments and procedures regularly reviewed and improved concerning the funding mechanism of the RS policy?
- Are the human resources needed to implement the program or policy components of the RS policy?

- Have training plans been designed to support implementation of the national road safety program or policy components?

The score of non-answers is globally satisfying, except for Togo, Kenya. Consequently, those latter countries would be discarded for interpreting the general picture of result for that sub-matrix. Moreover, Cameroon and Tunisia shows weak answer rates.

Table 13: Policy implementation and funding matrix outcomes for pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

70 % of countries are above the average, while Gambia, Sierra Leone and Swaziland underperform that requires to implement new interventions. Benin, Burkina Faso, Congo, Guinea, South Africa, Cameroon and Tunisia have to improve the current situation.

4.1.4 Monitoring and Evaluation

Monitoring and evaluation represents an important component of administrative capabilities of a country for implementing a public policy. That section provides some key information related to the existence of robust system for collecting data information, reporting procedures, how is articulated horizontally and vertically with road safety stakeholders. That table deals also with the evaluation process. Monitoring and Evaluation Items are:

- Are sustainable and reliable systems (durable, funded, maintained) in place to collect and manage data on road accidents, fatalities and injuries?
- Are sustainable and reliable systems in place to collect and manage data on road safety behavioural indicators?
- Is there a national Observatory centralizing the data systems for road safety?
- Has a reporting procedure been set up to monitor the road safety interventions carried out in the country?
- Is it performed "horizontally" at the national level (covering ministries and government agencies)?
- Is it performed "vertically" to cover activities at the regional and/or the local level?
- Has a procedure been set up to evaluate safety performances of the national program or policy?
- Is "benchmarking" used to monitor progress in the road safety situation relatively to other countries?
- Does some "process evaluation" of safety interventions take place during the implementation period of the program? (checking that measures work as expected and do not generate undesired side-effects)

- Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs of some policy components?
- Web resources

The score of non-answers is correct for 90 % of countries, meaning that the obtained scoring rates are of good quality. Only Tanzania and Swaziland score remains less certain.

Table 14: Monitoring and evaluation matrix outcomes for pillar 1

The global performance is contrasted for that item. Only 35 % of countries perform above the average. Benin, Lesotho, Malawi, Mauritius, Congo shows some performances below the average, while Botswana, Cameroon, Swaziland and Tanzania have very low performance. Globally, concerning monitoring and evaluation, it remains some possibilities for improving the current practices.

4.1.5 Scientific support and Knowledge and capacity building

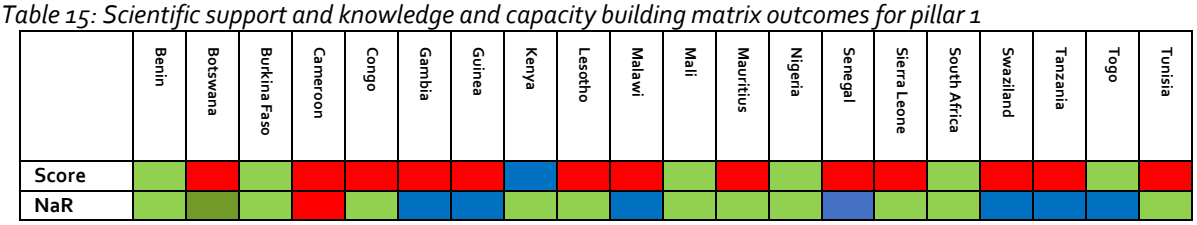
The implementation of effective countermeasures, the evaluation of public policies and the monitoring process require the support of science and the mobilization of appropriate knowledge for selecting the correct measures for tackling the road safety issues. Table 15 indicates the outcomes for the different items investigated and related with that issue. Some concern the existence of a research institute, research teams, the support of academic resources, the setting-up of training, etc.

Is there at least one institute or university department in your country performing multi-disciplinary road safety research and/or studies? Scientific Support and Knowledge and Capacity Building Items are:

- Are there steady research teams?
- Are the teams of road safety researchers in the country systematically requested by policy-makers to contribute knowledge for policy formulation?
- Are there articles or programs in the media on road accidents and/or on road safety activities which review, criticize or challenge current policies?
- Is there at least one university (or other superior education structure) providing a multi-disciplinary course on road traffic safety for students?
- Do universities or other educational institutions offer specialized courses addressing future professionals who may be involved in road safety?

The quality of answer is quite good, except for Cameroon, country for which the outcome cannot be interpreted correctly.

Table 15: Scientific support and knowledge and capacity building matrix outcomes for pillar 1



In terms of performance, the general overview shows a bad score for the most part of countries. Forty-five percent of countries have a very bad score and 65 % of the total show a performance below the average. Only 35 % of them remain at a level above the average. Those results imply an important effort has to be consented for improving scientific support, knowledge and capacity building for helping the government in designing effective public policy.

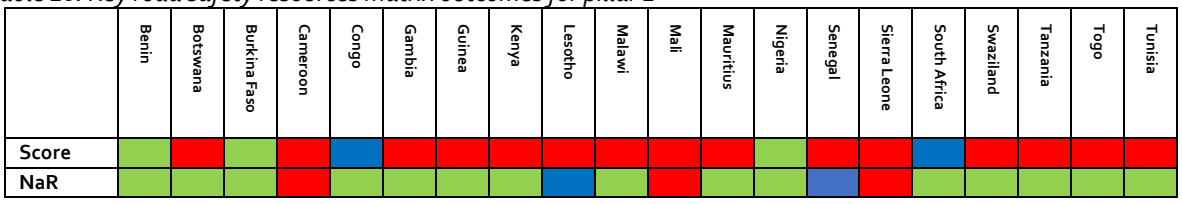
4.1.6 Key road safety resources

One main resources or calibrating effective public policy and design appropriate countermeasures, but also for evaluating and monitoring policies is the availability of data series, information sources, the access to good practices, etc. Table 16 resumes the outcomes for the different items on this issue. Key Road Safety Resources Items are:

- Do you use any international road safety databases/information sources?
- Do you use any national databases/information sources?
- Use of exposure data (e.g. kilometers driven, numbers of trips)?
- Use of statistical methods for priority setting?
- Existence of information on the socio-economic cost of crashes, fatalities and injuries?
- Existence of statistical models and tools for priority setting?
- Existence of information on the impacts of road safety measures on other sectors policies?
- Existence of standardised procedures and methods for evaluating road safety measures?
- Information on the costs and benefits of a road safety measure?
- Information on the public acceptance of road safety measure?
- Good practice catalogue of measures including implementation conditions?

The analysis of non-answering rate shows that globally the scores could be trusted. Only Mali, Swaziland, Cameroon and Sierra Leone outcomes have to be disregarded, because of a too low level of answers.

Table 16: Key road safety resources matrix outcomes for pillar 1



It could be noted that the global performance is quite low. A majority of countries (55 %) declares insufficient access to informational resources. Only 5 countries can be associated with a good score: Benin, Burkina, Congo and Botswana. Such results imply that an important effort have to be accomplished for bridging the existing gap in terms of knowledge and producing sufficient and required information.

4.1.7 Global Evaluation for Pillar 1

When the focus is placed upon the general performance score, another picture could be provided for the pillar 1. Globally, the non-answer rate is quite low, except for Botswana, Kenya and Cameroon. However, for those latter countries, it remains within acceptable limits of interpretation.

Table 17: Global Performance Outcomes for Pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score	29.5	19	44.5	12.5	35	9	10	21	27	30	38	30	50.5	22	27	43	21	21	22	31
NaR																				

From a general point of view, as it showed by Table 17, the first three sub-items can be considered as being reached by the most of investigated countries. Those items are institution and organization and coordination, Policy formulation and adaptation, Policy Implementation and funding. The last three items show critical performance and concern monitoring and evaluation, scientific support and knowledge, while key road safety resources item is concerned with bad performance.

Table 18: Global performance outcomes and sub-items for pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Item 1																				
Item 2																				
Item 3																				
Item 4																				
Item 5																				
Item 6																				

Fifty percent of the investigated countries show a global performance above the average, that is an encouraging result. Botswana, Kenya, Tanzania, Togo, Sierra Leone and Senegal have to improve their performance to be above the average. Gambia, Guinea, Swaziland and probably Cameroon show a weak performance requiring a strong intervention and for which well-designed interventions are required to hope positive evolutions in a near future.

4.1.8 Evaluation of the Mid-term Review recommendations for Pillar 1

4.1.8.1 Items of the ARSAP

For pillar 1, the ARSAP comprised 22 items, which could be organized into three main categories: establishment and strengthen of the lead agencies, the improvement of the management of road safety data, the development and strengthen of the cooperation and partnership. For evaluating the implementation of such requirements, a link was built with the questionnaire. Some questions are directly related with the ARSAP items; some are not directly available, for instance the percentage of dedicated funds for maintenance and investment in road safety. For such items, an indirect item is used dealing with the existence of formal rule for allocating resources and the sufficiency of such resources. The below box sums-up the different components and the questions related to the questionnaire. Two sub-items were not informed and are related to the Develop/Strengthen Partnership and Collaboration item section (road safety component for international intervention and road safety component in corridors).

Established/Strengthened Lead Agencies

1. Establish Lead Agency; Prepare/Approve Road Safety Strategy – B4
2. Set Road Safety targets – B17
3. Advocacy for Road Safety in development plans – B10
4. Road Safety research/studies and use of best practices - B43
5. Knowledge management portals on Road Safety – C8
6. Self-standing Road Safety financing – B26
7. Allocate 10% of road investment to Road Safety – B28
8. Allocate sufficient financial/human resources to Road Safety – B31
9. Allocate 5% of road maintenance resources to Road Safety – B30

Improved Management of Data

1. National Road Safety database – B34
2. Mandatory reporting, standardised data, sustainable funding – B36
3. National Crash Analysis and Reporting System – B37
4. Harmonise data format, and international standards in reporting – B38e
5. Harmonise vehicle/driver registration data system – D1h
6. Build capacity for Road Safety data management – B44b
7. Engage local research centres on Road Safety data management – B43a
8. Establish/strengthen/harmonise injury data system for health facilities – B42
9. Establish baseline data on Road Safety – B17

Develop/Strengthen Partnership and Collaboration

1. Include Road Safety component in relevant international partner funded interventions – (non available)
2. Introduce Road Safety programmes in transport corridors – (non available)
3. Establish national association of accident victims and survivors – B11
4. Promote Private Sector and CSO involvement in Road Safety – B21

4.1.8.2 Pillar 1: General Overview

The global performance, measured by the grand total of different items, and for all the countries is below the average. Only 15 % of countries perform quite well, such as South Africa and Nigeria. Burkina, Cameroon, Lesotho, and have a good score and outcomes have to be consolidated. 40 % of the countries have a performance above the average. Benin, Gambia, Guinea and Kenya have a very low score, suggesting a complete and general administrative and institutional capacity building is necessary to obtain the first steps of progress for road safety. Finally, Malawi, Mauritius, Senegal, Sierra Leone, Swaziland, Tanzania, Togo and Tunisia present insufficient performance, which suggest a voluntary policy is required for reaching positive performance.

Table 19: General overview outcomes for pillar 1

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia	Total
Item 1																					
Item 2																					
Item 3																					
Total																					

4.1.8.3 Evaluation of the Established/Strengthened Lead Agencies

The global picture for that item shows a medium performance. There is also an important heterogeneity among the different countries. Burkina Faso, Lesotho, Mali, Malawi, Nigeria, South Africa and Tanzania show a good ranking. 65 % of the countries are above the average, while 35 % show a weak score. Cameroon, Congo, Sierra Leone, Mauritius underperform. Finally Benin, Botswana, Gambia, Guinea, Kenya, Swaziland and Togo record bad performance. For other countries, evaluation cannot conclude.

Table 20: Established/strengthened lead agencies outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia	Total
Item 1																					

In terms of criteria, 1, 2 3 and 6, countries show good performance: establishment of a lead agency, setting targets and advocacy effort for road safety are globally effective.

Communication, better knowledge of RS issues and appropriate funding mechanism could be improved. The most problematic issue remain the dedicated and appropriate funding, which remains a major issue for improving the situation.

4.1.8.4 Improved Management of Data

The general performance of the whole countries is quite weak concerning that item. Only 30 % of countries are above the average. Burkina Faso, Nigeria and South Africa perform quite well, while Togo, Tunisia, Mali, Malawi and Sierra Leone have to improve their performance. It represents 20 % of the number of investigated countries. 40 % of them show very low score, such as Benin, Botswana, Guinea, Gambia, Kenya, Mauritius, and Senegal 15 % of our data are inconclusive. It appears that countries manage national road safety data basis and are able to harmonize data basis, to define a baseline for road safety performance, associate research centers. However, it appears there is a true difficulty for having systematic and detailed statistic information, especially for vehicle registration of health facilities. Systematic report of date faces also some difficulties.

Table 21: Improved management of data outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia	Total
Item 2																					

4.1.8.5 Develop/Strengthen Partnership and Collaboration

The analysis of that item focuses only upon the involvement of NGO and the association of private sector with the road safety policy. Two sub-items are not informed, due to limitations of the used sources (questionnaire). The general performance is quite good. Again some heterogeneity among countries can be noted. A group of countries including Benin, Burkina Faso, Cameroon, Congo, Mali, Nigeria, South Africa, Tunisia and Togo performs well. More than 50 % of countries are above the average. The rest of countries remains below and requites appropriate answers.

Table 22: Develop/strengthen partnership and collaboration outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia	Total
Item 3																					

4.1.9 Recommendations for Pillar 1

From the analysis above, some recommendations for each item can be done. Concerning the item related to evaluation of an *Established and the strengthening of lead agencies*, the African countries have to strengthen the institutional framework by consolidating the current position and the prerogatives of the lead agency where it exists, and to develop and complete its fields of operation. A specific effort has to be accomplished concerning communication and more especially to allocate appropriate level of resources for promoting and enforcing road safety policy.

Dealing with the *Improved management of data* item, the African countries have to develop consistent and systematic collection of data. It requires the setting-up of robust and performant data system. It would also consist in elaborating new data collection, making possible detailed analysis and evaluation, and ultimately helping public bodies for designing their public policy.

Finally for the item related to *Develop strengthen partnership and collaboration*, those countries have to keep enforcing cooperation with NGOs and private sector representatives where it is already at work and to sustain effort for developing further cooperation where it is partially operated or inexistent.

4.2 Pillar 2: Safer Road and Mobility

The assessment of Pillar 2 – Safer road and mobility aims at understanding to what extend the African Road Safety Action Plan (ARSAP) 2011-2020 (AU-UNECA, 2010) has been successfully addressed by African countries so far, especially for what concerns the last recommendations identified in the 2015 Mid-term Review of ARSAP (AU-UNECA, 2015a, 2015b.

The Safer road and mobility assessment framework is based on four main aspects:

- Institutional dimension (who is responsible for road infrastructure safety?)
- Organizational dimension and monitoring (how road infrastructure safety is monitored and managed?)
- Key road safety resources (which tools and resources are available to support management and monitoring?)
- Road safety data and measures (how road infrastructure safety performance is monitored?)

As described in the methodology, each item is assigned to a score; the sum of the four scores expresses the performance of a country with respect to safer road and mobility pillar. The maximum score assigned to each item is as follow:

- Institutional dimension (7 points)
- Organizational dimension and monitoring (10 points)
- Key road safety resources (3 points)
- Road safety data and measures (8 points)

For detailed information about the results for each country see the matrix in the appendix.

4.2.1 Institutional dimension

The *institutional dimension assessment* seeks to answer to the following questions:

1. Is road infrastructure safety represented within high level and technical road safety institutions?
2. Are road infrastructure safety professionals represented within stakeholders' consultation structure(s)?
3. Are Targets and Funds been adopted to implement road infrastructure related programs?

These are investigated through the 6 sub-items listed below:

- Delegate in high level inter-sectoral decision-making institutions
- Delegate in technical inter-sectoral road safety institution
- Statutory budget for technical institution
- Representatives of Professional organizations consulted
- Sectoral quantitative targets
- Funds allocated sufficient
- Effective safety engineering unit

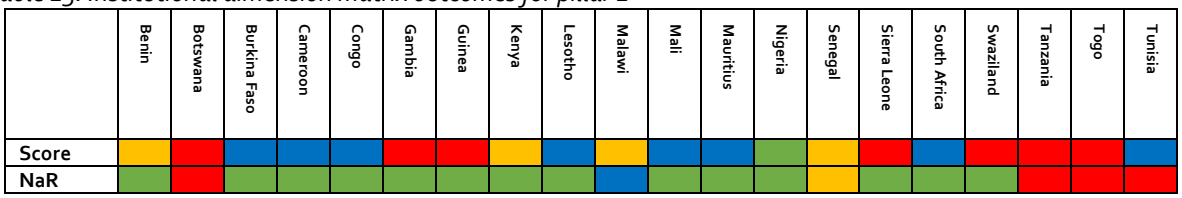
Table 23 reports the results for each country in terms of total score and the percentage of not answered items (NaR). For this aspect, the percentage of unanswered items is higher than 50% in four countries: Botswana, Tanzania, Togo and Tunisia. Therefore, the benefit of the doubt should be given to these countries.

A delegate belonging to the area of urban planning, transport and traffic planning, road infrastructure is participating in high level inter-sectoral decision-making institutions almost in every investigated country (78% of countries). Benin, Guinea, Togo and Sierra Leone seem not to have such kind of high level structure. A delegate is commonly present also in a technical inter-sectoral road safety institution specifically established to coordinate policy formulation and implementation (i.e. road safety lead agency) (47% of countries). In 7 countries there is also a statutory budget for these structures. Also, formal consultation of stakeholders (especially representatives of Professional organizations for transport, traffic…) seems to be well established in 55% of countries.

Quantitative targets or performance indicators are seldom defined (34% of countries).

What seem to be really missing in all investigated countries are: the technical capabilities of an effective road safety engineering unit (only in Cameroon it seems to be available) and a sufficient budget allocated to implement the program of interventions to improve the safety of roadsafety infrastructure.

Table 23: Institutional dimension matrix outcomes for pillar 2



4.2.2 Organisational dimension and Monitoring

The *"Organisational dimension and monitoring"* assessment seeks to answer to the following questions:

- Are existing technical structures with adequate staff and expertise?
- Are national and local data collection systems sustainable and reliable?
- Are monitoring and evaluation procedures put in place?

These are investigated through the sub-items listed below:

- Sufficient human resources needed to implement the programme
- Training plans
- Training of Road Safety professional
- National Sustainable & Reliable data collection
- Regional Sustainable & Reliable data collection
- Local Sustainable & Reliable data collection
- In-depth accident investigations
- National Observatory with exposure/infrastructure data
- Monitoring road safety interventions
- Periodical reporting
- Process evaluation of safety interventions
- Socio-economic costs evaluation

Table 24 reports the results for each country in terms of total score and the percentage of not answered items (NaR). For this aspect, the percentage of unanswered items is higher than 50% in six countries: Botswana, Sierra Leona, Swaziland, Tanzania, Togo and Tunisia. Therefore, the benefit of the doubt should be given to these countries.

The human resources required implementing the road safety program or policy components related to road infrastructure or transport and traffic planning seem to be adequate only in Lesotho and Nigeria. However, the fact that in half of the countries training plans have been designed to support implementation of the national road safety program or policy components also taking into account the needs of road engineers and police agents seem to suggest that the issue is only a matter of adequately funded technical structures. Dedicated training programs for road safety professionals seem to be available only in South Africa, where some Universities offer courses and post graduate degrees. However, it must be stressed that this information is not available for the majority of countries (18).

Sustainable and reliable systems (meaning durable, adequately funded and maintained) in place to collect and manage data at the national, regional or local level seem to be available in only three countries, namely Benin, South Africa and Tunisia. This is actually one of the most important challenges in Africa, leading to highly under-reported road crashes and casualties and undermining the capability to monitor and control road safety. Curiously, sustainable and reliable in-depth accident investigations for road safety purposes seem to be in place in much more countries (likely 5 countries), which are different from the three mentioned.

A national Observatory centralizing the road safety data systems and publishing also exposure and infrastructure related data is running in likely 8 countries (Benin, Congo, Lesotho, Malawi, Mali, Nigeria, South Africa, Tunisia), including the three with a reliable crash data collection system.

Table 24: Organizational dimension and monitoring matrix outcomes for pillar 2

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

The implementation process of road infrastructures is monitored and periodically reported in three countries (Burkina Faso, DR Congo and Nigeria). In Lesotho, it seems that there is a monitoring but not a periodical reporting. A process evaluation focused on the implementation process of road infrastructure projects is undertaken in Cameroon, DR Congo, Mauritius and Nigeria. An effectiveness or efficiency evaluation process to assess the effects on accidents and injuries or socio-economic costs seems to be in place in DR Congo, Lesotho, Mauritius, South Africa and Nigeria.

4.2.3 Key road safety resources

The Key road safety resources assessment seeks to answer to the question: Are road safety data (e.g. GPS, exposure…) and tools (e.g. guidelines) available to support road infrastructure safety?

These aspects have been investigated through the 10 sub-items listed below:

- Travel/mobility survey results
- The use of GPS and/or GIS technologies in accident data collection
- Exposure data (e.g. kilometres driven, numbers of trips)
- Results from in-depth crash investigations
- Results from naturalistic driving studies
- Results from driving simulator studies
- Information on the effect of external factors on the number of road traffic crashes
- Information on frequent crash scenarios and patterns
- Information on crash causation factors
- National Road Safety Audit/Inspection Guidelines

Table 25 reports the results for each country in terms of total score and the percentage of not answered items (NaR). For this aspect, the percentage of unanswered items is higher than 50% in only three countries: Sierra Leone, Tanzania and Tunisia. So, plausibility of results for these countries is questionable.

For what concerns crash data, the results highlight a good availability of Information on crash causation factor (12 countries, 60%). The use of GPS and/or GIS technologies in accident data collection is undertaken in 28% of countries: Benin, Lesotho, Mauritius, South Africa, Nigeria and Tanzania (Benin and South Africa confirm a useful and reliable data collection system). The countries where in-depth accident investigations are undertaken have also the collected data available for analysis/planning purposes. Information related to the effect of external factors on the number of road traffic crashes is available in 23% of countries.

Data from travel/mobility survey and information on frequent crash scenarios and patterns are available in about 33% of investigated countries, while exposure data are only available in Burkina Faso, Congo and Nigeria. However, this type of data seems to be actually available only in DR Congo according to results presented in the next chapter.

Data from naturalistic studies and driving simulators seem to be available in Burkina Faso and potentially also in Nigeria. When coming to guidelines for road safety audits and inspections these are only available in South Africa, even if it must be stated that in 65% of cases the related questions was unanswered.

Table 25: Key road safety resources matrix outcomes for pillar 2

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

4.2.4 Road Safety Data & Measures

The *road safety data & measures* assessment seeks to answer to the following questions:

- What road accident and risk exposure data are available?
- What measures have been implemented?

Road accident and risk exposure data are investigated through the sub-items listed below:

- Fatalities on motorways
- Fatalities on urban roads
- Fatalities on rural roads
- Number of Injuries
- Number of hospitalized road accident casualties
- Number of hospitalized road accident casualties with MAIS>3 score
- Vehicle km of travel (all vehicles)
- Vehicle km of travel (passenger cars)
- Vehicle Km of travel (motorcycles)
- Vehicle Km of travel (HGV)
- Length of road network (total)
- Length of motorways
- Length of rural roads
- Length of paved roads
- Length of road tunnels
- Modal split road/rail
- Modal split passenger/freight
- Modal split private/public
- Number of registered vehicles
- Number of passenger cars
- Number of HGV

- Number of power two wheelers

Implemented measures are investigated through the sub-items listed below:

- Number (and length) of Road Safety Audits conducted
- Formal audits required for new road construction projects
- Road Safety Audits on rural roads
- Regular inspections of existing road infrastructure
- Treatment of High Risk Sites
- Pilot Road Safety project on high-risk corridors
- Road Safety facilities for vulnerable road users

Key measures assessed to improve infrastructure safety are Road Safety Audits (RSA) and Road Safety Inspections (RSI). An RSA is commonly defined an independent detailed systematic and technical safety check relating to the design characteristics of a road infrastructure project and covering all stages, from planning to early operation, as to identify, in a detailed way, unsafe features of a road infrastructure project. Similarly, an RSI is a preventive tool consisting of a regular, systematic, on-site inspection of existing roads, carried out by trained safety expert teams, resulting in a formal report on detected road hazards and safety issues, requiring a formal response by the relevant road authority (Persia et al. 2015).

Table 26 presents the results for each country in terms of total score and the percentage of not answered items (NaR). In this case, the percentage of unanswered items is higher than 50% in several countries: Botswana, Gambia, Kenya, Lesotho, Malawi, Mali, Nigeria, Sierra Leone, South Africa, Swaziland, Tanzania and Tunisia. This means the interpretation of results is based on less than half of the considered assessment items.

Table 26: Road safety data matrix outcomes for pillar 2

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

For what concerns the availability of specific road safety data, the following can be said:

- Fatalities distribution by road type is available in 9 countries on motorways (45%), 8 countries on rural roads (40%) and 6 countries on rural roads (30%).
- Number of injuries is available in 8 countries (40%), while number of hospitalised crash casualties is hardly available.
- Exposure (total kilometres travelled, and distance travelled by vehicle type) is available only in DR Congo (in 65% of countries the questions are unanswered) and similar results are observed for modal split information.
- The availability of length of road network (total, by road type and road surface type) is good (about half of the countries considering also that 37% of respondents did not provide an answer).
- Data on total number of registered vehicles and distribution by vehicle type is good (about 63% of countries)

However, these results should be coupled to the reliability of the operational data collection system(s), which seem to be in place only in Benin, South Africa and Tunisia.

For what concerns the implementation of specific road infrastructure safety measures, the following can be said:

- Formal RSAs are compulsory for new road construction projects in 65% of countries. However, there is few information available to understand if and how many RSAs have been conducted (question left unanswered in many cases).
- RegulaRS Is seem to be undertaken in 60% of countries. Again, this figure should be taken with care, since it was not possible to assess the quality of the inspections being made. Where the expert opinion was available, "not undertaken" was a common answer and regularity of inspections was recorded as an issue.
- Identification and treatment of high risk sites and/or corridors is also not clear due to poor respondents.
- Road safety facilities for vulnerable road users have been implemented in 35% of countries (according mostly to WHO reports).

4.2.5 Global Evaluation for Pillar 2

Based on the available results, it can be said that *safer roads and mobility* performance is poor in the investigated countries, especially for what concerns the key road safety resources (Table 26). The availability of information represents an issue, except for the institutional dimension, in the other assessed aspects, up to 50% of items were unanswered.

Table 27: Pillar 2: Global results by the four assessment aspects

Macro-criterion	Global Score	NaR
Institutional dimension (7 points)		
Organizational dimension and Monitoring (10 points)		
Key road safety resources (3 points)		
Road safety data and measures (8 points)		

Concerning the general countries performance, most of the countries show poor performance. Only three countries (Burkina Faso, Congo and Nigeria) perform well in Pillar 2. As already stated, a major issue for Pillar 2 assessment is the general high non-answer rate, being a critical aspect for countries like: Botswana, Sierra Leone, Swaziland, Tanzania, Togo and Tunisia. Therefore, for those latter countries, the assessment results can be considered only plausible.

Table 28: Pillar 2, Global results by country

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score	11.2	4.4	21.5	9.6	17.4	2.1	4.4	2.6	11.4	7.5	14.3	12.6	18.9	3.4	2.4	11.9	2.5	4.5	3.4	8.5
NaR																				

In general, the main findings from the undertaken evaluation are:

- Road infrastructure safety and mobility seems to be addressed in high level institutions in most of the countries.
- Technical structures or road safety professional involvement are less frequent. While road and traffic engineering organizations seem to be consulted in some way the availability of a technical fully operational safety engineering unit is unknown in almost all countries (except for Cameroon).
- Appropriate funds to implement planned road safety interventions are generally missing.
- Training programs supporting the implementation of road safety policies seem to be frequent, however, information on their effective implementation is not available in most of the cases.
- National road safety Observatory publishing also exposure and infrastructure data, are present in 38% of countries.
- Monitoring, reporting and evaluation procedures are seldom put in place.
- In about 30% of countries no data/tools or very limited data are available. Existing crash data collection systems are poor (but strangely a «sustainable and reliable in-depth accident investigation» seems to be in place). Crash location, mobility data are rare, while road network length, registered vehicles and crash causation factors are frequently available.
- The availability of expertise needed to carry out road safety audits and inspections is not clear. Formal Road Safety Audits are required for new road construction projects in several countries (65%), however, poor information is available to understand to what extent they are used. Even if Road Safety Inspections are claimed to be carried out in a country, regularity and fully implementation are questionable.

4.2.6 Evaluation of the Mid-term Review recommendations for Pillar 2

The ARSAP for Pillar 2 focuses especially on Road Safety Audits (RSA) and Inspections (RSI). It states that member countries should carry out safety audits for the most travelled portions of the network throughout planning, designing, construction and operation stages – and conduct corrective upgrade programs.

Based on this and the (poor) results related to this measure in the Mid-term Review, the main recommendation is to "Develop road safety audit and inspection guidelines".

The Pillar 2 items (i.e. indicators) adopted to monitor the ARSAP implementation are reported below:

- Effective safety engineering unit available
- Training of Road Safety professional
- Road Safety inspection/audit of priority corridors
- Pilot Road Safety project on high-risk corridors
- Road Safety facilities for vulnerable road users
- Road Safety audits on rural roads
- National Road Safety Audit/Inspection Guidelines
- Treatment of HRS

- RSA compulsory on new roads
- Number (and length) of Road Safety Audits conducted
- Formal audits required for new road construction projects
- Regular inspections of existing road infrastructure

Based on the data collected for the 20 investigated countries, the implementation process of ARSAP recommendations seem to proceed quite slowly. Except for Benin, Burkina Faso, Mali and South Africa, the level of implementation seem to be poor or very poor.

Table 29: Pillar 2, ARSAP Mid-term review indicators

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

4.2.7 Recommendations for Pillar 2

The present report confirms road safety audit and inspection guidelines are hardly available (only in South Africa) to technicians in the selected countries, even if it must be stated that 65% of respondents did not provide any answer. Therefore, the recommendation on the adoption of guidelines for RSA and RSI is still valid.

Moreover, based on the highlighted findings, the following recommendations can be suggested:

- To establish, where not existing, or improve a technical structure with high capability in road infrastructure safety management providing a statutory budget and the necessary training to be fully operational and capable.
- To improve the existing crash data collection system both in terms of coverage (crashes in rural roads seem to be highly under-reported), commitment and tools; starting with an appraisal of the current data collection processes and defining the required steps to reach a sustainable and reliable system.
- To develop the required expertise and premises for establishing road safety audit and inspection procedures. This could be done for instance by involving the national or a local road authority in a pilot phase. Based on the results of the pilot phase, a strategy for wider implementation could be developed and implemented. One step beyond this would be creating a National Road Safety Auditors Accreditation System and Agency to ensure that skills and capacity is built in the country and checked regularly and transparently. A reference accreditation system in place is the one in UK[1].

[1] More reference can be found at: https://www.gtkp.com/themepage.php&themepgid=375#_Toc400459064.

4.3 Pillar 3: Safer Vehicles

The analysis of the Pillar 3 – Safer Vehicles has been made using the questionnaire defined in the WP 4 with some additional modifications to retrieve information deemed to be useful. In some cases, the supplementary information was not considered in the first retrieval of information of that WP and therefore it has been necessary to use other sources. In any case, the amount of answers NA[2] seems to be too high, and additional sources of information in the countries may remedy the situation.

The list of countries used for the other pillars has been complemented with the data of Morocco, due to the availability of a reliable source of information for this pillar.

The part D of the WP 4 questionnaire – "Data Collection Practice", offered the possibility of answering some questions highlighting both priority and availability. In order to process the data for the analysis the pillar 3, only the answers regarding availability was taken into account.

4.3.1 Institutional dimension

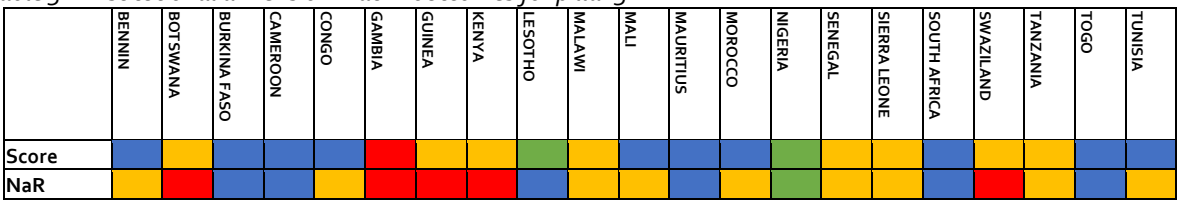
As stated in the definition of the project SaferAfrica, the institutional level "concerns the systemic considerations and constrains that road safety issues must face". The questions included are:

- Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? (Including a representative for Vehicle or ITS).
- Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? (Including Vehicles)
- Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)? (Including- Businesses related to transport or traffic (vehicle manufacturers or importers, insurance companies, etc.))
- Are the funds allocated sufficient to implement the program or policy components adopted in the vehicle sector?
- Are the human resources needed to implement the program or policy components adopted sufficient in the vehicle sector?
- Are there any authority structures in charge to ensure whole life vehicle suitability?

The general overview of this dimension in shown in the next table:

[2] Not avaiable, understood as the person answering the quesionnaire didn't have the right information to answer.

Table 30: Institutional dimension matrix outcomes for pillar 3



The three first question make direct reference of institutional structures and the majority of the answers are split between "Yes" and "NA". The lack of availability may be understood either as the non-existence of the high-level bodies defining the policies and strategies for road safety or as lack of communication to make stakeholders aware of their existence.

Questions 4 and 5 are aiming to identify whether the resources, both human and economic, are devoted to road safety. In this case the majority of answers is "No". In this case, it is necessary to consider that the questionnaire was not aiming to identify the allocation of resources for he structures in a numeric way, but the views of the experts answering them.

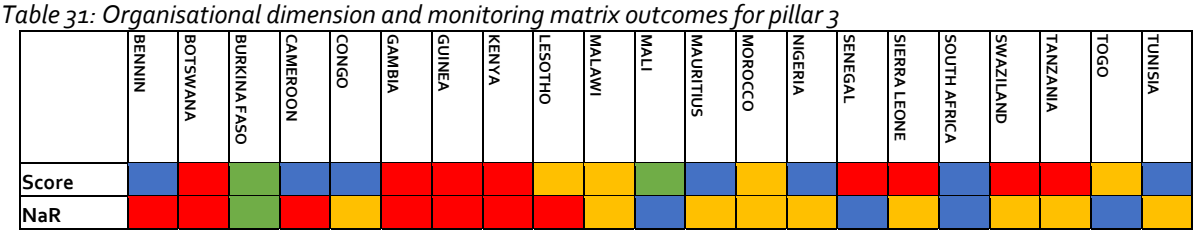
Finally, the question 6 is again related to institutional arrangements only for vehicle suitability. In this case the amount of "Yes" is much lower than for the structures of the three first questions, with a high number of "NA".

4.3.2 Organisational dimension and Monitoring

The organisational dimension makes reference to "how road safety is organized?", "what organizations are involved?" etc. The questionnaire contains 8 questions, all of them with the same weight although one of them, "Registration" is split into 4 concepts. The detail is the following:

- Is there a national Observatory centralizing the data systems for road safety? Including Vehicle registration data.
- Has a reporting procedure been set up to monitor the road safety interventions carried out in the country? Concerning vehicle intervention
- Is the reporting periodical?
- Does some "process evaluation" of safety interventions take place during the implementation period of the program?
- Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs?
- Registration
- 1: Passenger cars
- 2: Motorcycles and mopeds
- 3: Heavy duty vehicles
- 4: Trailers
- Is it mandatory road vehicle insurance?
- Are there provisions to ensure the quality of repair workshops?

Table 31: Organisational dimension and monitoring matrix outcomes for pillar 3



The first 5 questions make references to the arrangements to follow up on the evolution of road safety. According to the answer 1, most of the countries have the structures but, according the results of the following ones, not all of them are using those structures for reporting, monitoring and assessing the cost of crashes or that information is not available.

The questions 6 makeqs reference to vehicle registration, which is essential to undertake any activity related to the management of data of vehicles. As explained in 4.1, these questions were not broadly answered and it was assumed that all countries register passenger cars and heavy duty vehicles. It is important to know the registration of two- and three-wheelers because their share of the fleet and their impact in safety.

The question 7 refers to vehicle insurance and it is surprising the amount of NA. In the case of the question 8, provisions to ensure the quality of repair workshops, there is as well a big amount of NA.

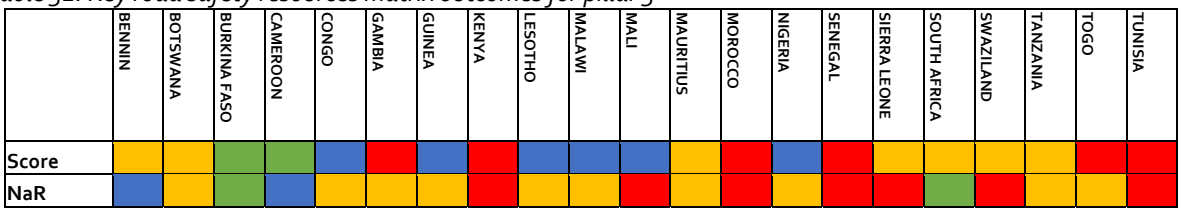
4.3.3 Key road safety resources

This sets of question aims to identify basic road safety activities that are essential for the decision-taking process. This block contains three questions; the 2nd one is split in 6 sub-questions:

- Do you use any national databases/information sources?
- Please indicate both priority and availability of the following data and resources
- .1: Results from in-depth crash investigations
- 2: Results from naturalistic driving studies
- 3: Results from driving simulator studies
- 4: Information on the effect of external factors on the number of road traffic crashes
- 5: Information on frequent crash scenarios and patterns
- 6: Information on crash causation factors
- Is the accuracy of crash data sufficient?

The NAR amounts to 39 %.

Table 32: Key road safety resources matrix outcomes for pillar 3



According to the answers, there is a relatively high amount of databases/information sources (question 1), although results of in-depth crash investigations, naturalistic driving studies, simulator studies and information on frequent crash scenarios factors is not that much available (questions 2). It is not confirmed that accuracy of data is considered sufficient (question 3).

The answer to the last question is very much in line with the fact that crash analysis, when taken from a statistical point of view, may not be accurate and may bring to misinterpretations. The main reasons for that are:

- Crash analysis mainly made by standard police staff, without dedicated knowledge
- Lack of technical means
- In case of crash, the priority is to rescue the injured people and to clear the road, and not to make and in-depth analysis
- Crash causation related to vehicle failures uses to be expensive to find
- Crash causation analysis mostly linked to find users' responsibilities for insurance purposes

4.3.4 Regulation

The aim of this set of questions it to identify which are the regulatory provisions in place to ensure whole-life vehicle suitability. It contains 7 questions, some of them split in sub-questions as shown in the following list:

- Technical inspection
- 1: Technical inspection mandatory for passenger cars
- 2: Technical inspection mandatory for motorcycles
- 3: Technical inspection mandatory for heavy duty vehicles
- Port-of-entry inspection is mandatory
- Laws that prohibit the use of vehicles without seatbelts (front and rear).
- Vehicle standards-seat belts and anchorages
- Vehicle standards
- 1: Vehicle standards-Frontal impact
- 2: Vehicle standards-Side impact
- 3: Vehicle standards-Electronic stability control
- 4: Vehicle standards-Pedestrian protection
- 5: Vehicle standards-Child seats
- 6: Vehicle standards-Motorcycle helmet
- Vehicle standards – heavy duty vehicles
- 1: Vehicle standards-ADR (transport of dangerous goods)
- 2: Vehicle standards-tachograph
- 3: Vehicle standards-Speed limiters for heavy-duty vehicles
- 4: Vehicle standards-School buses
- Additional
- 1: Are there provisions for road-side inspection?
- 2: Are there provisions to ensure the suitability of spare parts?
- 3: Are there provisions to ensure the suitability of vehicles' modifications?

- 4: Are there provisions to ensure the enforcement of all the above?

The NAR IS 39 %.

Table 33: Regulation matrix outcomes for pillar 3

	BENNIN	BOTSWANA	BURKINA FASO	CAMEROON	CONGO	GAMBIA	GUINEA	KENYA	LESOTHO	MALAWI	MALI	MAURITIUS	MOROCCO	NIGERIA	SENEGAL	SIERRA LEONE	SOUTH AFRICA	SWAZILAND	TANZANIA	TOGO	TUNISIA
Score																					
NaR																					

The answers to the questions 1 show that vehicle inspection for passenger cars is established in almost 70% of the countries, whereas the situation is not the same for other relevant categories like motorcycles of heavy-duty vehicles. The answer cannot be considered as normal, since most of the countries with vehicle inspection for passenger cars have, at the same time, vehicle inspection for heavy-duty vehicles. A reason for this high number of NA answers is the fact that this question was not considered in the original questionnaire of the WP4.

According to the answer to the question 2, there is room to improvement regarding the inspection of in-use vehicle entering in a country, which is crucial to ensure their roadworthiness later on.

The questions 3, 4 and 5 make reference to vehicle standards. Whereas it is relatively normal to require safety-belts and safety-belts anchorages, other requirement like fontal- and side-impact, electronic, stability control and pedestrian protection are not much spread. There is room too for child restraints and motorcycle helmets. It is necessary to highlight that the situation is better that that identified in the 2015 Global Status Report on Road Safety of the WHO, as shown in the point 3.2.2 of this document.

Questions 6 make reference to standards for heavy duty vehicles. Among them, the only one with some implementation is the ADR – transport of dangerous goods. The amount of countries requiring additional standards is marginal.

In the last group of questions, it is possible to check that additional requirements like road-side inspections, suitability of spare parts and vehicle modifications and enforcement provisions are very little implemented.

4.3.5 Global Evaluation for Pillar 3

This is the global view of pillar 3:

Table 34: Global Performance Outcomes for Pillar 3

	BENNIN	BOTSWANA	BURKINA FASO	CAMEROON	CONGO	GAMBIA	GUINEA	KENYA	LESOTHO	MALAWI	MALI	MAURITIUS	MOROCCO	NIGERIA	SENEGAL	SIERRA LEONE	SOUTH AFRICA	SWAZILAND	TANZANIA	TOGO	TUNISIA
Score (max 25)	9,8	5,8	18,8	13,3	12,6	2,3	5,8	4,2	11,5	8,9	12,7	12,3	15	17,5	8,7	6,4	15,3	6,5	6,5	8,8	12,8
NaR																					

Table 35: Global Performance Outcomes and Sub-Items for Pillar 3

	BENNIN	BOTSWANA	BURKINA FASO	CAMEROON	CONGO	GAMBIA	GUINEA	KENYA	LESOTHO	MALAWI	MALI	MAURITIUS	MOROCCO	NIGERIA	SENEGAL	SIERRA LEONE	SOUTH AFRICA	SWAZILAND	TANZANIA	TOGO	TUNISIA
Institutional																					
Organisational																					
Resources																					
Regulation																					

4.3.6 Evaluation of the Mid-term Review recommendations for Pillar 3

The mid-term review of the African Road Safety Action Plan is, regarding the pillar 3 – safer vehicles, very much in line with the findings of this chapter. Whereas vehicle inspection is very much spread in the continent, there are some remarks regarding the regional deployment and the quality of inspection.

Those two aspects are not assessed in this chapter but are in line with the preliminary results of other activities, like the project AVIS – Assessment of Vehicle Inspection System developed by the GRSF – World Bank and CITA in Togo during the 2nd half of 2017 and still pending of publication.

The report also highlights the issue of the vehicle age in Africa that makes essential the definition of technical criteria to admit used vehicles and how to apply them. It has to be considered that the five standards considered as essential for new vehicles: 1) frontal impact, 2) side impact, 3) electronic stability control, 4) pedestrian protection and 5) child restraint are already mandatory for many years in the European Union and Japan: the origin of an outstanding amount of used vehicles entering in Africa.

Any activity related to new and used vehicle compliance requires important skills and knowledge of the authorities to define, implement, manage and control the appropriate schemes. Therefore, it is very much likely that training and capacitation initiatives are identified as steps forward.

With the following pictures, the scores of the each country referred to the whole Pillar 3 and the four dimensions are displayed in the map of Africa to analyse possible regional trends. As a conclusion, there is no clear geographical impact in the way that the aspects related to "safer vehicles" are managed among the continent.

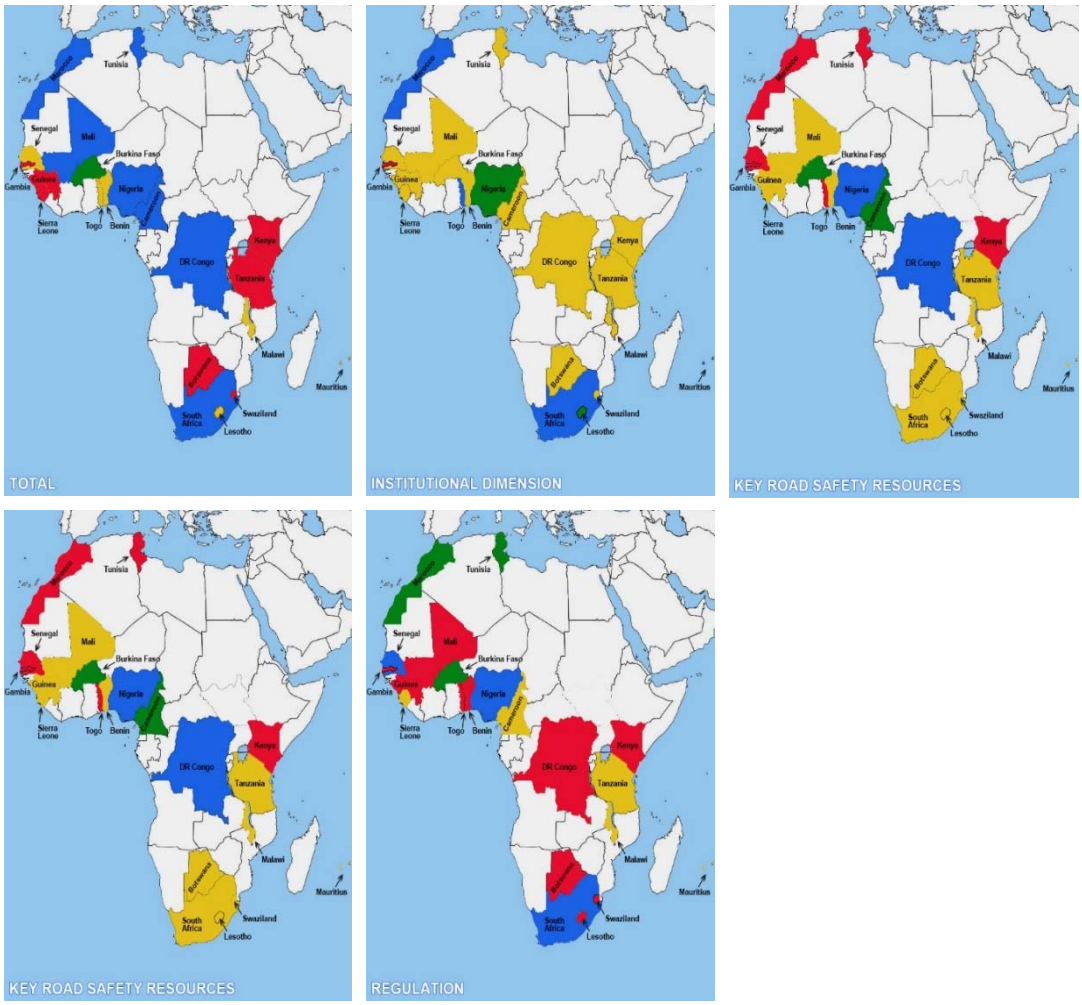


Figure 15: Score per country for pillar 3 (red: very bad; orange: bad; blue: good; green: very good)

The situation regarding the recommendations of the ARSAP mid-term review can be seen through table 36.

Table 36: ARSAP recommendations performances per country for pillar 3

(1) The answer "Yes" means that, according to the information retrieved, the following categories of vehicles are included in each concept: motorcycles, passenger cars and heavy duty vehicles.
The answer "Partial" means that one or more of the mentioned categories of vehicles are included.
The answer "No" means that the concept is not involving any kind of vehicle.
(2) In case of non-availability of the answers, it is considered as "No".
(3) Port-of-entry inspection.
In the case of "Partial" vehicle inspection, the most common missed vehicles are motorcycles, except in the case of South Africa where only heavy-duty and commercial vehicles are inspected.

	Periodical inspection of vehicles (1) (2)	**Incentives for importation of safer vehicles (2) (3)**
Benin	Partial	Yes
Botswana	No	No
Burkina Faso	Yes	Yes
Cameroon	Yes	Yes
Congo	Partial	No
Gambia	Partial	No
Guinea	No	No
Kenya	No	No
Lesotho	Partial	No
Malawi	Part	No
Mali	Partial	Yes
Mauritius	Partial	Yes
Morocco	Partial	Yes
Nigeria	Partial	Yes
Senegal	Partial	No
Sierra Leone	No	No
South Africa	Partial	No
Swaziland	No	No
Tanzania	Partial	No
Togo	Yes	No
Tunisia	Partial	No

4.3.7 Recommendations for Pillar 3

For assessing whether African countries are incentivizing the import of safer vehicles is based on the application of standards. In particular, the questionnaire used to retrieve information contains questions on the application of the standards for vehicles considered as essential by the WP 29 of the UNECE (2017b):

- Frontal impact
- Side impact
- Electronic stability control
- Pedestrian protection

Those countries applying one or more standards are considered to have "incentives for the importation of safer vehicles". It was taken into account that the answers do not differentiate on

whether the standards are applied to new- and/or in-use vehicles. Therefore, it still may be some room for improvement in those countries with a positive answer.

Table 37: Pillar 3, ARSAP Mid-term review indicators

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Introduce incentives for importation of safer vehicles																				
NaR								x		x	x									

This information may be completed with the limitation of the age of imported vehicles. Nevertheless, this data was not retrieved so far and side effects of that initiative jeopardizing road safety must be analysed.

In fact, the 3rd pillar of the Global Plan for the Decade of Action for Road Safety 2011-2020 does not contain considerations on how to manage the existing car fleet and how to ensure the suitability of vehicles once they are registered and in use. Nevertheless, the governments of African countries and other parts of the world have already identified that need and are defining and implementing provisions to ensure vehicles' roadworthiness.

Taking into account the precise activities described in the ARSAP, the situation is the following one:

Table 38: Main recommendations for pillar 3

Activity	Current status	Recommendation
Make regular inspection of vehicles mandatory and ensure enforcement of inspection	Periodic compulsory inspection of vehicles is spread in Africa for some kind of vehicles	To reinforce the knowledge and skills of authorities to manage vehicle inspection programs in order to achieve a measurable improvement of the fleet. To spread the inspection to all kind of road vehicles.
Develop and implement motor vehicle and related equipment safety standards	The situation is better than the one shown in the WHO 2015 Global Status Report on Road Safety (point 3.2.2 of this document)	To complete the requirements for new and used vehicles coming from international trade. To use already existing schemes like UN 1958 Agreement.
Implement or strengthen enforcement in accordance with good practices	The survey wasn't focus to analyze the efficiency of the measures and therefore there is not assessment on the suitability of enforcement and good practices. Anyway, a rough check of the fleet proofs that the fitness of the fleet must improve.	To reinforce the knowledge and skills of authorities to manage vehicle inspection programs. This is to be complemented with requirements for new vehicles and used vehicles coming from international trade.
Encourage the use of fiscal advantage and other incentives for motor vehicles that provide high levels of road user protection and discourage import/export of new or used cars that have reduced safety standards	Fiscal aspects have not been considered in this chapter. In general, it is possible to strength the requirements for new vehicles and used vehicles coming from international trade.	To reinforce the knowledge and skills of authorities to manage vehicle approval programs. This is to be complemented with requirements for new vehicles and used vehicles coming from international trade. Special attention should be paid to measures like limiting the age of used vehicles, since that may increase the age of the fleet and shift to less safe vehicles like motorcycles.
Setup and implement regulations on transportation of dangerous goods	Regulations on ADR are applied by 12 out of the 21 countries analyzed, which is by far the most used vehicle standard.	To spread ADR standards in those countries still pending and to setup appropriate enforcement procedures.

In order to have a comprehensive approach of the pillar vehicles, it is necessary to consider them in all the stages of their life:

- New vehicles: to ensure good new vehicles, government have to enforce some minimum requirements. UNECE Agreement of 1958 (UNECE, 2017a) already provides the framework to control new vehicles entering into a country. This may be completed with initiatives like NCAP.
- Used vehicles in international trade: the capability of low- and middle-income countries to renew their fleets with new vehicles is limited, therefore, it is necessary to implement schemes to ensure some minimal technical requirements for used vehicles being registered for the first time in a country
- In-use compliance: once vehicles are on the road, it is necessary that all the benefits accruing from their design when new are maintained during the time. This is the main aim of periodical vehicle inspection, complemented by road-side inspection and, when possible, data analysis
- Modification of vehicles: the needs of vehicles owner changes. In the case of Africa, for instance, is not unusual to add additional axes to heavy duty vehicles to increase their payload. This is not a trivial modification and is advisable to include within the schemes to ensure vehicles' whole-life compliance the checking that vehicle transformations fulfil safety requirements

Side factors to consider are:

- To ensure the registration of all kind of vehicles, and in particular of the two- and three-wheelers because of their big impact in fatalities and injuries
- To promote a skilled, equipped and country-wide network of workshops that ensure repair and maintenance
- To ensure the availability of quality spare parts

The most important needs from the institutional point of view are:

- To ensure the commitment of all the involved departments: transport, police, customs, taxation
- To ensure the skills and capability of the responsible officers to manage the whole vehicle-compliance scheme
- To communicate the benefit of these activities to the relevant stakeholders and to the

4.4 Pillar 4: Safer Road Users

A total of 46 elements have been included in the evaluation of the African Road Safety Action Plan for pillar 4. These elements are a combination of relevant questions taken from the first in-depth questionnaire distributed within the SaferAfrica project and additional elements that appeared in the action plan but that were not part of the questionnaire. The elements were divided in to 4 categories; institutional dimension, organisational dimension and monitoring, key road safety resources and regulation / campaigns. In the case that two questionnaires were available for the same country, any conflicting responses remaining after independent verification of the answers were treated according to the methodology used in D4.1.

4.4.1 Institutional dimension

A total of 5 elements were taken from the questionnaire in respect of the institutional dimension relating to safer road users:

- Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? (Including a representative for NGO)?
- Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? (Including traffic education, training and licensing)?
- Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)? (Including- Businesses related to transport or traffic education, training and licensing etc.)?
- Are the funds allocated sufficient to implement the programme or policy components adopted in the traffic education, training or licensing sector?
- Are the human resources needed to implement the programme or policy components adopted sufficient in the traffic education, training or licensing sector?

Table 39 shows the overall outcome in relation to institutional dimensions per country.

Table 39: Pillar 4 institutional dimension matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Response rates to the questions in this section were generally very good with just two countries, Tunisia and Kenya responding poorly.

The majority of countries have an NGO representative as a part of their decision making institution (75%, 15/20) whilst 65% of the countries (13/20) have a road safety institution coordinating policy formulation and implementation that include traffic education, training and licensing. Stakeholder consultation in relation to transport or traffic education, training and licensing has been established in 55% of the countries (11/20). Regarding funds and human resources available for the implementation of programmes / policies in the traffic education, training or licensing sector, only 3 of the country's respondents indicated sufficient funds (Botswana, Mauritius and Nigeria) and 3 indicated sufficient human resources (Cameroon, Gambia and Lesotho).

It would appear that whilst many countries have established institutions and are engaging with relevant stakeholders and hence are in a position to formulate policies, the feeling from road safety experts is that there is not sufficient financial and human resources to implement the policies.

4.4.2 Organisational dimension and Monitoring

For the organisational dimension and monitoring, 6 relevant questions were drawn from the questionnaire:

- Are sustainable and reliable systems in place to collect and manage data on behavioural indicators (speed, alcohol, safety belt, etc.)?
- Is there a national Observatory centralizing the data systems for road safety? Including licences, exposure, injuries, behavioral data?
- Has a reporting procedure been set up to monitor the road safety interventions carried out in the country? (Concerning traffic education and training)?
- Is the reporting periodical?
- Does some "process evaluation" of safety interventions take place during the implementation period of the program?
- Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs?

Table 40 shows the overall outcome in relation to organizational dimension and monitoring per country, colour coded according to the methodology described earlier.

Table 40: Pillar 4 organisational dimension and monitoring matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Within this section, there were three countries, Kenya, South Africa and Swaziland that have a NAR greater than 30%.

A similar proportion of countries do (45%) and do not (50%) have sustainable and reliable systems in place to collect and manage data on the questioned behavioural indicators. For the existence of a national observatory that centralises data concerning licences, exposure, injuries and behavioural data 40% have this in place and 45% (9/20) have reporting procedures for monitoring road safety interventions. For the countries that do have a reporting system just under half report that the reporting is periodical. For those that do not have a reporting system, no answer was provided to the question concerning the period of reporting. Eight of the 20 countries (40%) indicated that there is some process evaluation during the implementation of a programme with the same proportion stating that an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs.

4.4.3 Key road safety resources

The questionnaire provided 10 elements that relate to key road safety resources in relation to road user behaviour:

- Do you use any national databases/information sources (travel/mobility survey and data)?
- Availability of information on road users and behaviour and attitudes
- Availability exposure data
- Availability of results from driving simulator studies

- Availability of results from in-depth crash investigations
- Availability of information on frequent crash scenarios and patterns
- Availability of information on crash causation factors
- Availability of information on the public, acceptance of road safety measure
- Availability of tools for simulating road user behaviour
- Methods to assess the training needs of individuals involved in road safety implementation process

Table 41 shows the overall outcome in relation to key road safety resources per country, colour coded according to the methodology described earlier.

Table 41: Pillar 4 key road safety resources matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Overall, response rates were very good for this section, with just 4 countries having a very poor response rate.

Availability has been grouped to include when the respondent indicated either 'partially available' or 'fully available'. The questionnaire revealed that respondents from 12 of the countries (60%) use national databases/information sources (travel/mobility survey and data) during the course of their work.

Considering the availability of the different data sources, 13 countries have information on road users, behaviours and attitudes whilst just 6 (30%) have exposure data known to be available. An even lower proportion, 15% of countries, has results from driving simulator studies available whilst 20% of countries are known to have tools for simulating road user behaviour. In-depth crash investigation results are available in 5 countries (25%), information on frequent crash scenarios and patterns in 11 countries (55%), and information on crash causation factors in 15 (75%).

Information relating to the public acceptance of road safety measures is known to be available in 7 countries (35%) – this information is important for understanding the education and campaigning needs in order to ensure successful and effective implementation of and engagement with road safety programmes. Also connected to education is the availability of methods to assess the training needs of individuals involved in road safety implementation process. These are known to be in place for 6 of the countries surveyed (30%).

4.4.4 Regulation / campaigns

A total of 25 elements have been considered in relation to regulation and campaigns aimed at user behaviour. These come from both the questionnaire and additional elements that were apparent in the African Road Safety Action Plan but not included in the questionnaire. Where possible, experts within the Safer Africa consortium have completed the elements not included in the questionnaire, and the early results from a second questionnaire have been incorporated for some, but not all

countries. Missing information (not answered by a questionnaire respondent) has also been completed, and for some elements validated, using the WHO global status report on road safety (2015). The elements are:

- Existence of national speed limit law
- Existence of child restraint law
- Existence of a national helmet law
- Law requires helmet to be fastened
- Law refers to helmet standards
- Existence of law on mobile phone use while driving
- Demerit/Penalty Point System in place
- Existence of national drink-driving law
- BAC limits (general)
- BAC limits (young/novice drivers)
- BAC limits (professional drivers)
- Existence of National Drug-driving law
- Driving licences thresholds (minimum ages per category) for passenger cars
- Driving licences thresholds (minimum ages per category) for motorcycles
- Driving licences thresholds (minimum ages per category) for trucks and goods vehicles
- Compulsory / voluntary education programmes in primary / secondary school
- Compulsory / voluntary education programmes for particular groups (e.g. elderly, bicyclists)
- Regulations to wear seat belts
- Seat belt law applies to FSO and RSO
- Strengthen drivers' training, testing and licencing standards and rules
- Regulate vehicle operation times and drivers' working and resting hours
- Undertake and intensify safety awareness campaigns (general)
- Promote public awareness campaign on benefits of helmets
- Promote use of child restraints
- Campaign against speeding

Table 42 shows the overall outcome in relation regulations/campaigns per country, colour coded according to the methodology described earlier.

Table42: Pillar 4 regulation/campaign matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

This section was less well answered than the previous sections within pillar 5. This is due to some of the items not being present in the stakeholder survey, relying upon additional sources of information for completion that were not forthcoming for some countries.

The following results are based upon information validated using the WHO country profile factsheets and independent review by experts.

National speed limit laws are widely adopted across the countries (18/20, 90%) with a similar proportion also having a law on the use of mobile phones while driving. All of the countries surveyed have a drink driving law a high percentage of which also have BAC limits for in general and also for young/novice drivers (80% and 75% respectively). BAC for professional drivers is less well documented, not forming a part of the WHO data. Based on the questionnaire responses/expert review, 8 countries confirmed BAC levels for professional drivers. In comparison, laws relating to the use of drugs while driving are known to exist in 16 of the countries (80%).

Considering regulation relating to occupant (road user) protection, 19/20 countries have a law regarding seatbelt use however this does not always imply compulsory restraint for both FSO and RSO. Only 8 countries have a law relating to child restraints (40%). All of the countries have a national helmet law, however, the law does not necessarily require the helmet to be fastened (only required for 9 countries) and does not always refer to helmet standards (only required for 13 countries).

The following results are taken from the questionnaire responses and expert review. Driving licence thresholds appear to be widespread across the countries with 80% having a known minimum age for passenger cars, 75% for motorcycles but a lower proportion known for goods vehicles (55%). In relation to education programmes, these are known to be in progress for children in just over half of the countries (12/20) with a lower proportion confirmed for targeted groups such as the elderly and cyclists (9/20). A demerit/penalty point system is in place in 30% of countries.

The final group of elements were not included in the questionnaire or the WHO country profiles, thus the results rely upon validation by experts within the SaferAfrica project and limited responses received thus far from a second questionnaire. This has resulted in a high proportion of unknowns for these elements and the results are unlikely to reflect the true picture at this stage. Further clarification will be sought fully utilising the second survey being undertaken within the SaferAfrica project.

Regarding actions to strengthen drivers' training, testing and licencing standards and rules, these are confirmed for 6 countries, undertaking and intensifying safety awareness campaigns for 9 countries, specifically promoting public awareness on the benefits of helmets in 5 countries, promoting the use of child restraints in just 2 countries and initiating campaigns against speeding in 7 countries.

4.4.5 Global Evaluation for Pillar 4

A total of 28.5 points were allocated across the four categories. The overall performance of each country in pillar four is shown in Table 43 below. This is based on the knowledge available at the time of writing this report.

Table 43: Global performance outcome for Pillar 4

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score (max 28,5)	10,8	12	23,5	17,7	19,8	8,7	6	10,5	15,5	13	17,7	16,5	23,5	8,5	11,5	16,3	7,5	9,5	7,3	16,8
NaR																				

In relation to safer road users it can be seen that

- Two countries have very good performance, Burkina Faso and Nigeria
- Seven countries (Cameroon, Congo, Lesotho, Mali, Mauritius, South Africa and Tunisia) have good performance
- Ten countries are engaging with measures for safer road users but have further progress to make (Benin, Botswana, Gambia, Kenya, Malawi, Senegal, Sierra Leonne, Swaziland, Tanzania and Togo)
- Just one country, Guinea, has very low performance.

This should however be taken in context with the non-answer response rate. For most countries this is below 30%, however for some of the countries requiring further progress (Kenya, Sierra Leonne and Swaziland), the NAR is higher which could account for the lower performance rating.

The global performance outcomes for the 4 sub-items below are summarised in table 42.

- Institutional dimension (5 points)
- Organisational dimension and monitoring (6 points)
- Key road safety resources (5 points)
- Regulations and campaigns (12.5 points)

Table 44: Global performance outcomes by sub-items for Pillar 4

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Institutional																				
Organisational																				
Key RS resources																				
Regulation																				

The two countries that have very good overall performance (Burkina Faso and Nigeria) also have good or very good performance across all of the 4 sub-items. Additionally, Congo also shows good or very good performance across all the items. Mauritius shows good performance across all sub-items and Cameroon performs well in all but the availability of key road safety resources. Lesotho performs generally well apart from within regulations and campaigns. The remaining countries could show improvement in at least 2 but more often 3 or more of the sub-items.

4.4.6 Evaluation of the Mid-term Review recommendations for Pillar 4

Thirteen items related to safer road users were evaluated in the mid-term review of progress towards the African Road Safety Action Plan. These are shown in table 45 below, separated in to those items that did not later form recommendations from the review and those that did. The table also indicates how the information reviewed correlates with the items and recommendations in the review acknowledging where information rely solely expert review (not included in WHO or WP4 questionnaire) and where the mapping of information has some limitations.

Table 45: Mid-term review of the African Road Safety Action Plan for Pillar 4

Mid-term review of the African Road Safety Action Plan	
Item in mid-term review (not recommendation)	**Related information**
Item 1: Clear Speed limit regulation	Questionnaire E2d (Existence of national speed limit law) / WHO GSR country fact sheet
Item 2: Campaign against speeding	Expert review
Item 3: Regulation on Mobile phone use	Questionnaire E2d (Existence of law on mobile phone use while driving) / WHO GSR country fact sheet
Item 4: Rules on use of Alcohol and other drugs	Questionnaire E2d (Existence of national drink driving law) / WHO GSR country fact sheet (drug law)
Item 5: Targets to inspect driver under influence of drug and alcohol	Questionnaire E2d (BAC limits general, BAC limits young / novice drivers, BAC limits professional drivers) / WHO GSR country fact sheet
Item 6: Compulsory wearing of seat belts	WHO GSR country fact sheet (Law applies to FSO and RSO?)
Item 7: Regulation on use of seat belts	WHO GSR country fact sheet
Item 8: Appropriate Helmet law	Questionnaire E2d (Existence of helmet law / law requires helmet to be fastened / law refers to helmet standards) / WHO GSR country fact sheet
Item 9: Safety directives for commercial service/driver working hours	Expert review
Item 10: Strengthen driver's training, testing and licensing	Expert review
Item 11: Include RS in school curricula	Questionnaire E2d (Compulsory / voluntary education programs in primary / secondary schools) ***NB question does not distinguish between RS in the curricula and RS clubs)***
Item in mid-term review (recommendation)	**Related information**
Item 12: Use of child restraints	Questionnaire E2d (Existence of child restraint law) / WHO GSR also expert review (Promote use of child restraints)
Item 13: Establish/Strengthen RS clubs	Questionnaire E2d (Compulsory / voluntary education programs in primary / secondary schools) ***NB question does not distinguish between RS in the curricula and RS clubs)***

Considering first the items that were not recommendations (items 1-11), the scores per country against each of these is shown in Table 46.

Table 46: Country performance against non-recommendation items in the ARSAP interim review

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Item 1 (1Q)																				
Item 2 (1Q)																				
Item 3 (1Q)																				
Item 4 (2 Q)																				
Item 5 (3 Q)																				
Item 6 (1Q)																				
Item 7 (1Q)																				
Item 8 (3Q)																				
Item 9 (1Q)																				
Item 10 (1Q)																				
Item 11 (1Q)																				
Overall																				

Considering these items it can be seen that

- Overall 17 of the 20 countries are making quite good progress against these items (green or blue).
- All countries except 2 (Guinea and Togo) have a national speed limit law and this is supported with campaigning relating to speeding in 7 of the 20 countries.
- All countries except 2 (Lesotho and Tanzania) have regulations on the use of mobile phones whilst driving.
- All of the countries have regulation in place for drink and or drug driving and this is supported by at least general BAC limits for 16 or the 20 countries.
- All countries except for Benin have a seatbelt law in place and for 8 countries this applies to both front seat and rear seat occupants.
- All of the countries have a national helmet law and for eight of these the law also requires it to be fastened and for it to comply with safety standards.
- There is evidence of safety directives for commercial service/driver working hours in 3 countries (Burkina Faso, Kenya and Tunisia) – this item was however not answered for the remaining 17 countries.
- Action to strengthen driver's training, testing and licensing is reported for 6 countries with the remaining 16 not answered.
- Around 50% of the countries have some action implying provision of road safety education for children.

The interim resulted in two recommendations where, at the time of the review, little action had been taken in the area by those countries included in the interim review. The recommendations were to:

1. Promote the use of child restraints (item 12 above)split into regulation and campaigning
2. Establish or strengthen Road Safety Clubs in Schools (item 13 above)

Table 47: Country performance against recommendation items in the ARSAP interim review

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Item 12 - regulation																				
Item 12 - campaigning																				
Item 13 (1Q)																				

For the current evaluation, the WHO Global Status Report on road safety (2015) provided information on the existence of a national law governing child restraint use and this was verified independently by expert evaluation. This resource indicates that out of the 20 countries included in the current evaluation, 10 do not have a law (62%). Concerning campaigning to promote the use of child restraints, this is only confirmed (through expert review) for Botswana and Tunisia, both of whom also have a law governing the use of child restraints.

The questionnaire included the question *'Are compulsory / voluntary education programmes in primary / secondary schools in existence'*. The responses, in conjunction with subsequent literature review in relation to education programmes and expert review, revealed that 13 of the countries are taking some action towards promoting road safety among children with the other 8 stating that no programmes are in existence or having no other evidence in support of actions. There could be some ambiguity between the comparative definition of 'education programmes' in the questionnaire and 'Road Safety Clubs' from the interim review. Again, the issue of road safety education for children has been included in the second questionnaire in order to gain a better understanding of the situation. Only preliminary results from a small number of responses from the 2nd questionnaire are included in this report.

4.4.7 Recommendations for Pillar 4

In this section firstly it is noted whether the recommendations from the interim review are also recommendations from this current evaluation of actions against the ARSAP (items 12 and 13), and then further, new recommendation are made based upon the global performance within items 1-11.

Concerning the items from the interim review:

1 Promote the use of child restraints (item 12 above) split into regulation and campaigning

More action needs to be taken in respect of child restraints; this includes both establishing laws and promoting use. Clearly promoting the use of child restraints is difficult if no law exists governing child restraints. This suggests that action still needs to be taken in many countries in order to establish a law on child restraint use and that this should be done in conjunction with the implementation of awareness campaigns relating to the correct use of child restraints. This should also be complemented with the introduction of regulations relating to appropriate standardised fixings for child restraints, integral to passenger carrying vehicles such as ISOFIX. A request for information regarding actions

relating directly to the promotion of the use of child restraints has been included in the second SaferAfrica questionnaire.

2 Establish or strengthen Road Safety Clubs in Schools (item 13 above)

Whilst there seems to be progress in relation to educating children in safe road user behaviour, this should still be considered a priority due to the vulnerability of children as road users, particularly as pedestrians or cyclists.

The following new recommendations are made in respect of road user behaviour, based upon the information available from the current review:

- Dedicate financial and human resources for the implementation of policies relating to road user behaviour.
- Build capacity for monitoring and evaluating road safety interventions
- Encourage the collection of exposure data
- Encourage monitoring of public acceptance of road safety measures in order to identify education and awareness campaigns to maximize effects.
- Similarly, identify the training needs for those individuals involved in road safety implementation process
- Seat belt laws exist in almost all countries however these seem to relate mainly to drivers; laws should be enhanced to include all vehicle occupants. This should be in conjunction with vehicle standards governing the fitment of seat belts in all occupant positions.
- Enhance national helmet laws to include a requirement that the helmet is fastened and meets required safety standards.
- More action could be taken in relation to road user education and campaigning potentially staring by targeting vulnerable road user groups.
- Rear seat occupant protection should be further encouraged.

4.5 Pillar 5: Post-Crash Response

As for previous pillars, the analysis has been based on answers from the WP4 questionnaire and completed by international databases information (WHO), specific knowledge of "experts", and by knowledge from colleagues having access to a dedicated country.

4.5.1 Institutional dimension

Institutional dimension analysis for post-crash response is based on the five items (See Appendix 2):

1. Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? Including a representative for health sector?
2. Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? Including health sector?

3. Have sectoral quantitative targets or performance indicators also been set to mobilize RS actors in the fields of health?
4. Are the funds allocated sufficient to implement the program or policy components adopted in health sector?
5. Are the human resources needed to implement the program or policy components adopted sufficient in health sector?

Table 48 provides the outcomes issued from the coding of the answers for our sample of 20 countries. Those items highlight how health sector is taken into account in road safety strategies.

Table 48: Post-crash institutional dimension matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Only one country (Nigeria) seems to have a good level of institutional involvement of the health sector concerning post-crash response. Five countries have three items among 5 and are quite good on this dimension. Five countries have institutional involvement on 2 items, and have still to progress. Other nine countries which constitute quite 50% of our sample have not more than one field of intervention on institutional involvement including health sector concerning post-crash response. The low rate of non-answer to these questions confirms a good level of confidence in the interpretation.

4.5.2 Organisational dimension and Monitoring

Organisational dimension and monitoring analysis for post-crash response is based on the below five items:

1. Is there a national Observatory centralizing the data systems for road safety? Including accidents, fatalities and injuries?
2. Has a reporting procedure been set up to monitor the road safety interventions carried out in the country? Concerning health dimension?
3. Is the reporting periodical?
4. Does some "process evaluation" of safety interventions take place during the implementation period of the program?
5. Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs?

Table 49 provides the outcomes issued from the coding for our sample of countries concerning organisational dimension and monitoring for post-crash response. Those items highlight centralized data system and evaluation process.

Table 49: Post-crash organisational dimension and monitoring matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Three countries (Burkina Faso, Congo and Nigeria) have a good level of organisational involvement concerning post-crash response. Five countries have three items among 5 and are quite good on this dimension. One country has organisational involvement on 2 items, and have still to progress. Other countries (11), which constitute the majority of our sample, have not more than one field of intervention on organisational involvement concerning post-crash response. The low rate of non-answer to these questions confirms a good level of confidence in the interpretation.

4.5.3 Key road safety resources

Key road safety resources analysis for post-crash response is based on three main items, including seven sub-items (See Appendix 2):

1. Do you use any national databases/information sources morbidity, hospital information)?
2. Please indicate both priority and availability of the following data and resources
    - Fatality definition
    - Serious injury definition
    - Work related crash definition
    - Data on the underreporting of road traffic crashes
    - Crash databases that link police and hospital data
    - Examples of the successful integration of road safety policies with other sector (health)
    - Information on the socio-economic cost of crashes, fatalities and injuries
3. Information on the impacts of road safety measures on other sectors' policies (environment, health, mobility, etc.) and/or vice versa

Table 50 provides the outcomes concerning key road safety resources for post-crash response. Those items highlight availability of centralized data concerning fatality, morbidity and links between health sector and road safety sector concerning the use of this kind of data.

Table 50: Post-crash key road safety resources matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Four countries have a good level on Key Road Resources concerning Post crash Response (Cameroon, Congo, Mali, and Nigeria). Two countries have a quite good involvement on this dimension. Six countries seem to have a very low involvement on key road resources for post-crash response. Here also, the low rate of non-answer to these questions confirms a good level of confidence in the interpretation.

We can also add that an additional question concerning "priority of this kind of data" for the person who answered the questionnaire allows us to say that even if data is not available yet at national level in some countries, people in charge of road safety are completely aware of the interest of such data for the post-crash response in their country for the future.

4.5.4 Regulation

Regulation analysis for post-crash response was based on four items:

1. Trauma care training is required for emergency care personnel
2. Estimated % SI patients transported by ambulance
3. Number of ambulances per population
4. Hospital beds per 1000 inhabitants

Questions 2 and 4 had systematic non answers from the WP4 questionnaire. For both of these questions "Estimated % SI patients transported by ambulance" and "Hospital beds per 1000 inhabitants", WHO data was used. For question 3, there is no data available.

In some countries, the "estimated % SI patients transported by ambulance" information may forget private ambulances or patients transported by other mean of transport, as private cars for example. A similar statement can be made for the "Hospital beds per 1000 inhabitants" item, which takes into account only public hospitals in many cases. This answers for this item provides a raw picture of the situation for these countries but needs to be analysed more in depth.

Table 51 provides the outcomes concerning Regulation for post-crash response. Those items try to highlight the spatial coverage of the health and emergency sector.

Table 51: Post-crash regulation matrix outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score																				
NaR																				

Three countries have a good level of regulation involvement concerning Post crash Response. 11 countries have a quite good involvement on this dimension. Other six countries have a very low involvement on regulation.

Here the rate of non-answer refers mainly to the first question "Trauma care training is required for emergency care personnel". Questions 2 and 4 have been completed with WHO data.

4.5.5 Global Evaluation for Pillar 5

When the focus is placed upon the general performance score, another picture could be provided for the pillar 5. Globally, the non-answer rate is quite low, except for five countries.

Based on global performance outcomes for pillar 5, we can highlight that for post-crash response:

- Two countries have very good performance (Congo and Nigeria),
- Four countries (Botswana, Lesotho, Mali and Mauritius) have good performances,
- Seven countries have a certain involvement but have still to progress (Burkina-Faso, Cameroon, Gambia, Malawi, Senegal, South-Africa and Tunisia),
- Seven countries have very low performances (Benin, Guinea, Kenya, Sierra- Leone, Swaziland, Tanzania, and Togo).

Table 52: Global Performance Outcomes for Pillar 5

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Score	3,2	11,2	4,3	7,9	13,7	4,2	1,1	3,4	10,0	5,2	10,1	8,4	14,0	5,1	3,2	4,4	3,3	2,9	3,2	8,0
NaR																				

This global performance outcomes results from the 4 sub-items:

- Institutional dimension (5 points)
- Organizational dimension and Monitoring (5 points)
- Key road safety resources (5 points)
- Road safety data and measures (2 points)

Table 53: Global Performance Outcomes and Sub-Items for Pillar 5

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Institutional																				
Organisational																				
Key resources																				
Regulation																				

Among the six countries which have a good or very good performance for post-crash response, five have good performance on all sub-items. Mali has a quite good global performance, but has a low performance on regulation and particularly concerning road safety data and measures, which requires a specific recommendation on this dimension.

For the other countries at least two dimensions (sub-items) among 4 would need efforts.

4.5.6 Evaluation of the Mid-term Review recommendations for Pillar 5

According to the mid-term review of the African Road Safety Action Plan, two main items are of interest:

1. The items identified in the summary report of the mid-term evaluation
2. The mid-term review recommendations for post-crash response

Concerning these items, the available data in the WP4 questionnaire, completed by International DATA bases (WHO) and completed by a new questionnaire sent at the beginning of 2018 were used. This new questionnaire focused on items of the mid-term evaluation, for which only a limited answers were received. To obtain the correct information, links between recommendations and potential answers of the WP4 questionnaire were established as explained in table 54.

Table 54: Mid-term items and recommendations for Post-crash outcomes

Mid-term Review of the African Road Safety Action Plan	
Mid-term data (summary report)	**WP4 questionnaire data (questions related), WHO data**
Health facilities along main highways	information not available in WP4 questionnaire
Long-term hospital trauma care and rehabilitations	Hospital beds per 1000 inhabitants - line 157 Or/and WHO data
Popularize WHO guideline for trauma	No information available in WP4 and on WHO database
Universal 3 digits emergency telephone	Country has one national emergency access number- line 117 Or /and WHO data
Emergency medical services coordinating centres at strategic locations	Designated trauma care centres - line 140
Coverage of emergency assistance	Number of ambulances per population - line 156 Or/and WHO data: Estimated % SI patients transported by ambulance
Mid-term Review recommendations for Post-crash response	
Mid-term Recommendations	**WP4 questionnaire data (questions related), WHO data**
Introducing emergency medical services coordination centres at strategic locations	Designated trauma care centres - line 140
Item 8 - Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment	Number of ambulances per population - line 156 Or/and WHO data: Estimated % SI patients transported by ambulance
Developing capacity for long term hospital trauma care and rehabilitation	Hospital beds per 1000 inhabitants - line 157 Or/and WHO data
Item 11 - Health facilities along main highways with emergency medical system supplies and facilities	No information available in WP4 and on WHO database

Six items were highlighted in the mid-term ARSAP evaluation:

- Health facilities along main highways (item 1)
- Long-term hospital trauma care and rehabilitations (item 2)
- Popularize WHO guideline for trauma (item 3)
- Universal 3 digits emergency telephone (item 4)
- Emergency medical services coordinating centers at strategic locations (item 5)
- Coverage of emergency assistance (item 6)

Table 55: Post-crash mid-term summary report items outcomes (other items than recommendations)

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Item 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Item 2	0,2	0,5	0,5	0,5	0,8	0,5	0,2	0,5	0,5	0,5	0,2	0,8	0,2	0,2	0,2	0,5	0,5	0	0,2	0,5
Item 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Item 4	1	1	0	1	1	1	0	1	0	1	1	1	1	0	1	0	0	1	1	1
Item 5	0	0	0	1	0	1	1	0	1	0	1	0	1	1	1	1	0	0	1	0
Item 6	0,4	1	0,4	0,1	0,1	0,1	0,1	0,1	0	0	1	1	0,4	1	0,4	0,7	0,4	0,1	1	0,1

There is no available data concerning two of these items "Health facilities along main highways" and "Popularize WHO guideline for trauma". Indeed, the question of highways appears quite unrealistic for the African context. A refection has to be made about the usefulness of this item.

"Universal 3 digits emergency telephone" is still available in the main part of the countries of our sample but not in use in seven countries.

For "Emergency medical services coordinating centres at strategic locations", the item of the questionnaire "Designated trauma care centres" was used as a proxy. Ten 10 countries are on line with this item.

For "long-term hospital trauma care and rehabilitations", the item of the questionnaire "Hospital beds per 1000 inhabitants" (WHO) was used. The coverage of Hospital in African countries should be reinforced, while probably it does not take into account the private health sector facilities.

For the "coverage of emergency assistance", the item of the questionnaire "Estimated % SI patients transported by ambulance' (WHO) was used. A careful interpretation is required. Six countries have a quite good coverage and that other countries have to progress on this item.

Four recommendations were written for post-crash response in the mid-term evaluation:

- Introducing emergency medical services coordination centres at strategic locations (Rec 1)
- Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment (Rec 2)

- Developing capacity for long term hospital trauma care and rehabilitation (Rec 3)
- Health facilities along main highways with emergency medical system supplies and facilities (Rec 4)

Table 56: Post-crash mid-term recommendations outcomes

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Rec 1	0	0	0	1	0	1	1	0	1	0	1	0	1	1	1	1	0	0	1	0
Rec 2	0,4	1	0,4	0,1	0,1	0,1	0,1	0,1	0	0	1	1	0,4	1	0,4	0,7	0,4	0,1	1	0,1
Rec 3	0,2	0,5	0,5	0,5	0,8	0,5	0,2	0,5	0,5	0,5	0,2	0,8	0,2	0,2	0,2	0,5	0,5	0	0,2	0,5
Rec 4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

For the item "providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment", there is no direct data. It was assumed that the "estimated % of SI patients transported by ambulance" (WHO) is a proxy. However, while there are some equipped ambulances for the most part of countries, the major part of injured people is taken in charge by private vehicles, which are mainly not equipped to rescue the injured.

In addition to the issue of the allocation of equipped ambulances, we would like also to highlight the necessity of defining a procedure to take in charge injured people from the accident location to the first rescue station.

Recommendations for Pillar 5.

The following recommendations identified in the mid-term ARSAP evaluation are still relevant for the coming years for African countries:

- Universal 3 digits emergency telephone
- Long-term hospital trauma care and rehabilitations
- Emergency medical services coordinating centers at strategic locations
- Coverage of emergency assistance

It is also recommended to modify some of them, because they appear no more suitable or are unrealistic for the African context. It is proposed to replace "Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment" by:

- Developing a protocol for the transport of injured people whatever the location of the road accident and provide simple rules and information about the first aid kit for the people in charge or in relation with rescue activity (taxi drivers, members of associations, health associations and bodies).

First aid and of first aid training is clearly important, especially for commercial drivers, by-standers, and all those passing their driving-license exam.

Additional recommendations due to SaferAfrica Pillar analysis concerning pillar 5:

- Developing relationships about strategy between health sector and road safety authorities (Ministries of Transport and Health, lead Agency, hospitals and Road Safety Observatory, etc.)
- Developing an evaluation culture based on reporting procedures for fatalities and injuries, in both health and road safety sectors
- Reinforce fatality and injury reporting linked to crash databases that link police and hospital data

4.6 Pillar analysis synthesis

A main difficulty was to obtain Road Safety data for the African countries. The proposed analysis is based on inputs from some questionnaires, international databases and expert's knowledge (see Chapter 2). One difficulty was to obtain completed questionnaires, and when accessed, another difficulty consisted in facing many non-responses and partially completed questionnaire.

The approach per pillar (Chapter 4) provided some information on performances but also on non-answer scores, in order to have realistic vision of performances.

With these restrictions concerning data in mind, the analysis per pillar can be completed by a broader approach combining all five pillars for the 20 countries, so that it is possible to point out performance per country on all dimensions. Table 57 presents global performance scores for the 5 pillars.

Table 57: Global Performance Outcomes for the 5 pillars

GLOBAL SCORE	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Pillar 1 : Road safety management (max 57)	29,5	19	44,5	12,5	35	9	10	21	27	30	38	30	50,5	22	27	43	21	21	22	31
Pillar 2: Safer roads and mobility (max 28)	11,2	4,4	21,5	9,6	17,4	2,1	4,4	2,6	11,4	7,5	14,3	12,6	18,9	3,4	2,4	11,9	2,5	4,5	3,4	8,5
Pillar 3 : Safer vehicles (max 25)	9,8	5,8	18,8	13,3	12,6	2,3	5,8	4,2	11,5	8,9	12,7	12,3	17,5	8,7	6,4	15,3	6,5	6,5	8,8	12,8
Pillar 4 : Safer road users (max 28,5	10,8	12	23,5	17,7	19,8	8,7	6	10,5	15,5	13	17,7	16,5	23,5	8,5	11,5	16,3	7,5	9,5	7,3	16,8
Pillar 5 : Post crash response (max 17)	3,2	11,2	4,3	7,9	13,7	4,2	1,1	3,4	10,0	5,2	10,1	8,4	14,0	5,1	3,2	4,4	3,3	2,9	3,2	8
Total score pillar evaluation (max 155,5)	64,5	41,2	108,3	53,1	84,8	26,3	26,2	38,3	65,4	59,4	82,7	71,4	110,4	42,6	47,3	86,5	37,5	41,5	41,5	77,1

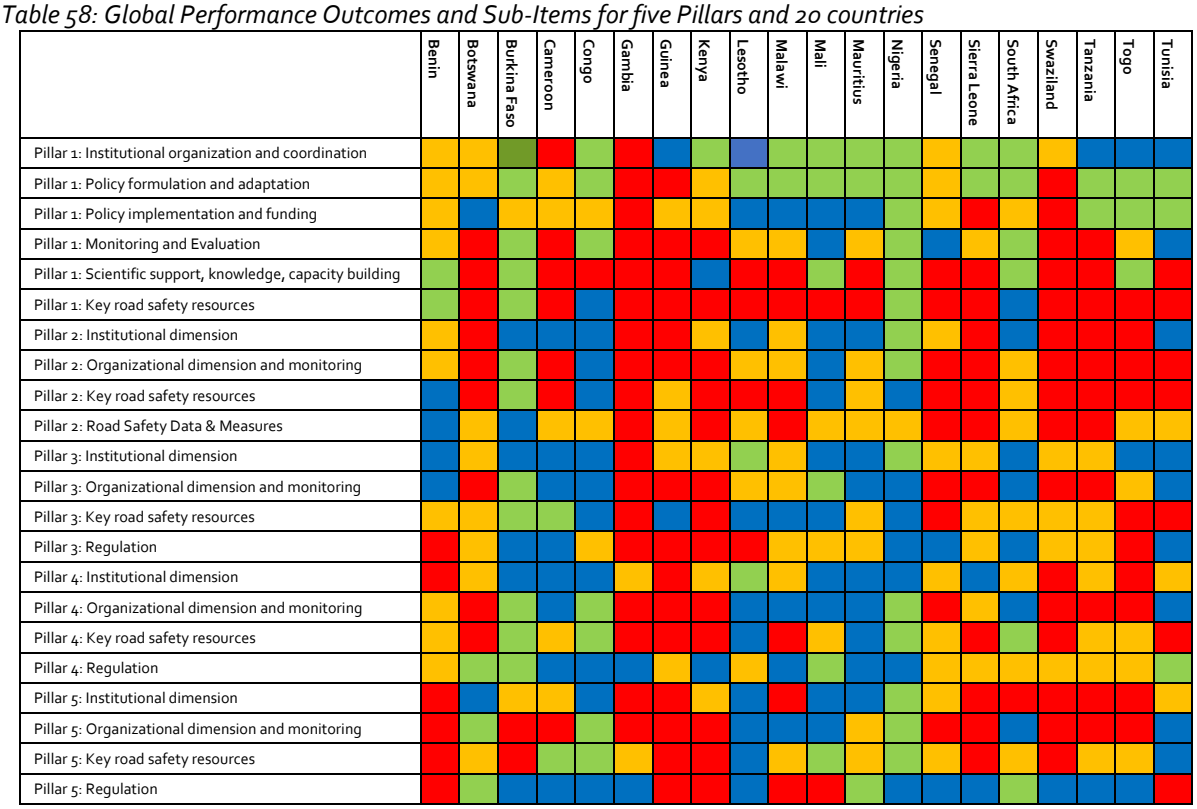
Table 57 shows that

- Five countries seem to have quite good results at the global level and for all pillars (Burkina-Faso, Congo, Mali, Nigeria and South-Africa). These performances are even very good for 4 pillars for Burkina-Faso.
- The majority of the countries show no good results (less than 50% of good performances on items) and have clearly to progress. For these countries, main efforts have to be focused upon first on pillars 2 and 5, and then on pillar 3, pillar 1 and pillar 4.

- Four countries seem to have the lowest results (Gambia, Guinea, Kenya and Swaziland). For these four countries, scores are very low for all pillars and for each pillar for the most of sub-items (Table 58).

It is also possible to highlight the sub-items on which efforts have to be done. Table 58 shows Global Performance Outcomes and Sub-Items for the five Pillars and the 20 countries. This overall view highlights clearly the best or worst performances per sub- item.

Table 58: Global Performance Outcomes and Sub-Items for five Pillars and 20 countries



Concerning recommendations, Table 59 shows a synthesis of outcomes par pillar.

For Pillar 1, the global performance, measured by the grand total of different items, and for all the countries is below the average. It shows medium performances concerning "Evaluation of the Established/Strengthened Lead Agencies" and weak performances concerning "Improved Management of Data". The analysis of the item "Develop/Strengthen Partnership and Collaboration" focuses only upon the involvement of NGO and the association of private sector with the road safety policy. Two sub-items are not informed, due to limitations of the used sources (questionnaire). The general performance is quite good.

For Pillar 2, based on the data collected for the 20 countries investigated, the implementation process of ARSAP recommendations is quite slow. Except for Benin, Burkina Faso, Mali and South Africa, the level of implementation appears to be poor or very poor.

For Pillar 3, the way to assess whether African countries are incentivizing the import of safer vehicles is based on the application of standards. Those countries applying one or more standards are considered to have "incentives for the importation of safer vehicles". However the analysis is unable to differentiate on whether the standards are applied to new- and/or in-use vehicles. Therefore, it still may be some room for improvement in those countries concerning the countries with some standards.

For Pillar 4, the interim resulted in two recommendations where, at the time of the review, little action had been taken in the area by those countries included in the interim review. More action needs to be taken in respect of child restraints, particularly to promote the use of child restraints. While there is progress in relation to educating children in safe road user behaviour, this should still be considered a priority due to the vulnerability of children as road users, particularly as pedestrians or cyclists.

Table 59: Mid-term recommendations outcomes (indicators for Pillars 1 and 2, recommendations for pillars 3, 4 and 5

	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Pillar 1																				
Established/strengthened lead agencies																				
Improved management of data outcomes																				
Develop/strengthen partnership and collaboration																				
Pillar 2																				
ARSSAP mid-term review indicators																				
Pillar 3																				
Introduce incentives for importation of safer vehicles								-		-	-									
Pillar 4																				
Promote the use of child restraints - regulation																				
Promote the use of child restraints - campaigning																				
Establish or strengthen Road Safety Clubs in Schools																				
Pillar 5																				
Introducing emergency medical services coordination centres at strategic locations																				
Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment																				
Developing capacity for long term hospital trauma care and rehabilitation																				
Health facilities along main highways with emergency medical system supplies and facilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

For Pillar 5, "Universal 3 digits emergency telephone" is still available in the main part of the countries, but it is not in use in seven countries. For "Emergency medical services coordinating centres at strategic locations", the item "Designated trauma care centers" of our questionnaire is used, and 10 countries are aligned with this item. For "Long-term hospital trauma care and rehabilitations", we have approached with Hospital beds per 1000 inhabitants (WHO), the coverage of Hospital in African countries should be reinforced.

5 Detailed analysis per country and Abidjan-Lagos corridor

This chapter proposes an in-depth analysis of ARSAP mid-term recommendations applied to a limited number of countries and chosen for their representativeness (See Chapter2).

The countries are:

- Burkina Faso
- Cameroon
- Kenya
- South-Africa
- Tunisia

The five countries were chosen on different criteria (regional location, speaking language, availability of data, existing studies or research, for example Capacity Review proposed for WP5).

Angola was initially chosen, even if this Country was not part of our sample of 20 Countries, because it was considered as being important to have a Portuguese-speaking country. However, it was not possible to obtain enough data and information for this report.

In order to have a regional level of analysis, the Abidjan-Lagos corridor was selected for a detailed analysis and is also presented in this chapter.

Tables 60 and 61 show the global performance for the five selected countries:

Table 60: Global Performance Outcomes for the 5 pillars

	Burkina Faso	Cameroon	Kenya	South Africa	Tunisia
Score pillar 1 (max 57)	44,5	12,5	21	43	31,00
Score Pillar 2 (max 28)	21,5	9,6	2,6	11,9	8,50
Score Pillar 3 (max 25)	18,8	13,3	4,2	15,3	12,80
Score Pillar 4 (max 28,5)	23,5	17,7	10,5	16,3	16,80
Score Pillar 5 (max 17)	4,3	7,9	3,4	4,4	8,00
Total score pillar evaluation (max 155,5)	108,3	53,1	38,3	86,5	77,10

Table 61: Global Performance Outcomes and Sub-Items for five Pillars and 20 countries

	Burkina Faso	Cameroon	Kenya	South Africa	Tunisia
Pillar 1: Institutional organization and coordination					
Pillar 1: Policy formulation and adaptation					
Pillar 1: Policy implementation and funding					
Pillar 1: Monitoring and Evaluation					
Pillar 1: Scientific support, knowledge, capacity building					
Pillar 1: Key road safety resources					
Pillar 2: Institutional dimension					
Pillar 2: Organizational dimension and monitoring					
Pillar 2: Key road safety resources					
Pillar 2: Road Safety Data & Measures					
Pillar 3: Institutional dimension					
Pillar 3: Organizational dimension and monitoring					
Pillar 3: Key road safety resources					
Pillar 3: Regulation					
Pillar 4: Institutional dimension					
Pillar 4: Organizational dimension and monitoring					
Pillar 4: Key road safety resources					
Pillar 4: Regulation					
Pillar 5: Institutional dimension					
Pillar 5: Organizational dimension and monitoring					
Pillar 5: Key road safety resources					
Pillar 5: Regulation					

5.1 Burkina Faso

Burkina Faso is a landlocked, low-income country, located in West Africa southern of the Sahara desert. The estimated population in 2017 reached 20 million inhabitants (CIA, 2018). This is one of the mid-size countries in Africa, with a surface of 275,000 km² that makes a density of population of 72.7 inhabitants / km (CIA, 2018). The population is mainly living in the capital, Ouagadougou and around, and in the southern part of the country. Last figures show that a relatively low amount of the population lives in urban areas: 31.5%, although its grow ratio reaches 5.29% per year.

The road network only accounts for some more than 15,000 km and its quality is not reported in terms of paved or unpaved.

The main incomes of the country come from raw materials, in particular cotton and gold. Since this is a landlocked country, the export of cotton and other farming products has been the reason of a remarkable amount of international traffic of heavy-duty vehicles to and from the neighbour countries with sea ports, i.e. Ivory Coast, Ghana, Togo and Benin. International traffic to other boundary countries like Mali is limited because of the instability of the region.

The death toll because of road accidents varies according to the source. The WHO has included Burkina Faso within the list of "Countries without eligible death registration data" (WHO, 2015). The gap between the data reported locally: 1,125 fatalities on the spot, and the WHO estimates: 5,072 must be taken into consideration (WHO, 2015).

The death toll in Burkina Faso is growing during the last years, from almost 500 in 2004 to the 1,125 nationally reported in 2013. The WHO estimated fatalities implies a ratio of 30.0 deceased per 100,000 inhabitants, above the African average of 26.6 (own calculation).

The vehicle fleet of Burkina Faso is small, with 1,545,903 registered vehicles that corresponds to almost 0.08 vehicles / inhabitant (CIA, 2018). A very significant part of the fleet, 1,282,706 vehicles (own calculation), is made by two- and three-wheelers.

Combining fleet data and crashes, the ratio reaches the figure of 0.73 deaths / 1,000 vehicles (CIA, 2018) when considering local data, and 3.28 deaths / 1,000 vehicles if the data taken into account are those of the WHO. As a reference, this figure is 0.05 deaths / 1,000 vehicles (CIA, 2018) in the United Kingdom.

Burkina Faso does not have any national production of vehicles.

5.1.1 Global evaluation of Road Safety Action for Burkina Faso

Like most low-income countries, road insecurity is somewhat accentuated in Burkina Faso. The frequency and severity of the accidents led the Government to take institutional, legal and operational measures. He has included road safety in his development program; it is included in the legal and political frameworks.

Thus, under the institutional measures, there was the creation of the National Office of Road Safety, which is the Lead Agency with financial and management autonomy and the creation of a high level inter-sectoral decision-making institution called National Road Safety Council under the chairmanship of the Prime Minister.

At the legal level, there was the adoption of the national road safety policy document, the adoption of the national action plan for road safety 2011-2020, and the adoption of regulatory texts to govern the main behaviours to risks (speeding, driving under the influence of alcohol and drugs, use of the phone in circulation, non-wearing of the helmet and seatbelt).

At the operational level, there is the institutionalization of a national awareness day on road safety adopted following the tragic traffic accident that occurred in Boromo (on the national road n °1) on November 15, 2008 and which made 69 dead and 30 injured persons. There is also the organization of the national forum on road safety on 8, 9 and 10 May 2012 which allowed to draw a diagnosis without complacency of the situation of the road safety and to make recommendations on the most symptomatic behaviours traffic accidents. Road safety education has been identified as an emerging topic and part of the curriculum. A road school textbook for primary school has been developed. But the popularization of road safety education is not yet effective.

As part of the strengthening of the actions of the governing office of road safety, a communication plan and a strategic plan for the development of the National Office of Road Safety were elaborated and adopted. A structure of road safety associations has been created and is an ally of the administration in the implementation of actions to promote road safety. A Network of Communicators and Journalists for the Promotion of Road Safety has also been created to support information and public awareness of road safety.

In the field of road infrastructure, the Government has embarked on a policy of internal and international opening up of Burkina Faso, through the asphalting of streets which integrates tracks and bike lanes on certain avenues and asphalting interurban and inter-State road axes. Vehicle load controls are carried out to protect the infrastructure against damage caused by the overloading of heavy goods vehicles.

For vehicle safety, motor insurance and technical control are mandatory for motor vehicles and motorcycles with two, three and four wheels. Vehicle fleet renewal operations are being organized and bus fleet for public urban transit and school and university transportation has been strengthened.

Despite all these efforts, Burkina Faso is one of the countries in West Africa where the rate per 100,000 populations is very high. It is 30, well above the African average, which is 26.6 (WHO, 2015). The fleet of registered vehicles was 2,106,292 in 2015 and the two-wheelers alone accounted for 1,789,181, or 85% of the fleet of registered vehicles. They are very involved in road accidents (more than 60%).

The main weaknesses in the field of road safety in Burkina Faso are: weak road checks. Road checks are not carried out in the long term and do not have a large network of the territory. Added to this, the penalties are low that are not dissuasive.

The road safety lead agency fails to fully fulfil its mission of coordinating the road safety actions of the various actors and lacks sufficient human, material and financial resources to fully implement the road safety policy.

The data collection system of road traffic accidents has flaws that do not allow identifying all the accidents that occur. The killed in an accident is considered to be the one who died on the spot or in the 24 hours, which makes escape all those who die in the 30 days which follow the accident. The lack of human and material resources at the level of the accident report services delays the interventions, and makes escape certain cases of accidents.

The lack of material resources has a negative impact on accident relief. In addition, the absence of medical ambulances does not allow for the provision of emergency care prior to the evacuation of the wounded at health centres. There is also a lack of good follow-up of casualties in traffic accidents at the level of health services.

Although road education is included in the curriculum, it has not yet been popularized. Only a few educational institutions provide road safety education to their students.

But the reinforcement of roadside checks in recent years and the combination of efforts from various actors of road safety (public and private services, civil society, NGOs) has helped to reduce the number of people killed in accidents. It has decreased from 954 in 2014 to 950 in 2015 and 878 in 2016. These reductions, although important, remain below the target of a 25% reduction in the number of people killed by 2020.

Performance can be improved with substantial funding for road safety, improvement of the road traffic accident management system and increased awareness and roadside checks.

5.1.2 Global evaluation of the mid-term ARSAP recommendations applied to Burkina Faso

Burkina Faso shows very good results in all pillars (table 62).

Table 62: Global Performance Outcomes for the 5 pillars for Burkina Faso

	Score Burkina Faso
Pillar 1 – Road Safety Management	44,5
Pillar 2 – Safer Road and Mobility	21,5
Pillar 3 – Safer Vehicles	18,8
Pillar 4 – Safer Road Users	23,5
Pillar 5 – Post Crash Response	4,3
Total	108,3

Pillar 1 – Road Safety Management

The score of pillar 1 is high. That shows commitment of the authorities with road safety. The lower value among the different concepts of pillar 1 is obtained for "policy implementation and funding" which is penalized with the lack of funding. Furthermore, it is remarkable that all questions related to this pillar have been answered.

Pillar 2 – Safer Road and Mobility

Again, there is relatively high score in the concepts of this pillar, with a low amount of non-available answers. The block "Key road safety resources" is penalized by the lack of "Road safety facilities for vulnerable road users" and "Road safety audits on rural roads".

In the block "Regulation" the different answers to the questionnaire regarding the numeric data of victims and crashes show the same divergences than data from the country and WHO estimates.

Pillar 3 – Safer Vehicles

Burkina Faso has a comprehensive approach to deal with the roadworthiness of in-use vehicles, and areas to improve are those related to standards for new vehicles and used vehicles coming from international trade, funding and allocation of human resources.

Pillar 4 – Safer Road Users

Again, the scores of this pillar are high, only showing the lack of funding and some particular initiatives like penalty-points driving license, educational programs for particular groups and awareness campaigns on the use of helmets.

Pillar 5 – Post Crash Response

Pillar 5 shows the same trend of previous pillars, identifying lack of funding and allocation of human resources. The block "Key Safety Resources" identifies priorities about the use of data but show that in some cases not all of them are available.

5.1.3 Recommendations for Burkina Faso

The results of Burkina Faso show that there is a big degree of awareness about road safety in the three different levels: institutional, organisational and operational. It is remarkable the low amount of non-available answers that also demonstrate that the experts involved in the answer of the questionnaire have a very good view of all road safety undertakings in the country.

From the questionnaire point of view, the main areas that may be improved is the allocation of human resources and funding to the road safety activities, together with a comprehensive approach to setup requirements for vehicles entering into the country and, above all, effective application of the texts adopted.

It is clear that the right theoretical approach of Burkina Faso is not enough to improve road safety because fatalities are remarkably growing, from more than 400 in 2004 to 1,125 in 2013. In any case, it has to be considered that the implementation of road safety policies may unveil some non-previously registered data and at the end of the day the impact is not a dramatic increase of fatalities but a more efficient recording procedure.

Taking into consideration all the above, it seems necessary to define a more detailed assessment to actually check the efficiency of the road safety undertakings of Burkina Faso, and to ensure the availability of human resources and funding.

In addition, it is advisable to analyse the reasons of the big divergence between local data and WHO estimates and data as seen in table 4 (item 3.3.2)

Institutional organization and coordination

High-level intersectoral decision-making institutions have been established to develop road safety guidelines. It is a National Road Safety Council (CNSR) operating under the supervision of the Head of Government. It is an institutional stakeholder consultation structure and defines the road safety policy. The CNSR does not meet regularly. He does not have a statutory budget. Then there is the National Road Safety Office charged with implementing the road safety policy and coordinating, monitoring and evaluating the actions of other actors.

Parliament does not play a leading role in decision-making on road safety policies or guidelines. Legislative instruments defining intersectoral management functions for road safety are not periodically reviewed and reformed.

Policy formulation and adoption

Government agencies are actively promoting the need for road safety measures and NGOs are actively promoting road safety. Regional and local authorities are involved in the management of the national road safety policy.

A long-term "national" vision and medium-term national quantitative targets have been established to improve safety performance. Targets are based on morbidity indicators. Quantitative sectoral targets or performance indicators have also been established to mobilize road safety stakeholders. A national medium-term road safety program has been developed.

Implementation of the policy and funding

Partnerships and agreements have been established at the national level with the private sector. The budget of the national road safety action plan has been estimated but no high level commitment to ensure the availability of funding. Part of the fines are allocated to road safety interventions or related activities. There is no sustainable funding structure for road safety. But through the Public Treasury, funds are allocated to interventions and strengthening of road safety capacity. These funds are insufficient to implement the road safety program or policies and are not regularly reviewed and improved.

Control and evaluation

A data collection and management system for traffic accidents, deaths and injuries is in place. It is considered unreliable by the WHO. The same is true for the data collection and management system on road safety behaviour indicators. An observatory is set up in Ouagadougou. Data systems for road safety are centralized at the level of the National Office of Road Safety (ONASER) which acts as National Observatory. ONASER also monitors road safety interventions in the country in road control, road engineering and road safety education. A "process assessment" of safety interventions during the program implementation period was made through a national forum. A comparative analysis is used to monitor the evolution of the road safety situation compared to other countries.

Scientific support, knowledge and capacity building

There are institutes that carry out research and / or multidisciplinary studies on road safety. There are stable research teams. But they are not systematically involved in policy formulation. There are articles and media programs on traffic accidents and / or road safety activities that review and critique current policies. There are institutes offering a multidisciplinary course on road safety to students. There are also other educational institutions that offer specialized courses for future road safety professionals.

Main road safety resources

The main road safety resources used are: databases / sources of international and national exposure information, statistical methods for prioritization and sources of information on morbidity and hospital information. There is also information on the socio-economic cost of accidents, deaths and injuries, the impact of road safety measures on the policies of other sectors (environment, health, mobility, etc.), on standardized procedures and methods assessment of road safety measures, on the costs and benefits of a road safety measure.

Regulation

There are data on the number of accidents, deaths, injuries and hospitalized injuries in urban and interurban areas. There is data on the modal share of passengers / freight on the fleet of vehicles registered along the length of the urban, rural, earth and paved road network.

As road safety measures, legislation exists for the main risky behaviours (legislation on speed, the technical control of vehicles, safety systems for children, the wearing of helmets and safety belts, the telephone, alcohol, drugs, driving license).

As an after-accident response, the number of hospital beds per 1,000 populations is known. A national emergency number and a law on motor liability insurance to provide rehabilitation for accident victims exist.

5.1.4 Global evaluation of the mid-term ARSAP recommendations applied to Burkina Faso

- Establish a main agency: The agency is established is the ONASER
- Advocacy for road safety in development plans: road safety is already included.
- Road safety corridors: Burkina Faso is a member of the Organization for Road Safety in West Africa. It has also established a Treaty of Friendship and Cooperation with Côte d'Ivoire and PAMOSET is a joint project between Côte d'Ivoire and Burkina funded by the World Bank for the facilitation of transport. As part of these various networking activities, actions to promote road safety are carried out.
- Establish a national association of accident victims and survivors: the association is already created.
- Prepare and approve the RS strategy: a strategy is already established
- Set road safety targets: Targets are set.
- Promote private sectors in road safety: This is ongoing.
- International Financing Partnership: International Financing Partnership Initiatives are undertaken with the World Bank, the European Union, the African Development Bank, the Global Partnership for Road Safety /
- Autonomous financing of road safety: No autonomous funding for road safety yet.
- Allocate 10% of road investment to road safety: not effective.
- Allocate sufficient financial / human resources to road safety: not effective.
- Assign 5% of road maintenance resources to road safety: not effective.
- Mandatory reporting, standardized dating, sustainable financing: not effective.
- Strengthen road safety data management capacity: ongoing with the development and validation of texts on the road accident information system.
- Knowledge management portals on road safety: several websites exist at the level of road safety structures (ONASER, CCVA, DGTTM, DGESS of the Ministry of Health, ICI-SANTE, IRD Burkina, etc.).
- Mandatory reporting, standardized data, sustainable financing: not effective.
- National system for analysing and reporting collisions: not effective.
- Engage local researchers in the management of road safety data: ongoing process.
- Research / studies on road safety and use of best practices: In progress.
- Develop. / strengthen / harmonize the injury data system for health facilities: not effective but foreseen in the context of the traffic information system.
- Establish baseline data on road safety: Baseline data exist.

- Harmonize the data format, international standard in the reporting: not effective but foreseen within the framework of the system of information on the accidents of the circulation.
- Road safety research / studies and use of best practices: in progress
- Road Safety Knowledge Management Portals: Existing.
- Introduce emergency medical services coordination centres at strategic locations: not effective: not effective.
- Item 8 - Supply of fully equipped ambulances with medical supplies and rescue and rescue equipment: not in force
- Develop long-term care capacity in hospital trauma and rehabilitation: not effective.
- Develop the capacity of long-term care in hospital traumatology and rehabilitation - mental: not effective.
- Develop long-term care capacity in hospital traumatology and physical rehabilitation: not effective.
- Item 11 - Sanitary facilities along main highways with supplies and facilities of the emergency medical system: not effective.

5.2 Cameroon

Cameroon is a central African country covering nearly 480,000 km² and home to more than 23 million people in 2014 yielding a population density of 41 persons / km². Slightly more than half the population (52%) live in urban areas (Laurea 2012).

Cameroon has underdeveloped road network comprising of approximately 34,500 km of road (equating to a density of around 72 km / 1000 km² of land area which is low by world standards). The country also has a railway network comprising some 1,000 km of single track rail connecting the south-eastern port of Douala with the capital city of Yaoundé and the northern city of Ngaoundéré.

Approximately a quarter of the rural population has access to the road network which is considered to be in a poor condition (Dominguez-Torres and Foster 2011). The condition of the country's classified paved road network is below the level of peer countries, with only 52% of the classified paved network in good or fair condition. The quality of the roads in Cameroon restricts the competiveness of the private sector with approximately one third of the companies identifying roads as a major constraint for doing business (Dominguez-Torres and Foster 2011; Laurea 2012).

Apart from the relatively poor state of the roads, roads are also unsafe mainly due to livestock and pedestrians on the road, inappropriate speeds and poor driver discipline. Road and traffic signs are scarce and speed limits are seldom adhered to due to a general lack of enforcement.

Currently there are no reliable estimates of the vehicle population in Cameroon. Car ownership is estimated[3] at between 6 and 7 per 1,000 populations which equates to between 135,000 and 156,000 cars. This shows some agreement with 2005 estimates of the WHO (World Health Organisation 2009) which estimated the vehicle population to be 312,259 vehicles of which 56% cars; 21% motorised 2 and 3 wheelers; 9% minibus and vans; 8% trucks; 5% buses and 1% non-motorised vehicles.

5.2.1 Global evaluation of Road Safety Action for Cameroon

According to the WHO report on Global Road safety (World Health Organisation 2015), there were more than 6,000 road deaths in Cameroon in 2013. Police records in Cameroon reported 1,095 traffic fatalities in 2013.

Compared to WHO data this number is underestimated by a factor of 5.6 resulting in an actual mortality rate of 276 per million of population, putting Cameroon among the worst performing countries when it comes to road safety. Furthermore, the country scores relatively poorly with respect to the aspects outlined by the five road safety pillars of the United Nations Decade for Action (United Nations 2011). The WHO assessment suggests that Cameroon faces significant challenges if it is to meet the fatality targets reductions it has set itself. One aspect that rates particularly poorly is enforcement of various road user behaviours and this, together with an estimated low rate of crash registration, could be indicative of the relatively low level of priority given to road safety.

In Cameroon information on road crashes can be obtained from the National Gendarmerie, the National Police, the Ministry of Public Health and the Ministry of Transport. The National Police are responsible for data recording and capturing. Unfortunately the country does not have reliable databases on traffic crashes accidents nor are these administered centrally and accessible via a road crash information system. As mentioned above, each organisation involved in road safety management collects and administers crash data via their own system. This produces a lack of consistency in the data processing and undermines the goal of identifying real needs and defining solutions.

Registered fatalities and injuries, historical development

The number of police recorded crash reports in Cameroon are not a stable time series. The number of crash reports varies between 0 in 2015, approximately 30 in 2012 and 2014 and almost 3,000 in 2008 and 2009. In these years, approximately 800 road deaths are reported, as presented in Table 59. The number of fatalities are based on persons killed within 7 days from a road accident occurring. This differs from the WHO norm of 30 days. The most recent WHO report on road safety (World Health Organisation 2015) approximates the number of road deaths in Cameroon to be between 5,035 and 7,236 in 2013. Given the population and income levels, this number is in agreement with what can be

[3] See: http://www.populstat.info/Africa/cameroog.htm

expected from the general relation between per capita GNP and mortality (Table 63). The number of reported road deaths in Cameroon is much lower due to the difference in the definition of a fatality and also the unstable rate of registration of crashes (and fatalities). It is approximately one tenth of the WHO estimate, in the years with the highest reported rate in the database (2008 & 2009). In other years, the reported rate is (much) lower.

Table 63: Number of persons involved in reported crashes (2008- 2016)

Severity	2008	2009	2010	2011	2012	2013	2014	2016	Total
Not injured	1,490	1,564	2,100	1,231	24	937	30	160	7,536
Minor	1,190	914	503	329	5	310	3	17	3,271
Major	2,357	2,701	1,265	392	3	352	5	48	7,123
Fatal	781	850	480	193	6	187	5	40	2,542
Unknown			3	3					6
Total	**5,818**	**6,029**	**4,351**	**2,148**	**38**	**1,786**	**43**	**265**	**20,478**

Overall evaluation Pillar scores based on inputs from WHO and WP4 questionnaire

The scores for Cameroon based on an assessment of performance scores reveals that Cameroon scores low in all the Pillars and although this reflects on poor performance.

Table 64: Global Performance Outcomes for the 5 pillars for Cameroon

	Cameroon
Pillar 1 – Road Safety Management	12,5
Pillar 2 – Safer Road and Mobility	9,6
Pillar 3 – Safer Vehicles	13,3
Pillar 4 – Safer Road Users	17,7
Pillar 5 – Post Crash Response	7,9
Total	53,1

To give more insight into the developments per Pillar, information was sourced from recent studies in Cameroon (Persia et al., 2015; Schermers et al., 2016) and these provide an overview of the status regarding the application of Safe Systems procedures and processes in the country at present.

Pillar 1: Road Safety Management

The responsibility for "Road Safety Management" (RSM) in Cameroon falls under the Ministry of Transport who can be viewed as the "Lead Organization" (main entity coordinating road safety activities). The RSM activities are funded by the national budget and the Road Fund.

At the present time Road Safety Management has been deemed ineffective (Persia et al., 2015). It does not comply with best practices internationally especially as far as the coordination function is concerned. Regarding the management of traffic crash data, the current data collection system involving the Ministry of Transport, the National Gendarmerie, the National Police and the Ministry

of Public Health, is decentralised with each Administration having its own system of data collection, with its limitations and errors. This is not effective and coordination between the administrations is poor. This results in an inability to use data coherently and creates difficulties in identifying aspects that are essential for effective road safety management (identifying problems and defining the appropriate response measures).

The funding of Road Safety Management is insured predominantly via the "Road Fund" (Etablissement Public Administration) and falls under the protection of the Minister of Finance and Minister of Transport (responsible for roads). The funds are specifically designated for:

- Protection Programs of the National Road Heritage;
- Programs for prevention and road safety;
- Road Management Programs;
- Recovery operations and organisation of the streets.

Road safety strategy

The most recent strategy dealing with road safety is the nationally adopted strategy "Development of a National Strategy for road safety" (*Elaboration d'une Stratégie Nationale de Prévention et de Sécurité Routières*) which set out an action plan for the period 2009-2014.

The strategy has as its focus the following:

- A detailed evaluation of related road safety activities conducted since 1994;
- Developing a diagnosis of the current situation;
- Analysis of traffic accident data and costing of accidents;
- Developing a 5-year action plan, including evaluating the implementation plan and assessing the success of it;
- Developing proposals to secure funding and funding sources.

A new strategic plan covering the period from 2015 has not yet been developed. However, there are different policies in place that are being followed and different interventions are being implemented that directly or indirectly impact on road safety.

Implementation success

The Ministry of Transport has implemented a number of reforms aimed at improving the management and security of transport related permits, licences and documents, some of which are still being finalised. The main reforms include the following:

- Reorganisation of the driver licence examination system;
- Computerisation of driver licenses;
- Introduction of a license penalty points system for drivers (effective in January 2014);
- Compulsory roadworthy testing for vehicles;
- Computerised permits for taxi drivers.

Furthermore, the authorities in Cameroon are addressing the growing problem related to road user behaviour, particularly those related to infringements of traffic laws. The National Police (*Gendarmerie Nationale*) has initiated the "Operation-surveillance-control against violations of traffic" programme with particular emphasis on the enforcement of:

- Speed limits;
- The consumption of alcohol (drink driving) and drugs;
- The technical condition of vehicles.

The controls on urban roads appear to be less effective than those in interurban areas, especially with respect to offences such as driving without a seatbelt and using mobile phones while driving. This appears to be the result of the indulgence of police officers and preferential treatment of certain (types of) drivers.

From the point of view of road infrastructure, the short-term orientation is mainly aimed at increasing the length of surfaced roads. This not only improves road safety (reduced crash risk) but also ensures that these routes and roads can be used during all seasons (currently many roads become impassable during the wet season). Furthermore, ineffective road maintenance has been identified as a problem and initiatives have been undertaken to ensure that the road network be maintained to a reasonable standard so as not to compromise operational efficiency and road safety.

Pillar 2: Safer Roads and Mobility

The road network in Cameroon comprises about 50,000 km of registered road. The main network (which represents approximately 80% of the total) is composed of 5,000 km of paved roads, 11,600 km of classified roads and 12,338 km of rural roads (Luca Persia et al. 2015).

The paved roads and the gravel roads are poorly maintained and have low levels of security. During the rainy season, many gravel roads are not passable by most vehicles. Finally, road signs (especially regarding the speed limit) are seldom evident alongside roads. .

Pedestrians and livestock share the same roads as motorised vehicles resulting in constant conflicts and hazards, especially at night. Large logging trucks, as well as other vehicles, use the roads after dark and often these vehicles travel without lights and are frequently broken on the side of the road or even on the road. Together with a lack of road signing and lighting, these conditions make roads in Cameroon dangerous at night.

Like most other central African countries, motorised traffic increases during festive and seasonal periods. According to the Bafia *Mobile Gendarmerie* Road Safety Unit, road traffic volumes increase especially during August and December, as do the number of road crashes. The untarred roads in Cameroon also result in accidents that are related to the dry and wet season. During the dry season, road users grapple with excessive dust which causes visibility problems. In the rainy season road users are sometimes forced to use the wrong half of the road because of mud or potholes (CONSIA Consultants 2013; OSAC Country Council Information 2014).

Pillar 3: Safer Vehicles

Making certain safety features compulsory to vehicles using the road network, lobbying manufacturers to provide standard safety features, prohibiting certain vehicles, campaigning among

potential buyers to buy vehicles with higher safety ratings etc. are all actions that are supportive of the concept of safer vehicles.

Vehicle population

Table 65 shows the composition of the fleet of vehicles operating in Cameroon in 2011.

Table 65: Vehicle fleet size in 2012 (Source: Persia et al., 2015)

Vehicle type	Number of registered vehicles
Bus and coach	44,87
Truck	10,144
Logging truck	9
Minibus	5,539
Motorcycle	224,989
Pickup	20,481
Trailer	67
Semi-trailer	3,033
Tractor (Agriculture)	163
Tractor truck (Horse)	3,656
Scooter	3
Private vehicle (cars)	169,234
Other	1,213
Total	**443,018**

As mentioned earlier motorcycles make up the predominant mode of road transport in the country. These are both used for private transport and for commuter transport especially in cities to quickly transport people to their destinations.

Vehicle standards and roadworthiness

Although the country does not have rigorous vehicle standards and technical requirements, vehicles are issued with roadworthiness certificates upon purchase, often issued by the manufacturer or dealer. There are no stringent requirements for periodic inspections so the majority of vehicles on the roads no longer comply with the original safety standards and many are in generally poor condition. Vehicles are supposed to comply with minimum technical requirements but this is not administrated effectively. The (roadside and other) checks that are carried out may find defects but cannot revoke a vehicle license whereby a vehicle may no longer use public roads. Vehicle registrations are renewable on a 10-year basis and this is a formality without stringent controls to ensure that the vehicle is fit for use.

The poor condition of vehicles is a significant contributor to the high number of crashes.

Pillar 4: Safer Road Users

Driving licences

Taxi motorcycles are a cheap and popular form of commuter transport in the country. However, over and above the fact that these vehicles are not suited (not safe) for this purpose, a large proportion of the drivers are not legally licensed to operate these vehicles. Many drivers of motorcycle taxis have illegal driving licences. In 2005 it was estimated that approximately 22% of motorcycle taxi drivers did not have a driving license.

Furthermore, the country has many driving schools that do not meet the standards set by national laws. In 2015, a survey published by the Ministry Transport revealed that less than 30% of vehicles used by driving schools complied with the regulations.

General

In Cameroon, males are at an increased risk of road traffic accidents compared to females (McGreevy et al., 2014). According to the same source, drinking and driving are a major problem after dark. Social activities and several religious activities take place in the weekend leading to an enormous pressure on the roads that often result in fatal crashes. Most youths have limited driving experience and in the weekends they often drive at night and can be drunk while driving. Commercial drivers often disregard traffic safety when they try to recoup weekend expenses and therefore overload with passengers and over speed to complete more trips.

Human error such as fatigue, lack of skill, drunkenness, speeding and carelessness are major factors for traffic crashes (Dominguez-Torres and Foster 2011). There is an evident need for public awareness of traffic and safe driving. Thus, the government of Cameroon has launched intense road safety campaigns, strengthened enforcement strategies, driving school standardisation programs and introduced medical exams for commercial drivers (CONSIA Consultants 2013).

Pillar 5: Post-Crash Response

The time between injury and initial stabilisation is an important factor in the patient's survival (the so called golden hour). Prompt emergency assistance and efficient trauma care management are clearly important in minimising the injury consequences resulting from crashes. Cameroon does have multiple emergency telephone numbers but lacks emergency room injury surveillance systems (OSAC Country Council Information 2014). The country has limited resources to deal with road crash victims. There are no dedicated trauma teams for road crashes and these are treated as any other emergency patients in hospitals which are equipped with emergency care or special trauma units. Not all hospitals have these facilities nor do all ambulance services have specialised and trained trauma team personnel.

Reports of road crashes are channelled mainly through several informal and unstructured media. Currently, only one toll free emergency line is designated for crash/incident reporting. The location of the crash is then directed to an FRSC (Federal Road Safety Corps) patrol vehicle that is nearest to the crash scene. The data is collected by people of the FRSC filling in a notebook entry or the paper accident report form at the accident site (Minang 2014).

The number of fatalities among vulnerable road users in Cameroon is probably far higher than registered by the police (McGreevy et al., 2014). In especially the rural areas the police may not always be on location to register such fatalities. Furthermore, it is likely that vulnerable road users who die at the scene are transported to the morgue rather than to the hospital. This suggests that the number of deaths observed in the hospital (on which the registration data is based) are underestimated (McGreevy et al., 2014).

5.2.2 Global evaluation of the mid-term ARSAP recommendations applied to Cameroon

Cameroon did not supply information to be included in the African Road Safety Action plan midterm review. Consequently the information below is based on data from other studies.

Road safety management in Cameroon does not comply with the requirements of a Safe System approach and rates as relatively poor when compared to the international state of the art. There is little evidence of strategic medium to long term planning. Road safety policies and resulting implementation strategies are not informed by thorough analysis of road safety trends and problems. There is a general lack of coordination and although there is a lead agency, it does not have the support of a reliable road traffic crash database with which to inform and develop relevant policies and strategies. Monitoring of performance targets does not take place and there is a general lack of accountability. Data supporting effective road safety management is missing.

Drivers, vehicles and roads are generally of low standard and a lack of enforcement and supporting road safety infrastructure, all contribute to a declining road safety situation. The country lacks adequate resources to remedy the current problems and skills are needed across all the pillars supporting a safe road system.

The following recommendations, extracted from the various reviews and literature related to road safety management in Cameroon, may be relevant;

Pillar 1: Road Safety Management

- Reliable and accurate crash and other transport related data systems need to be established in order to effectively support road safety management
- A link between police registration and hospital trauma data is required to improve the quality of the crash registration
- Realistic short to long term road safety targets need to be developed on the basis of a proper situational analysis.
- Informed road safety policies and remedial programmes need to be developed and a sustainable source of funding needs to be secured and budgeted.
- The role of the lead agency needs investigation and defining to improve effective management across all the desired management functions (co-ordination; legislation; funding and resource allocation; promotion; monitoring and evaluation; R&D and knowledge transfer).

The African Road Safety Action Plan midterm review has a number of general recommendations, many of which are common with the specific Cameroon objectives above, for example:

- Set Road Safety targets
- Establish baseline data on road safety
- Establish national association of accident victims and survivors
- Harmonise data format, international standards in reporting
- Establish/strengthen/harmonise injury data system for health facilities
- Knowledge management portals on road safety
- Allocate 10% of road investment to road safety
- Allocate sufficient financial/human resources to road safety
- Allocate 5% of road maintenance resources to road safety
- Mandatory reporting, standardised data, sustainable funding
- Build capacity for road safety data management
- Road safety research/studies & use of best practices

Pillar 2: Safer Roads and Mobility

- The road network is not compliant with a safe systems approach and it is recommended that speed limits are aligned with road function, use and design.
- A road network maintenance and safety management systems is required to facilitate improved planning and remedial works programmes
- Road standards and guidelines need to be revised and updated to include specific road safety standards and facilities and provisions for non-motorised transport. These must include road safety audit guidelines (guidelines developed by the African Development Bank may serve as a basis, see https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ROAD_SAFETY_MANUALS_FOR_AFRICA_-_New_Roads_and_Schemes___Road_Safety_Audit.pdf)
- Road safety inspections and road safety audits should be introduced for at least all new upgrading (reconstruction) and new construction roads projects.
- The safety performance of existing roads should be assessed and remedial works should be planned together with routine and programmed maintenance works.
- Road signs and markings should be inspected and maintained annually

The ARSAP midterm review only recommends the development of road safety audit guidelines.

Pillar 3: Safer Vehicles

- Vehicle safety standards need to be adopted and enforced
- The import of older vehicles should be discouraged
- Annual vehicles inspections (roadworthiness) should become mandatory for all vehicles older than 4 years.
- Public transport and commercial vehicles should be subjected to stringent road safety standards and checks, preferable on a six-monthly basis
- Investigate revising the vehicle registration system
- Vehicle testing stations and certification needs revision
  The ARSAP midterm review only recommends the introduction of incentives for importing safer vehicles which, although less elaborate is in line with the above recommendations.

Pillar 4: Safer Road Users

- Driver testing and licensing systems need to be assessed and possibly revised or replaced
- Monitoring of critical offences needs to be introduced to develop targeted programmes for the improvement of seatbelt wearing, speeding, vehicle condition, red light violations, drink driving etc.
- Enforcement of critical offences needs to be planned and monitored. Penalties commensurate with the offence need to be strengthened and enforced (a culture of if you violate traffic laws you will be caught and prosecuted).
- Road safety education campaigns and educational programmes for pedestrians and school going children needs to be developed, implemented and monitored.

The ARSAP midterm review recommends the strengthening of road safety clubs in schools and promoting the use of child restraints which again are in line with the broader recommendations made for specifically Cameroon.

Pillar 5: Post Crash Care

- A co-ordination structure needs to be set up between the Ministry of Health/Health and Ambulance services and the lead agency/Department of Transport to co-ordinate improving crash registration, response protocols, training in emergency first aid of (traffic) police, public service vehicle drivers etc.
- The trauma care sector in Cameroon needs to be assessed to establish overall capability to dealing with traffic crash victims, including the setting up or operational improvement of the current emergency response number.
- Ambulances and emergency response personnel need to be equipped with the necessary equipment and skills to deal with trauma care patients.
- It is recommended that emergency care facilities along major traffic corridors and in remote rural areas be set up to provide first line emergency care to crash victims before transport to larger hospitals.
- A review of admittance criteria of trauma victims to hospitals and clinics is required to ensure rapid response and treatment to critical cases.
- As far as post-crash care is concerned, the ARSAP midterm review similarly recommends: introducing emergency medical services coordinating centres at strategic locations;
- Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment.
- Developing capacity for long term hospital trauma care and rehabilitation; and
- Introducing health facilities along main highways

5.3 Kenya

5.3.1 Global evaluation of Road Safety Action for Kenya

Road crashes are menace in Kenya with over 3,000 deaths annually, and millions of shillings in economic losses daily (Kenya Traffic Police Department). Thanks to the collaboration between the traffic police department and the National Transport and Safety Authority (NTSA), Kenyans have access to regular updates on road crash injuries and fatalities posted on NTSA website. While this is an improvement, even the data presented by NTSA does not reflect a true picture because crashes are significantly under-reported for an array of reasons. Logically, once data is collected, the next step should be to analyse it, consequent upon which necessary action should be initiated. NTSA has done little to translate the data into safety. The death toll keeps rising and despite evidence that many of the reported accidents occur at specific known locations, very little has been done to manage crashes at black spots. There is a need for the Authority to translate data, however little into action for safer road users.

Increased media coverage of road crashes in the country has seen more Kenyans become aware of them, but not necessarily safe from them. The year 2017, saw the country invest more in road safety compared to the previous five years. However much more needs to be done in Kenya to secure the safety of its citizens on the road. Pedestrians continue to register the highest number of fatalities among road users, as very little has been done to enhance their safety on the roads. Road infrastructure in the country is very vehicle centred as opposed to human centred. Pedestrians for example are often an afterthought rather than part of the original plan. On Thika Highway for example, majority of the safe pedestrian crossing points were only built after it was observed that several pedestrians had died or been injured while crossing the road.

As Kenya's lead road safety agency, NTSA and other roads authorities like the Kenya Highways Authority and Kenya Urban Roads Authority have done very little to target venerable road users such as persons living with disabilities, children and the elderly. Mobility is especially challenging for persons living with disabilities in Kenya. Far worse than pedestrians, their needs are rarely ever factored into urban planning. Where access ramps are built, they tend to be steep and slippery, or built on one end of the pavement and missing on the exit end. Additionally, engineers' perception of disability is limited to the physical form, which largely explains why the most frequent accessibility feature in Kenya is the ramp. No provisions are made for other disabilities such as the blind and deaf who can easily move unaccompanied. Incorporating sound features in a traffic signal machine, for example, can easily facilitate the crossing of the blind.

There is still much to be done to strengthen inter-sectoral collaboration between NTSA and key road safety stakeholders such as the Traffic Police, Ministry of Transport and Infrastructure, Ministry of Health, Ministry of Education, the media and private sector / civil society organizations. Entities generally work apart and there is no common strategy with set targets and budget towards identified national road safety goals. Each entity consults the other on need basis.

When it comes to safer vehicles, the lifespan of a car is between 10 and 15 years. But in Kenya it goes to beyond 20 years — perhaps up to 25 years. This is because Kenyans buy used cars that have been on the road for an average of eight years before they enter the Kenyan market. Eventually, with

incessant breakdowns and the insatiable need for spare parts used, car owners end up spending more than intended. The unfortunate heavy taxation by government on importation of used vehicles makes purchasing a safer new vehicle much more inaccessible to the average Kenyan. In 2017, the taxes charged on used cars average 40 per cent of the total cost of the units, making the levies a major determinant of the final yard prices that includes mark-ups of up to € 1,600.

Used cars attract an import duty of 25 %, excise duty of 20 per cent and valued added tax (VAT) of 16 per cent payable cumulatively and in that order. Calculation of the taxes is based on the current retail selling price (CRSP) of specific models, an amount that is adjusted for depreciation at a rate of 10 per cent per year. Insurance and freight charges are added to the adjusted CRSP to arrive at the custom value. Imports of used cars is capped at eight years from the date of manufacture, a move that has seen most dealers ship in models approaching that age to benefit from lower taxes.

5.3.2 Global evaluation of the mid-term ARSAP recommendations applied to Kenya

Kenya is generally performing poorly based on the Pillar analysis as shown in the table below. Poor performance is attributed to clear underperformance in the sectors reviewed as well as non-responsiveness of the respondents approached for this evaluation. Also, because progress registered in this evaluation is largely ongoing, it could not be registered as actual achieved indicators, thus the dismal performance.

Table 66: Global Performance Outcomes for the 5 pillars for Kenya

	Kenya
Pillar 1 – Road Safety Management	21
Pillar 2 – Safer Road and Mobility	2,6
Pillar 3 – Safer Vehicles	4,2
Pillar 4 – Safer Road Users	10,5
Pillar 5 – Post Crash Response	3,4
Total	38,3

Pillar 1: Road Safety Management

While Kenya has established a lead agency; the NTSA, per the WHO and ARSAP recommendations, the agency lacks political backing, sufficient financial and efficient human resource backing. This explains the poor performance under Pillar 1.

NTSA has established basic baseline road crash data that is heavily reliant on traffic police crash records. Unfortunately, hospital data continues to be left out in the country's crash analysis.

With the police data, NTSA, have remained very regular with their monthly analysis of road crashes and within Nairobi city, mapped out the roads where crashes occurred. Road safety interventions in the country are not however informed by crash data as shared by NTSA

On a positive note, NTSA has harmonized vehicle and driver registration through the Transport Information Management System (TIMS).

As far as partnership and collaboration is concerned, NTSA has not played it part as effectively as possible. Most civil society organizations report NTSA being hostile to partner with them, unless and

until road crashes are on the rise. The process of accessing detailed data on crashes and traffic offence monitoring to inform specific interventions is especially an uphill task for those working in road safety in Kenya. Private sector and civil society organizations aside, NTSA has had a challenge collaborating with other government partners. For example the Kenya Highway Authority, Kenya Urban Roads Authority runs independent road safety initiatives that are not necessarily coordinated with NTSA. Ironically, the Ministry of Health are not members of the NTSA Board.

Pillar 2: Safer Roads and Mobility

Although very good plans and initiatives are underway for Kenya in Pillar 2, most of the gains were eroded by the lack of coordinated efforts by the respective agencies working on them. The Road Safety Management Capacity Reviews made it evident that almost all government agencies responsible for road safety in one way or another, is working in silos.

As far as infrastructure goes, priority in Kenya is given to number of kilometres of road built, over the number of lives possibly saves by constructing safe roads. Several roads engineers interviewed reiterated that the President will only show up for the launch/opening of a road and never to launch/commemorate a road safety initiative. That speaks volumes to the level of political will.

The country neither has a standard roads construction manual nor an audit manual. As a matter of fact, road audits are hardly conducted with the aim of ensuring that safety features for all road users have been factored. While it may take a while before it is actualized, NTSA have proposed legislative amendments that will see it undertake Road Safety Audits and Inspections for all roads in the country.

As a long-term initiative, President Uhuru Kenyatta executed the Executive Order creating the Nairobi Metropolitan Area Transport Authority (NAMATA) under the enabling provisions of the State Corporations Act. NAMATA will cover the counties of Nairobi City, Kiambu, Kajiado, Machakos and Murang'a. NAMATA shall formulate a sustainable integrated public transport strategy based on the development of a sustainable urban mobility plan that will be the basis for the orderly and structured development of the proposed Metropolitan Area mass-transit system, which incorporates both bus rapid-transit and commuter rail. These elements are part of the Government's wider plan of improving Kenya's transport infrastructure and mobility.

Pillar 3: Saf*er Ve*hicles

As with most sub-Saharan countries, a large portion of vehicles in Kenya are second hand vehicles. Although the country scored dismally for this category, much has been initiated by the lead agency to address safety standards of vehicles in the country. All motor vehicles that are 4 years and above are required by law to undergo annual inspection in Kenya. Enforcement on this has however been lax, because the country has no capacity to inspect the over 2 million vehicles in the country. NTSA with the support of the Ministry of Transport are pushing for legislation that will see NTSA inspect all motor vehicles by outsourcing privately owned garages. This could significantly reduce the number of unroadworthy vehicles on Kenyan roads.

In 2017, Kenya through the Kenya Bureau of Standards (Kebs) tightened used car import rules in a bid to reduce the risk associated with substandard vehicles entering the Kenyan market. Importers of second-hand motor vehicles will no longer have a three-month grace period after the expiry of the deadline set by Kebs in a bid to enforce the eight-year age rule. This means that all certificates of roadworthiness for vehicles whose year of first registration is 2010 was only be valid up to December

31, 2017. Imported vehicles must pass safety and mechanical inspection, must be right-hand drive and must be less than eight years old.

Pillar 4: Safer Road Users

Kenya passed the traffic amendment act 2017, introducing for the first time in the country legislation that safeguarded children on their way to and from school. Although speed limits on school zones were maintained at a rather high 50 kph speed limit, the legislation obligates motor vehicles designated to transport children to or from school, or for any non-school related activity, be painted a visible bright yellow colour and to be fitted with safety belts designed to be used by children. The legislation further barres school buses from operating between 10 pm and 5 am and stipulates that the selection and training of school drivers be rigorous and include retraining and regular re-evaluation to ascertain alertness, consistency and proficiency of drivers to avoid putting the lives of pupils and students at risk.

Intelligent transport system (ITS) piloted in early 2018 in Nairobi has drastically reduced the traffic jams in the capital city, albeit with a few technical challenges. The ITS, which includes adaptive traffic lights that control traffic in response to road user patterns, ensures smooth flow of vehicles by improving mobility in at least 100 intersections in Nairobi. In addition to reducing road congestion, the traffic system is expected to promote road safety and curb violation of traffic rules. It will also reduce police corruption as it minimizes the interaction between road users and traffic police.

Pillar 5: Post Crash Care

Several ambulances in the country are remained taxis, because they can only ferry a patient to a health care facility and not necessarily provide life-saving services within the 'golden hour'. E-Plus and St. John's Ambulance service are the most trusted ambulance service providers in Kenya. Both provide free services as part of their Corporate Social Responsibility and as an income generating activity. Unfortunately, each has a unique emergency telephone contact. The 911 service run by the police works intermittently and is therefore unreliable.

The National Hospital Insurance Fund (NHIF) is the primary provider of health insurance in Kenya with a mandate to enable all Kenyans to access quality and affordable health services. To address post-crash care, NHIF expanded road emergency ambulance services to all members. Low and middle income citizens have traditionally relied on taxis and motorbikes to ferry them to health care facilities. The process of transferring the victim from scene of crash into the aforementioned forms of transportation often worsens the injuries. The state health insurer covering emergency evacuation services is therefore a move in the right direction.

Several county governments have invested in Emergency Response by purchasing/ leasing ambulances following the devolution of the Health Care function from the National Government to the County level. This has significantly reduced the time it takes for patients to arrive and gain admittance into health care facilities.

5.3.3 Recommendations for Kenya

The below recommendations have been fronted for Kenya.

Pillar 1: Road Safe*ty* Management

ARSAP recommendations still relevant are:

- Set short, medium and long-term targets backed by a budgeted strategic plan
- Allocate sufficient financial/human resources to road safety. NTSA generally is insufficiently funded to implement road safety programmes. The establishment requires more personnel as well as capacity building to enable it effectively execute its mandate.
- Establish associations of road crash victims and survivors.

We could also propose new recommendations for Kenya:

- NTSA needs to harmonize injury data systems from health facilities by working closely with the Violence and Injury Prevention Unit under the Ministry of Health.
- Establish rotational board membership for private sector and civil society organization (CSO) group members. Prolonged membership to the board by private sector and CSOs has seen them align more to government than represent the public interest which should be their primary concern.

Pillar 2: Safer Roads and Mobility

ARSAP recommendations still relevant are:

- Conduct pre and post-construction road audits. Roads in Kenya are built from a very vehicle-centric approach and road users such as pedestrians and cyclists are often neglected, yet they make up for over 50 per cent of the road user population. Their needs should therefore be considered prior to road construction.
- Develop road safety audit and inspection guidelines and undertake them to evaluate how road users interact especially with newly built roads

Pillar 3: Safer Vehicles

ARSAP recommendation still relevant is:

- Reduce taxation on motor vehicles to encourage importation of safer vehicles.

We could also propose a new recommendation for Kenya:

- Make emissions testing a mandatory part of the annual motor vehicle inspection once it is fully rolled out for implementation. Currently emissions testing is not done

Pillar 4: Safer Road Users

ARSAP recommendation still relevant is:

- Promote the use of child restraints
- Strengthening road safety clubs in schools and community based road safety education as a way of targeting pedestrians

We could also propose new recommendations for Kenya:

- More advocacy backed by police enforcement targeting pedestrians. They represent the highest number of road crash related deaths and are notably the most careless/ inattentive group of road users.
- Provision of more and improved facilities for pedestrians. They make up the highest population of road users as well as fatalities.

Pillar 5: Post Crash Care

ARSAP recommendation still relevant is:

- Establishing health facilities along main highways, especially since many of Kenya's hazardous locations (black spots) are located on the highways.
- The country should also develop capacity for long-term hospital trauma care and rehabilitation.
- Acquire fully equipped ambulances and medical supplies for each dispatch center.
- Implement universal three digit emergency telephone communication system. The country has various emergency response numbers with each post-crash responder adopting one unique to them.
- Acquire fully equipped ambulances with medical supplies and crash extraction and rescue equipment.

Cross-cutting

- Make traffic police permanent employees of the traffic police department without fear of being transferred to general policing. Currently, the position of a traffic officer is seen as very lucrative because of all the bribes one can collect on the road. Reliable sources inform us that policemen pay bribes to senior officials to secure a position as a traffic police man. By making their positions permanent, it would make it easier to capacity build them and weed out the corrupt ones.

5.4 South Africa

South Africa is a politically stable, middle-income country that has clearly a benchmark role within the continent. It is a large country, with more than 1.2 million km² (CIA, 2018). The population almost reaches 55 million of inhabitants, which means about 45 inhabitants / km², and is mainly concentrated in the south and southeast coast and around the city of Pretoria. Almost 66% of the population lives

in urban areas. The road network is quite large, with close to 160,000 km of paved roads but still almost 590,000 km of unpaved infrastructures.

According to the Global status report on road safety 2015 of the WHO, South Africa is considered among those with good registration of death data and therefore reliable; even the WHO estimates for South Africa's death toll are lower than the figures actually reported. After a pick of deaths of more than 30 fatalities per 100,000 inhabitants in 2006, the figure has slightly decreased and stabilized around 25, with a total amount of 13,802 fatalities within 30 days after the crash (WHO, 2015). This figure is slightly less than the African average which reaches 26.6 deaths per 100,000 inhabitants (WHO, 2015).

In 2013 there were 9,909,923 registered vehicles (WHO, 2015), which means a ratio of about 0.18 vehicles per inhabitant. The share of the fleet corresponding to two- and three-wheelers is relatively small, with less than 370,000. According to eNaTIS – electronic National administration Traffic Information System – (eNaTIS, 2019), the fleet of vehicles in February 2018 reached 12,271,533 vehicles.

Combining data of crashes and vehicles, there is a ratio of 1.39 deaths per 1,000 vehicles (WHO data), which is still far away from world benchmarks like the United Kingdom where 1.770 fatalities happened with a fleet of 35,582,650 vehicles, meaning a ratio of 0.05 deaths per 1,000 vehicles (own calculation).

The international road traffic is mainly generated by the direct trade with neighbours, with the exception of Lesotho, completely surrounded by South Africa together with Swaziland, Botswana and Zimbabwe that are landlocked neighbour countries.

Country's vehicle industry is well developed, South Africa counts with an important amount of manufacturers with 8 brands producing cars and vans, and 13 involved in trucks and busses (Naamsa, 2018).

5.4.1 Global evaluation of Road Safety Action for South Africa

A non-detailed analysis of the results obtained in this assessment of South Africa and their comparison with other countries of the continent may lead to a misinterpretation of the situation. The total score is in the high side reaching 86.5, but quite below of other countries like Burkina Faso (108.3) or Nigeria (110.4).

To have a complete view, it is necessary to add the confidence on data. Using as reference the WHO report on road safety 2015, and adding this concept to the numerical value shown in the previous paragraph, all together offers a picture that reflects that South Africa has a very clear view on what is pending regarding road safety.

In general terms, governmental structures are well stablished and consolidated. With identified lacks in funding, allocation of human resources, data management and therefore targets are not defined in every case.

The scores of South Africa are in the high side of the continent, but not as high as they should be related to the country's economic health, although this is sign of reliability of the information retrieved, as previously explained:

Table 67: Global Performance Outcomes for the 5 pillars for South Africa

	South Africa
Pillar 1 – Road Safety Management	43
Pillar 2 – Safer Road and Mobility	11,9
Pillar 3 – Safer Vehicles	15,3
Pillar 4 – Safer Road Users	16,3
Pillar 5 – Post Crash Response	4,4
Total	86,5

The result of analysing each pillar is shown below:

Pillar 1 – Road Safety Management: The score of pillar 1 is in the medium–high side. That shows commitment of the authorities with road safety. The lowest value among the different concepts of pillar 1 is "key road safety resources" that shows a lack of data for a deeper analysis.

Pillar 2 – Safer Road and Mobility: This pillar scores lower than the average in South Africa. At one side, there is a lack of targets for the road safety performance indicators, on the other not all the road safety relevant data or results from investigations and studies are available.

Pillar 3 – Safer Vehicles: South Africa has a comprehensive approach regarding the vehicles, with an already defined scheme to require road safety features to new vehicles. It is remarkable that the country has not yet stablished the system to undertake periodical inspection of passenger cars, although the legal framework has been already approved.

Pillar 4 – Safer Road Users: The answers to this Pillar identify lack of funding and human resources as main lack.

Pillar 5 – Post Crash Response: Pillar 5 on post-crash response shows some a lower trend of previous pillars. It identifies lack of funding but non on the allocation of human resources. Some strategic information is missing in this pillar, i.e. the availability of quantitative targets, process evaluation and information related to databases.

The results of South Africa show that there is a big degree of awareness about road safety in the three different levels: institutional, organisational and operational, although in some cases it was not information available.

Some work is still necessary to complete mainly the institutional approach, and the lack of periodical inspection for light vehicles and motorbikes is clearly identified as one of the important missing points.

On the other hand, the reliability of the information retrieved, as stated in the WHO report, brings South Africa to a situation in which the next steps should focus in the improvement of the effectiveness of the already existing structures.

5.4.2 Global evaluation of the mid-term ARSAP recommendations applied to South Africa

The scores of the country may not seem in accordance with the development level of South Africa, but because there are properly stablished structures they are able to clearly identify their shortcomings and areas of improvement.

The situation regarding the ARSAP recommendations is explained below:

- Established/strengthened lead agencies: already stablished, but in some cases lacking of resources and definition of targets
- Improved management of data: South Africa is able to identify room for improvement in this area
- Develop/strength partnership and collaboration: once completed the data management, it is going to be easier to identify the impact of such initiatives
- Safer roads infrastructure for all road users: whereas vulnerable users are targeted, there is some activity pending in this field
- Roadworthiness of vehicles: it is very much remarkable that South Africa still does not have periodical vehicle inspection of passenger cars, and only for commercial and heavy duty vehicles. Port-of-entry inspections are not stablished. The country applies some standards and requirements for new vehicles
- Educated general public (road users): the management structures are set but they lack of funding and resources allocation. There is still pending to undertake communication and promotion campaigns bot in general aspects of road safety and in particular ones like the use of helmets, safety belts or child restraints
- Use of helmet: in South Africa this is required, with appropriate standards and stating that it has to be fastened
- Seat Belt: South Africa has requirements beyond the use of safety belt, since they apply standards for front and side impact. Its use is required too.
- Alcohol: the country limits the content of alcohol in the blood, and there is a national drug-driving law. There are not particular limits for professional drivers
- Mobile phone use: this is limited by law
- Speeding: limited by law
- Emergency care: South Africa has consolidated governmental structures regarding emergency care, but there is still lack of targets, funds and human resources. The process assessment is pending too and data are not yet complete

5.5 Tunisia

5.5.1 Global evaluation of Road Safety Action for Tunisia

Tunisia is the smallest country in the Arab Maghreb Union (AMU), and most open to the influence of the Mediterranean. Tunisia is divided on 24 governorates and 264 delegations, which are subdivided

into 2,073 sectors, including municipalities. Figure 16 shows the current administrative composition of the Tunisian Republic.

Figure 16: Politic-administrative division of Tunisia (source http://fr.mapsofworld.com/tunisia/)

A phenomenon of intense has been undergone pressure along the coasts, the consequence of an excessive concentration of the population and most development activities. This concentration is the result of the territorial planning and the development approach adopted since independence and which has favoured the coastline at the expense of inland areas.

Food production is distributed quite unevenly around the country, leading to exchanges and unbalanced road logistics between regions, which must be taken into account when analysing road safety challenges (Béchir R. et al.; 2011). Population location, in the same way as mentioned for agriculture and economic activity, contributes to the regional imbalance in domestic transport and have direct consequences on road safety.

In 2011, Tunisia faced a political turmoil with a "political revolution".. After the last elections in 2014, however, a stable political climate is re-established, but the relationships between the central government and population is strongly modified (how the police's authority is perceived for instance). All these factors could have a direct influence on increasing the vehicle fleet and mobility, and indirectly on road safety.

At the end of 2015, Tunisia had nearly 1,922,000 vehicles on the road. 60% of vehicles in circulation were private cars and 22% vans. The most part of cars comes from non-official markets. Currently, nearly 100,000 vehicles are registered or re-registered in Tunisia every year. In 2015, more than 29,000 vehicles of all types were re-registered in Tunisia. In fact, insurance companies have decided to no longer insure utility vehicles over 15 years of age, as well as private cars over 20. Uninsured vehicles in

circulation are an important issue for Tunisia. Furthermore, Tunisia has some 1.2 million motorcycles, only 10% of which are insured, according to the Tunisian Federation of Insurance Companies (FTUSA).

Road accidents represent a great part in the financial balance of insurance companies, which contribute to improving awareness of road risks among their policyholders. They play an informational role (detailed instructions for filling in an amicable accident report, etc.) and a motivational role (encouraging accident victims to take photos of the accident site and the vehicle involved). Many companies encourage their policyholders to drive more safely.

Strategically, growth in the transport sector in Tunisia is slowed by insufficient and obsolete infrastructures. The sector has been marked by the deterioration of its infrastructures in recent years, which has some impact on logistics and economy at large. With a network of approximately 22,000 km of roads, nearly 75% of which are paved (close to the OECD average), and approximately 400 km of motorways from the capital, road transport represents 85% of land transport for goods and 95% of passenger transport. Furthermore, the transportation network suffers from growing imbalances between the coast and the interior of the country (MEFF, 2015), (World Bank, 2014; World Bank, 2015; World Bank Group, 2014). This disequilibrium in terms of infrastructure development is the outcome of past political planning and choice, which yield also some impacts on the road safety figures.

Concerning accidents, except for an increase in 2012, the official figures from the Tunisian Ministry of the Interior have shown a constant decrease in accidents and injuries since 2000, despite a regular increase in the fleet of cars on the roads. The number of traffic fatalities has been constant at around 1,500 deaths since few years. The decrease in accidents and injuries since the 2000s deserves special attention, because no road safety measures are able to explain it. But, the insurance companies estimate that 50% of the accidents occurring in isolated governorates are not recorded. According to a report by the WHO (World Health Organization) in 2015, the mortality rate due to traffic accidents per 100,000 residents in Tunisia was estimated at 24.4% in 2013. With this rate, Tunisia is considered to be a dangerous country in terms of road risks (Ouannes, 2016).

The first cause of accidents is speeding (approximately 450-500 fatalities), because there are no real sanctions anymore at least since Revolution period. A large number of accidents involve pedestrians crossing the roadway. Pedestrians often cross outside the dedicated crosswalks. Sidewalks are in poor condition in some cities and neighbourhoods, which discourages their use. Urban environments account for more than 60% of all accidents. Most accidents occurred in the country's big cities, including 19% in Tunis, 7.5% in Ben Arous, 7.4% in Sfax and 6.8% in Nabeul (Tunisian Ministry of Interior, 2018).

During the Revolution of January 2011, Tunisia evolved toward a constitutional democracy. Local power is based on decentralization (political, administrative, financial and economic). Decentralization takes on the form of local authorities including municipalities, regions and districts. While local government has become more important actors for implementing public policy, they did not benefit from new prerogatives for the road safety policy, which remains the field of ministers.

Indeed, several ministries deal with road safety. The Ministry of the Interior has a strong presence with the National Observatory for Information, Training, Documentation and Studies on Road Safety, but also the Ministry of Infrastructure and the Ministry of Transport. Both of those actors are the main ones for conducting the national road safety policy.

National statistics compile data form Police (urban areas) and from National Guard (outside urban areas). The National Observatory gathers all data each month from different governorates and settles national statistics for road accidents. When the police forces are informed that an accident has occurred, a team goes to the accident site. Their first action is to set up signage and warnings to protect the rest of the road users, and then they draw a map of the accident, record the identities of those involved and undertake interviews. No photos are taken.

The National Observatory for Information, Training, Documentation and Studies on Road Safety is under the authority of the Ministry of the Interior. Neither the governorates nor the delegations or municipalities intervene in the road safety information and education programs. Road safety is strictly reserved to the Ministry of the Interior. However, the ATPR *(Association Tunisienne de la prévention routière*), member of PRI (*Prevention Routière Internationale,* association), with branches in nearly all regions, organizes awareness campaigns and training courses for road users of all categories and all ages.

Based on a political desire from the late 1990s, the "*Conseil Supérieur de la Santé*" (High Council for Health) has sought to develop the pre-hospitalization sector and emergency services (up to the dispensary level). As of 2005, emergency medicine has been taught at the University Hospital Centres (CHUs) and has become a specialty. Today, 6 SAMUs cover the country.

Regulation concerning equipment (seatbelts, helmets required for powered two-wheelers, point-based driving license…) and technical control of vehicles seems sufficient but rules are in many cases not applied. The non-enforcement of road safety regulation raised some issues concerning the involvement of police forces and their legitimacy for enforcing the regulation.

5.5.2 Global evaluation of the mid-term ARSAP recommendations applied to Tunisia

Table 64 shows that Tunisia has quite good performances on three pillars (1, 3 and 4) and quite bad performances on two pillars (2 and 5). The global score of 77.1 get 49.9% of performance on all dimensions (pillars). With some improvements, there is no doubt that Tunisia should performed better in the future. Improvement should be done in priority on pillars 2 and 5.

Table 68: Global Performance Outcomes for the 5 pillars for Tunisia

	Tunisia
Pillar 1 – Road Safety Management	31
Pillar 2 – Safer Road and Mobility	8.5
Pillar 3 – Safer Vehicles	12,8
Pillar 4 – Safer Road Users	16,8
Pillar 5 – Post Crash Response	8,0
Total	77,1

Pillar 1*: R*oad safety management

Performances are very good for "Policy formulation and adaptation" and for "Policy implementation and funding", and quite good for "Institutional organization and coordination" and for "Monitoring and Evaluation". But Tunisia shows very bad performances concerning "Scientific support and knowledge" and "capacity building and Key road safety resources".

Table 69: Global Performance Outcomes and Sub-Items for pillar 1 for Tunisia

Pillar 1: Institutional organization and coordination	
Pillar 1: Policy formulation and adaptation	
Pillar 1: Policy implementation and funding	
Pillar 1: Monitoring and Evaluation	
Pillar 1: Scientific support and knowledge and capacity building	
Pillar 1: Key road safety resources	

Interviews realized in Tunisia (Carnis et al., 2018) show that:

- Road safety is taken in account by institutional stakeholders
- A road safety national organism is in charge of Road Safety
- A road safety national observatory collects data concerning road accidents
- A global vision is lacking
- No real local relay exists for the road safety policy
- The funding of Road Safety Politics is not explicit,
- Expertise and research on road safety files are lacking
- Accurate data for road safety (costs, exposure, statistical models…) is not available
- Initiatives in the field of road safety are mainly taken by private sector (insurance, medias) or associative sector (Road Prevention)

Pillar 2: Safer road and mobility

Table 70 shows that Tunisia has a quite good performance on "Institutional dimension", quite bad one concerning "Road Safety Data & Measures" and a very one for the "Organizational dimension and monitoring" and "Key road safety resources".

Table 70: Global Performance Outcomes and Sub-Items for pillar 2 for Tunisia

Pillar 2: Institutional dimension	
Pillar 2: Organizational dimension and monitoring	
Pillar 2: Key road safety resources	
Pillar 2: Road Safety Data & Measures	

This global evaluation for pillar 2 concerning infrastructure is confirmed by the interviews realised for the Capacity Review done for Tunisia and the additional collected information:

- No planning of actions on the overall road network (just on highways and few national roads) is done.
- No information concerning funding dedicated to infrastructure improvement is available.
- No information concerning planning of financial and human resources for actions on road infrastructure is provided.
- No economic evaluation of the impact of accidents on the cost of infrastructure is done
- Data concerning accident scenarios are insufficient. Information about infrastructure and environment do not exist, because they are non-digitized.
- No data concerning risk exposure, in general and per type of infrastructure is available.
- No land infrastructure policy for vulnerable road users is undertaken.

Pillar 3: safer Vehicles

On Pillar 3, Tunisia has good performances on "institutional dimension", "Organisational dimension and monitoring" and "regulation dimension", and a very bad one on "Key road resources".

Table 71: Global Performance Outcomes and Sub-Items for pillar 3 for Tunisia

Pillar 3: Institutional dimension	
Pillar 3: Organisational dimension and monitoring	
Pillar 3: Key road resources	
Pillar 3: Regulation	

The number of vehicles is increasing and a great part is re-registered in Tunisia. There are a substantial regulation and a regular technical monitoring, but not for the powered two-wheelers.

Moreover, there are:

- Regulation and monitoring for Safety equipment
- Centralized data available per type of vehicle
- Registration of all vehicles is mandatory and centralized

But, the main problem remains the parallel market for private cars and illegal importations for power two-wheelers.

Pillar 4 Safer Road Users

Tunisia has very different performances per item of pillar 4: very good on "Regulation / Campaign", quite good on "Organisational dimension and monitoring", quite bad on "Institutional dimensions" and very bad on "Key road safety resources".

Table 72: Global Performance Outcomes and Sub-Items for pillar 4 for Tunisia

Pillar 4: Institutional dimension	
Pillar 4: Organisational dimension and monitoring	
Pillar 4: Key road safety resources	
Pillar 4: Regulation / Campaign	

Concerning the road users in Tunisia different actions could be brought:

- Centralized data are available concerning Road Safety and behaviour (speed, alcohol, point-based driving license ….)
- Awareness campaigns for Road Safety are organized at national level
- Awareness campaigns are organized by national and local medias
- Data concerning injuries exist in Tunisia
- Insurance sector is interesting in the socio-economic evaluation of injuries and consequences of accidents
- A substantial legislation exists concerning behaviour (speed limit, driving license, alcohol, seatbelt….), but some means are lacking for having an effective enforcement.

Pillar 5 Post-crash response

For Pillar 5, on one hand Tunisia shows quite good performances on "Organisational dimension and monitoring" and on "Key road safety resources", which could be explained by:

- The policy in the field of secondary and tertiary safety is elaborated by the Ministry of Health.
- Statistical data exist (Observatory, insurance, hospitals…)
- Data on injuries exist also per gravity and type of injury

Table 73: Global Performance Outcomes and Sub-Items for pillar 5 for Tunisia

Pillar 5: Institutional dimension	
Pillar 5: Organisational dimension and monitoring	
Pillar 5: Key road safety resources	
Pillar 5: Regulation	

But, on the other hand, Tunisia has a quite bad performance on "Institutional dimension" and a very bad one for "Regulation". The Post-crash response is not efficient:

- Data concerning organization of rescue services (estimation of transported injured people, number of ambulances per population) are not well-known.

5.5.3 Recommendations for Tunisia

Taking into account the previous analysis by pillars, some recommendations for Tunisia are possible:

- Create an inter-ministerial body that encourages contributions and a cross-disciplinary approach by all road safety stakeholders, with adequate financial and human support. This inter-ministerial body should therefore be created under the authority of the Prime Minister.
- Develop the collection of data concerning accidents scenarios.
- Collect statistical data about exposure to risk per type of infrastructure and type of vehicle.
- Develop detailed data concerning road user behaviour.
- Develop Road Safety education (expertise, high level training courses).
- Develop Road Safety infrastructure audits.
- Develop infrastructure management for vulnerable road users.
- Collect detailed data on accidents for local roads in order to analyse to role of the road factor in the accident.
- Collect date about the accident locations.
- Set up an organization to identify and register the powered two-wheelers to improve their traceability.
- Make available data on secondary safety (injuries and rescue organization) for researchers and medical students.

5.6 Corridor Abidjan-Lagos

The objective is to carry out an initial assessment of the capacities of the five countries along the Abidjan-Lagos corridor in terms of road safety management and interventions that could be mobilized in the future in a road safety management project on the regional trade corridor (Breen et al., 2013).

This assessment proceeds by using the answers to the five pillar questionnaires of the five concerned countries (Ivory Coast, Ghana, Togo, Benin and Nigeria) on a subset of the most relevant questions for coordinated road safety management along the corridor. These responses are analysed to determine the degree of homogeneity of existing structures and interventions in these five countries. This analysis is followed by a review completed by summaries about the five road safety agencies from an exchange workshop held under the aegis of ALCO and SITRASS in Cotonou on 7 and 8 September 2017. That section is based on the works of the regional experts meeting on road safety along Abidjan - Lagos corridor[4]. Before presenting the corridor and its characteristics, the road safety management organization model on the European TENT-T network is evocated.

5.6.1 Characteristics of Abidjan-Lagos corridor

The corridor has a total length of 1,022 kilometres and connects the capitals or major ports of five countries of West Africa: Ivory Coast, Ghana, Togo, Benin and Nigeria.

Figure 17: Map of the corridor

[4] With the support of SITRASS, ALCO organized in collaboration with Benin National Road Safety Commission (NRSC), a regional road safety meeting bringing together the Road Safety Agencies of the five Abidjan-Lagos corridor member countries in Cotonou (OCAL-SITRASS, 2017). This section is an overview of the PowerPoint presentations made by road safety representatives of each ALCO member country.

This corridor is at the same time inter-urban and urban / peri-urban, crossing the capitals of Abidjan, Accra, Lomé and the ports of Cotonou and Lagos. In addition to road freight and passenger traffic, there is a long-distance transport with neighbouring landlocked countries, local cabotage transport and individual mobility generated by urban activities with vulnerable modes of transport such as motorcycles and pedestrians. This variety of infrastructure uses raises a major safety problem along the corridor.

Figure 18: The urban corridor in Cotonou and Accra

Large portions of this infrastructure have recently been rehabilitated from a conventional 2-lane carriageway with shoulders to a 2 × 2 or 3 × 3 lanes road with median and intersections with directional flows or roundabouts.

2 lanes Before

2 × 2 lanes After

Figure 19: The classic 2-lane road in the open countryside and the 2 × 2 lane road rehabilitated between Cotonou and the Nigerian border

5.6.2 The European model: Trans-European Transport Network TENT-T

As the trade corridors in Europe are numerous and concern different territories, trilateral governance has been set up with EU regional leadership, supported by national leadership, and plans for corridor platforms to aid TEN-T project management. The TEN-T Executive Agency turns it into action by managing the individual TEN-T projects on behalf of the European Commission Directorate-General for Mobility and Transport (DG MOVE).

The Regional Intervention Strategies for road safety cover four pillars and are related to:

- Regional Planning, Design, Operation, and Use of Road Infrastructure,
- Regional Freight and Passenger Transport Regulation: Vehicle Standards,
- Regional Freight & Passenger Transport Regulation: Driving and Operational Standards,
- Recovery and Rehabilitation of Road Victims from the Road Network.

5.6.3 Road safety corridor initiatives in Africa

Two initial initiatives out of 20 selected by NEPAD (New Partnership for African Development) (*Nouveau partenariat pour le développement de l'Afrique*) have been launched with a Partnership by GRSF and Total:

- The Central African corridor that links Douala to Ndjamena and Bangui,

- The Northern corridor which links Mombasa to Kampala and Bujumbura (Kenya & Uganda, January 2010).

The North South corridor (Tanzania- Malawi) has been the object of a road safety review by MacDonald for the World Bank (2013).

The Central Corridor Transit Transport Facilitation Agency in Tanzania has made a road safety audit call for tender (2017) and Fell et al. (2017) have published a report on the Improvement of road safety in Tanzania mainland.

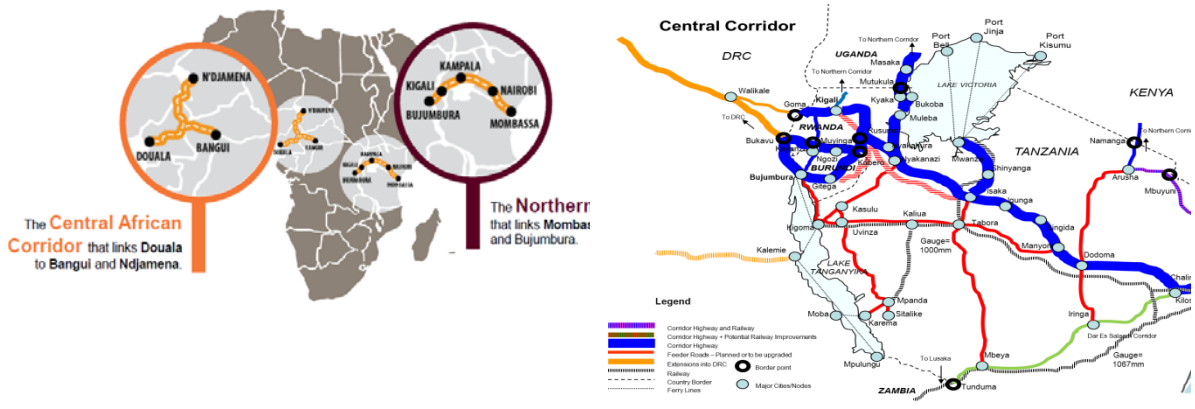


Figure 20: Existing ARSCI African Road Safety Corridor Initiatives

One problem is to implement the right organization to deal with the governance on road safety at different scales: regional, national and local. On the Northern Corridor, the "Safe Way, Right Way" NGO has been established to take actions linked to the project forward and a dedicated local project team is tasked with setting up the actions. The program should eventually lead to a reduction in the number of serious accidents and victims through adoption of a modular approach covering all aspects of road safety (Total, 2018):

- Road safety management (data monitoring, evaluation and reporting).
- Road user behaviour improvement through information, communication, education.
- Vehicle condition (driving standards, testing, licensing, inspection).
- Post-crash plan, to learn how to react in the event of an accident.
- Infrastructure (engineering, design, construction, signalization, safety audit)."

On the northern corridor in partnership with Safe Way, Right Way and North Alliance, a particular Program component seeks to design interventions aimed at nurturing the right attitude and behaviour among Northern Corridor road users and communities with regard to road safety particularly around Road Side Stations (RSS) (Integrated System limited ,2014).

5.6.4 Abidjan-Lagos corridor capacity evaluation

The Dimensions for success for developing a road safety management system on a corridor are:

- Designated lead agency arrangements,
- Coordination structures, working procedures and partnership building,
- Data collection and risk analysis ,
- Integrated road safety actions,
- Monitoring performance evaluation and recognition.

5.6.4.1 ALCO as a lead agency and the five national road safety agencies

As stated by Breen et al. (2013, p32), "No preferred structural models for the lead agency management of RTRC road safety performance can be identified from experience to date, but key management functions can be identified and current lead agency capacity assessed". But they recommend that "Depending on the regional and country circumstances encountered, these leadership management functions might be delegated to an existing regional corridor authority, an appropriate national agency well placed to handle the task, or a new regional or national body especially created for the purpose" (Breen et al., 2013, p 32).

ALCO is an institution with an intergovernmental organization status (2002). Its Mandate is to set up a holistic approach of the corridor development (Health, Transport and commerce facilitation, Road safety and Environment). These arrangements have been fixed in the MoU with ECOWAS (last date July 2016). The Governance is parted trough the five countries:

- NG: Président Comité Directeur (CD)
- GH: Vice Président (CD)
- TG: Président Comité consultatif interpays

- BN: Headquater
- CI: Secrétaire Exécutif

ALCO has fifteen years of experience in facilitation of trade and transport and ten years of experience in Coordination and sharing of good practices of the activities link to health to fight HIV. Recently ALCO has been charges by the WB with an evaluation study of the effectiveness of the rehabilitation of the corridor in Benin (CNSR, 2017).

Ivory Coast

The growing population mobility through motorization and the increase in traffic in the late 1970s have resulted in a higher number of road traffic accidents. In the light of this concern, Ivory Coast created in 1978 the Road Safety Board (OSER).

Acting under the responsibility of the National Road Safety Commission, the purpose of this leading institution is to study, research and implement all means to increase road users' safety. To carry out this mission successfully, OSER conducts some studies in accidentology, in conjunction with other agencies whose activities contribute to the improvement of road safety. The ultimate goal is to propose prevention and post-accident management measures.

These measures, based on regulatory provisions, involve awareness-raising, training, education, information and crackdown on road users in urban and rural areas.

Road safety management may face with enormous challenges. Organizationally, OSER has no representation within the country.

The slow collection, processing and transfer of accident findings delays publication of statistics. In an effort to address these shortcomings, OSER intends using ICTs in the collection and transmission of information in real time.

In 2016, the Ivory Coast recorded 10,718 accidents claiming the lives of 991 and 18,109 injured.

On the Ivorian stretch of the Abidjan-Lagos Corridor, 276 accidents were recorded for the same year, claiming the lives of 22 people and leaving 526 injured. Vulnerable users such as pedestrians and motorcyclists represent 55% of the road users killed. The 6 black spots on this road caused 25 accidents, 6 killed and 82 injured.

Ghana

The National Road Safety Commission (NRSC) was established in 1999 by an Act of Parliament, Act 567, to promote road safety in Ghana and coordinate all related policies and activities.

The Commission is under the Ministry of Transport and has offices in all the ten regions in Ghana. There are eight key road safety key stakeholders with specific responsibilities relating to Education, Engineering, Enforcement and Emergency Response Services.

Ghana's road safety management is being driven by a National Road Safety Policy and ten year National Road Safety Strategy known as NRSS III: 2011 – 2020, developed in line with the United Nation's Decade of Action for Road Safety. The Strategy, together with associated Action Plans, has defined specified outputs and targets as well as timelines for implementation by the various key

stakeholders. The national target/objective is to minimize persons killed and persons seriously injured by 50% by the year 2020, in absolute terms, to 820 persons killed and 2,838 persons seriously injured by the year 2020. The strategy hopes to achieve by promoting greater commitment, responsibility and dedication among road safety stakeholders and tackling three major areas, namely:

1. Improving the Public transport system
2. Managing traffic speeds on roads in the cities and highways and its attendant hit pedestrian and head-on collisions
3. Scaling up education and sensitization (Awareness Creation) to improve knowledge and skill among road users to change behaviour.

It is worth mentioning that Ghana has a very credible road accident database dated back in 1991, which is updated annually together with an established Key Road Safety Performance Indicators (KRSPI) as well as Research, Monitoring and Evaluation Framework.

Major road safety interventions made in Ghana in the past 6 – 7 years under the National Strategy and Decade of Action for Road Safety were the launching and the implementing of nationwide pedestrian and bus passenger campaigns. The campaigns involved comprehensive education and publicity through media and outreach programmes to public places including schools, churches, mosques and serious engagements with industry players, road safety advocates, etc. These are some additional engineering measures such as marking and signing of the road, traffic calming measures and installation of pedestrian footbridges. The enforcement of the relevant road traffic regulations is done by the police. Other complimentary efforts by the Licensing Authority consist in enforcing relevant standards and regulations concerning vehicle and drivers.

Statistical analysis of outcomes of road safety interventions in Ghana have revealed the following trends in road traffic crashes and casualties:

- Systematic reduction in crashes from 11,506 in the base year of 2010 to 9,796 in the year 2015 at the rate of 475 per year
- Systematic reduction in persons killed from(1,986 in the base year of 2010 to 1,802 in the year 2015 at the rate of 67 per year
- Systematic reduction in persons injured from 14,918 in the base year of 2010 to 10,565 in the year 2015 at the rate of 947 per year
- Systematic reduction in persons seriously injured from 11,507 in the base year of 2010 to 9,796 in the year 2015

The above reductions in crashes and casualties are emanating mostly from reductions in casualties among:

- Pedestrians from 3,707 in 2010 to 3,016 in 2015
- Commercial bus occupants / passengers from 5,777 in 2010 to 3,342 in 2015, and most importantly,
- Children under the age of 16 from 1,704 in 2010 to 1,128 in 2015

Ghana's major challenge in road safety management are:

- High travel speeds and disrespect for other road users and road traffic regulations.
- Increasing motorcycle population and associated level of indiscipline of riders which has seen casualties of riders and million riders rise from 456 in the year 2000 to 1,833 in 2015.

- Disabled vehicles.
- Inability of the National Road Safety Commission to regulate and ensure compliance of road safety standards by institutions involved in road safety management especially in road infrastructure, driver licensing and vehicle registration, and enforcement of Road Traffic Regulations.
- Inadequate funding for road safety activities especially education and publicity.

Ghana's efforts towards the objectives of the Decade of Action for Road Safety is on course. However, there is still much to be done and the following are some key intervention areas being considered for implementation in the coming months/years:

- Clamp down on motorcyclists – policy direction, education and enforcement.
- Vigorous enforcement of speed regulations by the police (spot fine) – 100 kph on motorway / expressway, 90 kph on highways, 50 kph in towns and villages, 30 kph in school areas, etc.
- Local / community road safety - Form strong collaboration with local government system.
- Improve engineering measures – Clear backlog of roadline markings, road signage and street lighting.
- Improve and regulate road safety related standards – data collection (i-MAAP [Microcomputer Accident Analysis Package] / RADMS [Road Accident Data Management System]), driver training and licensing, vehicle registration and inspection, road construction & maintenance and road-user behaviour (through ICT based tracking).
- Quicken emergency response – More first aid posts and dedicated ambulance services for accident victims.

Togo

In Togo, the number of road traffic accidents has been increasing from year to year according to statistics from the Ministry of Public Safety and Emergency Preparedness.

Despite tremendous efforts made by the government to improve the road safety situation, the depth was reached in the year 2014 with 802 killed in road accidents. This situation led the Head of State to declare 2014 as road safety year in Togo. The various measures undertaken enabled to reduce the number of accidents by half from 5,390 to 2,851 and the number of deaths from 802 to 473 between 2014 and 2015. Unfortunately, the upward trend resumed in 2016 (with 5,393 accidents and 514 deaths) and progressed until the first half of 2017 (2,559 accidents and 315 deaths).

In the light of this unfortunate situation, there is need for urgent important measures to achieve the objectives of reducing road traffic accidents by half by 2020.

The National Road Safety Board and the National Road Safety Council were established by presidential decree on 23rd July 1997 but are not operational to date. The Department of Road and Railway Transport and the Road Safety Division (RSD) are responsible for the coordination of road safety activities pending the Board operationalization.

The Fire Service is responsible for providing aid to road traffic casualties. It is based in Lomé and in the five administrative head districts. In Togo, there are two emergency numbers namely 118 for the Fire Service and 8200 for a private service called Togo-assistance.

In the absence of the Accident Analysis Report (AAR), the Police and Gendarmerie use separate accident data collection forms. A five-fold and a single-fold form are respectively used by the Police and the Gendarmerie. Data collection falls within the various Gendarmerie Territorial Brigades and the Police Accident Brigades.

Finally, it should be noted that Togo does not yet have adequate means or modern structures for road accidents locating or geo-tracking. Road traffic accidents are usually reported by witnesses or casualties to the Police and Gendarmerie.

Benin

Benin road traffic is influenced by the country's geographical location and the quality of its automobile fleet. In addition to its role as a transit country for other States, especially landlocked countries, the domestic situation is characterized by a growing automobile fleet due to significant importation of used vehicles. The highly individualized mode of transport is characterized by a very large number of two-wheeled motor vehicles in most major cities where motorcycle lanes are rather rare. In such an environment where public transport is highly depended on the use of motorcycle taxis, motorcyclists and their passengers are the main victims of accidents in large cities.

The resulting road safety issues report 2 people killed each day, i.e. about 700 killed per year, with more over 5,000 injured.

The institutional road safety organization in Benin calls for a multi-sector approach with stakeholders from diverse professional and disciplinary background. The National Road Safety Commission is the Benin national body responsible for coordinating road safety actions.

The legal framework for road safety is characterized by vigorous normative activity pending consolidation, through a new Highway Code and a national road safety strategy.

As part of the general activities including population education, vehicle roadworthiness inspection, road network inspection, statistical data collection and analysis through the AAR (implemented since 2000 through an Inter-ministerial Decree n ° 024 / MTPT / DC / MDN / MISAT of March 20, 2000) specific awareness-raising actions (in schools and markets along the corridor) have been organized, mobilizing one hundred and sixty volunteers over three months. Furthermore, adjustments were made to two black spots on the corridor namely: Agoué and Ouidah market crossing. With regard to accidents geographical location, it has evolved over time from pin method to benchmark approach. Nowadays, geographical location of accidents through GPS is common.

Today, the challenge is to reduce by at least 10% road accidents and serious injuries by the year 2025. This requires modernizing the database by acquiring high performing software for better monitoring of indicators.

Nigeria

Nigeria operates a Federal system of government where the central government provides leadership and coordinates road safety issues through its Lead Agency (Federal Road Safety Commission-FRSC) with appropriate Legal backing, finances and logistics provisions.

Nigeria has the largest Law Enforcement Volunteer group in the world on road safety (Special Marshals Group).

Efforts to de-centralize and empower States on road safety administration and management through establishment of States Road Traffic Management Agencies are in progress.

The country adopts seven special enforcement strategies on road safety and has recently pivoted special enforcement efforts on all commercial vehicles on mandatory installation of Speed Limiting Devices effective from 1 February, 2017 to reduce speed and speed induced crashes/ fatality.

Improvements on post-crash efforts from beyond 30 minutes response time to crash scene to 15 minutes through coordinated schemes known as "Zebra" Road Side Clinics and National Emergency Call Centre running toll-free services.

Counterpart and intervention funding by the World Bank as a result of country capacity review of road safety management assessment conducted in year 2010 has advanced road safety significantly leading to the creation of Safe Corridor project and delineation of 18 additional operations corridor for further intervention.

The Safe system approach on road safety drives Nigeria's road safety road map. This has led to the endorsement of Nigeria Road Safety Strategy (NRSS) which focuses on all the five pillars of the UN Decade of Action and that road safety is a high priority of government.

Road Traffic Crash data collection and analysis has been enhanced through harmonized efforts of all data sources through a National Committee on Crash Reporting System (NaCRIS).

The country uses a geo-tracking system located at the National Headquarters of the FRSC to enhance tracking and location of crashes for speedy responses.

The setting of corporate strategic goals has assisted the Corps in evaluating yearly performance in line with its yearly goals.

The country has a goal of achieving and surpassing the UN Decade of Action target with an ultimate goal of having a country where road crash leads to no death.

5.6.4.2 Coordination structures and Data collection and risk analysis

Basic management arrangements should include at a minimum

- a high-level steering group comprising agency heads,
- a senior managers working group,
- an extended senior manager consultative group that includes wider business sector and community representation.

It relies on the five countries road safety management capacities which can be evaluated from the answers to the questionnaire related to the first pillar on management (See Table 1 Appendix 7).

Four countries have a lead agency that has been formally established to direct the national road safety effort to achieve the desired focus on results. Togo is the exception. The lead agency role is usually defined in legislation and/or policy documents but there is a lack of annual performance agreements to achieve the desired focus on results.

A key issue is the availability of accident data on the corridor from accident files having a common data format if possible in order to carry out risk analysis as it has been done already on RN1 in Accra (Adu-Kumi, 2014).

Four countries have a reliable information system on traffic accident data. Togo is the exception. The accident form and the data collection system depends on the history of the development of road safety in these five countries, with the influence of the Transport Research Laboratory (TRL) in Nigeria and Ghana with the MAAP software, and the use of BAAC from 1990 in Benin, Togo and Ivory Coast (See Table A3.2, Appendix 3).

5.6.4.3 Planning, design, operation & use of road of the Regional Trade Road Corridor

The infrastructure of the corridor is under the responsibility of the Ministries of road of the five countries and is concerned with major rehabilitation.

The specified Regional Trade Road Corridor (RTRC) safety standards and rules and related compliance regimes in the five countries do not address the safety priorities on high-risk corridors. There is a lack of evaluation after rehabilitation, and the practice of road safety audit is not common (See Table A3.3, Appendix 3).

5.6.4.4 Entry & exit of vehicles to and from RTRC

There is an important traffic of mixed vehicles on the corridor.

Comprehensive safety standards and rules and related safety equipment have been set to govern the entry and exit of vehicles in the five countries, but with no associated performance targets (See Table A3.4, Appendix 3).

5.6.4.5 Entry & exit of road users to and from RTRC

As the main victims of accident on the corridor are pedestrians and two-wheelers specified RTRC safety standards and rules and related compliance regimes should clearly address the safety priorities of these high-risk road user groups.

For each category of driver (private, commercial, public), less compliance regimes are in place to ensure adherence to the specified existing safety standards and rules. More information is required on the speed limits by network and road user categories (See Table A3.5, Appendix 3).

5.6.4.6 Recovery & rehabilitation of crash victims

In each country, the corridor concentrates nearly 40% of the victims.

For each category of post-crash service (prehospital, hospital, and long-term care), RTRC compliance regimes are not in place to ensure adherence to the specified safety standards and rules to achieve the desired focus on results (See Table A3.6, Appendix 3).

5.6.5 Synthesis / Recommendations

The only improvement on this corridor about road safety is the rehabilitation of some parts from 2 lanes to 2 × 2 lanes, and even this improvement has to be assessed by a risk analysis based on accident data, because the road safety audits have not been made. Otherwise, no special concern is made in the five countries about the road safety on the corridor. ALCO has to mobilize the resources and the institutions to set up a road safety policy. In the light of this inventory, ALCO member countries must include road safety in their development strategies by investing in infrastructure, adopting

community legislation and harmonizing their information, especially on injury accident. The corridor plan could be the opportunity to harmonize the accident data collection systems, the speed limits and the allowance of heavy vehicles and buses. Only then it would possible to have a safe corridor. Ghana and Benin could be the main supporters of the future project as they have the best capacities about road safety management, data collection systems, and road safety interventions.

6 General discussion on recommendations and next steps

SaferAfrica project aims at establishing a Dialogue Platform between Africa and Europe focusing on road safety and traffic management issues. The main objective of work package 3 is to assess the implementation of Action Plan 2011–2020 (AU-UNECA, 2010). This assessment is supported by analyses completed at different scales (continental, regional, economic communities/corridors and country). The second main objective is to define some initiatives for different topics designed to foster the implementation of the Action Plan. For the African region level, the choice was made to focus upon the analysis of the recommendations issued from the mid-term review of the African Road Safety Action Plan (ARSAP) (AU-UNECA, 2015a, 2015b) and SWOT and PESTEL approaches through the different pillars of the Action Plan. For the country level, 5 countries were chosen for a detailed evaluation: Burkina Faso, Cameroon, Kenya, South Africa and Tunisia. For these countries the analysis has been based on results of the analysis with a five pillar approach applied to the country and on results and knowledge of partners having a god understanding of the country. An analysis is also conducted on Corridor Abidjan-Lagos, involving 5 countries: Ivory Coast, Ghana, Togo, Benin and Nigeria for which the same approach is applied.

Data was collected through a questionnaire distributed by WP4 and international databases (mainly WHO data). As previously asserted, obtaining road safety data in African countries was a very difficult task to complete. Moreover, the analysis has to deal with a lot of non-responses and lack of information. For this reason, a detailed analysis per pillar was chosen (Chapter 4), by producing information on performances but also on Non-answer scores, in order to have the least biased vision of performances.

The question of reliability of the data is a crucial issue for all countries in the world and particularly for Africa. So, a specific process of data validation has been proposed and realized by partners in order to reinforce the quality of the information and of the analysis. Our analysis is, thus, based on inputs form questionnaires, international databases and expert's knowledge (see Chapter 2). Of course few mistakes could remain in our material.

Table 74: Reminds presents Global Performance scores for the 5 pillars

GLOBAL SCORE	Benin	Botswana	Burkina Faso	Cameroon	Congo	Gambia	Guinea	Kenya	Lesotho	Malawi	Mali	Mauritius	Nigeria	Senegal	Sierra Leone	South Africa	Swaziland	Tanzania	Togo	Tunisia
Pillar 1 : Road safety management																				
Pillar 2: Safer roads and mobility																				
Pillar 3 : Safer vehicles																				
Pillar 4 : Safer road users																				
Pillar 5 : Post crash response																				
Total score pillar evaluation																				

As presented in conclusion of chapter 4:

- Five countries seem to have quite good results at the global level and for all pillars (Burkina-Faso, Congo, Mali, Nigeria and South-Africa). These performances are even very good for 4 pillars for Burkina-Faso.

- The most part of the countries shows no good results (less than 50% of good performances on items) and have clearly to progress. For these countries, main efforts have to be focused upon first on pillars 2 and 5, and then on pillar 3, pillar 1 and pillar 4.
- Four countries have the lowest results (Gambia, Guinea, Kenya and Swaziland). For these four countries, scores are very low for all pillars and for each pillar for the most part of sub-items

Based on this data and methodological choices, results allow us to highlight some recommendations that were proposed by mid-term review of the ARSAP and which are still reliable and new recommendations which are important in order to improve Road Safety in Africa.

Concerning pillar 1, this evaluation confirms improvements are still necessary. Some statements can be also highlighted:

- Concerning the item related to evaluation of an *Established and the strengthening of lead agencies*, the African Countries has to strengthen the institutional framework by consolidating the current position and the prerogatives of the lead agency where it exists, and to develop and complete its fields of operation.
- Dealing with the *Improved management of data* item, the African countries have to develop consistent and systematic collection of data, making possible detailed analysis and evaluation, and ultimately helping public bodies for designing their public policy.
- Finally for the item related to *Develop and strengthen partnership and collaboration*, countries have to keep enforcing cooperation with NGOs and private sector representatives where it is already at work and to sustain effort for developing further cooperation where it is partially operated or inexistent.

Concerning pillar 2, our study confirms road safety audit and inspection guidelines are hardly available (only in South Africa) to technicians in the selected countries, even if it must be stated that 65% of respondents did not provide any answer. Therefore, the recommendation on the adoption of guidelines for RSA and RSI is still valid. Moreover, based on the highlighted findings, the following recommendations can be suggested:

- To establish, where not existing, or improve a technical structure with high capability in road infrastructure safety management providing a statutory budget and the necessary training to be fully operational and capable.
- To improve the existing crash data collection system both in terms of coverage (crashes in rural roads seem to be highly under-reported), commitment and tools.
- To develop the required expertise and premises for establishing road safety audit and inspection procedures.

Concerning pillar 3, the Global Plan for the Decade of Action for Road Safety 2011-2020 does not contain considerations on how to manage the existing car fleet and how to ensure the suitability of vehicles once they are registered and in use. Nevertheless, the governments of African countries and other parts of the world have already identified that need and are defining and implementing provisions to ensure vehicles' roadworthiness. In order to have a comprehensive approach of the pillar vehicles, it is necessary:

- To consider them in all the stages of their life: New vehicles (new initiatives like NCAP for instance); Used vehicles in international trade (minimal technical requirements for used

vehicles being registered for the first time in a country); In-use compliance (Periodical vehicle inspection, road-side inspection and data analysis); Modification of vehicles (ensure vehicles' whole-life compliance, checking that vehicle transformations fulfil safety requirements).

- Side factors to consider are also: To ensure the registration of all kind of vehicles, and in particular of the two- and three-wheelers because of their big impact in fatalities and injuries; To promote a skilled, equipped and country-wide network of workshops that ensure repair and maintenance; To ensure the availability of quality spare parts.
- The most important needs from the institutional point of view are: To ensure the commitment of all the involved departments: transport, police, customs, taxation, etc.; To ensure the skills and capability of the responsible officers to manage the whole vehicle-compliance scheme; to communicate the benefit of these activities to the relevant stakeholders and to the ensemble of the population.

Concerning pillar 4, firstly it is noted whether the recommendations from the interim review are also recommendations from this current evaluation of actions against the ARSAP (items A and B), and then further, new recommendation are made based upon the global performance. Concerning the items from the interim review:

- Promote the use of child restraints (item A) split into regulation and campaigning: More action needs to be taken in respect of child restraints; this includes both establishing laws and promoting use. This should also be complemented with the introduction of regulations relating to appropriate standardised fixings for child restraints, integral to passenger carrying vehicles such as ISOFIX.
- Establish or strengthen Road Safety Clubs in Schools (item B): Whilst there seems to be progress in relation to educating children in safe road user behaviour, this should still be considered a priority due to the vulnerability of children as road users, particularly as pedestrians or cyclists.

The following new recommendations are made related to the road user behaviour, based upon the information available from the current review:

- Dedicate financial and human resources for the implementation of policies relating to the road user behaviour.
- Build capacity for monitoring and evaluating road safety interventions
- Encourage the collection of exposure data
- Encourage monitoring of public acceptance of road safety measures in order to identify education and awareness campaigns to maximize effects.
- Similarly, identify the training needs for those individuals involved in road safety implementation process
- Seat belt laws exist in almost all countries however these seem to relate mainly to drivers; laws should be enhanced to include all vehicle occupants. This should be in conjunction with vehicle standards governing the fitment of seat belts in all occupant positions.
- Enhance national helmet laws to include a requirement that the helmet is fastened and meets required safety standards.
- More action could be taken in relation to road user education and campaigning potentially staring by targeting vulnerable road user groups.
- Rear seat occupant protection should be further encouraged.

Concerning pillar 5, two kinds of recommendations can be proposed, first recommendations issued form the mid-term ARSAP evaluation, and second recommendations issued form our pillar Analysis. Recommendations identified in the mid-term ARSAP evaluation and still relevant for the coming years for African countries especially:

- Provide a universal 3 digits emergency telephone
- Develop long-term hospital trauma care and rehabilitations
- Promote emergency medical services coordinating centres at strategic locations
- Develop the coverage of emergency assistance

Concerning recommendation identified in the mid-term evaluation and which should be modified: "Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment" should be replace by:

- Developing a protocol for the transport injured people at all spatial levels and with all people potentially active (for example, taxi drivers, members of associations… and of course Health associations and Bodies).

The importance of First Aid and of first aid training (especially for commercial drivers, by-standers, and all those passing their driving-license exam) should be highlighted.

Additional recommendations due to SaferAfrica Pillar analysis concerning pillar 5 are:

- Developing links at high and strategic level between health sector and road safety authorities
- Developing an evaluation culture based on reporting procedures for fatalities and injuries, in both health and road safety sectors
- Reinforce fatality and injury reporting linked to crash databases that link police and hospital data

To conclude, this evaluation clearly highlights that ARSAP mid-term evaluation recommendations are still relevant and have to be enhanced in most African Countries.

Secondly, ARSAP mid-term evaluation proposes few recommendations for the pillars 3 and 4. Our analysis is able to propose some additional recommendations for those items, for example:

- Develop standards for full lifecycle of vehicles (old and news)
- Promote the use of child restraints

At least, based on our different contributions (dashboard presented in chapter 3, analysis per pillar detailed analysis per country and for Abidjan-Lagos Corridor), two major recommendations could be made. They concern all pillars. African Countries have to:

- Develop consistent and systematic collection of data, in order to help public bodies for designing their public policy.
- Enforce cooperation with NGOs and private sector representatives.

The main objective of SaferAfrica project is to provide African Countries tools for their road safety politics. These recommendations have now to be discussed with national contacts and authorities in charge of road safety, per country and with UNECA.

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8 List of Abbreviations

ALCO	Abidjan-Lagos corridor
ARSAP	Africa Road Safety Action Plan
ATPR	Association Tunisienne de la Prévention Routière (Tunisian Prevention Road association)
AU	African Union
BAAC	Bodily Injury Accident Analysis Bulletin
BAC	Blood Alcohol Content
EC	European Commission
ECE	Economic Commission Europe
CSS	Conseil Supérieur de la Santé" (High Council for Health) (Tunisie)
CHU	Centre Hospitalier Universitaire (University Hospital Centers)
GBD	Global Burden of Disease
GDP	Gross Domestic Product
FTUSA	Tunisian Federation of Insurance Companies
IHME	Institute for Health Metrics and Evaluation
ITF	International Transport Forum
IRF	International Road Federation
IRTAD	International Road Traffic Accident Database
NAASMA	National Association of Automobile Manufacturers of South Africa
NCAP	New Car Assessment Program
NGO	Non-governmental organizations
NRS	National Road Safety Strategy
OECD	Organisation for Economic Co-operation and Development
PRI	Prevention Road International association
PTW	Powered two-wheeler
RSMCR	Road Safety Management Capacity Review
RTRC	Regional Trade Road Corridor
SAMU	Emergency Medical Aid Service
SDG	Sustainable Development Goal
SSATP	Africa Transport Policy Program
TEN-T	Trans European Network Transport
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNECE	United Nations Economic Commission for Europe
VRU	Vulnerable Road User
WHO	World Health Organisation
WRS	World Roads Statistics

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11 Appendices

11.1 Appendix 1: Identification of experts for data validation per country

Country	Expert
BENIN	Casimir Sanon, Eugène Dakitsè
BURKINA FASO	Eduard Fernandez, Casimir Sanon
BOTSWANA	Govert Schermers
CAMEROON	Davideshingo Usami
CONGO Kinshasa (DRC)	Stephanie Aketch
GAMBIA	Thierry Zagré
GUINEA	Amakoe Adolehoume, Sylvian Lassarre
KENYA	Stephanie Aketch, Govert Schermers
LESOTHO	Govert Schermers
MALAWI	Thierry Zagré
MALI	Casimir Sanon, Amakoe Adolehoume, Sylvian Lassarre
MAURITIUS	Govert Schermers
NIGERIA	Thierry Zagré
SENEGAL	Amakoe Adolehoume, Sylvian Lassarre
SIERRA LEONE	Nadia Wurie
SOUTH AFRICA	Eduard Fernandez, Govert Schermers
SWAZILAND	Govert Schermers
TANZANIA	Stephanie Aketch
TOGO	Stephanie Aketch, Fatonzoun Innocent, Amakoe Adolehoume, Sylvian Lassarre
TUNISIA	Joël Yerpez, Dominique Mignot

11.2 Appendix 2: Pillar matrices

11.2.1 Pillar 1 Matrix

Pillar 1 Road Safety Management

Institutional organization and coordination 9pts	NA	Yes	No	Questions related
Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS?				b1
Does it operate under the Head of the State or the Parliament?				b1b
Is the high-level decision-making institution meeting regularly?				b1f
Does Parliament have a prominent role in initiating decision-making on road safety orientations or directions?				b2
Has a Lead Agency been formally appointed to take responsibility for road safety (direct the national road safety effort)?				b4
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?				b5
Is the technical inter-sectoral institution endowed with a statutory (law or decree established) budget for fact finding or implementins RS measure?				b5h
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)?				b8
Are the legislative instruments defining inter-sectoral road safety management functions periodically reviewed and reformed?				b9
	0	0	0	**Mean** 0

Institutional organization and coordination 9pts	NA	Yes	No	Questions related
Are some government agencies actively advocating the need for taking road safety action?				**b10**
Are there NGOs actively promoting road safety?				**b11**
Are regional authorities consulted as to the part they are called to play in national road safety policy?				**b12**
Are local authorities (municipalities, counties) consulted as to the part they are called to play in national road safety policy?				**b14**
Has a national "vision" for improved RS performance in the long term officially been set?				**b16**
Have national medium-term (four to ten years) quantitative targets been set for improved safety performance?				**b17**
Are the targets based on mordidity indicators?				**b17b**
Have sectoral quantitative targets or performance indicators also been set to mobilize RS actors?				**b17d**
Has a national medium term road safety programme been elaborated?				**b19**
	0	0	0	**Mean** 0

Policy Implementation and Funding 11 pts	NA	Yes	No	Questions related
Have partnerships or agreements been established at the national level with the private sector?				**b21**
If a national road safety programme has been elaborated and adopted has the budget needed for programme implementation been estimated?				**b22**
Has a high level engagement (decision) been taken to ensure availability of a budget for road safety?				**b24**
Does the government allocate the product of fines (or any funds collected from RS measures) to road safety interventions or related activities?				**b25**
Is there a budget specifically allocated to road safety activities, interventions and capacity building from the national budget (Treasury)?				**b26**
Is there a sustainable funding structure for road safety, independent from the Treasury (RS Fund, RS Foundation)?				**b27**
Are there formal resource allocation procedures to support road safety management tasks and interventions?				**b28**
Are the funds allocated sufficient to implement the programme or policy components of the RS policy?				**b30**
Are the legislative instruments and procedures regularly reviewed and improved concerning the funding mechanism of the RS policy?				**b32**
Are the human resources needed to implement the programme or policy components of the RS policy?				**b31**
Have training plans been designed to support implementation of the national road safety programme or policy components?				**b33**
	0	0	0	**Mean** 0

Monitoring and Evaluation 11 pts	NA	Yes	No	Questions related
Are sustainable and reliable systems (durable, funded, maintained) in place to collect and manage data on road accidents, fatalities and injuri				**b34**
Are sustainable and reliable systems in place to collect and manage data on road safety behavioural indicators?				**b36**
Is there a national Observatory centralizing the data systems for road safety?				**b37**
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country?				**b38**
Is it performed "horizontally" at the national level (covering ministries and government agencies)?				b38d
Is it performed "vertically" to cover activities at the regional and/or the local level?				b38e
Has a procedure been set up to evaluate safety performances of the national programme or policy?				b39
Is "benchmarking" used to monitor progress in the road safety situation relatively to other countries?				b40
Does some "process evaluation" of safety interventions take place during the implementation period of the programme?				b41
Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs of some policy components				b42
Web resources				C8
	#VALEUR!	0	0	**Mean** #VALEUR!

Scientific support and Knowledge and capacity building 6pts	NA	Yes	No	Questions related
Is there at least one institute or university department in your country performing multi-disciplinary road safety research and studies?				b43
Are there steady research teams?				b43a
Are the teams of road safety researchers in the country systematically requested by policy-makers to contribute knowledge for policy formulation?				b44b
Are there articles or programmes in the media on road accidents and/or on road safety activities which review, criticize or challenge current policies?				b47
Is there at least one university (or other superior education structure) providing a multi-disciplinary course on road traffic safety for students?				b48
Do universities or other educational institutions offer specialized courses addressing future professionals who may be involved in road safety?				b49
	0	0	0	Mean 0

Key road safety resources 11pts	NA	Yes	No	Questions related
Do you use any international road safety databases/information sources?				c1
Do you use any national databases/information sources?				c2
Use of exposure data(e.g. kilometres driven, numbers of trips)?				D1h
Use of statistical methods for priority setting?				D1i
Existence of information on the socio-economic cost of crashes, fatalities and injuries?				D1q
Existence of statistical models and tools for priority setting?				d3a
Existence of information on the impacts of road safety measures on other sectors policies?				d3b
Existence of standardised procedures and methods for evaluating road safety measures?				d3c
Information on the costs and benefits of a road safety measure?				d3f
Information on the public acceptance of road safety measure?				d3g
Good practice catalogue of measures including implementation conditions?				d3k
	0	0	0	**Mean** 0

No regulation information is used here and required, because it is already included through the other pillar scores.

Total score				
Min 0	Max 57	**Total**	0	**Mean** #VALEUR!

11.2.2 Pillar 2 Matrix

Pillar 2 Safer Road and Mobility

Institutional dimension	7 pts				
		NA	Yes	No	Questions related
Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? Including a representant for Urban Planning, Transport and Traffic Planning, Road infrastructure					b1c
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? Including a representant for Urban Planning, Transport and Traffic Planning, Road infrastructure					b5d
Is the technical inter-sectoral institution endowed with a statutory (law or decree established) budget - to implement some road safety interventions?					b5h
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree) Including-representatives of Professional organizations (Transport, traffic…) ?					b8a
Have sectoral quantitative targets or performance indicators been set to mobilize RS actors in the fields of Urban Planning, Transport and Traffic Planning, Road infrastructure?					b17d
Are the funds allocated sufficient to implement the programme or policy components adopted in Rural infrastructure, Urban infrastructure, Transport and traffic planning?					b30
% of road projects cost dedicated and spent on road safety infrastructure (Is an effective safety engineering unit available?)					
		0	0	0	**Mean** 0

Organisational dimension and Monitoring	10 pts				
		NA	Yes	No	Questions related
Are the human resources needed to implement the programme or policy components adopted sufficient in Rural infrastructure, Urban infrastructure, Transport and traffic planning?					b31
Have training plans been designed to support implementation of the national road safety programme or policy components? after exploring the needs for knowledge of Road engineers and policemen					b33a
Are sustainable and reliable systems (durable, funded, maintained) in place to collect and manage data *on road accidents, fatalities and injuries?*					
	at national level				b34a
	at regional level				b34b
	at local level				b34c
Are sustainable and reliable in-depth accident investigations for road safety purposes in place?					b35
Is there a national Observatory centralizing the data systems for road safety? Including exposure, infrastructure					B37a
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country? Concerning Engineering measures on rural roads, planning and engineering interventions in urban areas					B38b
Is the reporting periodical?					B38a
Does some "process evaluation" of safety interventions take place during the implementation period of the programme? Concerning infrastructure and/or different areas					B41a
Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs ? Concerning infrastructure					B42a
Training of Road Safety professional					
		0	0	0	**Mean** 0

Key road safety resources	3 pts				
		NA	Yes	No	Questions related
Do you use any national databases/information sources concerning Travel/mobility survey results:?					C2
Please indicate both priority and availability of the following data and resources					D1
	The use of GPS and/or GIS technologies in accidentdata collection				D1f
	Exposure data(e.g. kilometres driven, numbers of trips				D1h
	Results from in-depth crash investigations				D1j
	Results from naturalistic driving studies				D1k
	Results from driving simulator studies				D1l
	Information on the effect of external factors on the number of road traffic crashes				D1m
	Information on frequent crash scenarios and patterns				D1n
	Information on crash causation factors				D1o
	National Road Safety Audit/Inspection Guidelines				
		0	0	0	**Mean** 0

Road Safety Data & measueres	8 pts					
Road fatalities data		value	NA	Yes	No	Questions related
	Fatalities on motorways					E2b
	Fatalities on urban roads					E2b
	Fatalities on rural roads					E2b
	Number of Injuries					E2b
	Number of hospitalized road accident casualties					E2b
	Number of hospitalized road accident casualties with MAIS>3 score					E2b
Risk exposure						Questions related
	Vehicle km of travel (all vehicles)					E2c
	Vehicle km of travel (passenger cars)					E2c
	Vehicle Km of travel (motorcycles)					E2c
	Vehicle Km of travel (HGV)					E2c
	Length of road network (total)					E2c
	Length of motorways					E2c
	Length of rural roads					E2c
	Length of paved roads					E2c
	Length of road tunnels					E2c
	Modal split road/rail					E2c
	Modal split passenger/freight					E2c
	Modal split private/public					E2c
	Number of registered vehicles (total)					E2c
	Number of passenger cars					E2c
	Number of HGV					E2c
	Number of power two wheelers					E2c
Pilot Road Safety project on high-risk corridors						
Road Safety facilities for vulnerable road users						WHO
Road Safety audits on rural roads						
Treatment of HRS						E2d
RSA compulsory on new roads						E2d
		value				
Number (and length) of Road Safety Audits conducted		0				E2e
Formal audits required for new road construction projects						WHO
Regular inspections of existing road infrastructure						WHO
			0	0	0	**Mean** 0

Total score						
	Min 0	Max 28	**Total**	0	**Mean**	0

11.2.3 Pillar 3 Matrix

Pillar 3 Safer Vehicles

Institutional dimension 6 pts				
	NA	Yes	No	Questions related
Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? Including a representant for Vehicle or ITS				b1c
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? Including Vehicles				b5d
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)? Including- Businesses related to transport or traffic (vehicle manufacturers or importers, insurance companies, etc.)				b8a
Are the funds allocated sufficient to implement the programme or policy components adopted in the vehicle sector?				B30
Are the human resources needed to implement the programme or policy components adopted sufficient in the vehicle sector?				b31
Is there any authorities structures in charge to ensure whole life vehicle suitability?				
	0	0		**Mean** 0

Organisational dimension and Monitoring 8 pts				
	NA	**Yes**	**No**	**Questions related**
Is there a national Observatory centralizing the data systems for road safety? Including Vehicle registration data				B37a
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country? Concerning vehicle intervention				B38b
Is the reporting periodical?				B38a
Does some "process evaluation" of safety interventions take place during the implementation period of the programme?				B41a
Has an evaluation process been planned to assess the effects on accidents and injuries orsocio-economic costs ?				B42a
REGISTRATION				
Is it mandatory the registration of passenger cars?				
Is it mandatory the registration of motorcycles and mopeds?				
Is it mandatory the registration of heavy duty vehicles?				
Is it mandatory the registration of trailers?				
Is it mandatory road vehicle insurance?				
Are there provisions to ensure the quality of repair workshops?				
	0	0		**Mean** 0

Key road safety resources 3 pts				
	NA	**Yes**	**No**	**Questions related**
Do you use any national databases/information sources?				C2
Please indicate both priority and availability of the following data and resources				D1
Results from in-depth crash investigations				D1j
Results from naturalistic driving studies				D1k
Results from driving simulator studies				D1l
Information on the effect of external factors on the number of road traffic crashes				D1m
Information on frequent crash scenarios and patterns				D1n
Information on crash causation factors				D1o
Is the accuracy of crash data sufficient?				
	0	0		
				Mean 0

Regulation 8 pts				
	NA	**Yes**	**No**	**Questions related**
TECHNICAL INSPECTION				
Technical inspection mandatory for passenger cars				E2d
Technical inspection mandatory for motorcycles				E2d
Technical inspection mandatory for heavy duty vehicles				
Port-of-entry inspection is mandatory				
Laws that prohibit the use of vehicles without seatbelts (front and rear).				E2d
Vehicle standards-seat belts and achorages				E2d
VEHICLE ST ANDARDS				
Vehicle standards-Frontal impact				E2d
Vehicle standards-Side impact				E2d
Vehicle standards-Electronic Stability Control				E2d
Vehicle standards-Pedestrian Protection				E2d
Parts standards-Child Seats				E2d
Parts standards-motorcycle helments				
VEHICLE ST ANDARDS - HDV				
Vehicle standards-ADR (transport of dangerous goods)				
Vehicle standards-tachograph				
Vehicle standards-speed limiters for heavy-duty vehicles				
Vehicle standards-School busses				
ADDITIONAL				
Are there provisions for road-side inspections?				
Are there provisions to ensure the suitability of spare parts?				
Are there provisions to ensure the suitability of vehicle's modifications?				E2d
Are there provisons to ensure the enforcement of all the above?				
	0	0		
				Mean 0

Total score							
	Min 0	Max 25	**Total**	0	**Mean**	0	

11.2.4 Pillar 4 Matrix

Pillar 4 Safer Road Users									
Institutional dimension	5 pts								
				NA	Yes	No	Questions related		
Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS?							b1d		
Including a representant for NGO									
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?							b5d		
Including traffic education, training and licensing									
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)?							b8a		
Including- Businesses related to transport or traffic education, training and licensing etc.									
Are the funds allocated sufficient to implement the programme or policy components adopted in the traffic education, training or licensing sector?							B30		
Are the human resources needed to implement the programme or policy components adopted sufficient in the traffic education, training or licensing sector?							b31		
				0	0		**Mean**		0
Organisational dimension and Monitori	6 pts								
				NA	**Yes**	**No**	**Questions related**		
Are sustainable and reliable systems in place to collect and manage data on behavioural indicators (speed, alcohol, safety belt, etc.)							B36		
Is there a national Observatory centralizing the data systems for road safety? Including licences, exposure, injuries, behavioural data							B37a		
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country ? Concerning traffic education and training							B38b		
Is the reporting periodical?							B38a		
Does some "process evaluation" of safety interventions take place during the implementation period of the programme?							B41a		
Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs ?							B42a		
				0	0		**Mean**		0
Key road safety resources	5pts								
				NA	**Yes**	**No**	**Questions related**		
Do you use any national databases/information sources (travel/mobility survey and data)?							C2		
Please indicate both priority and availability of the following data and resources							D1		
	Information on road users and behaviour and attitudes						D1g		
	Exposure data						D1h		
	Results from driving simulator studies						D1l		
	Results from in-depth crash investigations						D1j		
	Information on frequent crash scenarios and patterns						D1n		
	Information on crash causation factors						D1o		
Information on the public, acceptance of road safety measure						1	D3g		
Tools for simulating road user behaviour						1	D5f		
Methods to assess the training needs of individuals involved in road safety implementation process						1	D5i		
				0	0				
							Mean		0
Regulation	12.5 pts								
				NA	**Yes**	**No**	**Questions related**		
Existence of national speed limit law							E2d	WHO	
Existence of child restraint law							E2d	WHO	
Existence of a national helmet law							E2d	WHO	
Law requires helmet to be fastened							E2d	WHO	
Law refers to helmet standards							E2d	WHO	
Existence of law on mobile phone use while driving							E2d	WHO	
Demerit/Penalty Point System in place							E2d		
Existence of national drink-driving law							E2d	WHO	
BAC limits (general)							E2d	WHO	
BAC limits (young/novice drivers)							E2d	WHO	
BAC limits (professional drivers)							E2d		
Exsistence of National Drug Driving Law								WHO	
Driving licences thresholds (minimum ages per category) for passenger cars							E2d	y&N	
Driving licences thresholds (minimum ages per category) for motorcycles							E2d		
Driving licences thresholds (minimum ages per category) for trucks and goods vehicles							E2d		
Compulsory / voluntary education programmes in primary / secondary school							E2d		
Compulsory / voluntary education programmes for particular groups (e.g. elderly, bicyclists)							E2d		
Regulations to wear seat belts								WHO	
Comulsory SB wearing FSO and encourage RSO								WHO	
Strengthen drivers' training, testing and licencing standards and rules									
Regulate vehicle operation times and drivers' working and resting hours									
Undertake and intensify safety awareness campaigns (general)									
Promote public awareness campaign on benefits of helemets									
Promote use of child restraints									
Campaign against speeding									
				0	0		**Mean**		0
			Min 0	Max 28.5	**Total**	0	**Mean**	0	

11.2.5 Pillar 5 Matrix

Pillar 5 Post Crash Response								
Institutional dimension	5 pts							
					NA	**Yes**	**No**	**Questions related**
Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS? Including a representant for health sector								b1c
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation? Including health sector								b5d
Have sectoral quantitative targets or performance indicators also been set to mobilize RS actors in the fields of health								b17d
Are the funds allocated sufficient to implement the programme or policy components adopted in health sector?								B30
Are the human resources needed to implement the programme or policy components adopted sufficient in health sector?								b31
					0	0	0	**Mean** 0
Organisational dimension and Monitori	5 pts							
					NA	**Yes**	**No**	**Questions related**
Is there a national Observatory centralizing the data systems for road safety? Including accidents, fatalities and injuries								B37a
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country ? Concerning health dimension								B38b
Is the reporting periodical?								B38a
Does some "process evaluation" of safety interventions take place during the implementation period of the programme?								B41a
Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs ?								B42a
					0	0	0	**Mean** 0
Key road safety resources	5 pts							
					NA	**Yes**	**No**	**Questions related**
Do you use any national databases/information sources morbidity, hospital information)?								C2
Please indicate both priority and availability of the following data and resources								D1
Fatality definition								D1a
Serious injury definition								D1b
Work related crash definition								D1c
Data on the underreporting of road traffic crashes								D1d
Crash databases that link police and hospital data								D1e
Examples of the successful integration of road safety policies with other sector (health)								D1p
Information on the socio-economic cost of crashes, fatalities and injuries								D1q
Information on the impacts of road safety measures on other sectors' policies (environment, health, mobility etc.) and/or vice versa								D3b
				Total	0	0	0	
								Mean 0
Regulation	2 pts							
				Value	**NA**	**Yes**	**No**	**Questions related**
Trauma care training is required for emergency care personnel								E2d - I 142
Estimated % SI patients transported by ambulance								E2d - I 154
Number of ambulances per population								E2d - I 156
Hospital beds per 1000 inhabitants								E2d - I 157
					0	0	0	**Mean** 0
			Min 0	Max 17	**Total**	0	**Mean**	0

11.3 Appendix 3: Abidjan-Lagos Corridor tables

Table A3.1: RS Management capacities of the five countries

	IC	G	T	N	B
Has a Lead Agency been formally appointed to take responsibility for road safety (direct the national road safety effort)?	1	1	0	1	1
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?	1	1	0	1	0
Are local authorities (municipalities, counties) consulted as to the part they are called to play in national road safety policy?	0	0	0	0	0
Have national medium-term (four to ten years) quantitative targets been set for improved safety performance?	1	1	0	1	0
Have partnerships or agreements been established at the national level with the private sector?	1	1	0,5	1	1
Is there a budget specifically allocated to road safety activities, interventions and capacity building from the national budget (Treasury)?	1	1	0	1	1
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country?	0	1	0	0	0
Is there at least one institute or university department in your country performing multi-disciplinary road safety research and/or studies?	0	1	0,2	0	0,5

Table A3.2: RS Management capacities of the five countries

	IC	G	T	N	B
Are sustainable and reliable systems (durable, funded, maintained) in place to collect and manage data on road accidents, fatalities and injuries?	1	1	0	1	0,8
Are sustainable and reliable systems in place to collect and manage data on road safety behavioural indicators?	0	0,5	0	0	0
Is there a national Observatory centralizing the data systems for road safety?	1	1	0	1	1
Do you use any national databases/information sources?	1	1	0	1	1
Use of exposure data (e.g. kilometres driven, numbers of trips)?	0	0	0	0	0
Existence of statistical models and tools for priority setting?	0,5	0	0	0,5	0,5
Existence of standardised procedures and methods for evaluating road safety measures?	0	0	0	0	0

Table A3.3: Planning, design, operation & use of road RTRC of the five countries

	IC	G	T	N	B
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)			1	1	0
Has a reporting procedure been set up to monitor the road safety interventions carried out in the country concerning Engineering measures on rural roads, planning and engineering interventions in urban areas ?				1	0
The use of GPS and/or GIS technologies in accident data collection			0	1	1
Develop & implement National Road Safety Audit/Inspection Guidelines					
Road Safety Audit compulsory on new roads			0	1	1
Number (and length) of Road Safety Audits conducted				1400	
Treatment of High Risk Sites					0
Pilot Road Safety project on high-risk corridors					

Table A3.4: Entry & exit of vehicles to and from RTRC of the five countries.

	IC	G	T	N	B
Is there a national Observatory centralizing the data systems for road safety? Including Vehicle registration data	1	1	1	1	1
Is it mandatory the registration of passenger cars?	1	1	1		1
Is it mandatory the registration of motorcycles and mopeds?	0	0	1		1
Is it mandatory the registration of heavy duty vehicles?	1	1	1		1
Is it mandatory the registration of trailers?	1	1	1		1
Is it mandatory road vehicle insurance?	1	1	1		0,5
Technical inspection mandatory for passenger cars	1	1	1	1	1
Technical inspection mandatory for motorcycles	1	1	1	1	0
Technical inspection mandatory for heavy duty vehicles	1	1	1		1
Port-of-entry inspection is mandatory	1	1	0	1	1
Laws that prohibit the use of vehicles without seatbelts (front and rear).	1	1	0	1	0
Vehicle standards-ADR (transport of dangerous goods)	1	1	1		
Vehicle standards-tachograph					
Vehicle standards-speed limiters for heavy-duty vehicles					
Are there provisions for road-side inspections?					

Table A3.5: Entry & exit of road users to and from RTRC of the five countries.

	IC	G	T	N	B
Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)?	1	1	0	1	0
Are sustainable and reliable systems in place to collect and manage data on behavioural indicators (speed, alcohol, safety belt, etc.)	1	1	0	1	0
Is there a national Observatory centralizing the data systems for road safety? Including licences, exposure, injuries, behavioural data	1	1	0	1	0
Availability Information on road users and behaviour and attitudes	1	1	1	1	0
Availability Exposure data	1	1	0	1	0
crash scenarios and patterns	1	1	1	1	0
Existence of national speed limit law	1	1	0	1	0
Existence of child restraint law	1	1	0	1	0
Existence of a national helmet law	1	1	1	1	1
Law requires helmet to be fastened	1	1	0	1	0
Law refers to helmet standards	0	0	0	1	0
Existence of law on mobile phone use while driving	1	1	1	1	1
Demerit/Penalty Point System in place	1	1	0	1	0
Existence of national drink-driving law	1	1	1	1	0
BAC limits (general)	0	0	0	1	0
BAC limits (professional drivers)	1	1	0	1	0
Existence of National Drug Driving Law	1	1	1	1	0
Driving licences thresholds (minimum ages per category) for passenger cars	0	0	1	1	1
Driving licences thresholds (minimum ages per category) for motorcycles	1	1	1	1	
Driving licences thresholds (minimum ages per category) for trucks and goods vehicles	0	0	1	1	
Compulsory / voluntary education programmes in primary / secondary school	0	0	0	1	0
Compulsory/voluntary education programmes for particular groups (elderly, bicyclists)	1	1		1	0
Regulations to wear seat belts	1	1	1	1	0
Compulsory SB wearing FSO and encourage RSO	1	1	1	0	0
Strengthen drivers' training, testing and licencing standards and rules	1	1			
Regulate vehicle operation times and drivers' working and resting hours	1	1			
Undertake and intensify safety awareness campaigns (general)	1	1			
Promote public awareness campaign on benefits of helmets	1	1			
Promote use of child restraints	0	0			
Campaign against speeding	1	1			

Table A3.6: Recovery & rehabilitation of crash victims of the five countries.

	IC	G	T	N	B
Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?	1	1	0	1	0
Is there a national Observatory centralizing the data systems for road safety? Including accidents, fatalities and injuries	1	1	0	1	1
Do you use any national databases/information sources morbidity, hospital information)?	1	1	1	1	1
Data on the underreporting of road traffic crashes	1	1	0,9	1	0,9
Estimated % SI patients transported by ambulance					
Item 11 - Health facilities along main highways with emergency medical system supplies and facilities	1	1			
Item 5 - Universal 3 digits emergency telephone communication system	1	1	1	1	1
Item 3 - Emergency medical services coordinating centres at strategic locations	0	0	1	1	0
Item 8 - Providing fully equipped ambulances with medical supplies, and crash extraction and rescue equipment	0	0			
Developing capacity for long term hospital trauma care and rehabilitation	1	1			
Item 2 - 3rd Party Motor Insurance Law to ensure rehabilitation of crash victims	1	1			
Item 10 - Train technicians in rescue operations & handling crash extraction tools	0	0			
Item 4 - Fully equipped ambulances and medical supplies for each dispatch centre	0	0	1	1	