SSATP
Africa Transport Policy Program

DECADE OF ACTION FOR ROAD SAFETY 2021 2030

A Road Safety Performance Monitoring Framework for African Countries

November 2024

SSATP is an international partnership supported by:

Schweizerische Eidgenossenschaft
Confédération suisse
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Federal Department of Economic Affairs, Education and Research EAER
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The SSATP is an international partnership to facilitate policy development and related capacity building in the transport sector in Africa.

Sound policies lead to safe, reliable, and cost-effective transport, freeing people to lift themselves out of poverty and helping countries to compete internationally.

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The findings, interpretations, and conclusions expressed here are those of the author and do not necessarily reflect the views of the SSATP or its partners.

Table of Contents

Figures

Tables

Acknowledgments

This framework for monitoring road safety performance in African countries was commissioned by the Africa Transport Policy Program (SSATP) and supervised by Haileyesus Adamtei (World Bank Senior Transport Specialist, SSATP Road Safety Pillar Co-lead). It was developed by Dr. Kunsoan Noella Bajia (Lead Consultant) with valuable input and support from Marisela Ponce de Leon Valdes (World Bank Senior Transport Specialist, SSATP Road Safety Pillar Lead), Dr. Eva M. Eichinger-Vill (Senior Consultant, Global Road Safety Facility [GRSF]), and Arif Uddin (Transport Specialist, GRSF), who reviewed and provided profound insights that helped refine the framework. Special thanks to Mustapha Benmaamar (Program Manager, SSATP) for his leadership in this process.

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Abbreviations

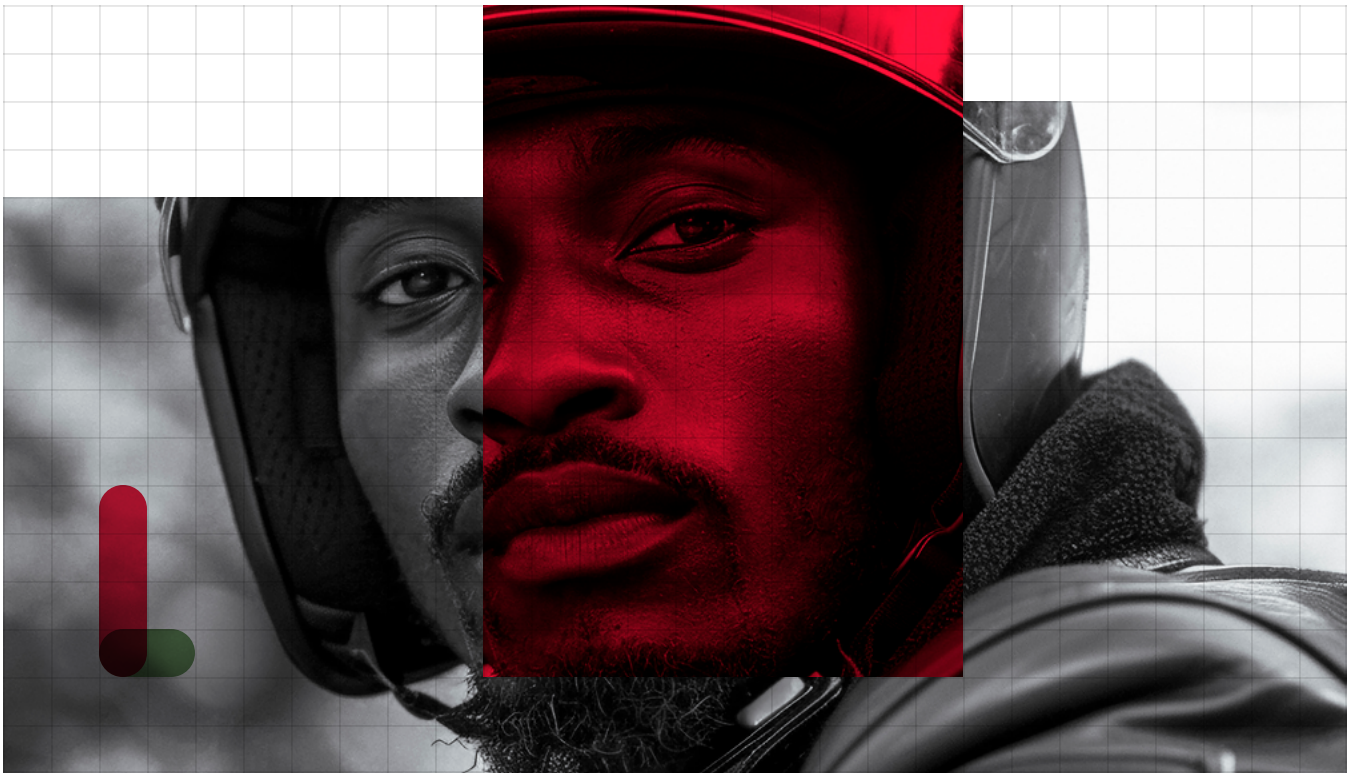
ARSO	African Road Safety Observatory
AU	African Union
BAC	blood alcohol concentration
DoA	UN Decade of Action for Road Safety 2021–2030
EAC	East African Community
EMS	emergency medical services
GRSF	Global Road Safety Facility
iRAP	International Road Assessment Programme
ITF	International Transport Forum
M&E	monitoring and evaluation
RSM	road safety management
RSPMF	road safety performance monitoring framework
RSLA	road safety lead agency
SDG	Sustainable Development Goal
SPI	safety performance indicator
SSATP	Africa Transport Policy Program
UN	United Nations
WHO	World Health Organization

Executive Summary

Africa continues to sustain significantly high road traffic fatality rates, which can be reduced through fast-tracked investment in road safety measures. Responding to this crisis, African countries adopted the United Nations Decade of Action for Road Safety 2021–2030 with its 12 voluntary global road safety performance targets, through the African Road Safety Action Plan 2021–2030. To fast-track Africa's progress toward the reduction of road traffic crashes by half by 2030 and other targets, it is important to develop a road safety performance monitoring framework. Experience has shown that monitoring outputs and final outcomes is not optimal without monitoring changes in road traffic operational conditions that have causal links to the final outcomes. Monitoring intermediate outcomes or safety performance indicators in Africa is currently disjointed and does not provide sufficient information to improve intervention strategies.

This framework provides a list of minimum road safety performance indicators relevant to the road safety context of African countries that are recommended for adoption by countries to monitor their progress toward achieving the set targets of the UN Decade of Action for Road Safety 2021–2030. The 14 road safety performance indicators, if adopted, can explain changes in the operational conditions of the road transport system, which in turn can explain the patterns of road traffic fatalities and injuries. A reporting architecture indicates levels and responsibilities of reporting the performance from the national level to the global level. The framework also provides a guide on the required data to provide countries with a snapshot of the data needs that accompany the monitoring of safety performance indicators.

Several data challenges exist in Africa, which can hinder the efficient implementation of this framework. This report summarizes these challenges as well as some mitigation strategies. The framework is expected to spur demand for data that may not have been collected before and therefore trigger partnerships toward the development and sustainability of road safety monitoring capacity in Africa.



Introduction

Acknowledging the significance of developing a road safety performance monitoring framework (RSPMF) to systematically monitor the road safety performance of African countries, the Africa Transport Policy Program (SSATP) mandated the creation of such a framework. This framework aims to facilitate periodic assessment of a country's road safety status and the subsequent implementation of appropriate corrective measures in a timely manner. The RSPMF for Africa was designed in alignment with the pillars of the UN Decade of Action for Road Safety and 12 voluntary global road safety performance targets set by the African Road Safety Action Plan 2021–2030.

This section provides a background and context for the RSPMF and its objective. The RSPMF is presented in section 2. Section 3 examines the data collection methodologies, potential data issues, and mitigation measures. Section 4 discusses information-sharing mechanisms. Section 5 concludes the report with strategies for implementing the RSPMF.

1.1 Background and Context

Globally, road safety has emerged as a significant public health and development issue: 1.19 million lives were lost in 2021 because of road traffic crashes (WHO 2023). Road safety has posed a significant development challenge for Africa, which has sustained unacceptably high road fatality rates (19 deaths per 100,000 population) compared with the European region (7 deaths per 100,000 population) (WHO 2023).

At the global level, the United Nations General Assembly in September 2020 proclaimed a second Decade of Action for Road Safety 2021–2030 (DoA) with the objective of reducing road traffic fatalities and serious injuries by at least 50 percent by 2030. This global plan recommends five focus areas (pillars): multimodal transport and land use planning, safe road infrastructure, safe vehicles, safe road use, and postcrash response (WHO 2021). It aligns with the UN Sustainable Development Goals (SDGs 3.6 and 11.2) and UN voluntary global road safety performance targets.

At the regional level, using the UN's DoA as a starting point, the African Union (AU) drafted the African Road Safety Action Plan for the Decade 2021–2030, whose pillars are road safety management, safe road infrastructure, vehicle safety, safe road users, and postcrash response. This strategic direction will help African countries adopt and align their road safety interventions to address concerns regarding the indicated pillars in a Safe System approach.

The Safe System approach to road safety is a holistic and proactive approach that aims to ensure a safe transport system for all road users. It acknowledges that people can make mistakes that can lead to road traffic crashes; however, the transport system should be forgiving, and these errors should not lead to death or serious injuries. The Safe System approach rests on five pillars: safe roads, safe speeds, safe vehicles, safe road users, and postcrash care. The convergent nature of the Safe System pillars, the UN DoA pillars, and the pillars of the African Road Safety Action Plan are worth noting and constitute the focus areas of action that African countries are called upon to implement evidence-based interventions to curb the road safety problem of the continent.

Road safety data management is a crucial element that drives the success of this endeavor. In Africa, although many countries collect road safety data, the process often is not comprehensive, nor does it ensure data quality. Data collection methods vary across countries and are not aligned with global targets, complicating benchmarking. Moreover, the Safe System approach has received limited attention because of limited resources, poor road safety data, weak road safety monitoring, and inadequate research to inform evidence-based interventions. Therefore, a monitoring framework is essential to guide comprehensive data collection and tracking of key result areas for a more accurate understanding of a country's road safety landscape and performance. The framework can improve road safety outcomes by holding countries accountable for their safety performance, with measurable progress toward achieving the set targets. As such, a guideline that captures all the elements of the Safe System approach is of great need for African countries to monitor and assess the progress of their road safety management efforts. In this light, the SSATP embarked on the development of an RSPMF for African countries to monitor their performance toward achieving road safety targets and the objective of the Decade of Action for Road Safety 2021–2030.

1.19 million
lives lost globally in 2021 due to road traffic crashes.

19 deaths
per 100,000 population in Africa, compared to 7 in Europe.

50% reduction
in road traffic fatalities and serious injuries targeted by 2030.

1.2 Road Safety Challenges Faced by African Countries

Road Safety Management

Road safety management is one of the pillars of road safety actions and involves the coordinated application of principles, strategies, and techniques to reduce the number and severity of road traffic crashes, injuries, and fatalities. It can be viewed as a systematic process that involves planning, organizing, directing, and controlling resources and activities to achieve road safety objectives. The efforts of various stakeholders, including government agencies, nongovernmental organizations, the private sector, and the community, should be comprehensively integrated to address the complex nature of road safety issues. Based on the African Road Safety Action Plan 2021–2030, effective road safety management is premised on sustainable funding, a fully empowered road safety lead agency, effective data management, developed road safety strategies, ratified road safety–related UN legal instruments, and multimodal transport and land-use planning. The recommended actions for each element are outlined in the African Road Safety Action Plan 2021–2030.

African countries face unique and significant road safety challenges in road safety management, including the following:

I.

Limited resources

Resource constraints significantly hinder the effective management of road safety. These include limited financial resources for road safety initiatives, inadequate human resources with the necessary expertise, and insufficient technological resources for road safety data management (Mitullah, Small, and Azzouzi 2022; Small and Runji 2014).

II.

Weak road safety lead agencies

One of the main challenges hampering road safety improvement in Africa is the lack of effective and coordinated leadership and governance. The World Bank (2020) has noted that most African countries have established lead agencies for road safety management; however, most are not fully empowered or funded to effectively perform institutional management functions or deliver road safety interventions. This negatively affects the development and implementation of evidence-based policies, strategies, and interventions to reduce road traffic crashes and protect road users. A road safety lead agency (RSLA) is a government entity with mandates and responsibilities for coordinating and overseeing all aspects of road safety in the country. It should have the following characteristics: (a) a clear legal status and authority to set road safety goals, targets, indicators, and regulations; (b) adequate human and financial resources for planning, implementing, monitoring, and evaluating road safety activities and programs; (c) strong leadership and political support from the highest level of government and other relevant stakeholders; (d) effective partnerships and collaborations with other sectors and agencies, such as transport, health, education, police, justice, civil society, and the private sector; and (e) the capacity to collect and disseminate reliable and timely data on road crash injuries and fatalities and to use the data for evidence-based decision-making. However, most African RSLAs continue to face significant challenges.

III.

Poor data management

Poor data management and underreporting of road traffic crashes, injuries, and fatalities constitute challenges that affect road safety in Africa (Segui-Gomez et al. 2021; WHO 2023). Accurate data are crucial for comprehending the magnitude and nature of road safety problems, identifying risk factors, designing and implementing effective interventions, and monitoring and evaluating the progress and impact of road safety initiatives; however, many African countries lack a comprehensive and reliable system for collecting, analyzing, and disseminating road safety data. One obstacle is the lack of standardized definitions and indicators for road crashes, injuries, and fatalities, which makes it difficult to compare and aggregate data across various sources and countries. As a remedy, the SSATP provides a minimum set of road safety indicators for data collection, analysis, and reporting for African countries (Segui-Gomez et al. 2021). However, the proposed minimum set of road safety indicators provided by the SSATP mostly relates to crashes, and thus focuses on a higher outcome level. There is a need for a similar harmonization of safety performance indicators at the intermediate outcome level to adequately assess the operational conditions of the road transport system before it results in fatalities. Additionally, a lack of coordination and integration among various agencies and sectors involved in road safety data collection, such as police, health, transport, and insurance, coupled with a lack of resources and capacity to collect, store, manage, and share data constitutes a significant bottleneck in data management. These challenges have led to major underreporting and underestimation of the road safety situation in Africa, thereby hindering the development and implementation of effective policies and programs.

IV.

Inadequate legislation and enforcement

Weak road safety legislation and insufficient enforcement of traffic laws pose major challenges in African countries. Many countries have laws addressing major road safety risk factors that are either outdated or not aligned with best-practice recommendations and not comprehensively enforced, leading to prevalent risky road user behaviors (WHO 2023).

V.

Slow ratification and implementation of UN legal instruments

The ratification and implementation of UN road safety legal instruments has been very slow in African countries. For example, the African Road Safety Charter adopted in 2016 by AU member states provides a framework for road safety policy implementation and accountability in Africa, but only 13 countries have ratified it.[1]

1. Global Alliance of NGOs for Road Safety, “What Is the African Road Safety Charter?” August 10, 2023, https://www.roadsafetyngos.org/africa/what-is-the-african-road-safety-charter

VI.

Weak multimodal transport and land-use planning

Multimodal transport and land-use planning establish an optimal mix of motorized and nonmotorized transport modes to ensure safety and equitable access to mobility while responding to the diverse needs and preferences of the population. It considers diverse transportation options, typically walking, cycling, public transit, and automobiles, and accounts for land-use factors that affect accessibility. The availability of parking for bicycles and private vehicles at bus stops and train stations fosters multimodal commutes; however, this infrastructure is still in its nascent stage in most African countries. In addition, increasing the feeling of safety for pedestrians and cyclists from motor vehicle traffic by creating their lanes in the road infrastructure is an important prerequisite for encouraging multimodal transport and active mobility. Most African countries face the challenge of upgrading existing roads and developing a safe road infrastructure for all road users. This is reflected by the results of roads assessed in Africa using the International Road Assessment Programme (iRAP) methodology, which revealed that 95 percent of roads failed to provide an acceptable 3-star level of safety for pedestrians and 93 percent of roads failed for cyclists. Most roads rate 1 star, meaning that they have no bicycle lanes, no safe crossings, and enable high vehicle speeds (UNEP and UN-Habitat 2022).

Road Infrastructure Safety

Many African countries struggle with inadequate road infrastructure that does not meet safety standards. Roads often lack essential safety features such as pedestrian pathways, cycle lanes, and safe crossing points, which contributes to high rates of road traffic crashes. The distribution of road infrastructure in Africa is unequally spatially allocated, as some regions are overequipped and others underdeveloped (Holz and Heitzig 2021). Recommended actions for safe road infrastructure are outlined in the African Road Safety Action Plan 2021–2030.

Vehicle Safety

Active vehicle safety components that can prevent crashes include collision-avoidance systems, electronic stability control, improved road-vehicle interaction, automatic braking systems, air cushion technology, Alcolocks, and speed limiters. Vehicle components that protect the occupants in the event of a crash (passive safety) include three-point seat belts, padded dashboards, and airbags. In Africa, vehicle safety remains a critical concern because a substantial share of imported used vehicles are over 15 years old and lack the essential safety features.[2] This indicates lapses in the application of vehicle regulations in these markets. Recommended actions for vehicle safety are outlined in the African Road Safety Action Plan 2021–2030.

2. UN Road Safety Fund, “Safer and Cleaner Used Vehicles for Africa” (project), https://roadsafetyfund.un.org/projects/safer-and-cleaner-used-vehicles-africa

Road User Safety

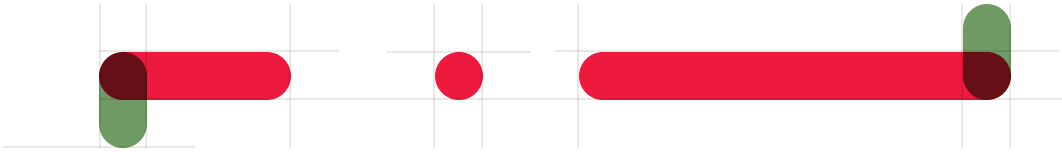
Risky behaviors among road users, such as speeding, drunk driving, not wearing seat belts or helmets, and distracted driving, are major contributors to road traffic injuries and deaths in Africa. Changing these behaviors requires sustained education, enforcement, and engagement strategies (WHO 2018). The African Road Safety Action Plan 2021–2030 provides details of the recommended actions for safe road users.

Postcrash Response

The lack of efficient emergency medical services (postcrash care) in many African countries has resulted in higher fatality and injury rates. Delays in providing prompt and effective medical care to crash victims can significantly affect the outcome of road traffic injuries (Mehmood et al. 2018; World Bank 2021). Recommended actions for postcrash response are outlined in the African Road Safety Action Plan 2021–2030.

General Problem Statement

High road traffic crashes, injuries, and fatalities in Africa are the result of inadequate safety features on most roads and vehicles, weak compliance to road safety standards by road users, inefficient emergency medical services, and weak road safety management.



1.3 Objective of the RSPMF

The objective of the RSPMF for African countries is to monitor their road safety performance in accordance with the UN Decade of Action for Road Safety 2021–2030 global plan. The framework incorporates a methodology to assess and measure the proposed set of road safety performance indicators for all pillars, which together depict the overall road safety performance of the respective countries. This will require countries to establish baseline performance measures against which progress can be measured at the end of the decade. It will serve as a tool for the systematic monitoring of the performance of countries on all pillars of action and will ease benchmarking to measure regional progress.

The RSPMF depicts five pillars of action for addressing the major problem areas in road safety. The recommended actions per pillar are activities that produce results at several levels, including outputs and outcomes. The outputs are the immediate results of implementing these activities, while the short- and long-term effects are the outcomes.

Based on the expected results, road safety performance indicators were developed to measure key result areas at the outcome level. The outcomes represent road safety performance and achievements for each pillar of action, culminating in the goal of halving the number of road fatalities and serious injuries by 2030. The purpose of road safety performance monitoring using road safety performance indicators within this framework is to provide a signal of the road safety situation by indicating the safety conditions of the road transport system, measuring the influence of road safety interventions, and benchmarking road safety performance across countries.

1.4 Methodology of Developing the RSPMF

This subsection outlines the methodology used to develop the road safety performance monitoring framework, which comprised a desk review of relevant documents and reports and the development of a theory of change, results framework, monitoring and evaluation plan, reporting tool, and mechanism for reporting and information sharing.

Desk Review of Relevant Documents and Reports

A comprehensive review of relevant documents and reports was conducted to identify standards for monitoring road safety performance and potential indicators. The review was based on published reports and existing monitoring frameworks, guidelines, and standards established by road safety agencies. The review ensured that all relevant indicators were selected to measure progress toward achieving the objectives of both the DoA and the African Action Plan for Road Safety 2021–2030. These indicators focus on road safety management, road infrastructure safety, vehicle safety, safe road users, safe speed, and postcrash response, which are key road safety pillars.

Theory of Change and Results Framework

A theory of change for the RSPMF was developed to outline the steps, processes, and assumptions necessary to achieve the objective of the Decade of Action for Road Safety (DoA). This was underpinned by a thorough literature review and was used to establish the information that countries ought to collect and process to assess their progress as they implement the recommended road safety actions. The theory of change provides insights into how recommended actions across various pillars interact to produce the desired outcome of improved road safety. An outcome statement (Road Safety Performance Objective) was clearly indicated to guide the results progressively.

The strategies used by countries to achieve the outcome statement comprise five intermediate outcome areas in line with the DoA/Safe System pillars. The chain of results (causal pathway) and activities assumed to lead to the outputs and desired outcomes were identified using backward mapping. This was done by indicating the Road Safety Performance Objective and working backward from the five outcome areas of the DoA pillars, and identifying the lower outcomes, outputs, and road safety activities and inputs. The causal pathway was identified based on evidence from research and road safety experience.

TABLE 1
Selection Criteria of Indicators for Road Safety Performance Monitoring

No.	Criterion	Justification
1.	Credibility	The indicator has been adopted or is used by lead actors or global commitments for road safety organizations. This assumes that the indicator is important, accurate (not biased), and relevant, thereby fulfilling three essential requirements for indicators.
2.	Specificity	The indicator measures a unique aspect of road safety.
3.	Feasibility	Data on the indicator are available within realistic effort (not too expensive given the frequency of data collection).

Note: *The three criteria were assumed to have equal weights, and an indicator had to meet all three criteria to be retained as part of the minimum set of indicators for the road safety performance monitoring framework.*

Critical assumptions and risks that may impact the achievement of desired outcomes were identified. The process was participatory and involved other road safety experts. The theory of change informed the development of a results framework for road safety performance. This forms the basis for countries to collect information on road safety performance indicators to gauge their progress on each pillar.

Indicators Selection

The safety performance indicators (SPIs) were selected by first examining the indicators used for all DoA pillars and then assigning them to the appropriate result areas. These include indicators of the 12 UN voluntary global road safety targets and those of the DoA pillars developed within the SafetyNet, DaCoTa, and Safer Africa projects. Data accessibility was considered to ensure that indicators were suitable, efficient, and feasible. The selected indicators included in the results framework are specific, measurable, achievable, realistic, and time-bound (SMART) to accurately measure the results achieved through road safety interventions. Additionally, their credibility and feasibility were considered, as listed in table 1.

Based on these criteria, the indicators were selected and sorted into high and medium priorities to constitute a minimum set of key SPIs to be monitored by African countries. The high-priority indicators are considered primary indicators for which data will be collected and reported within the stipulated periods as indicated in the performance monitoring plan; these indicators are critical for measuring expected outcomes in relation to the pillar. The medium-priority indicators are also crucial for measuring expected outcomes per pillar but could be considered secondary to the high-priority indicators.

Monitoring and Evaluation Plan

In addition to the results framework, a monitoring and evaluation (M&E) plan was developed to serve as a robust tool for the planning and management of road safety performance monitoring and to track progress toward achieving desired outcomes over time. The M&E plan provides guidance on data collection, reporting, and analysis, ensuring that countries can effectively monitor their performance to meet predetermined targets. This standardized working document will be used for road safety performance monitoring, serving to define each indicator in a clear and unambiguous manner. In addition to the definition of each indicator, the M&E plan outlines the data source, frequency of data collection, and data collection methods. This will enable countries to gain a thorough understanding of what is being measured, the methods required for data collection, and the data-processing approaches used to derive the indicator's value. The M&E plan ensures that the reported values for each indicator are accurate and consistent over time and across countries. Information about each indicator will be collected by the country's road safety data focal persons at the RSLAs. The M&E plan provides guidance to countries on the timeliness, accuracy, completeness, uniformity, integration, and accessibility of their indicator data to facilitate meaningful comparisons at the continental level.

A reporting tool was developed to facilitate reporting at three levels: national, regional, and continental. The second and third levels entail the consolidation of data collected from various countries for regional and continental progress toward achieving established road safety targets. To streamline this process, a national reporting template featuring all selected indicators and validated data fields was created in a spreadsheet format. The decision to use a spreadsheet format was informed by the anticipated ease of use by focal points, who are likely to encounter numerous data quality challenges. Moreover, spreadsheets can be seamlessly integrated with other data and information platforms or dashboards used by agencies responsible for higher-level (continental) reporting. The design of information-sharing mechanisms was informed by an examination of the most effective practices employed in national and international reporting systems. These were tailored to align with the road safety structure at the national, regional, and continental levels.

The RSPMF

2.1 Overview

This section contains the elements of the framework proposed to guide African countries in monitoring their progress toward achieving the expected road safety results within the Decade of Action for Road Safety 2021–2030 (DoA). This includes an explanation of the theory of change that links recommended actions, outputs, and outcomes (section 2.2), the proposed set of safety performance indicators for the five pillars (section 2.3), and the results framework (section 2.4). Section 2.5 contains the monitoring and evaluation plan, with further details of the proposed indicators provided in table 3.

2.2 Theory of Change

The theory of change outlines the pathway through which recommended inputs are expected to lead to desired road safety outputs and outcomes. It serves as a detailed and logical framework that connects initial conditions and inputs to the DoA's ultimate objective of reducing road traffic deaths and injuries by at least 50 percent. The International Transport Forum (ITF) (2023) recommends a shift from monitoring only the final outcome indicators, such as the number and cost of road fatalities, to monitoring intermediate outcomes through safety performance indicators that reflect the operational conditions of the road transport system. This is because the number and cost of road fatalities are high-level outcomes, and they do not provide information regarding the prevailing operational conditions of road transport systems that are responsible for their high occurrence. This establishes the importance and significance of monitoring safety performance indicators as well as high-level outcomes to address emerging issues and improve road safety conditions and outcomes.

Road safety targets, such as the UN voluntary global targets and the DoA targets, provide clear actionable objectives for countries to implement actions that address the problem of fatalities and contributing factors in line with the pillars of action for the decade. Associated performance indicators to measure the results from the interventions are indispensable for improving road safety, as they clearly highlight whether the expected results are being achieved. Targets and safety performance indicators provide a means to monitor the extent of progress and adjust the focus and scale of road safety interventions to ensure that the targets are attained. (See appendix B for the RSPMF's theory of change.)

2.3 Proposed Road Safety Performance Indicators

A set of 14 key safety performance indicators (SPIs) is proposed for adoption by African countries, and by the SSATP, for monitoring countries' road safety performance. These SPIs will be monitored in addition to the minimum set of crash indicators already adopted by African countries to report to the African Road Safety Observatory. It is expected that by adopting these indicators to monitor road safety operational conditions, countries will consolidate and enhance areas of strength while identifying areas for improvement and taking appropriate measures in line with the five pillars to achieve set road safety targets.

Pillar 1

ROAD SAFETY MANAGEMENT

LEGEND

H **HIGH PRIORITY**

M **MEDIUM PRIORITY**

Road safety management (RSM) is a systematic process aimed at reducing the number and severity of road fatalities and injuries. A weak RSM is a significant impediment to road safety because of the inability to efficiently deliver institutional management functions, which are foundational to evidence-based interventions to address road safety concerns. Moreover, road safety strategies in a country involve multisectoral interventions that require the integration and collaboration of multisectoral actors. Disjointed efforts tend to result in conflicting or duplicate endeavors in the absence of effective coordination and collaboration. A World Bank report on road safety opportunities and challenges for low- and middle-income countries indicates that 45 out of 49 African countries have established road safety lead agencies (World Bank 2020). Most, however, do not perform their responsibilities for various reasons, such as weak political support and human capacity. Based on the African Road Safety Action Plan 2021–2030, an effective RSM is premised on sustainable funding, a fully empowered road safety lead agency (RSLA), effective data management, developed road safety strategies, ratified road safety–related UN legal instruments, and multimodal transport and land-use planning. The following are the proposed key SPIs of an effective RSM to be monitored by African countries:

H

1. Percentage of financed annual RSLA budget

This indicator measures the proportion of the annual road safety budget of the lead agency that has been successfully funded through several funding streams (the government, private sector, and development partners). It provides insight into how much of the financial resources needed for RSLA safety initiatives has been secured, mainly through the regular budgeting framework, relative to the overall expenditure estimates.

The indicator is calculated by dividing the RSLA annual allocated financial resources by the annual expenditure estimates of the lead agency, expressed as a percentage. It is assumed that the annual expenditure estimates are derived from the lead agency strategic plan, which, in turn, is derived from the national road safety action plan or strategy.

Data on the indicator will be obtained from RSLAs, finance departments, and the authorities responsible for the national budget and shall be reported based on government financial years. Other funding needs exist for road safety initiatives that may not be captured under the RSLA budget. However, as a starting point, monitoring the funding requirements of RSLAs is a milestone for African countries, given that limited funding has been cited by lead agencies as the greatest impediment to road safety management (Mitullah, Small, and Azzouzi 2022).

M

2. National road safety action plan with time-bound targets published

This indicator refers to the creation and public release by a country of a comprehensive strategic document that outlines specific road safety targets and the actions required to achieve them. This action plan includes clearly defined, measurable targets with set deadlines, ensuring a structured and accountable approach for improving road safety. The action plan serves as a road map for all stakeholders, detailing the actions and timelines necessary for their implementation. This indicator is a qualitative indicator of the presence of a road safety action plan with time-bound targets.

M

3. Centralized database on road safety established and operationalized

This indicator refers to the creation and active use of a unified, accessible repository for all road safety–related data within a country. This database consolidates information such as crash reports, traffic violations, and road infrastructure assessments from various sources into a single system. It is designed to facilitate data collection, storage, analysis, and sharing among relevant stakeholders, thereby enhancing the ability to monitor trends, identify risk factors, and effectively implement targeted road safety interventions. This indicator is a qualitative statement that communicates the status of the establishment and operationalization of a centralized road safety database.

Pillar 2

SAFE ROAD INFRASTRUCTURE

Safe road infrastructure designs present an opportunity to reduce the likelihood of a crash and can be used as a preventive measure. Safe road infrastructure comprises roadways that follow traffic separation, incorporate secure intersections, and conform to the safety requirements and ratings. The implementation of safety amenities such as footpaths, bicycle lanes, pedestrian crossings, intersections, and traffic-calming devices on roads can significantly minimize the likelihood of road crashes for all road users. The ITF reported in 2016 that crash rates per distance traveled decrease by 33–55 percent for each additional safety star-rating improvement. However, most African countries do not have data on road audits or assessment,[3] which makes it difficult to ascertain the level of user safety granted by such infrastructure. The African Road Safety Action Plan 2021–2030 recommends several activities for road infrastructure safety, including road audits, the results of which could be seen as improvements in the safety ratings of roads. Based on this, a 3-star safety rating for roads is proposed as a key SPI for safe road infrastructure. This SPI is also recommended by the Global Road Safety Facility (GRSF) and the International Road Assessment Programme (iRAP). This indicator value can be collected through either the iRAP methodology or other country standardized safety auditing methodologies that ensure the existence of the necessary road attributes for a 3-star rating (see appendix E).

3. Based on a World Bank (2020) compilation, only 10 out of 49 African countries have publicly available data on road safety assessment.

H

4. Percentage of trunk (national/primary) road length (km) with 3-star or better rating for road users (vehicle occupants, motorcyclists, cyclists, pedestrians)

This indicator measures the proportion of existing trunk (national/primary) roads that achieve a safety rating of three stars or higher. This rating is based on the iRAP or similar assessment systems, indicating a good level of safety for road users as indicated in appendix E. It is calculated as the length of existing trunk (national/primary) roads meeting a 3-star or better rating assessed for road users divided by the total assessed length of trunk (national/primary) roads multiplied by 100. The data required for this indicator are the length of existing trunk (national/primary) roads that have been assessed for road users and star ratings obtained from the star rating scores in the iRAP methodology or another methodology that ensures the minimum road safety attributes as summarized in appendix E.

M

5. Percentage of other (secondary and tertiary) road length (km) with 3-star or better rating for road users (vehicle occupants, motorcyclists, cyclists, pedestrians)

This indicator measures the proportion of other (secondary and tertiary) roads that achieve a safety rating of three stars or higher. This rating is based on the iRAP or similar assessment systems, indicating a good level of safety for road users as indicated in appendix E. It is calculated as the length of other existing (secondary and tertiary) roads meeting a 3-star or better rating assessed for road users divided by the total assessed length of other (secondary and tertiary) roads multiplied by 100. The data required for this indicator are the length of other existing (secondary and tertiary) roads that have been assessed for road users and star ratings obtained from the star rating scores in the iRAP methodology or another methodology that ensures the minimum road safety attributes as summarized in appendix E.

Pillar 3
SAFE VEHICLES

In the event of a crash, the likelihood of a vehicle mitigating or exacerbating an injury can significantly influence the outcome (Hakkert, Gitelman, and Vis 2007). According to the World Health Organization (2023), the implementation of vehicle safety standards, such as the comprehensive UN regulations,[4] can ensure that vehicles are capable of safeguarding passengers from the impact of a crash. These regulations have been integrated into country vehicle safety standards against which vehicle inspections are done at the port of entry into the countries' vehicle fleet and periodically to ensure that the vehicles meet roadworthiness standards. The SPIs for this pillar can serve as a measure of progress in the safety of a country's vehicle fleet.

4. For a list of these regulations, see UNECE (2021).

H

6. Percentage of vehicles that pass first registration inspection

This indicator measures the proportion of vehicles that successfully meet all roadworthiness and safety criteria during their initial inspection at the port of entry as part of the registration process. This metric provides insights into the compliance levels of newly registered or imported vehicles with national or international safety and environmental standards. It is calculated by dividing the number of vehicles that pass the inspection on their first attempt by the total number of vehicles inspected for first registration, then multiplying the result by 100. This indicator reflects the effectiveness of regulatory frameworks, the quality of vehicles entering the fleet, and the implementation of inspection standards.

H

7. Percentage of registered motor vehicle fleets that pass periodic roadworthiness inspection (RWI)

This indicator measures the proportion of vehicles within a country's registered fleet that successfully meet the required safety, environmental, and mechanical standards during periodic inspections. It is calculated by dividing the number of vehicles that pass the roadworthiness tests by the total number of vehicles subjected to the inspections within a given period, multiplied by 100. This indicator reflects the effectiveness of periodic inspection programs in ensuring that vehicles on the road are maintained to safe and operational standards. It provides insights into the general condition of the active vehicle fleet, the compliance level with national roadworthiness standards, and the success of enforcement mechanisms. Higher percentages indicate better maintenance and adherence to regulations, while lower percentages may highlight issues such as inadequate enforcement, outdated vehicle fleets, or limited access to maintenance services.

Pillar 4

SAFE ROAD USERS

Road user behavior risk factors emanate from factors that impede drivers' judgment while driving, such as excessive alcohol and drugs, distracted driving (for example, phone usage), and excessive speed that limits reaction time. The inadequate use of protective devices, such as seat belts/ restraints and helmets, also contribute as risk factors (WHO 2023). The SPIs for this pillar indicate the extent of progress made in ensuring safe road use.

Alcohol use

Alcohol and other drug use impairs road users, and the likelihood of road traffic crash occurrence increases as blood alcohol concentration (BAC) increases. According to the World Bank (2020), all African countries have enacted laws on drink driving based on the BAC. The proposed indicator to be monitored for drinking and driving is the percentage of drivers under the influence of alcohol.

H

8. Percentage of drivers under the influence of alcohol

This indicator measures the proportion of drivers found to be driving with a BAC level above the legal limit set by the country. This indicator is crucial to understand the prevalence of drunk driving and its potential impact on road safety. Data for this indicator should be collected from roadside surveys, implying the need to establish a sampling frame to ensure the representativeness of survey results. BAC data can be obtained from tests using breath or blood samples and should be produced annually by countries. This metric is calculated by dividing the number of drivers over the legal BAC limit by the total number of drivers tested.

Mobile phone use

Driving while using a mobile handset is a major source of distractions and has been observed to increase the chances of crashes by four times compared with not using one (WHO 2023). Mobile phone use while driving impairs reaction times, making it difficult for drivers to respond quickly to sudden changes in traffic conditions or hazards. The proposed indicator is the percentage of drivers who use mobile phones while driving.

M

9. Percentage of drivers using a mobile phone while driving

This indicator measures the proportion of drivers observed using a mobile phone while operating a motor vehicle. This indicator is essential to understand the prevalence of mobile phone use among drivers and its potential impact on road safety. The required data constitute the number of drivers and the status of mobile phone use while driving for each driver. This will be obtained from annual observational surveys along road sections.

Speed

Excessive or unsafe vehicle speeds increase the likelihood and severity of a crash (Vis 2005). In addition to enacting speed laws dictating speed limits, the African Road Safety Action Plan 2021–2030 proposes enforcing adherence. Enforcing legislation on speed limits has great potential to reduce crashes and improve their outcomes. The World Bank (2020) has highlighted that only a limited number of African countries have established recommended urban and rural speed limits, underscoring the urgent need for speed regulations to ensure the effectiveness of speed surveys. The proposed indicator for this problem area is the percentage of drivers exceeding speed limits.

H

10. Percentage of drivers exceeding speed limits

This indicator provides a measure of the magnitude of violation of the set speed limits and is also taken on identified spots of a road network. It is obtained by dividing the number of motor vehicle drivers traveling above set speed limits by the total number of motor vehicles observed in a speed survey. The data required for this indicator include the number of motor vehicles traveling, traveling speeds, time stamps, and set speed limits. This can be obtained from speed surveys conducted on designated sections of the road network during times when traffic flows freely or normally. Data should be collected for all categories of roads and classifications of vehicles to allow the comparison of related speeds at the continental level.

Protection systems

Failure to use protective devices, such as helmets and seat belts, on the road is associated with worse outcomes (injuries and fatalities) in the event of a crash. Most African countries (approximately 90 percent) have laws on the use of helmets and seat belts (World Bank 2020). Monitoring the use of protective systems can provide information on the level of protection for road users in a road transport system. The proposed indicators were adopted from ITF (2023), Thomas et al. (2018), and Hakkert, Gitelman, and Vis (2007).

H

11. Daytime helmet wearing rates by cyclists, moped riders, and motorcyclists

Monitoring the use of helmets is particularly important in the African road safety context, given the unprecedented growth in the number of motorcycles in use; motorcycles have a 16–26 times higher risk of fatality in the event of a crash (World Bank 2020). Liu et al. (2008) demonstrated that the use of helmets can reduce the risk of head injuries and fatal injuries by 60 percent and 42 percent, respectively. Most African countries have enacted laws mandating the use of helmets and seat belts; however, their enforcement is weak. Therefore, it is crucial to monitor the use of helmets and seat belts to determine the level of protection for this road user group. Data for this indicator can be obtained from annual national observational surveys and categorized according to the road type. The survey population comprises cyclists, moped riders, and motorcyclists.

M

12. Daytime seat belt–wearing rate of all occupants

The wearing of seat belts by drivers and passengers mitigates crash impacts on the bodies of vehicle occupants by restraining their movement in the event of a crash. Høye (2016) estimated 60 percent and 44 percent reductions in fatal injuries for front and rear passengers, respectively. Most African countries have laws on the use of seat belts (World Bank 2020), and monitoring the prevalence of their use can indicate the safety levels of road traffic systems. Data on this indicator can also be obtained from annual national observational surveys targeting both the front and rear passengers in vehicles. The data should be obtained on an annual basis and categorized according to the road classification (urban, rural, and motorways).

Pillar 5

POSTCRASH RESPONSE

Postcrash response, also known as road crash trauma management, includes the medical care provided to crash injury victims in both out-of-hospital and in-hospital settings. Out-of-hospital settings primarily involve emergency medical services (EMS), and the proposed SPIs in this area assess EMS capacity following a crash. In-hospital settings refer to the care provided to trauma patients in emergency departments. The effectiveness of the entire trauma management system significantly influences treatment outcomes. SPIs for African countries are designed to evaluate both

the capacity of the trauma care system to provide treatment for road crash injuries and the quality of care delivered, as indicated by treatment outcomes. While most African countries have some form of EMS, not all of them have established trauma registries. According to the World Bank (2020), 60 percent of African countries have an emergency care call number with a national coverage; however, only 15 percent have a trauma registry. This highlights the need for SPIs to monitor and improve the performance of trauma care systems across the continent. There are two proposed SPIs for the postcrash response.

H

13. Average response time for EMS

This is the average time lapse (in minutes) between the receipt of an EMS call and arrival at the scene of the patient. Data on this indicator can be obtained from the analysis of emergency call data at call centers, implying that countries must establish the same. This indicator will be reported on an annual basis and should be categorized by region to assess equality in access to EMS.

H

14. Fully operational designated EMS lead agency with authority to coordinate pre-hospital and facility-based EMS

This refers to whether a country has established a government body or office, such as a directorate within the ministry of health, that is mandated to oversee the delivery of EMS in the country and has the authority to coordinate both prehospital and facility-based EMS.

2.4 Results Framework

The results framework (table 2) outlines the indicators African countries will monitor and progressively report on their performance. The framework will serve as a strategic tool to systematically monitor progress, ensure accountability, and optimize resource allocation for improved road safety outcomes. Baseline data for the proposed indicators will be collected by countries and will provide a reference point for future comparisons. Ensuring the accuracy, reliability, and completeness of baseline data is critical for a meaningful assessment. Data for the indicators will subsequently be collected for the indicated years and compared with intermediate targets to monitor progress toward the achievement of the end targets. The data sources are outlined in the M&E plan (table 3). A mix of quantitative and qualitative methods will be used for data collection, as discussed in section 3.

TABLE 2
Results Framework

	Indicator name	Baseline (2021/2024)	Intermediate targets								End target (2030)[a]
			2022	2023	2024	2025	2026	2027	2028	2029	
Higher outcome indicators											
	Road fatalities per 100,000 population										50% reduction*
	Serious injuries per 100,000 population										50% reduction*
Safety performance indicators (outcome indicators)											
Effective road safety management											
1.	Percentage of financed annual RSLA budget										100% of RSLA budget financed
2.	National road safety action plan with time-bound targets published										Yes
3.	Centralized database on road safety established and operationalized										Yes
Safe roads											
4.	Percentage of trunk (national/primary) road length (km) with 3-star or better rating for all road users (vehicle occupants, motorcyclists, cyclists, pedestrians)										50% increase*
5.	Percentage of other (secondar/tertiary) road length (km) with 3-star or better rating for all road users (vehicle occupants, motorcyclists, cyclists, pedestrians)										50% increase*

TABLE 2
Results Framework [continued]

Indicator name		Baseline (2021/ 2024)	Intermediate targets								End target (2030)[a]
			2022	2023	2024	2025	2026	2027	2028	2029	
Safe vehicles											
6.	Percentage of vehicles that pass first registration inspection										50% increase*
7.	Percentage of registered motor vehicle fleet that pass periodic roadworthiness inspection (RWI)										50% increase*
Safe road users											
8.	Percentage of drivers under the influence of alcohol										50% reduction*
9.	Percentage of drivers using a mobile phone while driving										50% reduction*
10.	Percentage of drivers exceeding speed limits										50% reduction *
11.	Daytime helmet wearing rates by cyclists, moped riders, and motorcyclists										50% increase*
12.	Daytime seat belt–wearing rate										50% increase*
Postcrash response											
13.	Average response time for EMS										Reduce response time to 15–30 minutes on average
14.	Fully operationalized designated EMS lead agency for coordination of pre-hospital and facility-based EMS										Yes

Note: *EMS = Emergency Medical Services; RSLA = Road Safety Lead Agency.*
a. *End targets are just for the purpose of suggesting ambitious efforts toward achieving the global objective. Each country should adjust based on their context and baseline.*
*** *From the baseline value.*

Countries will establish baseline data for the indicators and set intermediate targets for all indicators based on their baseline results. The intermediate targets serve as guardrails in their journey toward achieving the end targets. Indicator data will be subsequently collected for the indicated years in line with the M&E plan and compared with the intermediate targets set to determine whether progress is being made for each of the indicators to achieve their end targets.

2.5 Monitoring and Evaluation Plan

The M&E plan presented in table 3 provides a definition/description of the proposed indicators; their reporting frequency, data source, data collection methodologies/formulas for indicator computing; and suggested authorities to bear the responsibility for data collection and responsibility of indicator reporting.

Data Requirements for Proposed Safety Performance Indicators

Based on the results framework, the quantification of the proposed SPIs necessitates the use of data that can be categorized into two broad categories. The first is administrative data defined as "data collected by organizations in the process of executing their mandates/functions" and forms an important source of secondary data for road safety performance indicators. These data are distributed across agencies that perform mandates other than road safety. Examples of these data are those from EMS and hospital records (which are within the mandates of health authorities), road inventory data, public finance data, legal records, and routine vehicle registration and inspection data. Therefore, data must be collected from various agencies and collated in a format that is useful for computing SPIs.

The second category of data consists of primary data, which usually do not exist in records and require the deployment of time-specific surveys to be obtained from the field. Primary data are required for SPIs related to road user behavior, such as speeding, alcohol impairment, and the use of protective devices such as helmets and seat belts. Data for SPIs related to the safety of road infrastructure also require primary surveys as part of the assessments. The data that demand the use of surveys have considerable cost implications for African countries. Subsequently, countries must establish national systems for undertaking such surveys within their national action plans to determine the frequency and coverage of such surveys. Finally, the success of obtaining data shall be determined by the readiness of country systems in terms of the current organization of administrative data and the capacity that exists within countries to collect data through surveys.

Frequency of Reporting SPIs

A few of the proposed SPIs will be reported annually based on the practice of reporting achievements in road safety strategies and action plans. This reporting frequency is compatible with most reporting obligations for organizations that generate secondary data useful for the computation of SPIs, such as police and hospitals. Furthermore, annual reporting allows for learning cycles that can be incorporated into the subsequent year's program pertaining to indicators. Apart from annual reporting frequency, sensitive indicators such as those involving EMS responses should be monitored by countries on a quarterly basis. This is because of the embedded flexibility of making changes to systems that lead to better results in subsequent quarters. However, countries will be expected to report on these indicators annually.

Special consideration should be given to SPIs that require surveys to collect data. While annual reporting frequencies may tend to be too costly, the frequency of updating such surveys could be after two years by the relevant country authorities. Countries should comply with recommended data collection methodologies and report the year of data collection in line with the M&E plan and results framework. This would allow for comparisons among countries using data collected in the same year.

Reporting Architecture for SPIs

The reporting architecture reflects the hierarchy and responsibilities of reporting within the proposed framework to facilitate synergies within existing structures and institutions, from the national level to continental level.

Role of national road safety lead agencies in national reporting

Road safety lead agencies (RSLAs) should assume the responsibility of national focal points for collecting and compiling data and reporting on SPIs. They will ensure the application of lessons learned from SPIs in the development and implementation of road safety strategies and action plans. In addition, RSLAs act as optimal links between national and regional or continental reporting platforms. Therefore, capacity development for the data collection of SPIs by RSLAs should be prioritized. Considering the necessity of collecting and compiling multisectoral data, establishing data collection mechanisms is of the utmost urgency. Concurrently, the lead agencies should initiate the process of collecting baseline data and setting targets for SPIs. This is consistent with the fact that African countries are at different stages of implementing road safety initiatives, such as national action plans for road safety. It is assumed that the African Road Safety Action Plan 2021–2030 informs national action plans, and the adoption of SPIs to monitor intermediate outcomes is therefore aligned with the interests of such national plans.

As focal points, RSLAs should establish local links (memoranda and systems) to facilitate the acquisition of data from other national authorities or agencies to facilitate reporting. Upon compilation of the SPIs, it is advised that validation sessions become part of the reporting culture locally, with full participation of stakeholders, including providers of data, as they may have varied interests in the SPIs. Lead agencies should also adopt annual reports as a basis for learning and refocusing efforts on specific areas of national concern.

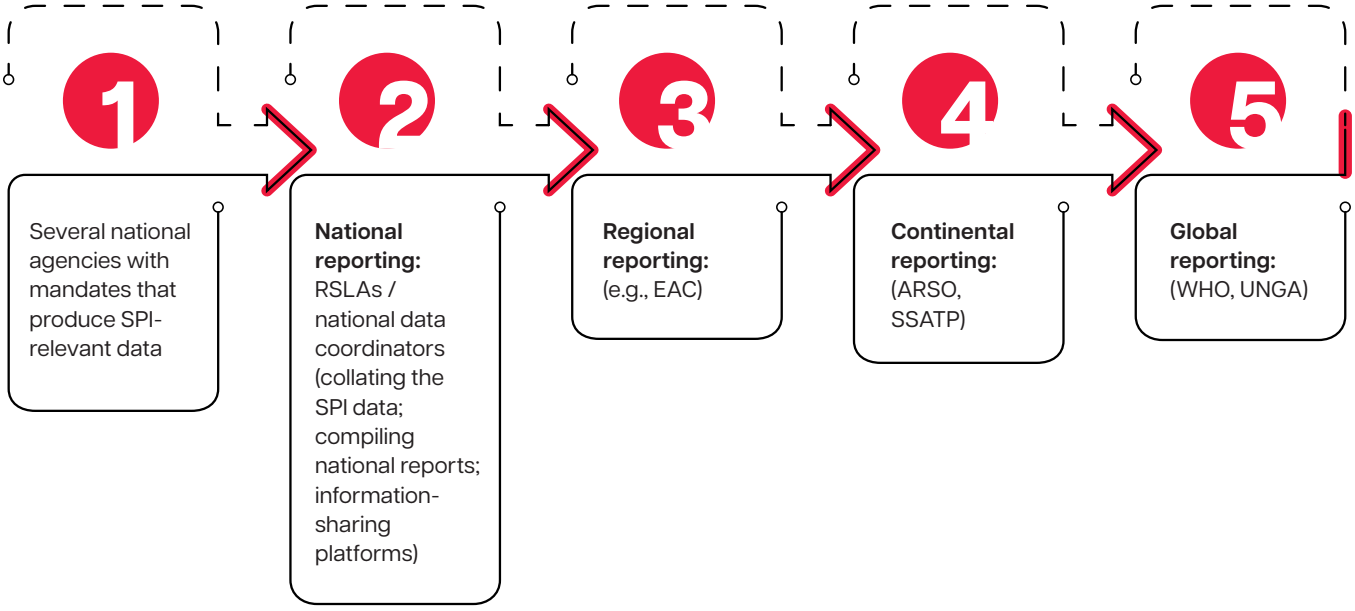
Regional and continental reporting

Upon validation of the data on SPIs at the national level, countries will submit reports and data at regional road safety forums for peer learning. The African Road Safety Observatory (ARSO) is a collaborative platform designed to enhance road safety across Africa. It collects, compiles, and analyzes road safety data from various African countries to understand the trends and identify high-risk areas. Validated data at the national level, such as crash data, and SPI data should be channeled to ARSO (figure 1). The African Union provides a platform for peer learning on road safety and the promotion of best practices and policies by countries, as well as accountability for results.

Global reporting

ARSO forms a reporting link between African countries and global-level reporting of road safety conditions, including progress made on the UN voluntary road safety targets and Sustainable Development Goals. At the global level, the World Health Organization has a mandate to collect, compile, and publish road safety data, such as its Global Status Reports on Road Safety (figure 1).

FIGURE 1.
Reporting Architecture for SPIs in Africa



Note: *ARSO = African Road Safety Observatory; EAC = East African Community; RSLA = road safety lead agency; SPI = safety performance indicator; SSATP = Africa Transport Policy Program; UNGA = United Nations General Assembly; WHO = World Health Organization.*

TABLE 3
Monitoring and Evaluation Plan for Safety Performance Indicators

Indicator name Definition/description	**Reporting frequency**	**Data source**	**Formula for indicator computing**	**Responsibility for data collection**	**Responsibility for indicator reporting**
Road safety higher outcome indicators					
Road fatalities per 100,000 population It measures prevalence of deaths from road traffic crashes.	Annual	Police and hospital records; national statistics databases	(Number of road traffic fatalities/ Population) *100,000	Institution in charge of police in the country; Ministry of Health	RSLA
Serious injuries per 100,000 population It measures prevalence of serious injuries from road traffic crashes.	Annual	Police and hospital records; national statistics databases	It is estimated as a function of fatalities in the ratio 15:1 (15 serious injuries for every fatality)[5]	Ministry of Health	RSLA

5. https://elibrary.worldbank.org/doi/abs/10.1596/33363

TABLE 3
Monitoring and Evaluation Plan for Safety Performance Indicators [continued]

Indicator name Definition/description	**Reporting frequency**	**Data source**	**Formula for indicator computing**	**Responsibility for data collection**	**Responsibility for indicator reporting**
Safety performance indicators (outcome indicators)					
Effective road safety management					
Percentage of financed annual RSLA budget It measures the proportion of the annual budget for a specific RSLA that has been financed through various funding sources. This indicator helps assess the financial health and sustainability of the RSLA by showing how much of its planned expenditures for the year are covered by confirmed funds.	Annual	- RSLA records on annual road safety funding allocations - Total annual road safety expenditure estimates	Annual financial resources secured/ Total annual expenditure *100	Public finance authorities; RSLA	RSLA
National road safety action plan with time-bound targets published It is an indicator of whether a country has developed and published a comprehensive road safety action plan that includes specific targets to be achieved within a specified time frame.	Annual	- National road safety websites	Review of country road safety websites for publication of the action plan	RSLA	RSLA
Centralized database on road safety established and operationalized It measures whether a country has developed and put into operation a centralized database for road safety. A "centralized database for road safety" refers to a single, integrated repository of data that collects, stores, manages, and provides access to information relevant to road safety. Basic information relevant to road safety includes crash and enforcement data from police and injury data from hospitals, among others.	Annual	- Relevant authorities and road safety experts - National road safety strategies, action plans, or reports	- Official statement by relevant authorities (transport, public works, police, health, insurance, RSLA) - Review of national road safety strategies, action plans, or reports for its indication	RSLA	RSLA
Safe road infrastructure					
Percentage of trunk (national/ primary) road length (km) with 3-star or better rating for road users It measures the level of safety of existing trunk (national/primary) roads for road users (vehicle occupants, motorcyclists, cyclists, pedestrians).	2 years	Road safety assessment/audits records	(Length in km of existing trunk (national/primary) roads assessed, which is rated 3 stars or above for all road users/Total length of the assessed existing trunk (national/ primary) roads) *100	RSLA; road transport authorities; roads authorities	RSLA

TABLE 3
Monitoring and Evaluation Plan for Safety Performance Indicators [continued]

Indicator name Definition/description	**Reporting frequency**	**Data source**	**Formula for indicator computing**	**Responsibility for data collection**	**Responsibility for indicator reporting**
Percentage of other (secondary/tertiary) road length (km) with 3-star or better rating for road users It measures the level of safety of other (secondary/tertiary) roads for road users (vehicle occupants, motorcyclists, cyclists, pedestrians).	2 years	Road safety assessment/audits records	(Length in km of other (secondary/tertiary) roads assessed, which is rated 3 stars or above for all road users/Total length of the other roads (secondary/tertiary) assessed * 100	RSLA; road transport authorities; roads authorities	RSLA
Safe vehicles					
Percentage of vehicles that pass first registration inspection It measures the proportion of vehicles that meet required safety standards during their first inspection to be registered into the country vehicle fleet.	2 years	Motor vehicle inspection/registration statistics	Sum of all motor vehicles that pass the country first registration inspection/Number of motor vehicles inspected for first registration *100	RSLA; vehicle registration / inspection bureaus; transport authorities	RSLA
Percentage of registered motor vehicle fleets that pass periodical roadworthiness inspection (RWI) It measures the level of compliance to national vehicle standards, among vehicles entering the national fleet.	2 years	Motor vehicle inspection statistics	Number of existing vehicles that pass the applicable inspection tests in a year/Total number of vehicles inspected in the year *100	RSLA; vehicle registration / inspection bureaus; transport authorities	RSLA
Safe road users					
Percentage of drivers under the influence of alcohol It measures the prevalence of alcohol use among drivers.	2 years	Roadside surveys	(Number of drivers tested that exceed BAC limits/Total number of drivers tested) *100	RSLA; Institution in charge of police in the country	RSLA
Percentage of drivers using a mobile phone while driving It measures the proportion of drivers who are observed using a mobile phone while operating a vehicle. This includes any use of a mobile phone, such as making calls, texting, or using apps, whether the phone is held in hand or used hands-free.	2 years	Roadside surveys	(Number of observed drivers using mobile phone/Total number of observed drivers) *100	RSLA; Institution in charge of police in the country	RSLA

TABLE 3
Monitoring and Evaluation Plan for Safety Performance Indicators [continued]

Indicator name Definition/description	**Reporting frequency**	**Data source**	**Formula for indicator computing**	**Responsibility for data collection**	**Responsibility for indicator reporting**
Percentage of drivers exceeding the set speed limit It measures the percentage of drivers that travel at speeds above the legally established speed limits on a given road segment.	2 years	Speed surveys (manual or technology based)	Number of motor vehicle drivers exceeding set speed limit on a given road segment/Total number of observed motor vehicles on the same road segment	RSLA; vehicle registration/ inspection bureaus; transport authorities	RSLA
Daytime helmet wearing rates by cyclists, moped riders, and motorcyclists It measures the percentage of riders who comply with safety regulations by wear helmets during daytime riding hours.	2 years	Roadside surveys	(Number of observed road users (cyclists, moped riders, and motorcyclists) wearing helmets/ Total number of observed road users) *100	RSLA; vehicle registration/ inspection bureaus; transport authorities	RSLA
Daytime seat belt–wearing rate It measures the percentage of drivers and passengers who wear seat belts in vehicles during daytime driving hours. This statistic is essential for assessing compliance with seat belt laws.	2 years	Roadside surveys	(Number of observed vehicles with occupants wearing seat belts/Total number of observed vehicles) *100	RSLA; vehicle registration/ inspection bureaus; transport authorities	RSLA
Postcrash response					
Average response time of EMS It refers to the average amount of time it takes (in minutes) for emergency medical services (EMS) team to respond to a call for assistance from the time the emergency call is received until the time the EMS team arrives at the scene of the incident.	Annual	EMS records	Sum of all individual response times recorded within a specified period (3 months)/Number of emergency responses within that period	Institution in charge of EMS in the country	RSLA
Existence of a designated agency for coordination of the provisions of pre-hospital and facility-based EMS It refers to whether a country has established a government body or office, such as a directorate within the ministry of health, that is mandated to oversee delivery of EMS in the country and has the authority to coordinate both prehospital and facility-based EMS.	Annual	Legislation or official EMS documents	Official statement by relevant EMS authority	Institution in charge of EMS in the country	RSLA

Data Collection Methodologies, Data Quality Issues, and Mitigation Measures

This section discusses the data collection methodologies for safety performance indicators (SPIs) by African countries, data quality issues that countries may encounter in sourcing data, and suggestions to mitigate these issues.

Data Collection Methodologies

Four data collection methods are discussed for monitoring SPIs: human roadside observations, technology-based observations, commissioned general population surveys, and the extraction of data from administrative sources. These methods are explained below and summarized in table 4.

Human roadside observations

Human roadside observations involve staging trained observers along a defined road section to observe and note the relevant characteristics of the road users. This method will be useful for SPIs pertaining to road user behavior, such as speeding and the use of protective devices (helmets and seat belts). Count data, such as those for motor vehicles, can also be collected using this method (European Commission 2022); however, it is resource intensive and may not be feasible for collecting large amounts of data.

Commissioned population surveys

This method involves designing and commissioning surveys to collect information on SPIs by using questionnaires from a population of road users. More information that may not be available using observations can be collected, such as behaviors, attitudes, or perceptions of road safety. The use of a web-based technique to administer the survey may lower costs and generate more data points. However, respondents usually self-report their own conduct on the road based on recall, which may introduce recall bias or Hawthorne effects.

Technology-based observations

This method is similar to roadside observations; however, it replaces human observers on the road with technological devices calibrated for specific data collection. Examples include fixed-speed cameras, radars, and automatic detection techniques. This method can generate more data than human observations; however, sampling bias may increase because installation locations may not yield representative data.

Extraction of data from administrative sources

Governments and other organizations collect massive amounts of data on a routine basis as part of fulfilling the mandates of regulations or service provision. These data can be used for SPIs if they form part of the variables required for the calculation of SPIs or have road safety themes. Such data can be found in hospitals, emergency services, police departments, public finance (taxes and budgets), road infrastructure, and vehicle registration. The data may need processing because its primary collection is not for the purposes of SPIs, and obtaining the same may be difficult because of a country's privacy laws. The greatest advantage is the wide coverage of such data, implying that it can provide information for the national-scale SPIs.

Potential Data Issues and Mitigation Measures

Data availability

There is a dearth of data on road SPIs in African countries (Thomas et al. 2018). This stems from several challenges, including limited access to historical records and insufficient investment in data collection infrastructure. These problems result in gaps and inaccuracies in road safety data, thereby hindering the development and implementation of effective interventions. Mitigation measures include enhancing investments in data management systems and technology and providing training to build the capacity of personnel involved in data collection and analysis. In addition, establishing regional data-sharing platforms and promoting collaboration among countries can improve data availability and reliability, enabling more informed decision-making and targeted interventions to enhance road safety across the continent.

Data completeness

Challenges in data completeness in Africa, particularly regarding SPIs and crash data, are a significant concern highlighted by studies such as the World Bank (2020), Thomas et al. (2018), and Mavromatis et al. (2018). Some of these challenges are caused by underreporting. An overreliance on police departments for crash data recording, despite their primary focus on law enforcement rather than road safety (African Union 2021), means that unreported crashes are excluded from official statistics. To address these issues, it is essential to establish and enforce SPI data standards across all relevant agencies. Enhancing the capacity of staff and providing technological support are crucial for ensuring adherence to quality standards. Embracing technologies and processes for integrating databases containing safety performance data is essential for improving SPI monitoring practices.

Data accuracy

Data accuracy challenges in Africa arise from documented difficulties in comparing road SPI data across countries (Thomas et al. 2018). These challenges are primarily due to variations in data quality and the periodicity of data collection. For instance, some countries report SPIs using outdated data that cannot be meaningfully combined with more recent data from other countries. Furthermore, even when recent data are available, standardized methodologies for data collection are often lacking. Different techniques for measuring variables, such as speed, as well as varying sampling methods, introduce biases that make data incomparable across countries. Additionally, inconsistencies in definitions, such as the criteria for road traffic fatalities, further complicate the data accuracy. To mitigate these issues, it is essential to adopt continent-wide protocols for sampling and weighting procedures to ensure that data collection is guided by consistent and objective methodologies. This includes having knowledgeable staff to oversee data collection and ensuring that samples are representative of diverse populations and conditions (Hakkert, Gitelman, and Vis 2007). Addressing these challenges is crucial for producing reliable and comparable SPI data to monitor the progress of countries in achieving road safety objectives.

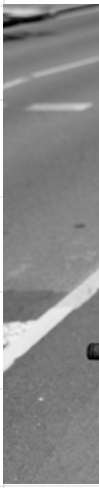


TABLE 4
Summary of Data Collection Methodology

Data collection method	Nature of data fit for method	Potential technical issues related to method	Pros of method	Cons of method
Roadside observations	Road user behavior (protective systems, speed, road conditions)	A representative and adequate sample will have to be obtained.	+ Most used method + Objective + Potentially representative data	- Because of cost, only a few variables can be observed at a time - Little information is therefore collected about road users
Technology-based observations	Speed, protective systems	May not be designed for road SPIs and modifications on the data may be needed, such as anonymizing the data.	+ Collection of massive data; therefore, a lot more information about road users may be obtained	- May not be representative - Potential data protection issues
Surveys	Road user behavior	Potential bias from collecting information through recall, as well as the Hawthorne effect, which involves only reporting accepted behaviors.	+ Specificity in collecting targeted data	- Biased - Costly
	Road assessments	Differences in the definitions as applied by individual countries.	+ Specificity in collecting targeted data	- Costly
Existing databases (secondary)	Police, hospitals, finance, motor vehicle registration, inspection, etc.	The data are not collected primarily for road SPIs and may need to be recalibrated. Applicable standards may differ across countries, calling for early harmonization of such standards.	+ Cost-effective + Wider geographical scope of coverage	- Data may need to be reshaped to fit purpose - There may be resistance and therefore an access problem because of privacy concerns

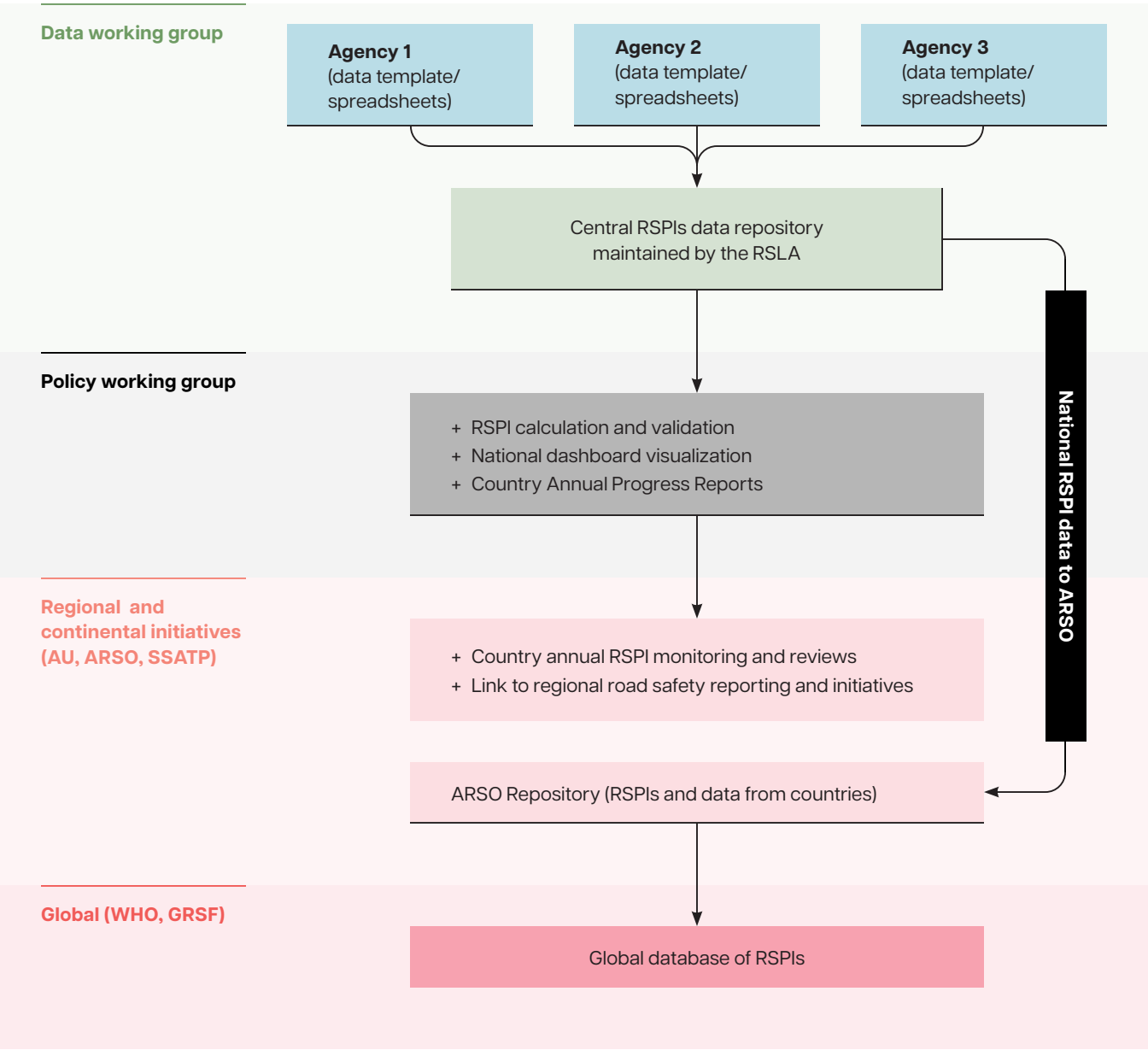
Source: *European Commission 2022.*

Mechanisms for Information Sharing

Most African countries have not reported road safety performance indicators (SPIs), and established mechanisms for information sharing are generally lacking. However, these countries are accustomed to using other reporting and data-sharing platforms to fulfill national and international commitments.

Road safety lead agencies (RSLAs) are responsible for monitoring and evaluating road safety measures within a country, including collecting and reporting data on SPIs at the national level. Because they do not generate all the necessary data for SPIs, they will form national working groups comprising official representatives from agencies that produce essential SPI data. This working group will consist of two chapters: a data chapter, which will handle data reporting, and a policy chapter, which will focus on policy-relevant outcomes and feedback from SPIs and related data issues. RSLAs will establish and maintain a centralized national database for all SPIs and their data requirements as outlined in the monitoring and evaluation (M&E) plan (table 3). Initially, this can be managed using simple spreadsheets to facilitate future integration into more advanced systems. In addition, lead agencies should create national repositories for SPI data, such as those used for crash data, to receive and store data from local agencies responsible for various SPI data components.

FIGURE 2.
Mechanism for Information Sharing



Note: *ARSO = African Road Safety Observatory; AU = African Union; GRSF = Global Road Safety Facility; RSLA = road safety lead agency; RSPIs = road safety performance indicators; SSATP = Africa Transport Policy Program; WHO = World Health Organization.*

To streamline the reporting process (figure 2), RSLAs will create a master list detailing all the data required from each respective data owner or reporter for computing the indicators. This comprehensive list will help identify all data sources and determine where capacity-building efforts and other necessary support should be directed. Additionally, lead agencies will develop specific reporting templates for each data owner, outlining the required data, recommended collection methods, units of measurement, and reporting frequencies and timelines in accordance with the M&E plan. These templates can be developed in simple spreadsheet formats to accommodate varying data capacities across agencies and will also be integrated with online reporting platforms developed by lead agencies.

Once an agency completes the spreadsheet with the required data, it sends the spreadsheet to the RSLA's repository for SPI data. It will be uploaded and prepared to process and compute the respective SPIs for the year. The indicator data will be used by the RSLA to develop an annual country report on road safety performance indicators. Additionally, the indicators will contribute to higher-level reporting, supporting regional road safety initiatives and the African Road Safety Observatory (ARSO).

To support the national road safety policy, it is recommended that the RSLA prepare an annual report. This report will be validated by the data working group before it is shared in a policy working group forum. The forum will include representatives from both private and public road safety stakeholders. This platform will enable discussions on past performance, identification of gaps, and efforts in road safety interventions, and provide feedback for designing future safety-related initiatives. Additionally, this report will serve as a foundation for sharing annual safety performance data at the regional and continental levels.

ARSO establishes and maintains a data-sharing platform as a comprehensive knowledge base for road safety. This platform will enable African countries to upload data on road SPIs and crash-related metrics. Each year, validated road SPI data from the participating countries will be submitted to ARSO and added to its database. This historical database will allow for the analysis and construction of road safety trends across the continent, thereby providing valuable insights for improving road safety policies and interventions in Africa.

Strategies for Implementing the RSPMF

This section summarizes key strategies for executing the road safety performance monitoring framework (RSPMF) for African countries and addresses three primary concerns: a mechanism to achieve an agreement on a common set of indicators considering the capacity of African countries, leadership for driving and managing multicountry reporting processes, and responsibility over advocacy of the RSPMF as a common monitoring framework for African countries.

The strategies for addressing these issues are as follows.

1.

Expert Consultation and Review of Existing Frameworks

The first step involved leveraging expert opinions and conducting an in-depth review of the existing global and regional road safety frameworks. This review ensured that the selected indicators are aligned with international best practices and are relevant to the African context. Indicators were selected following clearly defined criteria, ensuring that they are measurable, actionable, and comparable across countries.

2.

Stakeholder Engagement and Inclusivity

Stakeholder engagement is a fundamental component in this process. To ensure that the framework has broad support, the Africa Transport Policy Program (SSATP) led a structured consultation process that included approximately 45 participants from various road safety lead agencies (RSLAs), key road safety representatives from 13 African countries, international development partners, and technical experts. This consultation provided an avenue for stakeholders to share their perspectives, refine the proposed indicators, and provide valuable feedback that has been incorporated into the RSPMF.

3.

Capacity Assessments and Tailored Support

Given the varying levels of data management capacity among African countries, it is critical to assess their capacity for collecting, analyzing, and reporting road safety data. This information will enable country grouping and adoption of a capacity-building plan that is responsive to the needs of each country. These responses may include technical training on the development and use of standardized data collection tools and provision of the necessary infrastructure to enhance the country's ability to monitor and report road safety indicators. Development partners and regional organizations such as the African Road Safety Observatory (ARSO) and SSATP will use such assessments to mobilize resources for capacity development.

4.

Progressive Approach to Indicator Measurement

Given the disparities in data systems across countries, the RSPMF adopts a progressive approach. The framework includes a minimum set of core indicators applicable to all countries, ensuring that baseline data can be collected and analyzed across the continent for benchmarking. A supplementary list of indicators is included in appendix B for future consideration as countries progress in their data management capacity. This progressive approach ensures inclusivity while promoting progress in countries with stronger data systems.

5.

Institutional Leadership and Coordination

ARSO, in collaboration with the SSATP and the World Health Organization, will play a critical role in coordinating the RSPMF's implementation. ARSO's mandate to harmonize standards across Africa positions it as a key institution with the potential to advocate for the adoption and integration of the common indicators into national road safety monitoring instruments. As part of this responsibility, ARSO will advocate the inclusion of the RSPMF indicators within national road safety frameworks, ensuring that these indicators become a shared responsibility among all African countries.

6.

Regional Monitoring and Review Mechanism

To ensure accountability and continuous progress, ARSO should establish a regional monitoring and review mechanism. The mechanism should include an institutionalized calendar of reporting, a platform for data and information sharing, regular tracking of country performance on road safety indicators, publishing of reports, and knowledge-sharing strategies to facilitate the exchange of good practices. The establishment of this monitoring mechanism will not only foster greater accountability but also serve as a platform for countries to learn from one another, share lessons, and enhance road safety strategies across the continent.

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Appendix A.

Data Required for SPI Reporting by African Countries

	Data	Likely source
Pillar 1: Road safety management		
1	Statement on budget and funding arrangements for road safety action plan	RSLA
2	Statement on presence or absence of road safety action plan	
3	Statement on presence of absence of a centralized road safety database	
Pillar 2: Safe Road infrastructure		
1	Road length assessed/inspected (km)	National road safety / roads authority
2	Star (safety) rating scores for defined lengths of road for all road users	
3	Time of road assessment	
Pillar 3: Safe vehicles		
1	Fleet size	National transport authorities
2	Motor vehicle registration number	
3	Year of manufacture of motor vehicle	
4	Motor vehicle make	
5	Motor vehicle type	

	Data	Likely source
Pillar 4: Safe road use		
1	Drivers tested for alcohol	Police / RSLA / national transport authorities
2	Drivers testing positive for alcohol	
3	Time stamps for testing	
4	Speed of vehicles at a defined point and time	RSLA / national transport authorities
5	Time stamps for speed measurements	
6	Number and make of the vehicles captured	
7	Legal speed limits	
8	Number of cyclists and motorcyclists observed for helmet use	
9	Number of vehicles observed for seat belt wearing	
10	Number of drivers observed for use of mobile phone	
Pillar 5: Postcrash response		
1	Emergency call log data	EMS authorities
2	Time stamp of an emergency call to call center	
3	Time stamp of departure from an EMS station	
4	Time stamp of arrival at scene of patient	
5	Response time thresholds	
Other general areas		
1	National population	National statistics authorities
2	Road lengths by classifications	National roads / highways authorities
3	Budget and allocations (estimates; allocations and expenditure) data	Finance / Treasury authorities / roads authorities
4	Specific laws and regulations on road safety, taxation, imports	Tax authorities
5	Development partner agreements	Finance / Treasury authorities / development partners

Note: *EMS = Emergency Medical Services; RSLA = Road Safety Lead Agency.*

Appendix B.

Theory of Change RSPMF

Problem statement

High road traffic crashes, injuries, and fatalities on Africa roads due to inadequate safety features on most roads and vehicles, weak compliance to road safety standards by road users, inefficient emergency medical services, and weak road safety management

Outcome statement

Reduced road facilities and serious injuries.

PARTNERS

+ Member states
+ Private sector
+ Continental bodies
+ International development partners
+ Universities/research institutions
+ Civil society
+ Road safety agencies
+ Road users/local communities

INPUTS

+ Financial resources (capital investments,..)
+ Human resources (policy makers, road safety stakeholders)

ACTIVITIES

+ Government activities toward RSLA establishment, operationalization and empowerment
+ Monitoring and evaluation
+ Development and Implementation of policies

+ Constructing roads according to standards
+ Road safety audit and inspection
+ Crash-risk mapping
+ Infrastructure treatments

+ Technical controls and inspections (regular roadworthiness checks)
+ Vehicle safety requirements
+ Certification and registration systems

+ Road safety legislation
+ Enforcement activities
+ Driver training and licensing
+ Speed limits setting
+ Public awareness activities

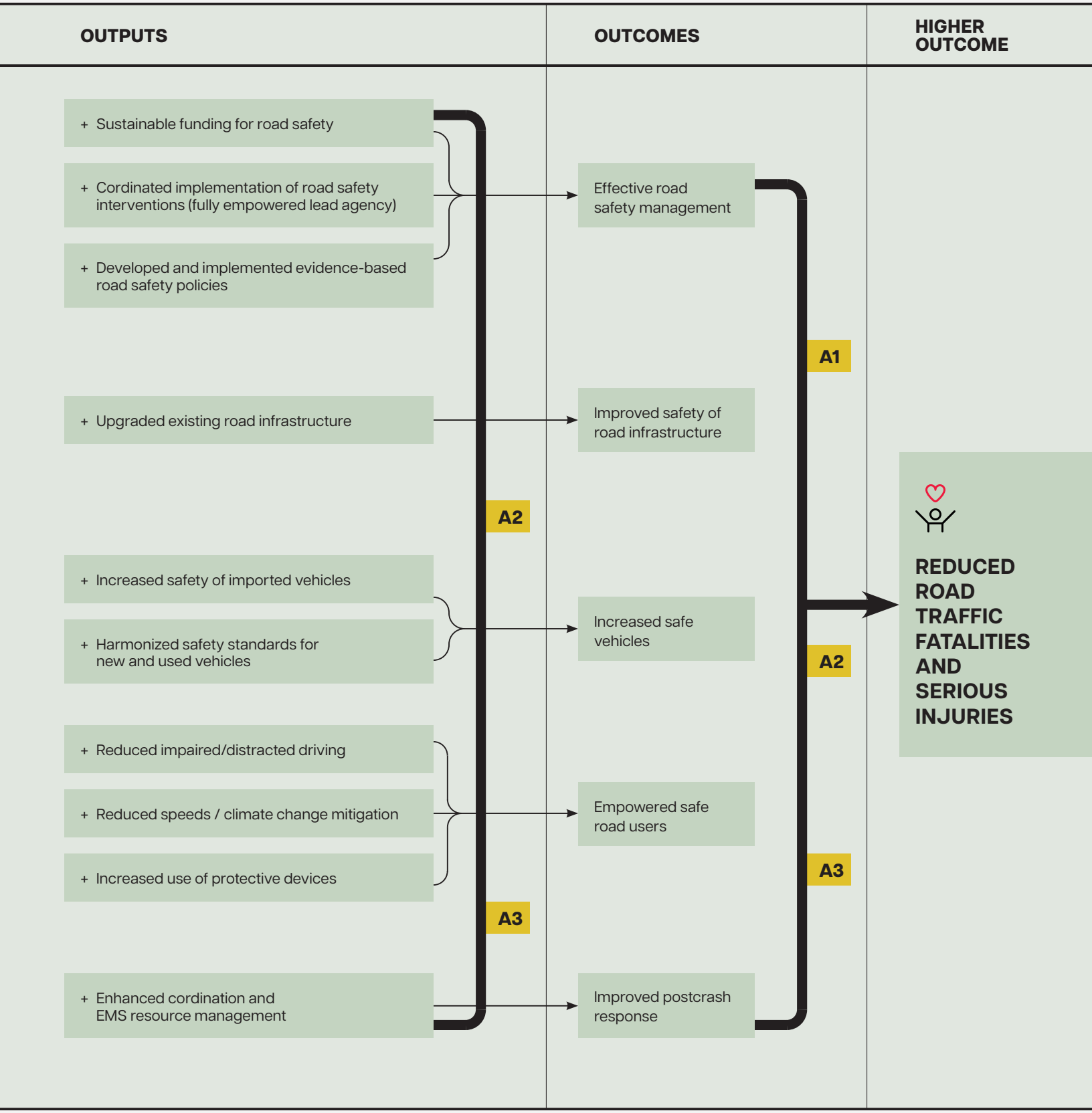
+ System to activate postcrash response
+ EMS cordinating centers
+ Training of EMS professionals
+ Equiped ambulances

A1: Member states will put in place recommended road safety regulations

A2: Member states will allocate sufficient funding for road safety

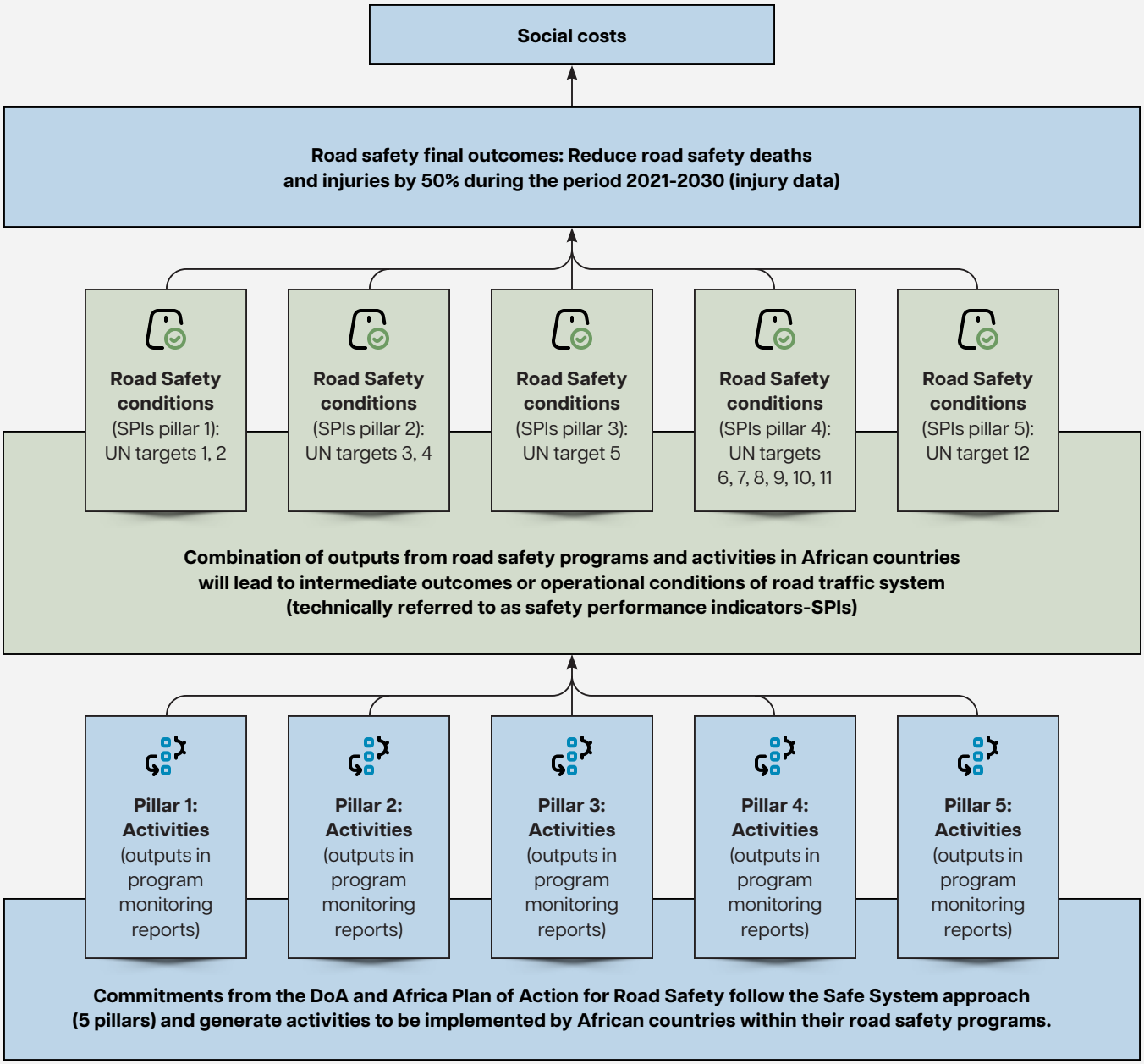
A3: There will be political goodwill from member states

Note: *EMS = emergency medical services; RSLA = road safety lead agency.*


OUTPUTS
OUTCOMES
HIGHER OUTCOME
+ Sustainable funding for road safety
+ Cordinated implementation of road safety interventions (fully empowered lead agency)
+ Developed and implemented evidence-based road safety policies
+ Upgraded existing road infrastructure
+ Increased safety of imported vehicles
+ Harmonized safety standards for new and used vehicles
+ Reduced impaired/distracted driving
+ Reduced speeds / climate change mitigation
+ Increased use of protective devices
+ Enhanced cordination and EMS resource management
A2
A3
Effective road safety management
Improved safety of road infrastructure
Increased safe vehicles
Empowered safe road users
Improved postcrash response
A1
A2
A3
REDUCED ROAD TRAFFIC FATALITIES AND SERIOUS INJURIES

Appendix C.

Conceptual Framework



Note: *DoA = United Nations Decade of Action for Road Safety 2021–2030.*

Appendix D.

UN Voluntary Global Targets for Road Safety

Higher level outcome:
By 2030, reduce by 50% the road fatalities and serious injuries in Africa

Higher outcome indicators:
Road fatalities per 100,000 population
Serious injuries per 100,000 population

Pillar 1:
ROAD SAFETY MANAGEMENT

Target 1:
By 2030, all countries establish a comprehensive multisectoral national road safety action plan with time-bound targets

Target 2:
By 2030, all countries accede to one or more of the core road safety–related UN legal instruments

Safety performance indicators (outcome indicators)	Outputs	Priority
1. Percentage of financed annual RSLA budget	Sustainable funding of road safety	High
2. National road safety action plan with time-bound targets published	Coordinated implementation of road safety interventions (fully empowered lead agency)	Medium
3. Centralized database on road safety established and operationalized	Developed and implemented evidence-based road safety policies	Medium

Pillar 2:
SAFE ROAD INFRASTRUCTURE

Target 3:
By 2030, all new roads achieve technical standards for all road users that take into account road safety, or meet a three-star rating or better

Target 4:
By 2030, more than 75% of travel on existing roads is on roads that meet technical standards for all road users that take into account road safety

Safety performance indicators (outcome indicators)	Outputs	Priority
4. Percentage of trunk (national/primary) road length (km) with 3-star or better rating for road users (vehicle occupants, motorcyclists, cyclists, pedestrians)	Upgraded existing road infrastructure	High
5. Percentage of other (secondary and tertiary) road length (km) with 3-star or better rating for road users (vehicle occupants, motorcyclists, cyclists, pedestrians)		Medium

Pillar 3:
SAFE VEHICLES

Target 5:
By 2030, 100% of new (defined as produced, sold or imported) and used vehicles meet high-quality safety standards such as the recommended priority UN regulations, global technical regulations, or equivalent recognized national performance requirements

Safety performance indicators (outcome indicators)	Outputs	Priority
6. Mean age of motor vehicle fleet in years	Increased safety of imported vehicles	Medium
7. Percentage of registered motor vehicle fleet that meets the UN vehicle safety standards	Harmonized safety standards for new and used vehicles	High

Pillar 4:
SAFE ROAD USERS

Target 6:
By 2030, halve the proportion of vehicles traveling over the posted speed limit and achieve a reduction in speed-related injuries and fatalities

Target 7:
By 2030, increase the proportion of motorcycle riders correctly using standard helmets to close to 100%

Target 8:
By 2030 increase the proportion of motor vehicle occupants using safety belts or standard child restraint systems to close to 100%

Target 9:
By 2030, halve the number of road traffic injuries and fatalities related to drivers using alcohol, and/or achieve a reduction in those related to other psychoactive substances

Target 10:
By 2030, all countries have national laws to restrict or prohibit the use of mobile phones while driving

Target 11:
By 2030, all countries to enact regulation of driving time and rest periods for professional drivers and/or accede to international/regional regulations in this area

Safety performance indicators (outcome indicators)	Outputs	Priority
8. Percentage of drivers under the influence of alcohol	Reduce impaired/distracted driving	High
9. Percentage of drivers using a mobile phone while driving	Reduced vehicle speeds	Medium
10. Percentage of drivers exceeding speed limits	Increased use of protective devices	High
11. Daytime helmet wearing rate by cyclists, moped riders, and motorcyclists		High
12. Daytime seat belt–wearing rate		Medium

Pillar 5:
IMPROVED POSTCRASH RESPONSE

Target 12:
By 2030, all countries establish and achieve national targets in order to minimize the time interval between road traffic crash and the provision of first professional emergency care

Safety performance indicators (outcome indicators)	Outputs	Priority
13. Average response time of EMS	Enhanced coordination and EMS resource management	High
14. Fully operationalized designated EMS lead agency with authority to coordinate prehospital and facility-based EMS		Medium

Recommended activities that form the basis of these outcomes are outlined in the African Road Safety Action Plan 2021–2030.

Appendix E.

Attributes of a 3-Star Road Based on the iRAP Methodology

The iRAP methodology is a widely used system for assessing road infrastructure safety. It uses a star-rating approach to evaluate the safety of road infrastructure based on key attributes that affect road user safety. A 3-star rating is considered a moderate level of safety for road users, meaning that the road provides a reasonable level of protection but could be further improved. To achieve a 3-star rating in iRAP, several critical road attributes are evaluated:

1. **Lane width.**
   Roads should have sufficient lane width to allow safe maneuvering of vehicles. A minimum width is required to ensure that vehicles do not encroach on adjacent lanes or shoulder areas, particularly at higher speeds.

2. **Road shoulders.**
   The presence and quality of road shoulders are assessed. Roads with wide, clear, and well-maintained shoulders are considered safer because they provide a recovery area for vehicles that might veer off the road.

3. **Road surface quality.**
   A smooth, skid-resistant surface is crucial for reducing the likelihood of accidents, especially in adverse weather conditions. The 3-star rating requires a surface that is free of major defects, cracks, or loose material that could cause vehicles to lose traction.

4. **Intersection design.**
   Safe intersection design, including proper signage, lighting, and traffic flow, is an essential factor. A 3-star road will typically have intersections that are designed to minimize conflict points but may still need further safety enhancements.

5. **Pedestrian infrastructure.**
   Adequate pedestrian facilities, such as sidewalks and pedestrian crossings, are crucial for protecting vulnerable road users. A 3-star road should have pedestrian infrastructure, though it may not always meet the highest standards for accessibility or safety.

6. **Road signage and visibility.**
   Proper signage and clear visibility are essential for road safety, especially at curves, intersections, or other complex road features. Roads that achieve a 3-star rating generally have appropriate road signs, but visibility may still be limited in certain areas (e.g., because of poor lighting or obstructed sightlines).

7. **Speed management.**
   Speed limits and speed-calming measures, such as rumble strips or speed bumps, help reduce the risk of high-speed crashes. A 3-star road may have adequate speed management strategies but may still allow for relatively high-speed travel in some areas.

8. **Roadside hazards.**
   The presence of hazards such as trees, utility poles, or embankments near the roadside is a significant consideration. A 3-star road will typically have some mitigation measures for roadside hazards, but it may not fully separate the roadway from these obstacles.

9. **Roadside safety barriers.**
   The presence of barriers, such as guardrails, is evaluated based on the level of protection they provide to prevent vehicles from running off the road. A 3-star road may have some barriers, but coverage may be incomplete or only in high-risk areas.

10. **Lighting.**
    Adequate street lighting, especially in high-risk areas like intersections, curves, and pedestrian crossings, is essential for improving visibility during nighttime. A 3-star road generally has lighting in key areas but may lack continuous coverage along the entire route.

Appendix F.

Supplementary List of Indicators for Road Safety Performance Monitoring

HIGHER OUTCOME
REDUCED ROAD TRAFFIC FATALITIES AND INJURIES

Indicators	Formula
Road fatalities per 100,000 population	(Number of fatal road crash cases /Population) *100,000
Ratio of injuries to fatalities	Number of injuries/Number of fatalities

Data source: Hospital and police data

INTERMEDIATE OUTCOMES
+ Effective road safety management
+ Improved safety of road infrastructure
+ Increased safe vehicles
+ Empowered road users
+ Safer speeds
+ Improved postcrash response

Indicators	Formula	Data sources
+ Effective road safety management		
Percentage of road infrastructure budget allocated to road safety	(Road safety budget allocation/Roads development budget allocation) *100	Public finance and roads authorities
Percentage of road safety budget financed	(Road safety budget requirements/Road safety budget allocation) *100	

Indicators	Formula	Data sources
National road safety lead agency established	Logical	Lead agencies, transport authorities
National road safety strategy developed		
Publication of national road safety action plan with targets		
Compliance with minimum crash data reporting requirements (ARSO)		
Centralized database on road safety established and operationalized		
Road safety data sharing protocols signed		
Road safety data capacity-building program in place		
Country membership to IRTAD established		
Number of research institutions conducting road safety research in a country	Number	
African Road Safety Charter ratified	Logical	
Number of UN road safety conventions and agreements acceded to or ratified	Number	
Presence of national policies that promote compact urban design	Logical	
+ Improved safety of road infrastructure		
Presence of road safety audit and inspection guidelines or manual	Logical	Road / transport authorities
Percentage of road infrastructure projects undergoing formal road safety audits (RSA) at the design phase	(Number of road infrastructure projects audited/Total number of road infrastructure at design phase) *100	
Existence of a resourced plan for the safety improvement of existing roads	Logical	
Percentage of km of new roads that meet the minimum 3-star standard for all road users	(Length of surveyed road meeting the 3-star rating for all road users (kms)/ Total length of surveyed roads in kms) *100	
Percentage of rehabilitated roads with 3-star rating for all categories of users		
Percentage of roads with formal pedestrian footpaths	(Length of surveyed roads assessed, which has formal pedestrian crossings/ Total length of the surveyed roads) *100	
Percentage of roads with pedestrian crossings	(Length of surveyed road with formal pedestrian crossings (kms)/Total length of surveyed roads in kms) *100	
Percentage of roads with undivided carriageways with vehicles speeds of 80 km/h or more	(Length of surveyed road with undivided carriageways (kms)/Total length of surveyed roads in kms) *100	

Indicators	Formula	Data sources
+ Increased safe vehicles		
Percentage of vehicles that pass first registration inspection	(Sum of all motor vehicles that pass the country first registration inspection/ Number of motor vehicles inspected for first registration) *100	Lead agencies / transport authorities
Motor vehicle import age limit in years	Years	Tax / transport authorities
Percentage of registered motor vehicle fleets that pass periodical roadworthiness inspection	(Number of existing vehicles that pass the applicable inspection tests in a year/ Total number of vehicles inspected in the year) *100	Lead agencies / transport authorities
Mean age of vehicle fleet in years	The sum of ages of all vehicles/Number of vehicles	
Proportion of 2- and 3-wheelers out of registered vehicles	(Number of 2- and 3-wheeled vehicles/ Number of all registered motor vehicles) *100	
+ Empowered road users		
Existence of legislation specifying legal maximum blood alcohol concentration (BAC) limits	Logical	Lead agency / transport / health authorities
Existence of legislation specifying legal maximum levels of psychoactive substances		
Existence of legislation specifying enforcement of BAC limits and other driving under the influence (DUI) legislation		
Existence of data systems on driving under the influence of alcohol and/or other psychoactive substances		
Percentage of drivers under influence of alcohol	(Number of drivers tested for alcohol/ Total number of drivers tested) *100	Lead agency / transport authorities / police departments
Percentage of fatal and serious injury crashes with drivers under the influence of alcohol	(Number of fatal and serious injury crashes drivers that test positive for BAC/Total number of fata and serious injury crashes drivers tested) *100	
Existence of national seat belt law	Logical	Lead agency / transport authorities
Existence of legislation on appropriate fitment and use of safety belts for car drivers and passengers		
Existence of legislation on enforcement of safety belt wearing		
Existence of data systems on the use of safety belts		
Percentage of motor vehicle drivers correctly wearing a safety belt	(Number of drivers observed to correctly wear a seat belt/Total number of observed drivers) *100	

Indicators	Formula	Data sources
Percentage of motor vehicle passengers correctly wearing a safety belt	(Number of passengers observed to correctly wear a seat belt/Total number of observed passengers) *100	Lead agency / transport authorities
Existence of national child restraint law	Logical	
Existence of legislation on appropriate fitment and use of child restraint systems (CRS) in cars		
Daytime helmet wearing rate	(Number of motorcyclists observed to correctly wear a seat belt/Total number of observed motorcyclists) *100	
Graduated driver licensing for novice drivers adopted	Logical	
Limits for maximum driving time and minimum rest periods for professional drivers set and enforced		
Existence of mandatory liability insurance for operators of motorized vehicles		
Existence of legislation on quality of helmets for motorcyclists		
Existence of national motorcycle helmet wearing law		
Existence of legislation on enforcement of helmet use by all motorcyclists	Logical	
Existence of data systems on helmet use		
Percentage of motorcyclists appropriately wearing an appropriate helmet	(Number of motorcyclists observed to correctly wear a seat belt/Total number of observed motorcyclists) *100	
Number of head injuries (fatal or severe) of motorcyclists	Number as given by hospitals	Hospitals
Existence of legislation on the use of mobile phone while driving	Logical	Lead agency / transport authorities
Existence of legislation on enforcement of mobile phone use while driving		
Existence of data systems on distracted driving by handheld electronic devices		
Percentage of vehicle drivers using handheld mobile phones while driving	(Number of drivers observed to use a mobile phone while driving/Total number of observed drivers) *100	Lead agency / transport / police authorities
Existence of data systems on road injuries and fatalities caused by distraction by mobile phone	Logical	Lead agency / transport authorities
Number of road injuries and fatalities due to distraction by mobile phone	Number	Lead agency / transport / police authorities
Existence of legislation on driving times and rest periods for professional drivers	Logical	

Indicators	Formula	Data sources
Percentage of professional drivers checked for compliance with regulation on driving times and rest periods	(Number of checked professional drivers found to be compliant with driving times and rest periods/Total number of checked professional drivers) *100	Lead agency / transport / police authorities
+ Safer speeds		
Existence of legislation on speed limits	Logical	Lead agency / transport / police authorities
Existence of legislation on speed limits enforcement		
Number of vehicles checked for compliance with speed limits	Number	
Existence of data systems on speeding	Logical	
Percentage of vehicle exceeding the speed limit	(Number of vehicles found to be exceeding the speed limit/Total number of observed vehicles) *100	
Existence of data systems on speeding related injuries and fatalities	Logical	
Proportion of speeding as contributing factor within the total number of road injuries and fatalities	(Number of road injuries and fatalities involving speeding/Total number of road injuries and fatalities) *100	Lead agency / transport / police authorities
+ Improved postcrash response		
Existence of a policy specifying national time target for maximum interval between a road crash resulting in serious injury and the provision of first professional emergency care	Logical	EMS authorities
Average response time of emergency medical services (EMS)	Sum of all individual response times recorded within a specified period (3 months)/Number of emergency responses within that period	
Existence of a designated agency with authority to coordinate emergency care, including prehospital and facility-based emergency care services	Logical	
Percentage of road traffic crashes resulting in serious injury where the time interval to professional emergency care did not exceed the national target	(Number of road traffic crashes resulting in serious injury where the time interval to professional emergency care did not exceed the national target/Total sum of all responded cases of serious traffic crashes) *100	
Proportion of the number of road traffic deaths among those severely injured in road traffic crashes	(Total recorded road traffic death cases/ Total road crash injuries admitted to hospitals for a period lasting 24 hrs or more) *100	Hospital / police data

Indicators	Formula	Data sources
Proportion of the number of road traffic deaths among those presented to hospitals for road traffic injuries	(Number of road crash injuries admitted at casualty that die in a hospital/Total road traffic injury patients admitted at casualty) *100	Hospital data
Number of EMS stations per 10,000 population	(Number of certified EMS stations in a country/ Population of the country) *10,000	EMS authorities
Number of EMS stations per 100 km	(Number of certified EMS stations in a defined road length (kms)/Total road length) *100	
Training in emergency medicine – available for nurses	Logical	Health / EMS authorities
Training in emergency medicine – available for doctors		
Percentage of physicians out of EMS staff	(Number of registered EMS physicians/ Total registered EMS staff) *100	
Percentage of emergency medical technicians (EMTs) out of EMS staff	(Number of registered EMS technicians/ Total registered EMS staff) *100	
Percentage of emergency care assistants (ECAs) out of EMS staff	(Number of registered ECAs/Total registered EMS staff) *100	
EMS staff per 100,000 population (physicians, EMTs, ECAs)	(Total number of EMS staff (doctors, ECAs, EMTs, or as defined by a scheme of service)/population) *100	
Number of health professionals trained on WHO protocol	Number	Health / EMS authorities
Type A ambulance per 100,000 population	(Number of Type A ambulances/ Population) *100	
Type B ambulance per 100,000 population	(Number of Type B ambulances/ Population) *100	
Type C ambulance per 100,000 population	(Number of Type C ambulances/ Population) *100	
Number of health facilities per 100 km of main highways	(Number of health facilities along trunk roads/Total length of trunk roads in kms) *100	
Percentage of beds in trauma centers and trauma departments of hospitals out of the total hospital beds	(Number of certified trauma beds in use/Total hospital beds) *100	
Total number of trauma care beds per 100,000 population	(Number of certified trauma beds in use/Total population) *100,000	
Average length of stay of RTI victims in intensive care units	Number as given by the hospitals	Health authorities
Existence of a unique emergency telephone number with national coverage to activate postcrash response	Logical	EMS authorities
National emergency call and dispatch center set up		
Existence of a good Samaritan law		

Indicators	Formula	Data sources
Number of lay responders trained in BLS	Number	EMS authorities
Proportion of lay responders trained in BLS per 100,000 population	(Number of trained lay responders/Total population) *100,000	
Percentage of health facilities with trauma registries established	(Total number of health facilities with trauma registries/Total number of health facilities) *100	Health / EMS authorities
EMS incorporated in national health insurance schemes	Logical	
Percentage of patients who develop complications after emergency care	(Number of patients who develop complications after emergency care/ Total emergency care cases) *100	Health authorities
Availability of vehicle third-party insurance coverage for road trauma patients	Logical	Health / transport authorities

Note: *ARSO = African Road Safety Observatory; BLS = basic life support; IRTAD = International Road Traffic and Accident Database; RTI = road traffic injury; WHO = World Health Organization.*

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