TRANS-SAFE

TRANSFORMING ROAD SAFETY IN AFRICA

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Radical improvement of road safety in low- and medium-income countries in Africa

D2.1: Baseline Report on Safe Systems theory in selected African countries

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Summary Sheet

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Abstract	Using the state-of-the-art in-depth database on crash data, vehicle features and damages, road users and their injuries developed in WP1 and the assessments on road design and infrastructure for VRU in WP3, determine which countries have, theoretically, integrated international and local standards into their road and traffic management systems.

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LIST OF ABBREVIATIONS

Acronyms	Full meaning
ARSO	African Road Safety Observatory
ARSO	The African Organisation for Standardisation
BAC	Blood Alcohol Concentration
BIGRS	The Bloomberg Philanthropies Initiative for Global Road Safety
CDC	Centre for Disease Control
C-BRTA	Cross-Border Road Transport Agency
DOT	Department of Transport
EAC	East African Community
GA	General Assembly
iRAP	international Road Assessment Programme
ISO	International Standard Organization
JICA	Japan International Cooperation Agency
KUMP	The Kigali Urban Mobility Project
LMICs	Low- and Middle-Income Countries
MININFRA	Ministry of Infrastructure
NRSA	National Road Safety Authority

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NMT	Non-Motorized Transport
NFAIC	National Fatal Accident Information Centre
NRTLEC	National Road Traffic Law Enforcement Code
RNP	Rwanda National Police
RTIA	Road Traffic Infringement Agency
RTMC	Road Traffic Management Agency
RTSA	Road Traffic Safety Agency
RURA	Rwanda Utilities Regulatory Authority
SADC	Southern African Development Community
SAPS	South African Police Services
UN	United Nations
UNRSF	United Nations Road Safety Fund
WHO	World Health Organization
WB	World Bank

EXECUTIVE SUMMARY

Over the past decade, the significant multisectoral costs of road fatalities and injuries globally, and particularly in Africa, have been repeatedly emphasized (WHO, 2018). The emphasis on Africa is not surprising, especially considering that low-and middle-income countries are disproportionately impacted by fatalities and injuries, accounting for 90% of global road traffic deaths (WHO, 2018). While there are several tools and methodologies available to address the issue in Africa, the adoption of the "Safe System Approach" has been hailed, as the most effective measure to significantly improve road safety (Usami, et al., 2021).

The safe systems approach's implementation framework, developed by The WHO and other stakeholders underlines the importance of co-operation between partners in tandem with interventions aimed at improving road safety. It emphasizes that in a Safe System, all stakeholders are responsible for establishing the circumstances for safer and more inclusive mobility systems (ITF, 2022).

In the seventy fourth session of the General Assembly on improving global road safety, the Assembly adopted the Decade of Action for Road Safety 2021-2030 (A/RES/74/299). Acknowledging the lessons from the First Decade of Action 2011–2020 on integrated and intersectoral approaches to road safety, the resolution "encourages Member States to consider including road safety as an integral element of planning of land use, street design, transport systems and governance, keeping in view the needs of vulnerable road users in urban and rural areas, inter alia, through the promotion of a safe system approach, as appropriate".

The Safe System identifies five pillars of action that are generally accepted as all being critical to realizing the goal of reducing road traffic deaths and injuries by 50% by 2030. The pillars are multimodal planning, safer roads, safer vehicles, safer road users, and post-crash care response (WHO, 2021). Through the first African Road Safety Action Plan and subsequent regional cooperation efforts led mostly by the UN Economic Commission for Africa, the Safe Systems approach has become integrated into the Africa wide framing for road safety and has, to a large extent been mirrored, in theory, with national road safety frameworks (Small & Runji, 2014).

This document aims to elaborate on the extent to which the safe systems method has meaningfully been woven into both the policies and actions of local authorities in the cities and countries selected

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for the TRANS-SAFE demonstration pilots and provide some evidence into the status quo. The report focuses on the safe systems approach integration, in Kigali, Rwanda, Lusaka, Zambia, Cape Town, South Africa and Kumasi, Ghana. The report provides insights into the scale of the problem and some insight into whether countries are meaningfully taking action across all five of the pillars. The report finds that while all of the countries engaged in the project have embraced the safe systems methodology in theory, in practice, gaps in implementation and enforcement continue to worsen the status of road safety.

- All of the countries engaged in the project have a lead road safety agency and guiding documents for decision making and processes as well as established targets on national and regional level. However, the power of cities to take action is limited due to funding challenges and mechanisms to obtain permissions to take action.

- Road user behaviour requires significant efforts. Although there are several local and national level campaigns in many of the cities and corresponding regulations and penalty structures, drinking and driving, driving while using mobile phones and not wearing seatbelts or properly restraining children remains a challenge in ensuring road safety.

- Most vehicles are old and are likely not to be roadworthy. However, all the countries are taking action to set regulations on the kinds of vehicles that are imported and available. The focus has predominantly been on emissions standards but there is expanding focus on road safety in regional bodies and regulatory frameworks. Action for safe vehicles could be targeted at national level policy but there are also opportunities to explore city level interventions for existing vehicles.

- Post crash care is a significantly underreported pillar of the safe system and it is unclear what the true extent of action has been. Most countries are tackling a wide range of public health issues among road related deaths and injuries. However, it is encouraging that in many of the countries, health and transport ministries are working hand in hand to design solutions and set clear targets.

1. INTRODUCTION

The report provides an analysis of the current state of integration of the safe systems approach in four African Countries on the national and city level. It outlines a brief history of the Safe Systems Approach in the African context and dives into its application in Lusaka Zambia, Cape Town South Africa, Kumasi Ghana and Kigali, Rwanda. Statistics are included, where available and relevant, on road crashes, fatalities, and injuries, as well as an overview of the main causes of road crashes in these cities.

The report analyses actions and institutional structures under each of the 5 pillars with reference to other relevant work packages and explores road safety interventions that were either perceived widely as successful when evidence is lacking or are supported with data showing an impact. Examples include public awareness campaigns, improvements in infrastructure and vehicle safety standards, and changes to legislation and law enforcement. The report identifies the major challenges and barriers that impede the implementation of successful road safety measures in Africa, such as lack of resources, inadequate infrastructure, and weak governance.

About TRANS-SAFE

The TRANS-SAFE project involves national, regional, and city level demonstrations to test different types of innovative and integrated Safe System solutions, complemented by a comprehensive toolbox, capacity development, policy support and replication activities. To maximize impact, the project brings together in a consortium, highly committed cities, road safety agencies and experts from both Europe and Africa. Building on numerous synergistic projects, networks, and a strong technical experience among partners, the consortium will deliver on project objectives through highly effective and innovative approaches to sustainable road safety development, thereby ensuring that road safety systems and interventions from this project deliver on the recommendations of the Road Safety Cluster of the African-EU Transport Task Force, adopted in 2020. The consortium members have experience and expertise in Africa-related research as well as development-related research in collaboration with local actors in various countries of Africa at many levels. Ultimately, the project will help deliver on the Joint EU-Africa Strategy (JAES) and advance countries' progress towards the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). TRANS-SAFE

leverages on existing partnerships to collaboratively design sustainable interventions that aim to radically transform road safety systems in Africa.

Methodology

The research for this report relied on a mixed methods approach. Trans-safe project partners provided anecdotal insights into the situation based on their own expertise and experience and their knowledge was expanded with a desk review and available literature search. Some sources are official, others academic but some statistics are also taken from quotes given to the press by politicians and the police authorities which, it is recognised, are not always consistent. Further, the road safety data may not be consistent or truly reliable due to the methodologies used to collect in each of the respective countries. The limitations of the report are therefore acknowledged and the project's attempt to define the status of road safety in these countries and cities is constrained by access to available published data. Efforts have been made to reduce the possible bias in the usage these data resources. It is recommended that follow-up interviews and continued research supplement the findings in this text.

2. THE SAFE SYSTEMS APPROACH

The Decade of Action for Road Safety 2021-2030 is a product of a General Assembly (GA) resolution on improving road safety and many years of consensus building on the best possible methodology for reducing road fatalities and injuries (WHO, 2021). It is the second global commitment with the first taking place 2011–2020. The Plan, whose development was led by WHO and UN Regional Coordinators, aims to reduce the number of deaths and injuries due to road traffic accidents through reliance on what is called the Safe Systems Approach. The approach, which has been utilized in various projects and in multiple national strategy documents, emphasizes that any road deaths or serious injuries are unacceptable (ITF, 2022).

The Global Plan describes what is needed to reduce road fatalities by 50% by 2030 and calls on governments and partners to implement an integrated safe systems approach. The GA resolution it is empowered by, adopted at the Seventy-fourth session in 2020, on Improving Global Road Safety (A/RES/74/299); frames road safety as a key driver of Sustainable Development and recognizes that it should not be approached as a stand-alone issue. Instead, it should be an integrated component of

several policy agendas, including child health, climate action, gender, and equity. The overarching idea is that systems soaked in safety will have holistic benefits for health, the environment, equity, the economy and our mobility and transport systems.

The GA Resolution highlights that road traffic deaths and injuries disproportionately impact marginalized communities, as people with disabilities, those on low incomes, the elderly, young people and women are the road users protected least. In Particular, pedestrians, cyclists, users of motorized two- and three-wheeled vehicles and passengers of public transport often have no choice but to rely on modes of transport that are less safe. Thus, making the sustainable modes of walking, cycling and public transport a priority.

The Resolution emphasizes the importance of an urgent whole systems approach, the language of the provisions however invites some level of interpretation that makes it difficult to identify the order of essential actions or a clear methodology. For example, the text invites member states to consider adopting comprehensive legislation on key risk factors. It also encourages them to consider becoming contracting parties to the United Nations legal instruments on road safety such as the 1949 Convention on Road Traffic and the 1968 Convention on Road Signs and Signals. It notes the importance of keeping the needs of vulnerable road users in urban and rural areas in view through *inter alia*, the promotion of a safe system approach, as appropriate.

While many of the provisions contain descriptions of what to consider, in the incorporation of road safety as an integral element of planning land use, street design, transport systems and governance, Member States are asked only to consider integrating road safety and only, as appropriate, promote the safe systems approach.

Of course, there are several United Nations legal instruments and guidance documents that support the implementation of the safe systems approach and the interpretation of the relevant sections and what they could mean as well as some defined standards, however, the phrasing conveys discretion and makes the content potentially objective. Open-ended phrases such as "consider" or "as appropriate" fail to clarify what standard should be used to identify whether an action is worth consideration or is appropriate. As a result, certain responsibilities across the five recommended (but not prescriptive) pillars of the safe systems approach in the Global Plan namely, improve road safety management; strengthen the safety of road infrastructure and mobility; improve the safety of vehicles; enhance the behaviour of road users; and improve the post-crash care response, may be susceptible to being prioritized or deprioritized due to internal or external pressures, financing or political agendas

or a single pillar approach. The voluntary nature of the global performance targets in the Plan also makes it difficult to hold actors accountable.

There are several objective sources that bolster the interpretation of the resolution's provisions. The WHO and leading transport agencies have done considerable work to harmonize information on road safety and make data, knowledge products and services available, in particular for African countries. There has also been considerable financing geared towards the safe systems approach through funding opportunities like Bloomberg Philanthropies, projects like SaferAfrica, AfroSAFE and the project for which this document is being guided by, Trans-safe. The Global Plan itself was developed by WHO and the United Nations Regional Commissions, in cooperation with partners in the United Nations Road Safety Collaboration and other stakeholders, as a guiding document to support the implementation of the Decade of Action 2021–2030 and its objectives.

Despite the call to "consider as appropriate" in some of the cornerstones of the GA Resolution and the impact that open phrases can have on interpretation and prioritization, the Global Plan confirms that the safe systems approach is a core feature of the decade of action. It recognizes that "humans, vehicles and infrastructure must interact in a way that ensures a high level of safety". In essence, it outlines that a safe system:

- "Anticipates and accommodates human errors;
- Incorporates road and vehicles designs that limit crash forces to levels that are within human tolerance to prevent death or serious injury;
- Motivates those who design and maintain the roads, manufacture vehicles and administer safety programmes to share responsibility for safety with road users, so that when a crash occurs, remedies are sought throughout the system, rather than solely blaming the driver or other road users;
- Pursues a commitment to proactive and continuous improvement of roads and vehicles so that the entire system is made safer rather than just locations or situations where crashes have occurred; and
- Adheres to the underlying premise that the transport system should produce zero deaths or serious injuries and that safety should not be compromised for the sake of other factors such as the cost or desire for faster transport times."

2.1 AFRICAN INTEGRATION OF SAFE SYSTEMS APPROACH

In Africa, the safe systems approach, particularly in the wake of rapid motorization, has also been clarified and cemented as a fundamental approach to reducing road fatalities through Ministerial Round Tables, charters, action plans, decisions of the Road Safety Cluster of the African-EU Transport Task Force and other forums.

In 2007 at the African Road Safety Conference in Accra, although not expressly referencing the safe systems approach, the stakeholders outlined actions akin to the targets and pillars including promoting road safety as a health, transportation, law enforcement, education, and development priority and strengthening pre-hospital and emergency services to provide timely and appropriate care to road traffic-injured patients and (UNECE & WHO, 2007). Interestingly, unlike the Global Plan which does not have a strong emphasis on rural road safety, the Declaration urges African countries to pay special attention to rural transport through research on the rural dimension of road safety. There is also no specific reference to safer vehicles specifically.

In 2016, during an ordinary session of the African Union, the Charter for Road Safety was drafted (African Union, 2016). The Charter aims to serve as a policy framework for road safety improvement and advocacy in Africa. It does consider the multi-sectoral dimension of road safety as well as the impact of transport on matters of safety and security and the protection of the environment. However, despite there being an opportunity to make reservations on any of the provisions of the Charter (unless contrary to the object and purpose), full signature and ratification rates remain low. Currently out of 55 signatures, only 17 have signed and 11 ratified the text (status as at June 2023).

According to Article 4 and 5 of the Charter, State Parties are legally mandated to establish national road safety lead agencies through cross-sectorial coordination and provide the lead agencies with institutional and financial support. Recognising the importance of data, Article 7 mandates national road safety databases that are made available for planning, research and development and monitoring and evaluation of the progress. These three Articles appear to have been a priority for most African countries since the development of the First Decade of Action, which commenced in 2011 (African Union, 2018). However, the underreporting of injuries and deaths from crashes, and lack of harmonized definitions and data sets remains a challenge (African Union, 2017).

The Charter, although not expressly indicating commitment to the safe systems approach, does incorporate many elements of it. In particular, dedication to making safety management part of

broader planning decisions that meet economic, human and environmental goals (Usami, et al., 2021). It mandates road safety audits, national road design manuals, priority for vulnerable road users and, unlike the Accra Declaration developed 9 years earlier, an entire article dedicated to safer vehicles. Article 16 on safe road users mandates the enforcement of road safety legislation on speed control, alcohol and drugs, wearing seatbelts, the use of helmets and the use of mobile telephones while driving. Article 17 is dedicated to post-crash care.

The African Road Safety Action Plans which are drafted in order to support the objectives of the Charter for Road Safety as well as the Decade of Action, do however, very clearly make a firm connection with the safe systems approach (African Union & UNECE, 2011) (6.1 Annex 1 – African Action Plan Review) The Plan for 2011 – 2020 incorporated all 5 pillars with specific, locally relevant activities, monitoring indicators, expected accomplishments and time frames. There was also a rural transport safety component.

From 2014-2017 experts on road safety met continuously to discuss international instruments on road safety, drunk driving reduction measures in Africa, the implementation of the Road Safety Action Plan for Africa and strengthening the Safe Systems machinery. In 2018, the United Nations Trust Fund for Road Safety was launched. The Fund has supported projects around the globe, with most of the funding (28%) dedicated to Africa and most funds going towards the pillar on road management (36%) and safe roads (36%) (UNRSF, 2022).

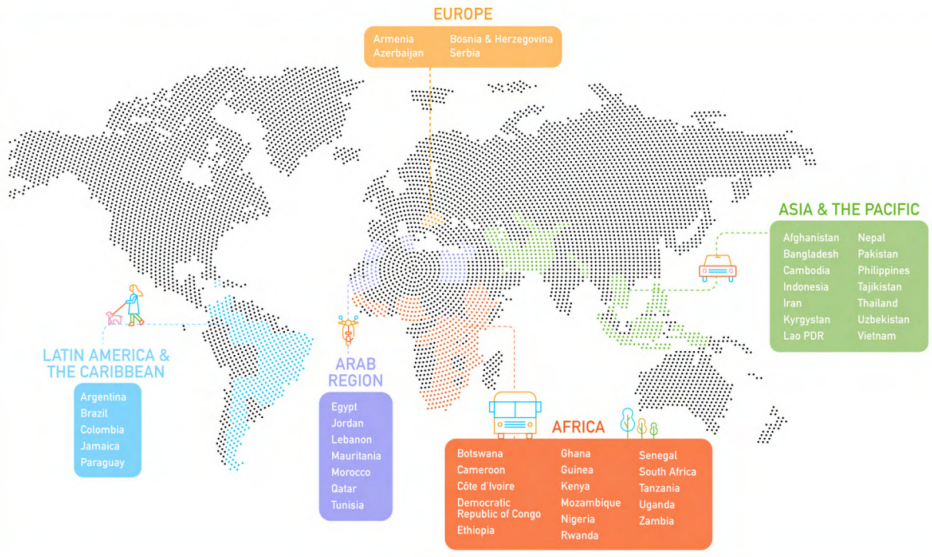

Figure 1: Map of activities of the United Nations Trust Fund in 2022 adapted from the Annual Report

2.1.1 AU led Safe Systems Review

Despite growing international and African consensus on the urgency of the issue, in the review of the implementation of the first African Action Plan, it was noted that the road safety status in some countries is worsening rather than improving (African Union, 2018). This statement is complimentary with the available data. As illustrated in Figure 2, estimates from the WHO made in 2020, indicate that the number of male deaths increased in Ghana from 35.2 per 100,000 in 2010 to 39.7 in 2019. Male deaths decreased in Rwanda but remained high at 43.2 per 100,000 in 2019. Encouragingly, the number of fatalities has decreased overall and the number of female deaths in all countries has decreased. However, it is difficult to quantify the real impacts as the injury data is not comprehensively captured and it is uncertain whether the available data is exact.

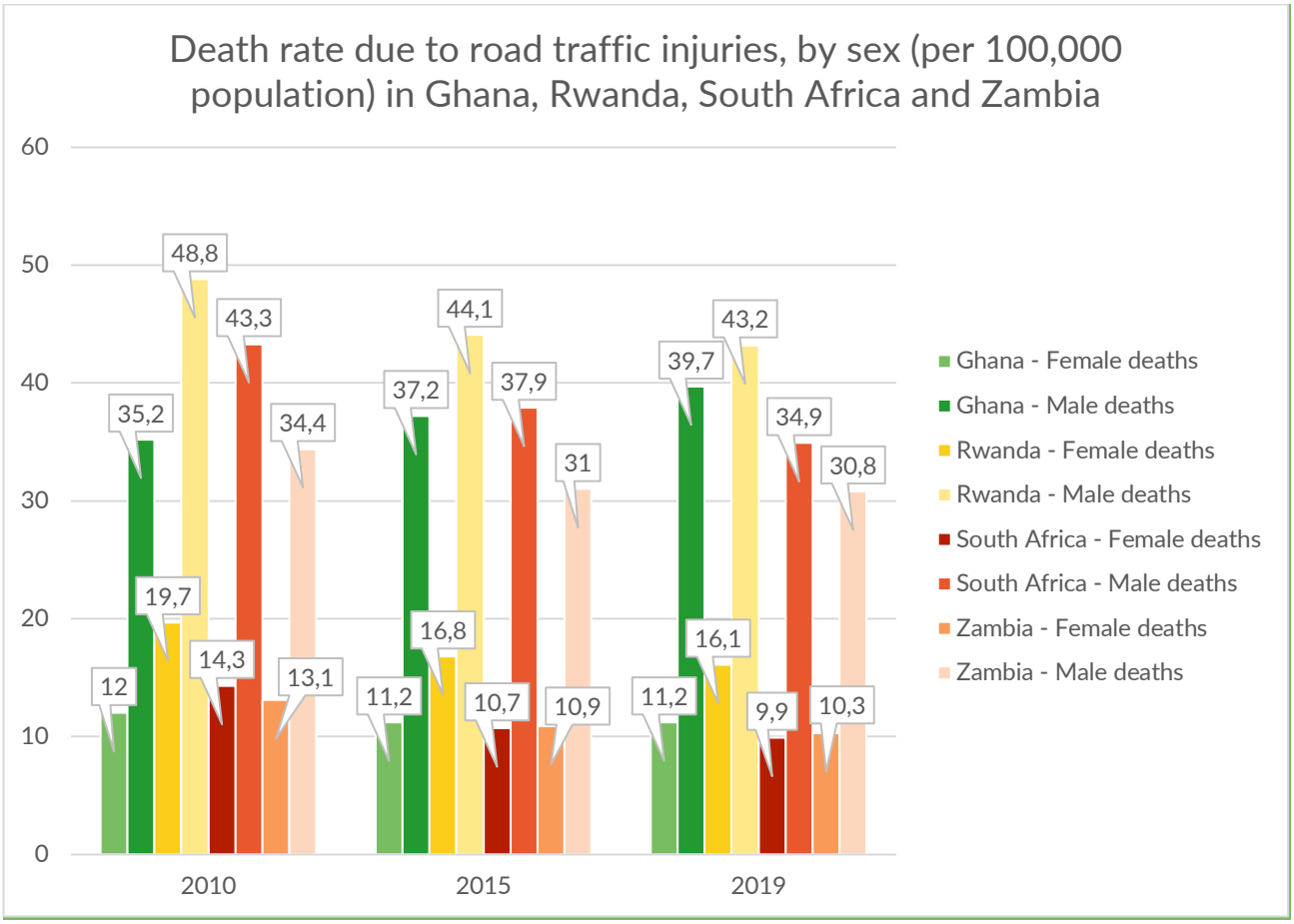

Figure 2: Global Health Estimates 2019: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2019. Geneva, World Health Organization, 2020

The review has 6 pillars for assessment, those that are incorporated in the Decade of Action as well as any Cross-cutting issues (Pillar 6). Cross-cutting issues deal predominantly with rural transport safety and evaluation.

Unfortunately, while there were improvements in middle- and high-income countries, at the time of the review, no low-income country was able to demonstrate a decline in injuries and fatalities (African Union, 2018). Further, only 30 countries participated in the review and 25 completed the follow-up questionnaire which focused on the following thematic areas (pillars):

i. "Road Safety Management which concerns the institutional framework needed to implement road safety activities, and thereby sets the oversight of all other pillars;

ii. Safer roads and mobility that deals with road development, the safety of all road users, especially pedestrians and other vulnerable users;

iii. Safer vehicles which focuses on standards, entry and exit of vehicles into and from countries;

iv. Safer drivers and other road users that addresses driver training, testing and licensing, driving permits and enforcement of the driving code, awareness and education of the public, and the development of a safety culture, and

v. Post-crash response which deals with on-site care, transport and trauma care of injured" and

vi. Cross cutting issues on transport safety in rural areas.

Zambia is the only country out of the four in the Trans-Safe project that participated in the evaluation workshop and completed the follow-up questionnaire.

During the evaluation, the countries that have reported to have fully implemented Pillar 1 activities as defined in the Action Plan were Côte d'Ivoire, Benin, Niger, Nigeria and Burkina Faso. Although fully implemented, they had not succeeded in reducing fatalities as the established road safety body was not operational, the highway codes were not enforced, and the national road safety strategy was not implemented (African Union, 2018).

The assessment found that countries such as Niger, Nigeria, Ghana and Zimbabwe had fully implemented several activities under the second pillar, Safer Roads and Mobility. Senegal, Seychelles and Benin had fully implemented the activities of pillar three on safer vehicles.

Most countries that had taken only limited or marginal action in the implementation of Pillar four. Due largely to inactivity on its targets, pillar five appears to be the most urgent (African Union, 2018). In 2018, many states did not have any answers for the activities under post-crash care, likely due to the status of their health infrastructure overall. Seychelles, Niger, Senegal were the only countries who reported to have fully implemented the activities indicated in the pillar.

On the Sixth in the African Action plan, which deals with transport safety in rural areas, Benin, Mali, Burkina Faso, Côte d'Ivoire, Lesotho had fully implemented the measures.

2.1.2 The future of the Safe Systems Approach in Africa

The Safe System is being adopted by an increasing number of countries due to the UN Decade of Action for Road Safety and subsequent actions of international and domestic actors to localise and realise the targets. The efforts to ensure integration on a policy level have been growing in significance and impetus and is evidence that there is a high level of consensus on its appropriateness for improving global road safety. Organisations like the Network of African Road Safety Legislators, for example, are assessing legislation in Africa on vehicle safety, drink and drug driving, speeding and the use of seat belts and helmets. They are also supporting countries in ratifying the African Charter for Road Safety (WHO, 2023).

There has also been an increasing number of partnerships and alliances aimed at supporting the realisation of the Safe Systems Approach and funding streams, which local authorities sorely rely on, are increasingly refining their criteria for support towards the pillars, pushing governments and implementing agencies towards designing projects and activities that fulfil the targets and objectives (Figure 3). Partnerships have also been geared towards improving data management and increasing capacities for data-driven decision making (SSATP, 2023).

The priorities of the first African Action Plan, namely the establishment of lead road safety agencies and the availability of robust and reliable data are likely to be echoed in the Second Action Plan. However, the success of the second plan is only likely if the challenges identified in the review of the first are decisively addressed. Namely, obtaining sustainable funding, improving the capacity of Road Safety Agencies/organizations, full empowerment of road safety agencies, ensuring national level collaboration, developing an overarching legal framework to guide road safety, ensuring effective data management and a clear identification of political champions (African Union, 2017).

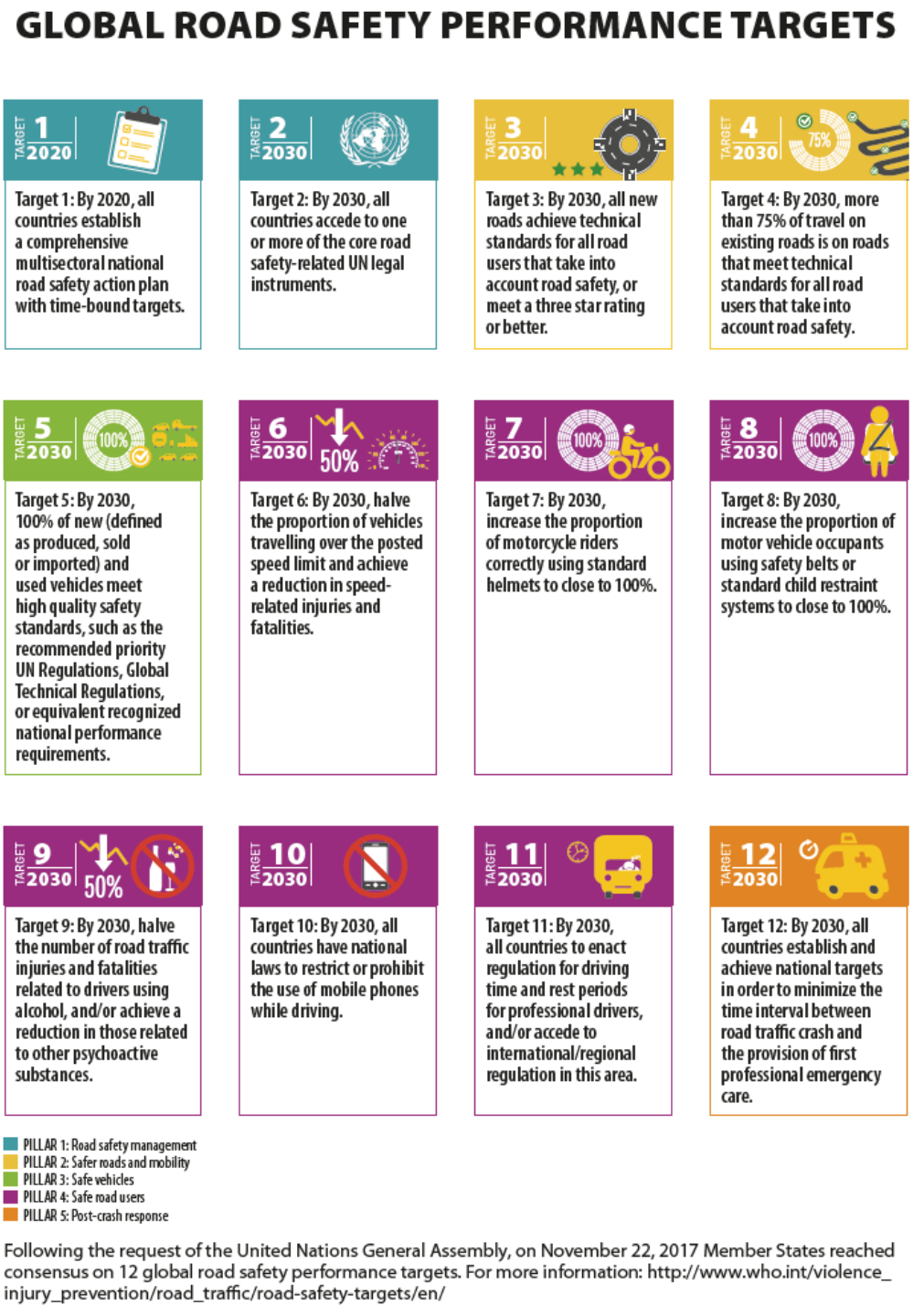

Figure 3: The 12 Global Targets as agreed by Member States on implementation of the Global Decade Of Action 2021 - 2030, adapted from the Global Plan for Road Safety.

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3. LIVING LABS BASELINE

In order to support the activities in each of the respective Living Lab countries and cities, the following sections have been developed to determine which, out of those incorporated into the TRANS-SAFE project have, theoretically, integrated international and local standards into their road and traffic management systems. It features a deep dive into the scenarios of each relying predominantly on the targets as agreed by member states as indicated in Figure 3 above. The global targets are utilized as the Second Action plan for Road Safety in Africa is still currently being developed and the exact targets are unknown. It is suggested that future research rely on the documents developed specifically for the region and relevant sub regions.

3.1. KIGALI, RWANDA

Road crashes are a significant challenge in Rwanda. The WHO modelled a rate of 29.7 deaths/100,000 population on Rwandan roads, which is substantially higher than the African average (WHO, 2018). According to the Rwanda National Police (2022), road accidents claimed 655 lives, with the majority (225) being pedestrians. Out of the 684 victims of serious crashes, 175 were pedestrians, and out of 5,244 minor accidents, 1,262 involved pedestrians. The National Transport Strategy attributes the status quo to unsafe street designs, a lack of road safety awareness, and inadequate post-crash response (MINIFRA, 2021).

3.1.1 Road Safety Management

Target 1: Rwanda has shown clear commitment to making road safety and the safe systems approach a priority in policy and responsibility delegation, however, according to the research conducted in WP1 of the TRANS-SAFE project, in 2015, it had the highest road traffic fatality rate among East African Countries. The National Transport Policy and Strategy for Rwanda 2021, provides a clear direction and intervention framework for ensuring safer roads. Additionally, Presidential Order No 85,01 of 02-09-2002 regulates general traffic police and road traffic, guiding the specifications of road signs and the use of roads to ensure safety.

Although there is no direct reference to the safe systems approach, the focus of the National Transport Policy and Strategy is on improving safety for goods and passengers in every mode of

transport. The Strategy provides directions and interventions to ensure safe speeds and aims to protect road users from crashes. The document contains a commitment to ensuring that transport systems will be developed with increased emphasis on poverty alleviation, safety, and environmental improvement.

A commitment to planning measures that promote safety for all cyclists and pedestrians is also contained in the National Urbanization policy showing that road safety is integrated into the urban planning agenda at the policy level (MINIFRA, 2015). The Fourth Health Sector Strategic Plan also sets targets for the reduction of road traffic accidents. Although there is no detailed breakdown or strategy to do so, the strategy commits to ensuring the availability of ambulances and emergency services more generally (MOH, 2018).

Target 2: Despite not being a party to any of the UN Conventions on road safety in 2020 (Table 1), the country has proved, to some extent, that action can be taken to address road safety, locally and there have been some shifts in policy on a regional level on the import standards of certain vehicles (UNEP, 2022). Rwanda has made significant strides in integrating international and local standards into its road and traffic management systems, aiming to enhance road safety and reduce the number of road crash deaths.

Table 1: Rwanda's ratification, accession or definite signature on legal document according to the United Nations Road Safety Conventions Contracting Party Status; 2020. Blank indicates no data.

Ratification, accession, definite signature Signature No action	Road Traffic Act, 1968	Road signs and signals, 1968	Vehicle Regulations 1958	Technical inspection of vehicles, 1997	Global Vehicle regulations, 1998	Dangerous goods by road (ADR), 1957	African Road Safety Charter
Rwanda							

3.1.2 Safer Roads and Mobility

Target 3 and 4: Navigating the roads can be a challenge in Kigali. Non-maintained roads, dangerous curves and steep intersections, mixed traffic usage, and lack of proper road signage can all create

hazardous conditions. Additionally, view obstructions and relatively narrow roads can lead to confusion and potential crashes. Pedestrians and two-wheelers are often not provided with designated lanes, leading to a dangerous mix of traffic. Inappropriate road signs in some places or lack of them where needed can be particularly dangerous, especially in school zones where speed limits are often not reduced below 80 km/hr and drivers are not encouraged to slow down. Currently, there is no data on the road ratings on the iRAP Safety Insights Explorer, which provides star ratings for road infrastructure. (iRAP, n.d.)

Flooded roads due to inadequate canalization and drainage systems can also be an issue. Pedestrian crossings in some road sections may be inappropriate or lack the necessary safety measures to protect those walking. Sidewalks may also not always be present. Finally, inclusive road design standards from the policy planning, development, and enforcement are often not in place.

Research has found that high crash risk hotspots are less likely to be partially paved or dirt roads, less likely to have narrowing of roads, and more likely to have wet, flooded, slippery, or uneven road surfaces. Additionally, pedestrian walkways, factors aiding pedestrian crossings such as crosswalks, pedestrian traffic lights, and flower beds are more common in high crash risk locations (e.g. these are areas where there are many people walking and high volumes of traffic mixing). Road-related bridges are present in higher fatal crash areas too. It has also been found that 82% of fatal crashes occur at intersections (Wang, et al., 2020).

The National Transport Policy and Strategy for Rwanda 2021 provides directions and interventions to ensure safer roads. It also contains a commitment to implement safe at-grade pedestrian crossings.

In the analysis of selected examples of critical crossing facilities for vulnerable road users conducted as part of the TRANS-SAFE project (WP3), three typical junctions in Kigali city were analysed (Nyabugogo terminal area, Kinamba crossing and Sonatube roundabout). The strengths of all were emphasized, however, only Sontube roundabout was found to have the most impact as Nyabugogo's design does not solve the problem of heavy pedestrian traffic conflict with the passing vehicular traffic and the Kinamba crossing has a wider carriageway with no physical separation and no pedestrian refuge. The crossings also lacked zebra crossings, warning signs and speed calming measures towards zebra crossing locations (TRANSSAFE; 2023).

Rwanda does have a technical committee nested under the Rwanda Standards Board (RSB/TC 055), dedicated to standardization of highways, the safety of roads, pavement design and road construction furniture. The committee is tasked with developing guidelines or codes of practice for construction, rehabilitation, and maintenance of the roads (RSB, n.d.). Agencies identified in the committee includes the City of Kigali, The Rwanda Transport Development Agency, The Ministry of Infrastructure, Institute of Engineers Rwanda (IER) and Rwanda Consumer's Rights Protection Organization (ADECOR). More research into the role of the Standards Board in road safety is needed.

Several strategies have been implemented by the Government to reduce the rate of crashes, such as increasing road width, setting speed limits and installing traffic cameras. However, these have failed to significantly reduce the number of fatalities. The report cited several causes, such as black spots, poor vehicle condition and a lack of knowledge of traffic rules.

There are some projects on the horizon that would be valuable to monitor in the next phases of the TRANS-SAFE project.

- The Kigali Infrastructure Project (KIP), launched in February 2023, is a City of Kigali road construction project that aims to increase road connectivity while improving road safety by focusing on keeping roads in good condition including road signs and markings (Kigali Infrastructure Project (KIP) launched by the City of Kigali in Rwanda, 2023).
- The Blackspots Correction Initiative aims at reworking dangerous road sections for safety improvement.
- The Kigali Urban Mobility Project (KUMP) is a City of Kigali World Bank funded project aimed at enhancing public transport services including walking and cycling and road safety improvement interventions.

3.1.3 Safe Vehicles

Target 5: Until recently, due to the lack of strict vehicle importing rules, there was a general a non-compliance with international vehicle safety standards. As a result, many of the vehicles in the country are unlikely to have the same safety features as newer vehicles. Important safety features such as Frontal and Side Impact protection (UN ECE. 94, 95), Motorcycle Anti-Lock Braking System (UN ECE. 78), Pedestrian Protection (UN ECE. 127), Electronic Stability Control (UN ECE. 140), and Seat Belts and Anchorages (UN ECE. 16, 14) have not, historically been monitored in Rwanda.

In 2022, East African Standards on standards on Air Quality – Vehicular exhaust emission limits came into effect in the region (EAS 1047:2022) (UNEP, 2022). To support the implementation of the standards, the East Africa Community Secretariat (EAC) in with UNEP and the United Nations Economic Commission for Europe (UNECE) organized a regional training on inspection and monitoring framework for used vehicles imported in the East Africa Community Sub Region. The event formed part of the "Safer and Cleaner Vehicles for Africa" Programme and resulted in a set of minimum environmental and vehicle safety requirements. All member states have the EAC region were encouraged to adopt and fully implement the East African standard on vehicle emission limits but it is not clear yet whether Rwanda has yet.

Topic	Passenger cars	PTWs	Commercial vehicles
	UN Regulation	UN Regulation	UN Regulation
Active safety			
Brakes	R13 H (incl. ABS)	R 78 (incl. ABS) GTR 3	R 13 (incl. EVSC)
Electronic Stability Control	R 140 GTR 8		
Steering	R 79		R 79
Tyres	R 30/ GTR 16	R75	R 54
Mechanical couplings			R 55
Passive safety			
Helmets		R22	
Safety belts anchorages	R 14		R 14
Safety belts	R 16		R 16
Seats/ head restraints	R 17, R 25/ GTR 7		
Frontal collision	R 94		
Lateral collision/ pole side impact	R 95, R 135/ GTR 14		
Pedestrian safety	R 127/ GTR 9		
Child restraints	R 44		
Electric PTW safety	R 100/GTR 20	R 136	
Cabs strength			R 29
General safety			
Buses and coaches			R 107
Safety glazing	R 43/ GTR 6		R 43
Devices for indirect vision			R 46
Underrun protection			R 58 R 93
Lighting and light installation			
Installation of lighting	R 48	R 53, R 74	R 48

Figure 4: The principles for minimum used vehicles standards for the EAC community as agreed in September 2022.

Additionally, there is a lack of inspections to powered two wheelers and motos, and many imported used vehicles that lack some protective measures. There is a mandatory vehicle inspection in Rwanda. Commercial vehicles undergo roadworthiness inspection twice a year and once a year for cars of personal use. It aims to keep vehicles safe. There is also a ban on the importation of used motorcycles which aims to reduce road crashes due to old motorcycles. Despite good vehicle inspection

enforcement, some old cars operate on rural roads where they are less likely to meet enforcement officers.

The Ministry of Infrastructure (MININFRA) has established legal frameworks to ensure the safety of vehicles and the Rwanda Standards Board (RSB) has put in place vehicle-related standards.

3.1.4 Safe Road Users

Target 6: The national government has recognised the impact of speed on safe road users. The transport strategy identifies introducing systematic traffic calming on smaller streets among other things to reduce motor vehicle speeds and the Rwanda National Police have, for several years worked on road safety education campaigns and initiatives like Gerayo Amahoro (Rwanda National Police, 2023).

Speed is the major cause of crashes in Kigali, however, at times action to address the issue by the national government has often been met with frustration by road users. Reports from 2020-2021 indicate the user responses to regulations introduced to limit speeding in Kigali (Lliza, 2021). The provisions limited speeds to 40km/h with high fines issued by automated cameras for violations. In 2021, the President revised provisions which regulated speed limits in the capital (Office of the President of Rwanda, 2021).

Target 7: Helmet usage for motorcyclists in Kigali is high. In a study conducted in 2014 on 609 commercial motorcyclists, 100% reported wearing a helmet and 99% reported wearing a chin strap (Vissoci, et al., 2020). In 2022, the UNRSF provided Rwanda with $299,600 to develop a scalable helmet manufacturing industry that will be intended to produce a consistent supply of safe, affordable helmets to be exported across the continent (UNRSF, 2022)

Target 8: The Rwanda Utilities Regulatory Authority (RURA) has developed a regulation governing school bus transport services in Rwanda (REGULATION N^{0} 011/R/TL-TPT/RURA/2023 OF 06/03/2023). According to the regulation, which is also relevant for the safe vehicles pillar, the "phasing out of mini-buses and other types of small vehicles under contracts with schools in the City of Kigali as well as seat belt installation on every seat will be effective from September 2023" when the new regulations will be implemented. The regulation dictates that "each school bus must contain a seat belt on every seat, first aid kit, fire extinguisher, glass breaker; a drop off / pick up signs." The implementation of this measure could be an interesting opportunity to learn for other regions and

could be monitored in the coming months. More research is needed to understand the wider seatbelt regulations and usage in Rwanda.

Target 9: According to the National Police, most of the road traffic accidents are caused by reckless human behaviour. The police regularly request that drivers avoid alcohol and drugs, speeding or failing to wear a seatbelt. The Rwanda Bureau of Investigation has also encouraged Rwandans to avoid bad habits such as alcoholism and drug use, particularly during the holiday season when accidents are expected to increase. Speed is the major cause of crashes, and the majority of victims in Kigali (50.7%) were in the 16 to 30 age group. Driver's condition was the major determinant in 80% of crashes, with reckless driving being the most prominent cause.

Exceeding the speed limits results in a fine of Rwf 25,000 (approximately $24.6) which increases to Rwf 35,000 (approximately $34. 4) if not paid within two days. Motorcycles make up most of the vehicles on the roads which are also often heavily loaded with people and goods. Privately owned vehicles are subject to speed limits, but these are high - even in urban areas - 80 km/hr (Achieng & Mulyungi, 2019). The speed is enforced, in places, by Vitronic automated speed detection cameras and road design measures (speed humps and rumble strips).

Target 10: Out of the 5000 accidents recorded in 2018, at least 2000 were linked to use of a mobile phone while driving or crossing the road (Nkubito, 2019). There is a small fine of Rwf10,000 for illegally using a mobile phone while driving but it has been increased to Rwf100,000 to try to reduce crashes related to driving while on a phone call.

Target 11: RURA is responsible for monitoring operator's practices and has a code of conduct for public transport drivers in Rwanda. More research is required to understand whether the testing and management of drivers.

3.1.5 Post Crash Care

Target 12: Road traffic accidents are a common cause for admission into hospitals in Rwanda. A recent study revealed that in the period of January – June 2020 at the Centre Hospitalier Universitaire de Kigali ED, the most common injuries were as a result of a road traffic accident (70.8%) with 58.3% of patients being treated for traumatic brain injury (Odoom, et al., 2022). Of those treated, a quarter still required hospitalization and most that were discharged reported an impaired functional capacity.

Emergency medicine is a relatively new formal speciality in Rwanda that is delivered as a Masters in Medicine requiring four years of training. There are also nursing and anaesthetist specialist training programs in disciplines that will support improved post-crash care. Due to this new status, long duration of training, and attrition of healthcare providers after training the numbers of those with specialized training are few and predominantly surgeons, general practitioner physicians, anaesthetists and nurses without specialized training provide care across prehospital, clinic and hospital settings.

NGOs and higher education institutions have some human resources trained as instructors in emergency care courses for different levels of healthcare providers and lay responders but often funding to conduct training and spread the resource is limited given many competing priorities in the health system.

There is a 912-emergency response line and ambulance service to provide post-crash care when summoned within Kigali city, however there are only 277 ambulances nationwide to service a population of nearly 13 million and it is commonly reported by 912 callers to be unreliable (Dollemore, 2022). However, the ambulance service providers are in the process of upgrading and digitizing their response system with precise geolocations of the callers and a dedicated communication system. Health is one of the main sectors identified in the ICT National strategy (MINICT , 2017).

There is also a strategic plan within the health system aimed to decentralize emergency care resources by distribution of specialist trained physicians across the network of hospitals outside of Kigali city. In addition, there is an NGO and academia supported-movement to provide more training in internationally validated, simple post-crash care across the population spectrum and scaling this through integration with formal education/registration schemes such as professional drivers, police, medical and nursing licensure.

The health system is responding to the current limitations in data to understand the epidemiology and outcomes of road traffic injuries and presently most documentation takes place on paper and is sometimes transferred to digital databases. However, these data sets are frequently reported in aggregate which limits their usefulness in intervention selection, quality assurance, and improvement programs.

3.2. KUMASI, GHANA

According to reports by Ghana's National Road Safety Authority (NRSA), an average of 10,365 traffic crashes have occurred annually in Ghana over the period between 1991 and 2019. These crashes have Killed 47,783 people, seriously injured 147,208, and has caused minor injuries to 200,703 people over the same period. The Centre for Disease Control (CDC) further has reported that road injury is among the top 10 causes of death in Ghana. One report suggests that about $230 million is spent annually on emergency and trauma care associated with motor accidents alone (US Department of Health and Humanitarian Services, 2019).

According to the National Transport policy, motorcycle users face the greatest risk of death in traffic, registering the second highest road traffic fatalities (20.9%) in the country after pedestrians. Bus occupants account for 17.5% of deaths and car occupants 10.3% (MOT, 2020).

Kumasi is the capital town of the Ashanti region, located at the middle belt and it is the second largest city of Ghana. According to the Department of Urban Roads, there are 1,700km of road networks which serve a population of about 3.5 million. Presently most of the city roads and junctions have exceeded their capacities thus causing traffic jams in the metropolis.

In 2020, The Kumasi Metropolitan Assembly (KMA) worked with Bloomberg Philanthropies Initiative to reduce road injuries and crashes under the Global Road Safety (BIGRS) initiative (KMA, 2021). Together with several partners including the Ghana Police Service and the National Road Safety Authority, stakeholders mapped the status of road safety in the metropolitan.

The findings revealed that the number of reported road traffic deaths rose by 3% from 2020 – 2021, with vulnerable road users accounting for two thirds of the fatalities from 2017 – 2021 (KMA, 2021). More than 59% of deaths occurred when drivers hit pedestrians.

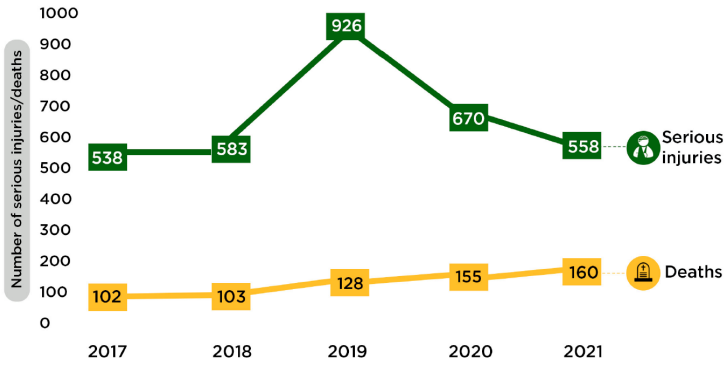

Figure 5: Road traffic trends in Kumasi, 2017 - 2021 as indicated in the Kumasi Road Safety Annual Report 2021

3.2.1 Road Safety Management

Target 1: In 2020, The Republic of Ghana drafted its national transport policy. National Transport Policy is the primary governance document for the transport sector and is theoretically aligned with the Sustainable development goals, the Paris Agreement and Agenda 2063.

The Coordinated Programme of Economic and Social Development Policies (CPESD) 2017-2024, the framework with which the transport policy has been drafted emphasises several strategies to ensure safer roads. The CPESD includes "incorporating pedestrian safety facilities in planning, design, construction and maintenance of road infrastructure; providing adequate training for motor vehicle operators; amend the law to empower the National Road Safety Commission to enforce and sanction road sector operators who do not comply with the laws; developing standards for public transport vehicles in line with international best practices; and integrating the databases of Driver and Vehicle Licensing Authority (DVLA), police and insurance companies to assist with traffic law enforcement."

The National Transport Policy for the Republic of Ghana aims to create an accessible, affordable, reliable, safe, and secure transport system for all users.

The Motor Traffic and Transport Directorate of the Ghana Police Service (MTTD) is the primary agency responsible for enforcing traffic regulations in Ghana (Okyere, et al., 2021). The functions of the MTTD include traffic control and management; enforcement of all road traffic laws and regulations; investigation on road traffic accident crash cases reported and processing and prosecution of traffic offenders. Headquartered in Accra, members of the MTTD unit are also responsible for educating the public on preventive measures (Stantec, 2022). There are several other agencies that operate in the

space. The Ghana Revenue Authority (GRA) with monitoring support from the Ghana Police Service, for example collects Vehicle Income Tax quarterly from commercial transport operators (GRA, 2023).

The core organisations involved in road safety are:

i. National Road Safety Commission (NRSC)

ii. Driver And Vehicle Licensing Authority (DVLA)

iii. Ministry Of Road And Highways (MRH)

iv. Ministry Of Transport (MOT)

v. Ministry Of Health (MOH)

vi. Transport Associations like the Ghana Private Road Transport Union (GRPRTU), Progressive and the Transport Owners' Association (Protoa)

vii. Ghana National Fire Service

viii. National Ambulance Service

There is evidence that government authorities, managing the design and building phase of infrastructure are responsible for doing so in a way that complements national plans, policies and strategies and is responsive to wider needs and demands (Ministry of Roads and Highways, 2019). In Particular, the “social and economic goals of poverty alleviation and development; increasing rural accessibility; and protection of the environment.”

Target 2: Ghana has signed the African Union’s Road Safety Charter (04/07/2017) but not ratified the text (Table 2). However, it is an active member of the West African Road Safety Organisation which has been hailed as an effective sub regional mechanism for refining policies for road safety (Natioal Road Safety Authority, 2023). For example, the Ghana National Bureau has incorporated what is referred to as the “ECOWAS Brown Card Insurance Scheme”. The Brown Card Scheme aims to ensure swift and fair compensation to victims of motor crashes caused by motorists visiting territories of other ECOWAS Member States (Stantec, 2022).

Table 2: Ghana's Ratification, accession or definite signature on legal document according to the United Nations Road Safety Conventions Contracting Party Status; 2020.

Ratification, accession, definite signature Signature No action	Road Traffic Act, 1968	Road signs and signals, 1968	Vehicle Regulations 1958	Technical inspection of vehicles, 1997Global Vehicle regulations, 1998	Dangerous goods by road (ADR), 1957	AETR, 1970	African Road Safety Charter
Ghana							

3.2.2 Safer Roads and Mobility

Target 3 and 4: The Ghana National Transport policy outlines that one of the most significant gaps in Ghana's planning is the lack of integration between transport planning and land use planning (MOT, 2020).

Although there are design guidelines for walking and cycling in Ghana (UNEP & UN-Habitat, 2022), there are several studies, reports and data sets that stress the inadequacy of the available infrastructure, especially for vulnerable road users. The poor location and maintenance of pedestrian infrastructure, especially within the Kumasi Central Business District (CBD), for example, is a significant risk to safe mobility (Amoako, Brandful , & Rockson, 2014).

The Ghana Highway Authority has an embedded The Road Safety and Environment Division (RSED). The authority is tasked with providing a safe and reliable trunk road network at optimal cost (Stantec, 2022). In 2019, the Ministry developed a Manual for Low Volume Roads (Ministry of Roads and Highways, 2019). According to the manual, in 2019, the road network in Ghana comprised of approximately 71 000 km. The following documents guide road design on a national level:

The GHA's annual report features a section on all the activities of the RSED. It includes a long list of road safety infrastructure interventions and some activities related to the review of the Traffic Management Plan and Design including streetlight assessments, the installation of road furniture and the mapping of Black Spots (GHA, 2022). The report highlights upcoming projects and activities including the dualisation of Accra – Kumasi Road and development of several bypasses (N6, currently in design phase).

With the support of the BIRGS project from 2015-2019, several pedestrian footbridges, speed limits and crosswalks among other things were installed in Ghana. In Accra specifically, the BIGRS initiative

surveyed and assessed 260 km of roads; completed 74 km of construction based on iRAP survey recommendations and trained 164 professionals on road safety (iRAP, 2020).

In Kumasi, the KMA, Road Safety Report reveals the top five high-risk pedestrian fatal crash corridors. They are Sunyani Road, the Accra-Kumasi Road (N6), Bekwai Road (N8), Osei Tutu boulevard and PV Obeng Bypass. Noting the ongoing plans to upgrade Accra-Kumasi Road, improving the road safety status of this essential road could be a TRANS-SAFE priority (KMA, 2021).

3.2.3 Safe Vehicles

Target 5: Most of the vehicles in Ghana are used vehicles imported mainly from Europe and North America. There are also a few that come from Asia and the Middle East (UNEP DTU Partnership, 2022). The country has age and fiscal policies which in effect, mirror the Euro 4 standard for used vehicles to some extent but many of them are still older than 10 years (UNEP, 2020). Within the main metropolitan areas of Kumasi, there are two main forms of public transport operations. They are Tro-tro (mini buses) and shared taxi services (UNEP DTU Partnership, 2022). Tro-tros are often cited as being some of the most unsafe vehicles on the roads (Boateng, 2020).

In Ghana, vehicle assembly and automotive components manufacturing has been identified as a strategic anchor industry to be facilitated and supported as part nationwide industrial development (MOTI, 2019). One of the strategic objectives of the policy is to improve vehicle safety and environmental standards and ensure compulsory vehicle standards for all new and used vehicles. There is also a growing set of data and activity in the electric vehicle space in Ghana but some social barriers around the knowledge

A priority for Kumasi appears to be setting up a database of public transport vehicles and usage to bolster the available mobility data for decision-making (Carey, 2022).

Due to its role in intra-Africa exports and imports, Ghana has many weighbridges that assist with the enforcement of weight regulations on the roads. The GHA currently manages the eighteen (18) permanent weighbridge stations in the country, one of which is in Kumasi (GHA, 2022).

3.2.4 Safe Road Users

Dangerous driving practices are a major cause of road accidents in Ghana. Drivers often display impatience and disregard for traffic regulations, which can result in accidents. There is also inadequate

understanding of traffic regulations and road safety, which further contributes to accidents. In addition, there is ineffective dissemination of road safety information to the general public and, according to the national policy there is a gap in the enforcement of the provisions of the Road Traffic Regulations that severely impacts road traffic safety (MOT, 2020).

Target 6: With an emphasis on public transport vehicles, the goal is to address the problem of unsafe driving behaviours, notably excessive speeding. National authorities have introduced anti-speeding campaigns and are stepping up enforcement measures, and enhancing drivers' awareness of road safety.

In Ghana, competition, job insecurity, and low earnings are have been quantified as the drivers, particularly of public transport, of undesirable driving practices such as over speeding (Boateng, Why Africa cannot prosecute (or even educate) its way out of road accidents: insights from Ghana, 2021). Commercial buses and minibuses (referred to as trotro) are involved in a large portion of the crashes and are often blamed for the poor road safety status. Deaths went from 479 in 2020 to 684 in 2021. The Annual road safety report from Kumasi, reveals that road related deaths occur most regularly on the weekends and in December as a result of speeding, alcohol use and decreased enforcement (KMA, 2021).

The city has worked BIGRS and the National Road Safety authority to develop campaigns against speeding. In Kumasi and Accra, the campaign 2021 named “The Surgeon” targeted male drivers between 18 and 29 years. In the campaign, a doctor from the Greater Accra regional hospital explained how crashes could be avoided and testimonials from families with victims of road crashes shared their testimonials (Vital Strategies, 2021). Police officers in Accra have also recently been equipped with speed detection devices. It is hoped by the authorities that the devices will assist in reducing driver speeds. There is also growing research on the risks related to running red lights

Target 7 and 8: According to the Kumasi Annual Road Safety report, helmet use was very low in 2020. Only 44% of drivers and 6% of passengers were wearing helmets correctly if at all (KMA, 2021) in terms of seatbelts, in 2020, only a quarter of drivers were observed using seatbelts and only one out of five children younger than 5 were observed using child restraints (KMA, 2021). The barriers to the enforcement of seatbelt laws have been identified as inadequate resources and logistics, external interference and lack of consensus on seat belt laws and public attitudes towards road safety as both an individual and collective responsibility (Okyere, et al., 2021).

Target 9: Research suggests a serious influence of alcohol and other narcotics on all road users in Kumasi (Forson & Ackon, 2022). Two studies conducted at the Accident and Emergency Department at the Komfo Anokye Teaching Hospital have revealed that up to a third of injured patients presented to the emergency department with alcohol on board. Drivers, passengers, and pedestrians were found to have had significant alcohol exposure. Marijuana, cocaine, benzodiazepines, and opiates were also identified in drivers and passengers. Drunk-driving remains a serious challenge in Ghana (Damsere-Derry , Afukaar , & Agyemeng, 2012).

Target 10: In 2012 Ghana passed a law (L.I 2180), banning the use of mobile phones while driving. Despite the regulation, many drivers still text or call while driving, some even while operating public transport vehicles (Owusu, Abdurrahaman, Bakare, & Taana , 2021).

Target 11: Road Traffic Regulation 2021 does not allow a person to drive a car for more than 4 hours without rest or more than 8 hours in a 24-hour period. Drivers are also not allowed to drive more than 500km without resting. Regulations also require a compulsory rest of at least 30 minutes after a 4-hour driving period (Stantec, 2022). More research is needed to understand the level of enforcement of these provisions.

3.2.5 Post Crash Care

Target 12: The Health Service Delivery section of the revised National Health Policy aims to reduce the ratio of injuries and deaths from road traffic accidents to 200:1 by 2025, however, the text does not incorporate a baseline of current injuries and deaths, estimating at 500:1 for 2022 (MOH, 2021).

In the Capital, the Accra Metropolitan Assembly (AMA) launched an Accra Retrospective Hospital Report 2020-2021 to complement the efforts of the Police in the assessment of road traffic deaths and serious injuries in the city. (GNA, 2023). According to the press surrounding the launch, 559 deaths from traffic were reported from Accra hospitals. The attempt to accurately quantify the toll of road deaths and injuries could be a useful replication activity for Kumasi.

3.3. LUSAKA, ZAMBIA

Zambia is one of the few countries that recorded a decline in the number of road traffic crashes and deaths from 2015 to 2020 (Mubanga, Zambia's Road Satey Outlook Bright, 2021). However, the number of incidents still remains incredibly high and the rapid increase in population size in urban

areas has resulted in a number of challenges (Alcorn, 2022). Crashes in Zambia are monitored and documented by the Traffic Section of the Zambia Police. The latest national statistics were collected between January 2021 and December 2021 and are derived from the 2021 Road Transport and Safety Status Report, which is collated under the pillars of the safe systems approach (RTSA, 2021). During that period, Zambia recorded 32,372 road traffic crashes (RTC), where 2,163 (6.7%) resulted in fatalities. Of all the fatalities, pedestrians accounted for 49%, motorcyclists 12% and pedal cyclists 5%.

Zambia is partitioned into 10 regional provinces and in general the most urbanized provinces have a bigger share of traffic related deaths and injuries. Lusaka Province, where the Capital City is located, accounted for 55% while the more remote Northern Province recorded only 1.9% of collisions. Urban roads accounted for 76% of all the RTCs while inter town roads contributed 24%. Addressing road safety is a challenge due to limited revenue in the local council. Authorities rely almost exclusively on support from donors (Alcorn, 2022).

3.3.1 Road Safety Management

Target 1 and 2: In Zambia, the Road Transport and Safety Agency (RTSA) serves as the highest regulatory authority for road safety. Their primary responsibility is to ensure that all road users comply with safety regulations and guidelines, making the roads safer for everyone. RTSA has conducted significant, publicly available research into road safety, focusing on seatbelts, helmets and child restraints among other things. The Road Development Agency (RDA) manages, maintains, and develops the country's road network. The National Road Fund Agency (NRFA) is responsible for managing road investment funds and collecting road tolls. The Bus and Taxis Owners Association of Zambia (BTOAZ) is responsible for ensuring that public transport operators adhere to road safety regulations. They work closely with the RTSA to ensure that public transport vehicles are safe and that drivers are qualified and trained.

Enforcement of road safety laws and regulations is the responsibility of the RTSA, the National Traffic Police Department, Provincial Traffic Police, and City Traffic Police. These agencies work together to enforce laws, investigate accidents, and promote road safety awareness. The Ministry of Transport and Logistics, Zambia Road Safety Trust, and the RTSA are responsible for advocating for road safety. They work to raise awareness about the importance of road safety.

Table 3: Zambia's ratification, accession or definite signature on legal document according to the United Nations Road Safety Conventions Contracting Party Status; 2020.

Ratification, accession, definite signature Signature No action	Road Traffic Act, 1968	Road signs and signals, 1968	Vehicle Regulations 1958	Technical inspection of vehicles, 1997Global Vehicle regulations, 1998	Dangerous goods by road (ADR), 1957	AETR, 1970	African Road Safety Charter
Zambia							

3.3.2 Safer Roads and Mobility

Target 3 and 4: Lusaka is the capital city of Zambia and the most populated area of the Country. The most dominant mode of transport is walking. However, the city lacks designated walking facilities (MTC, 2019). While there are some parts of the country where cycling is popular like Chipata, for many bicycles are unaffordable (J.E Austin Associates, 2023). It's been acknowledged by the leading transport agency, RTSA that pedestrians, cyclists and motorcyclists who make the majority of the road traffic fatalities in Zambia require more specific and deliberate interventions (Mubanga, Zambia's Road Satey Outlook Bright, 2021).

People therefore predominantly rely on walking or small minibuses for their daily commute and form part of their main public transport. Sparingly, people who can afford to own cars rely on this mode of transport to move around town.

The Government of Zambia has prepared the Zambia Non-Motorised Transport Strategy in 2020. The strategy emphasizes the need to develop and maintain a comprehensive NMT infrastructure network, including sidewalks, footpaths, cycle tracks, and pedestrian-friendly crossings. Safety and Security: It also focuses on enhancing the safety and security of non-motorized transport users through measures such as improving road design, traffic management, enforcement, and education campaigns. Integration and Connectivity: further, it highlights the importance of integrating NMT with other modes of transport, ensuring seamless connectivity and easy access to public transportation hubs. Stakeholder Engagement: and finally, emphasizes the involvement of various stakeholders, including government agencies, local communities, civil society organizations, and the private sector, to collaborate and contribute towards the development and implementation of NMT initiatives.

The Zambian Road infrastructure is managed by two different entities (The Road Development Agency through the Ministry of Infrastructure and Urban Development and The Councils through the

Ministry of Local government). The level of investment in the infrastructure is defragmented and is dependent on funding to these institutions, which is usually limited. The street furniture and signage are very incoherent and in the main do little to address road safety requirements

Lack of 24 hours enforcement does exacerbate the already dangerous state on badly maintained roads. For instance, the Zambia Police rarely patrol at night when in fact that is when most of the collisions occur. Poor signage and Road markings on most of the roads does little to address road safety.

The SATCC Code of Practice for the Geometric Design of Trunk Roads is the current guideline used for road design in the country, however, it is not sufficient for the urban environment. Therefore, the RDA and RTSA have launched a road safety management sensitisation campaign along the Chinsali-Nakonde Road. This campaign will involve Circus Zambia (African Bank) to educate people on the importance of following the rules of the road. Data collected from the campaign shows that 37% of people use their phones while driving, 29% speed, 45% do not use a seatbelt and 44% do not allow pedestrians to cross. These figures all indicate that road safety needs to be significantly improved in Zambia.

3.3.3 Safe Vehicles

Target 5: In Zambia, the vast majority of motor vehicles on the roads are second hand imports mainly from Europe and Asia, which are usually older than 10 years (UNEP, 2020). Implicitly, it means that the vehicular safety integrities are diminished owing to their age. The stiff importation taxes on newer vehicles also tend to encourage people to opt for cheaper, older and less safe vehicles. Vehicle fitness checks and CO2 compliance checks do not appear to be stringent.

Around 90 percent of crashes in Zambia involve vehicles that fail to comply with traffic rules. Many vehicles in the country are imported from abroad and are very old, making them more prone to breakdowns and crashes. Additionally, they are often not well maintained and are unroadworthy, with elements such as poor brake systems, poor lighting, worn-out tires, and lack of protective mechanisms like seatbelts and airbags making them especially dangerous to drive. This is especially true of the minibuses used as public transport, where extra seats are often fitted locally, making them carry more people than they are designed for. In 2019, 271,508 motor vehicles and trailers were examined for road worthiness in Zambia for the issuance of test certificates. 263,646 passed while 7,862 failed (RTSA, 2021).

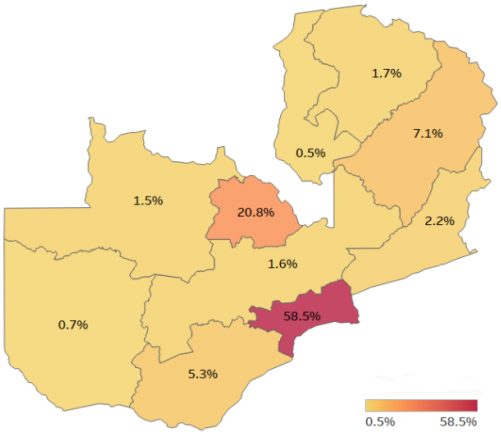

Figure 6: Zambia Motor vehicle Population by Province in Zambia. Adapted from the RTSA report on Seatbelt and Motorcycle Helmet use developed in 2019.

3.3.4 Safe Road Users

According to local reports on road safety, which are published at regular intervals and written by RTSA in the Daily Nation newspaper, interventions are mainly targeted towards road improvement, speed control, legislation and traffic law enforcement (Mubanga, Zambia's Road Satey Outlook Bright, 2021). There is a distinct focus on adopting SMART enforcement solutions and focusing on the role of technology in increasing road safety. Recently, RTSA developed an IT-based smart enforcement app to road monitor and address violations by motorists and Public Service Vehicles (PSVs) such as trucks and buses (Mubanga, 2021). However, the effectiveness of the app is not yet known and is recommended for further study under the TRANS-SAFE project.

Target 6: Systems installed by the RTSA across the city like the Global Position System (GPS), indicate that drivers, particularly of Public Service Vehicles (PSVs) regularly violate speed limits, reaching speeds of 120 km/h to 200 km/h against the prescribed speed limit of 100 km/h. The RTSA has recently issued press releases focused on enforcement, indicating that the organisation will utilise provision 68(1) (a) of the Road Traffic Act No. 11 of 2002 which empowers the RTSA to revoke driving licences (RTSA, 2021).

In 2022, under the leadership of Mayor Chilando Chitangala and together with the Partnership for Healthy Cities, authorities mandated a speed limit of 30km/h in school zones (Alcorn, 2022). The

regulation was matched with the installation of signage across the metropolitan area, but the results have not yet been measured directly. Local authorities have also been working with Vital Strategies (an implementor of the BIGRS) to advance public health, with a focus on road safety.

Zambia Police Collaborated in conjunction with RTSA to pioneer Automated Speed Enforcement (ASE) technology on some problematic roads of Lusaka. However, this initiative was discontinued after a short period of time.

Target 7: The Zambian Road Traffic Act 2002 and the Road Traffic regulations from 2016 on protective helmets, mandate helmets for motorcycles for both passengers and drivers and specifically, requires that the person driving ensures that passengers below the age of 10 wear one. According to a study conducted by RTSA in 6 cities in Zambia in 2019, motorcycle helmet usage is high but not perfect with 93% for drivers and 87% passengers (RTSA, 2019). Riders and passengers also do not generally wear any reflective gear.

Target 8: Similarly, the Road Traffic Act integrates the safe systems guidance around seatbelts and Child Restraint systems. In 2019, 10,028 vehicles were observed to understand the prevalence of seatbelt use in Zambian cities. Unlike helmet usage, figures are significantly lower. Seatbelt adherence is at 49.88% among drivers, 37.35% for front passengers and 6.6% for passengers in the back seat (RTSA, 2019). Lusaka was found to have the highest seatbelt adherence rate at 59% with women generally wearing them more than men. In 2021, the Zambia Road Safety Trust (ZRST) launched a campaign to encourage road users to use seatbelts.

In terms of Child Restraint systems, a baseline study also conducted in 2019 revealed that on 28 out of 463 observed vehicles in Zambia made use of adequate child restraint systems, meaning only 6% of children were secured (RSTA, 2019). Lusaka had the highest rate of usage at 18% while cities like Kitwe and Choma had only 2%.

Target 9: According to the Rwanda Global Health Observatory data repository on Blood Alcohol Concentration for the general population (BAC), the limit for drivers is <0.08 g/dl (WHO; 2020). Drunk driving appears to be a significant challenge in the city (Alcorn, 2022). In most towns of Zambia, including Lusaka, drink driving seems to be an accepted norm and is usually a contributing factor in most of the RTCs. At large bus stops for long distance routes, road traffic police regularly monitor drunk driving by breathalysing drivers on the road.

Target 10: Using a cell phone while operating a vehicle is illegal and carries a minimum fine equivalent to $60. The speed limit is 50 km/30 mph in Lusaka and 100 km/60 mph outside of city limits; however, speed limits are rarely respected.

Target 11: More research is needed to understand the rest periods for drivers and the standard of licensing in Zambia.

3.3.5 Post Crash Care

Target 12: As part of a Memorandum of Understanding (MoU) on Road Safety in Zambia, the Ministry of Health has recently procured 150 ambulances. The Road Transport and Safety Agency has also procured four sets of crash extraction equipment and has displayed a commitment to ensuring in rescue operations and handling of crash extraction equipment (RTSA, 2021).

RTSA has trained first accident respondents from various government departments in three districts which the rehabilitation road project covers. These departments include the Zambia Police traffic department, hospital ambulance crew and officers from the fire department under the councils in Chinsali, Isoka and Nakonde districts. This is to help ensure that in the event of a road traffic collision, emergency services such as ambulances and fire brigades are able to respond quickly and deliver post-crash care. This is important in order to ensure that those involved in road traffic collisions receive the best possible care (Mwale & Kanchele, 2019).

Zambia is also in the process of introducing a motor vehicle accident fund (MVAF). RTSA has indicated that the fund will be modelled after those developed in Botswana, Namibia and South Africa (RTSA, 2021).

3.4. CAPE TOWN, SOUTH AFRICA

Estimated to be the tenth largest road network in the world, South African authorities have spent the last few years working to integrate the safe systems approach through national policies, targeted interventions and road safety campaigns. In the last few years, South Africa has had a decline in the number of road crash fatalities; however, the reduction did not meet the first decade of action targets (RTMC, 2022).

Reports indicate that from 2019 and 2021 there is an increase of 2,2% of fatal crashes. However, comparing the years 2020 and 2021 the increase is 26,2%. Pedestrians account for the largest number of deaths at 40%. Male fatalities account for a third of total road fatalities and children between 0 to 4 years account for 17% of deaths. People aged 25 to 35 account for 38% of deaths. 60% of road fatalities occur over weekends (Friday to Sunday) (RTMC, 2022).

Recognising that South Africa has some of the most dangerous roads in the world, Cape Town has a comprehensive road safety campaign called “Safely Home”. Authorised by the Western Cape Government, the Western Cape Mobility Department is tasked with the implementation of the Safely Home Programme (Western Cape Government, 2023). Safely Home is based on the four E's of road safety, namely enforcement, education, engineering and evaluation. There is also a nationwide road safety campaign called ”Arrive Alive“. The campaign focuses on educating road users on all dimensions of road safety.

3.4.1 Road Safety Management

Target 1 and 2: This pillar is coordinated by RTMC and the Department of Transport (DOT). The core legislation on road traffic is the National Road Traffic Act of 1996 and The Road Traffic Management Corporation (RTMC), created under the Road Traffic Management Corporation Act is the lead road safety agency in South Africa (RTMC, 2023). The national mandate of the organisation includes law enforcement, road safety education and engineering, capacity development and data management. However, the administration of traffic offences and vehicle registration and licensing is coordinated by the City of Cape Town's Municipal Traffic Departments.

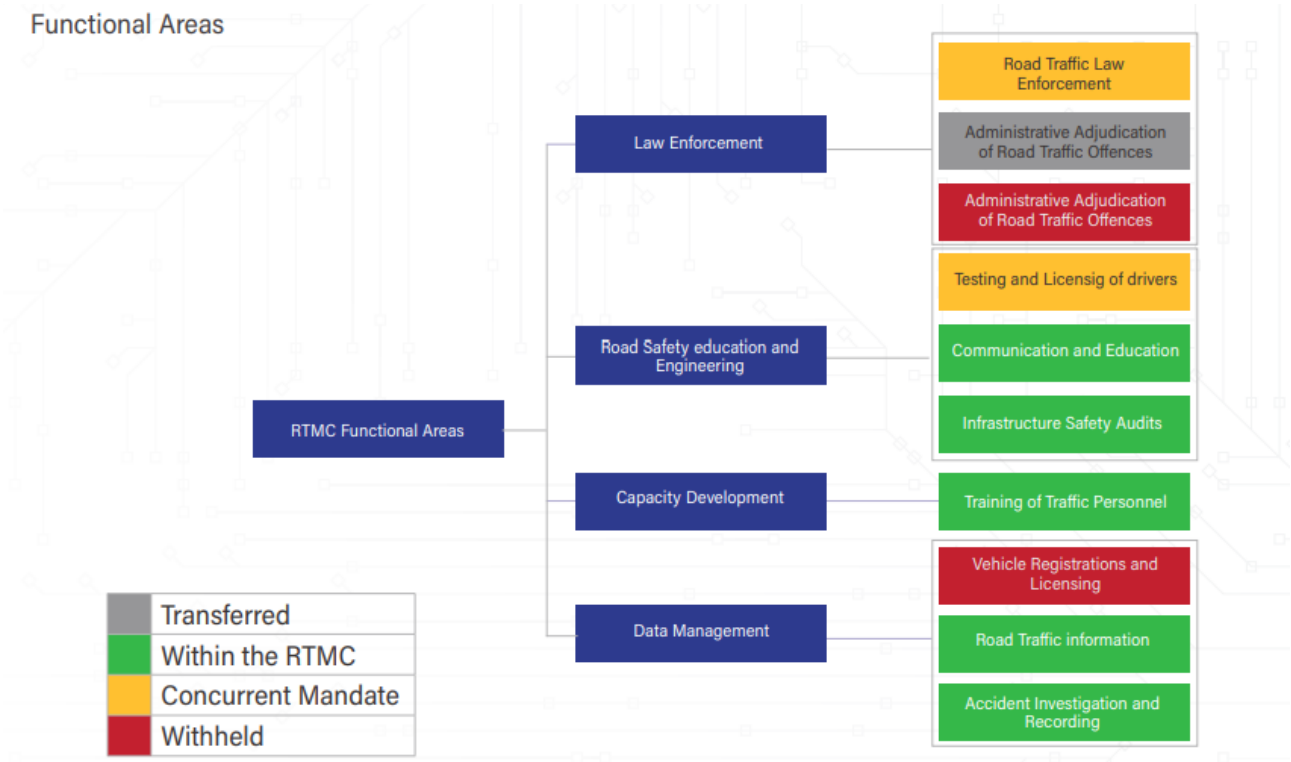

Figure 7: Functions of the RMTC as outlined in Section 18 of the Road Traffic Management Corporation Act adapted from the 2021 - 2022 Annual Report

The Ministry of Transport coordinated the development of a National Road Safety Strategy for the period 2016 – 2030. (NRSS) in the first decade of action for road safety, guided by the National Development Plan (NDP) and international best practice. The document is closely aligned with the Safe Systems Approach and has a phased approached to identified interventions in specific locally determined thematic areas. As the text was developed in the first decade, implementation is currently, according to the plan, focused on Medium-term interventions to address challenges such as the "betterment of vehicle safety standards, improvement in road design standards for the protection of all road users, addressing hazardous locations, improving the effectiveness of post-crash response and increasing road safety research relevant to South Africa" and long-term interventions on the adoption of innovative road safety technology and the proactive management of road safety. The NRSS 2016-2030 set a target of reducing fatalities in the country by 50% by 2030, however, the lack of reliable data means that the target cannot be methodically monitored (RTMC, 2022).

Road crash data is collected by the South African Police Services (SAPS), certain Provincial Traffic Authorities, as well as Metropolitan and local authorities through the Culpable Homicide Crash Observation Report form. This data is then gathered by the RTMC through the National Accident

Register (NAR) or the National Fatal Accident Information Centre (NFAIC). The NFAIC has a 24-hour response rate for fatal crash registration, whereas the NAR collates information on all road crashes, reporting within 6 weeks of the crash. Furthermore, in-depth studies are conducted on very serious crashes, involving five or more fatalities, and more than 100 studies are conducted each year. While there is a robust mechanism in place for recording fatalities, road traffic information is ordinality based on fatal crashes only (RTMC, 2022).

The Road Traffic Infringement Agency (RTIA) performs its functions in terms of subsection (1)(a) of the AARTO Act which is an administrative system for processing fines in Johannesburg and Tshwane. The agency has plans for national expansion, however, the role of AARTO requires further research as in 2022 the North Gauteng High Court declared the legislation empowering the mechanism to be unconstitutional (RTIA, 2022).

Reports from the RTMC indicate that key challenges in adopting the Safe Systems approach include the rise of information settlements next to major freeways, poor town planning and a lack of prioritisation for walking and cycling and limited action towards safer vehicles (RTMC, 2022).

The Road Safety Strategy for the Western Cape Province was drafted before the first decade of action for road safety in 2005. It promotes road safety throughout the province, focusing on national and provincial routes; and is responsible for the basic training of traffic officer recruits in the province to ensure uniformity and professionalism (Western Cape Government, 2023).

Even though South Africa has not signed the African Charter on Road Safety, there is a comprehensive Road Safety policy at country level. Further, there is evidence of capacity building and training, linkages and supporting data (traffic, mobility, ambulances), Observational surveys and road safety audits or inspections are undertaken (Usami, et al., 2021).

Table 4: South Africa's ratification, accession or definite signature on legal document according to the United Nations Road Safety Conventions Contracting Party Status; 2020

Ratification, accession, definite signature Signature No action	Road Traffic Act, 1968	Road signs and signals, 1968	Vehicle Regulations 1958	Technical inspection of vehicles, 1997	Global Vehicle regulations, 1998	Dangerous goods by road (ADR), 1957	African Road Safety Charter
South Africa							

3.4.2 Safer Roads and Mobility

Target 3 and 4: This pillar is coordinated by The South African National Roads Agency SOC Ltd (SANRAL) and Provincial Authorities. SANRAL is a parastatal responsible for the management, maintenance and development of South Africa's proclaimed National Road network (RTMC, 2022).

The RTMC through the National Traffic Engineering Technical Committee work to promote the development of road safety assessment capacity within road authorities. They are also tasked with the implementation of the iRAP road safety assessment programme on a national level. According to reports from the RTMC, national government is currently implementing road safety audit programmes across the country.

In 2017, the Western Cape developed a cycling strategy, while at the time the strategy recognised that cycling is mostly recreational, it sets out a plan to grow the utility of cycling. At the time, only 1% of transport trips were made on a bicycle (City of Cape Town, 2017).

The Western Cape Government has expressed that the Medium-Term Expenditure Framework, which is a national planning and budget formulation process is insufficient to maintain roads. While the 2022 budget included an increase in the roads budget, the level of funding was still inadequate to address the backlog in maintenance the need to build new roads. The available funding was also decreased in 2023 (Western Cape Government, 2023).

3.4.3 Safe Vehicles

Target 5: The safe vehicles pillar is coordinated by the Department of Trade and Industry (and its agencies namely, the National Regulator for Compulsory Specification (NRCS), South African Bureau of Standards (SABS). Nationally, the vehicle population increased by 2.04% from 2020 to 2021 and is currently at 12 957 208. At a provincial level, 16% of vehicles are registered in the Western Cape (most are registered in Gauteng) (RTMC, 2022). South Africa has a vast domestic vehicle manufacturing sector which has led the country to ban the import of second-hand vehicles (UNEP, 2020).

Manufacturing standards and requirements for vehicle manufacturers play a vital role in ensuring road safety. However, there is a need to enhance and set safety standards to mitigate risks associated with non-roadworthy vehicles. The harmonization of appropriate vehicle standards is also critical, with a

specific focus on vehicles from neighbouring countries that may not meet local technical requirements.

The NRSS sets out four main interventions to ensure that Vehicles on the road are roadworthy (3A(i) – 3A(ii)). They are: (1) to immediately increase traffic (law) enforcement around vehicle roadworthiness, (2) improved surveillance of vehicle testing stations to combat corruption and ensure that vehicle testing is robust, (3) to implement periodic roadworthy testing programme for all vehicles as well as specifying incremental checks for public transport vehicles, and (4) improve the roadworthiness of the Public Transport vehicle fleet.

Number of Registered Vehicles Motorised Vehicles	Number registered Dec 2020	Number registered Dec 2021	Change	% Change	% of Group Dec 2021	% of Total Dec 2021
Motorcars	7 498 920	7 652 045	153 125	2,04	65,25	59,06
Minibuses	341 853	349 671	7 818	2,29	2,98	2,70
Buses	64 888	64 339	-549	-0,85	0,55	0,50
Motorcycles	339 046	347 624	8 578	2,53	2,96	2,68
LDV's - Bakkies	2 616 337	2 671 293	54 956	2,10	22,78	20,62
Trucks	377 787	389 112	11 325	3,00	3,32	3,00
Other & Unknown	248 380	252 392	4 012	1,62	2,15	1,95
Total Motorised	**11 487 211**	**11 726 476**	**239 265**	**2,08**	**100,00**	**90,50**
Towed Vehicles						
Caravans	97 913	97 824	-89	-0,09	7,95	0,75
Heavy Trailers	209 400	221 267	11 867	5,67	17,98	1,71
Light Trailers	888 507	897 181	8 674	0,98	72,90	6,92
Other & Unknown	14 702	14 460	-242	-1,65	1,17	0,11
Total Towed	**1 210 522**	**1 230 732**	**20 210**	**1,67**	**100,00**	**9,50**
All Vehicles	**12 697 733**	**12 957 208**	**259 475**	**2,04**		**100,00**

Figure 8: Number of registered vehicles by type in South Africa, adapted from the RTMC State of Road Safety Report 2021

3.4.4 Safe Road Users

Road user behaviour is a main challenge in the country (RTMC, 2022). Mainly, driving at inappropriately high speeds, driving under the influence of alcohol and distracted driving because of using a mobile phone whilst driving.

A large component of the 'Safely Home' campaign noted earlier is focused on user behaviour. The website features a comprehensive set of resources for road safety, details on existing regulations and a citizen reporting tool where road users can report bad behaviour (Western Cape Government, 2023).

Target 6: Compared to countries with low fatalities, South Africa has high speed limits. The standard speed limit in urban areas is 60 km/h, which is very high where there are schools or pedestrians (Western Cape Government, 2023). Sections 35 and 36 of the National Road Traffic Act, 93 of 1996 regulate speeding and excessive speeding. Driver's licences are suspended if an individual is convicted of excessive speed.

South African authorities increase enforcement efforts in December and January through what is referred to as the Festive Season campaign. In the 2021 festive season, traffic law enforcement officers conducted 651 roadblocks throughout the country and issued 264 690 fines for different traffic offences (SADD, 2023).

Target 7: The 'Think Bike' campaign is a public awareness campaign aimed at improving motorcycle safety in South Africa. As of 2017, drivers and passengers are mandated to wear helmets. However, the National Road Traffic Act & Regulations of 1996, which regulate helmet usage is outdated and the level of enforcement is currently unknown.

Target 8: It is compulsory for passengers and drivers to wear seatbelts in terms of regulation 213(4) of the National Road Traffic Regulation, under the National Road Traffic Act, 1996 (Act No 93 of 1996). However, experts contributing to the 'Arrive Alive' knowledge platforms generally agree that the fines for non-compliance are too low. The NRSS outlines it will "enforce stricter adherence to seatbelts safety standards on all road-based public transport vehicles and the use thereof." In a study conducted in Cape Town in 2019, only 8 per cent of child passengers were properly restrained (UNICEF, 2022).

Target 9: Section 65 of The National Road Traffic Act outlines the regulations around driving while under the influence of intoxicating liquor or drugs having a narcotic effect. It mandates that no person shall drive a vehicle on a public road or be in the driver's seat while the engine is running while under the influence. The blood/alcohol limit in Cape Town is 0,05g per 100ml of blood (Western Cape Government, 2023). According to South Africans Against Drink Driving (SADD), up to 50% of people who die on the roads have a blood alcohol concentration above the legal limit (SADD, 2023). In knowledge products developed on the South African Police website, it is indicated that offenders are immediately arrested will be held in custody able to post bail. Depending on prior convictions, as well as the circumstances, offenders face a minimum fine of R2,000 or a two-year prison sentence, or both.

Target 11: According to the SADD, authorities have begun the process of amending the National Road Traffic regulations to better regulate Professional Driving Permits. The efforts are targeted within the

SADC, the Common Market for Eastern and Southern Africa (COMESA) and East African Community. However, currently, there is a dedicated training facility called Gene Louw Traffic College. The centre offers training in road traffic law enforcement for Traffic Officers, Examiner for Driving Licences, Examiner of Vehicles among other things.

3.4.5 Post Crash Care

Target 12: The responsibility to manage post-crash care rests with the Department of Health and the Road Accident Fund (RAF). The NRSS sets out specific activities aimed at increasing the effectiveness of first responses. South Africa has a Road Accident Fund (RAF). The RAF is responsible for providing support (usually financial) to all road users within the borders of South Africa. It is aimed at rehabilitating and compensating persons injured because of motor vehicles in a timely and caring manner; and actively promoting the safe use of all South African roads (RTMC, 2022). The strategic actions of the RMTC are geared towards improve access to quality healthcare as well as ensuring clarity with regards to on-scene response roles between SAPS, National Traffic Police, Metro Police, Provincial Traffic, Municipal Traffic and other stakeholders. There are also ambitions to introduce technologies to obtain precise location of crashes.

4. CONCLUSION

The First Decade of Action for Road Safety was launched 12 years ago on 11 May 2011. The goals were endorsed by more than a hundred national governments including Rwanda, Ghana, Zambia and South Africa. It had at its core, the objective of "stabilising and reducing" the level of global road fatalities by 2020, from the 2010 baseline. The global commitment to road safety led to a flurry of policy development and institutional action around the world and targeted actions identified for specific regions and sub regions. In Africa, The Charter for Road Safety was established along with locally relevant targets and indicators in a large-scale political effort to ensure that the lack of road safety was adequately addressed, and that road safety was proactively integrated and acted upon.

In 2021, at the onset of the Second Road Safety Decade of Action for the period 2021-2030 and the launch of the Global Plan, the status of road safety had not improved to the level necessary, and the main target set in the first decade had not been met.

Although many of the parties to the African Charter for Road Safety as well as those who were not, had taken action to meet the identified indicators, systemic challenges in sustainable funding, improving the capacity of Road Safety Agencies/organizations and the full empowerment of road safety agencies among other things, meant that although road safety issues had been addressed, the overarching targets and intended shift towards safer systems was not achieved (African Union, 2017).

In terms of road safety management, the four cities in the TRANSSAFE project have policies which guide the transport sector and data collection including walking and cycling. Rwanda has The National Transport Policy and Strategy for Rwanda 2021 which is the key document that guide transport, South Africa has National Road Safety Strategy 2016-2030, Ghana has The Revised National Transport Policy, and Zambia has the Road Transport and Safety Status Report 2021 and Non-Motorized Transport Policy which guide transport sector. These documents together with the mix of complementary policy and strategy texts are not likely to be the problem. Instead, the limited power of city authorities as a result of having to report to central government, decisions on road safety may be one of the reasons it is difficult to take action swiftly (Alcorn, 2022). Best practice guides should more likely be aimed at practitioners more than policy makers and activities should be aimed at empowering cities to take action for road safety through collaboration in the sector. It is further

recommended that activities tap into the African Road Safety Observatory workplan to ensure data driven decision making (ARSO, 2022).

Based on the information in this report, efforts to improve road infrastructure have focused on measures such as road maintenance, road design, and traffic management but are somewhat fragmented and difficult to action due to limited resources. In terms of road design, efforts have been made to incorporate safety features such as pedestrian crossings, bicycle lanes, and roundabouts but in a limited way. The challenges that come due to lack of these infrastructures is widely discussed including the number of crashes that have occurred in these four cities associated with poor or lack of better transport infrastructures such as good roads. The agencies responsible for managing road infrastructures in these four cities are mentioned and what roles they play in ensuring road infrastructures are of required standards and are regularly maintained and repaired. On a local level, it would be valuable for TRANS-SAFE to conduct in depth research on road design standards and also support the development of regional standards for transport infrastructure through the African Organisation for Standardisation (ARSO) frameworks.

The Global Plan for the Decade of Action for Road Safety 2021-2030 emphasizes the importance of addressing road-users in efforts to improve road safety. This approach is theoretically integrated into the policies and implementation actions in cities such as Kigali, Kumasi, Lusaka, and Cape Town. Efforts to improve road-user behaviour in these cities have focused on education and awareness campaigns targeting drivers, pedestrians, and cyclists. These campaigns aim to promote safe behaviour, such as obeying traffic laws, wearing helmets, and using designated crossings and wearing seatbelts. Adherence to the regulations remains low, however, and more action to sensitise the public may be necessary. Further, an in-depth investigation into the consequences of non-adherence should be explored.

The number of registered vehicles both public service and private, are recorded for each country for easy planning of transport facilities such as roads. Various challenges associated with vehicles such as corruption and fraud at vehicle testing centres, non-roadworthy vehicles, and lack of technological innovation for board vehicle control to enhance road safety have been highlighted and how they affect the transport sector. Efforts to improve road vehicle safety in these cities have focused on measures such as vehicle inspections, regulation of vehicle imports, and the promotion of safer vehicles. Vehicle inspection programs aim to ensure that vehicles meet safety standards and are roadworthy, while regulation of vehicle imports helps to ensure that only safe vehicles are allowed on the roads.

The promotion of safer vehicles has been focused on import standards and regulations. Additionally, some cities have implemented regulations requiring specific safety features on vehicles, such as seat belts and airbags. The activities in TRANSSAFE have the potential to strengthen the conversation around climate friendly, safe vehicles and strengthen the narrative around local opportunities in reducing the number of used and imported vehicles on the roads. They could also support the implementation of vehicle standards as set by ARSO (ARSO, 2022).

The Global Plan for the Decade of Action for Road Safety 2021-2030 recognizes the importance of post-crash care in reducing the impact of road traffic injuries and fatalities. Some of these Cities such as Cape Town have post-crash care policies that specifically address issues related to post-crash care services. A need for road accident funds has been noted in the respective countries and some, like Zambia are taking action to develop one. Efforts to improve post-crash care in these cities have included measures such as the development of emergency medical services, training of emergency medical personnel, and the establishment of trauma centres. The development of emergency medical services has focused on improving the availability and responsiveness of ambulance services, as well as equipping ambulances with the necessary medical equipment. Training of emergency medical personnel has also been a priority, with efforts focused on ensuring that emergency medical responders are adequately trained in pre-hospital care and transport of injured patients. Additionally, the establishment of trauma centres has been critical in providing specialized medical treatment to injured patients. However, the capacity of local authorities to action post-crash care has been a challenge. As revealed in the AU road Safety Action plan, many states did not have any answers for the activities under post-crash care, likely due to the status of their health infrastructure overall. This pillar may be the most challenging to have a lasting impact on but further research into the structures of the institutions and their priority areas may provide a clear way forward for project activities.

The second Decade of Action and accompanying regional efforts to improve road safety and integrate the safe systems approach is a culmination of many years of consensus building on action areas under the pillars of road safety management, safer roads and mobility, safe vehicles, safe road users and post-crash care. Each of the countries and cities included in the TRANS-SAFE project are at a critical moment where effort and coordination in the policy and institutional development in the past decade need to culminate in effective delivery on a city level. While the opportunities in each are different, effort in all pillars of the safe system as well as the surrounding thematic areas of climate and gender are necessary.

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6. ANNEXES

6.1 ANNEX 1 – AFRICAN ACTION PLAN REVIEW

The table below was taken from the review of the African Road Safety Action Plan 2011 – 2020 that was conducted in 2018 and informed by surveys completed by 25 countries. The countries engaged in the survey were Guinea, Madagascar, Malawi, Mali, Senegal, Sierra Leone, Uganda, Zambia, The Gambia, Gabon, Burkina Faso, Nigeria, Niger, Côte d'Ivoire, Seychelles, Benin, Mauritania, Comoros, Swaziland, Zambia, Lesotho and Zimbabwe, Chad, Togo, Mozambique and an unidentified State (the completed form did not include the name of the country).

Pillar	**Expected Accomplishments**	**Number of Activities**	**Total Number of Activities**
Pillar 1: Road Safety Management	1. Lead Agencies established/improved	10	23
	2. Management of Data improved	9	
	3. Partnership and Collaboration developed / strengthened	4	
Pillar 2: Safer Roads and Mobility	1. Safer Roads Infrastructure for all Road Users	7	8
	2. Capacity-building and Training	1	
Pillar 3: Safer Vehicles	1. Road Worthiness of Vehicles (Vehicle Safety)	5	5
Pillar 4: Safer Road Users	1. General Public educated (Road Users)	11	27
	2. Use of Helmets	3	
	3. Use of Seat Belt	7	
	4. Drinking and driving and influence of other drugs	4	
	5. Mobile Phone Use	1	
	6. Speeding	1	
Pillar 5: Post-crash Response	1. Improved Emergency Care	11	11
Cross-cutting Issues	1. Rural Transport Safety	3	5
	2. Evaluation of the Decade	2	
Total Number of Expected Accomplishments and Activities	**15**		**79**