

NIGERIA

THE “SINGLE ORGANIZATION ROAD SAFETY” INSTITUTIONAL MODEL

ITS EFFICACY AND REPLICABILITY



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FOREWORD

The Federal Road Safety Corps and the World Bank have been working together for some years, with a common commitment to developing and strengthening institutional road safety management capacity.

Road traffic injury is a major development issue and challenges the capacity of governments in low and middle-income countries whose citizens are facing significant increases in exposure as their economies develop. With financial support from the Global Road Safety Facilities (GRSF), this study attempts to assess the institutional governance model that the Nigerian Government has put in place to address the devastating social and economic impact of road crashes. It reflects our mutual trust, and our understanding that a feature of the strongest and most effective institutions is that they open themselves to scrutiny. The Federal Road Safety Corps hardly pretends that the major safety issues confronting Nigeria are nonexistent. It seeks to understand these issues, learn from others about how to address them, and then act in protection of the citizens it serves.

An ongoing commitment to developing institutional leadership is vital in road safety. The Nigerian road safety model, developed around the Federal Road Safety Corps, provides an important reference point within Africa, and across the globe. The study illustrates some universal lessons through Nigeria's governance system for road safety and identifies some opportunities for Nigeria to improve its performance over the life of its new National Road Safety Strategy II 2020-2030.

We look forward to collaborating on all road safety related areas including institutional development, capacity building, enforcement, engineering, speed management, promotion and advocacy, post-crash response and vehicle safety.

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Aurelio Menendez (Practice Manager, Infrastructure Practice Group) provided invaluable guidance during the study. The peer reviewers of the study were: Tawia Addo-Ashong, Sr. Transport Specialist (IAWT3), Sudeshna Mitra, Transport Specialist (ITRGK), Radia Benamghar, Transport Specialist (IAWT4), and Dr. Meleckidzedek Khayesi, World Health Organization (external reviewer).

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THE STUDY TEAM AND TEAM MEMBER ROLES

Farhad Ahmed of the World Bank led the overall study. He has an ongoing interest in road safety issues and one of the projects he led (Nepal Road Safety Support Project), has received Prince Michael International Awards for Road Safety in 2020.

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Md. Towshikur Rahman was responsible for the overall coordination of the study. He has been supporting the World Bank Nigeria Transport team as a consultant in overseeing and harmonizing the trust fund projects. He completed his MBA from Institute of Business Administration, University of Dhaka, and Bachelor of Science in Civil Engineering from Bangladesh University of Engineering & Technology.

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ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
APER	Annual Performance Evaluation Report
ARSO	African Road Safety Observatory
CAS	Crash Analysis System
CI	Crash Investigation
CITA	International Motor Vehicle Inspection Committee
COSEN	Corps of Safety Engineering
DMRB	Design Manual for Roads and Bridges
DRTS	Directorate of Road Traffic Service
DSSP	Driving School Standardization Program
DTMR	Department of Transport and Main Roads
FERMA	Federal Road Maintenance Agency
FMWH	Federal Ministry of Works and Housing
FRSC	Federal Road Safety Corps
GIS	Geographic Information System
GRSF	Global Road Safety Facility
HQ	Headquarter
iRAP	International Road Assessment Programme
IRF	International Road Federation
ISO	International Organization of Standardization
IT	Information Technology
KAROTA	Kano Road and Traffic Agency
LASTMA	Lagos State Traffic Management Authority
LASEMA	Lagos State Government Emergency Management Agency
LGA	Local Government Areas
LMIC	Low- and Middle-Income Country
MoW	Ministry of Works
MRC	Medical Rescue Service
MVAA	Motor Vehicle Administration Agency
NACRIS	National Crash Report Information System
NaRSAC	National Road Safety Advisory Council

NBS	National Bureau of Statistics
NCPCCI	National Community Post Crash Care Initiative
NDL	Nigeria Driver's Licence
NGN	Nigerian Naira
NRTR	National Road Traffic Regulations
NRSS	National Road Safety Strategy
NVIS	National Vehicle Identification Scheme
PIARC	Permanent International Association of Road Congresses
PRS	Policy, Research and Statistics
QPS	Queensland Police Services
QRCD	Queensland Road Crash Database System
RSA	Road Safety Audit
RSDT	Road Sector Development Team
RSI	Road Safety Inspection
RSIA	Road Safety Impact Assessment
RTC	Road Traffic Crashes
RTSS	Road Transport Safety Standardization Scheme
RTCIS	Road Traffic Crash Information System
RCDMS	Road Crash Data Management System
RADMS	Road Accident Data Management System
SON	Standard Organisation of Nigeria
SRA	State Road Agency
SRIP	Safer Road Investment Plan
SRMA	State Road Maintenance Agency
SSATP	Africa Transport Policy Programme
TWG	Technical Working Group
VIS	Vehicle Inspection Service
WHO	World Health Organization
UN	United Nation
UNEP	United Nation Environment Program
UNRSC	UN Road Safety Collaboration

EXECUTIVE SUMMARY

This study is one part of a comprehensive study of lead road safety agencies in low- and middle-income countries (LMICs), which is being conducted on a collaborative basis by the World Bank, the World Health Organization, and the African Development Bank. This particular study is supported by **UK Aid** through the World Bank's **Global Road Safety Facility (GRSF)**. It focuses on the case of Nigeria, a federal republic with three tiers of government - federal (central), state and local governments - and its single institutional model for road safety.

This report responds to the following questions:

- a. What are the strengths and weaknesses of this model and what could be done to improve its' efficiency and effectiveness?
- b. How efficient and effective is the "Single Organizational Model" institutional setup (both federal and state levels) in dealing with the road safety issues in Nigeria?
- c. Can this model be replicated in other LMICs and what are the factors that will determine the replicability of the model in those countries?
- d. What are the steps in setting up "Single Organizational Model" institutions in LMICs?

The defining feature of the Nigerian road safety model is a dominant federal road safety agency, the Federal Road Safety Corps (FRSC), delivering functions that many countries separate across multiple large agencies. The FRSC provides a strong institutional platform for road safety. The aggregation of functions within the one single agency in Nigeria has been having a significant beneficial effect on the capacity of the country to tackle its road safety problem. There is an organization – FRSC - in place, which has a very clear purpose, and is accountable for road safety performance.

It has been difficult to conclude whether Nigeria's single organizational model is more or less efficient or more or less effective than other models. This would require a complex comparative analysis which would still confront significant contextual issues associated with how governments and societies establish and govern public institutions.

A deeper analysis of some key challenges impacting on safety performance in Nigeria allowed for a brief assessment of the model against institutional management functions: coordination; leadership and target setting; legislation; funding and resource allocation; promotion and advocacy; monitoring and evaluation; and research and development and knowledge transfer.

These are the critical functions that need to be the focus of any national road safety lead agency. These functions need to be led by an agency which has been given the political mandate and resourcing to lead the national road safety effort. The organizational form in which these functions are led is open. The single organizational model embodied by the FRSC provides an important option for countries, but simply establishing an agency is insufficient. The organization must have the capacity to lead and coordinate the actions of other entities, rather than just focusing on itself.

Significant improvements in Nigeria's road safety performance are required, but the institutional foundation exists from which policy and investment decisions can be made in favor of road safety, and the FRSC is the critical organization for lifting this performance over the next decade. FRSC ownership and accountability over several decades has driven sustained effort and preparedness to act in the vital

areas the agency is responsible for. The FRSC recognizes the need to continually improve, and this restlessness for improvement can be further honed, in pursuit of the elimination of fatal and serious injury on Nigerian roads.

In this context, the FRSC should refocus again on safety leadership, and the efficiency of its enforcement operations. The following system wide improvements should be considered:

- a. *Using and improving the governance system.* Ongoing engagement by the National Road Safety Advisory Council (NaRSAC) is essential in nourishing the FRSC's mandate. Nonetheless, it is necessary for NaRSAC to meet on a regular basis, even just once a year, to review progress and renew the political mandate for road safety. Their oversight needs to focus on implementation of the new National Road Safety Strategy II, and significantly lifting investment in road safety. The establishment of a separate stakeholder group for important actors outside the government (such as professional bodies, industry associations and other non-government organizations) would help assist the Technical Working Group to focus on the accountabilities of different arms of government for delivering safety;
- b. *Strengthening the lead agency function.* The sheer size and scale of the FRSC (encompassing functions which are held by separate agencies in most jurisdictions) makes internal coordination of the national road safety agenda vital. The internal mandate and resourcing of the Policy Research and Statistics (PRS) Department within FRSC could be considerably strengthened to match its external mandate and resourcing. By consolidating key safety management functions within the department, it will be better placed to perform the necessary lead agency function within the national lead agency, and to lead the safety agenda both internally and externally.
- c. *Continuous improvement in regulatory management.* The country has a comprehensive regulatory framework governing the safety of: (a) motor vehicles; (b) motor vehicle drivers; and (c) operators of commercial transport services. These regulatory systems should be audited to ensure that there is transparent information about the standards required, the processes in place to check those standards are being complied with, and the enforcement activity which is being taken to ensure that unsafe vehicles, drivers and operators are removed from the road traffic system. A rolling regulatory audit program addressing one major element each year would provide a platform for continually improving the safety performance of these systems over time.
- d. *Taking the next step in vehicle safety.* Nigeria has assumed a leading African role in national vehicle safety regulation, and the FRSC should work with stakeholders to keep progressing this vital area of road safety. Aside from an audit of regulatory requirements for (new) vehicles entering the market, consideration should be given to using the UN regulatory standards as the basis for strengthening regulatory requirements for the much larger number of used vehicles entering the markets. The planned assessment of vehicle inspection systems in Nigeria, as per recent studies in Togo and Cameroon, should provide insights to the definition of this important reform program.
- e. *Targeting and enforcing key safety behaviors.* What appears to be a significant limitation on essential traffic enforcement equipment may mean that FRSC is failing to enforce two critical safety behavior problems in Nigeria. FRSC crash causation data highlights speeding (and

associated behaviors) as the number one cause of crashes, and the World Health Organization (WHO) provides compelling evidence that there is a significant drink driving in the country. An assessment of the readiness for automated speed enforcement systems is required, and a sustainable path developed to tackle drink driving, both within a strong general deterrence enforcement strategy.

- f. *Building safety engineering capacity nationally to transform the road environment.* Current safety engineering practices need to be considerably strengthened, beginning with a national capacity building program for FRSC staff, federal and state road authorities. An International Road Assessment Programme (iRAP) project backed by a multi-year infrastructure safety program would support this, and also provide impetus for the development of a comprehensive set of road safety engineering guidelines and manuals, as well as a systematic speed limit review process; and
- g. *Investing in improved road safety data:* The establishment of a local data collection capacity across Local Government Areas would be a critical step forward in this area, and should be reinforced by sustained capacity building in the field to increase the quality and quantity of crash data. Regular funding is required to ensure ongoing maintenance of the Road Traffic Crash Information System, and to conduct annual functional and technical reviews. Some revision is required of the National Road Traffic Regulations and FRSC Act to mandate the new crash data form for use by all stakeholders – FRSC, Nigeria Police, and other agencies.

Replication of one country's government agencies and governance systems in another country is fraught with difficulty. Nevertheless, Nigeria's single agency model — within a federal government structure — may be a path forward for other LMICs, for whom there are some essential features to draw from:

1. A high-ranking official entrusted with substantial legislative power is appointed by the head of government and held accountable for road safety.
2. There is a governance system in place through which the national road safety lead agency engages with government and non-government stakeholders.
3. This governance system is serviced by the national road safety lead agency and oversees the development and coordination of national multi-sectoral road safety strategies and plans; and
4. Aside from any other operational responsibilities (such as regulation, enforcement, infrastructure) the national lead agency is functionally responsible for all road safety institutional management functions (although it does not have a role in allocation of safety funds across government).

A decision to pursue this model in LMICs should only come after careful consideration of the national and institutional context of road safety within a particular country. A national review of road safety management capacity allows the countries to consider whether and what institutional reforms are required. They are encouraged firstly to reflect upon the extent to which their own arrangements compare with the factors (1 to 4) above, and secondly to consider whether they wish to prioritize institutional road safety reforms. This will help a country to establish a much stronger base for tackling their road safety problem, and how this may be best approached.

INTRODUCTION

1. The first recommendation of the landmark “World Report on Road Traffic Injury Prevention” in 2004 was to “identify a lead agency in government to guide the national road traffic safety effort.”¹ By establishing an institutional base for road safety, governments are much better placed to assess their road safety problem, develop a strategy, allocate resources, deliver interventions and achieve results. Without being grounded in an institutional arm of government that has been tasked with the road safety leadership role, national and sub-national road safety efforts can often flounder.

2. A decade and a half later, heading into the Second United Nations Decade of Action, the fundamentals of the World Report continue to resonate. This study is one part of a comprehensive study of lead road safety agencies in low- and middle-income countries (LMICs), which is being conducted on a collaborative basis by the World Bank, the World Health Organization (WHO) and the African Development Bank with financial support from the Global Road Safety Facility (GRSF). It focuses on the case of Nigeria and its single institutional model for tackling road safety.

3. The objective of this report is to assess the performance of the Nigerian “Single Organizational Model” delivered through the Federal Road Safety Corps (FRSC) in tackling Nigeria’s road safety challenges and to determine the factors that may allow the model to be replicated in other LMICs. It responds to the following questions:

- a. What are the strengths and weaknesses of this model and what could be done to improve its’ efficiency and effectiveness?
- b. How efficient and effective is the “Single Organizational Model” institutional setup (both federal and state levels) in dealing with the road safety issues in Nigeria?
- c. Can this model be replicated in other LMICs and what are the factors that will determine the replicability of the model in those countries?
- d. What are the steps in setting up “Single Organizational Model” institutions in LMICs?

4. The report was prepared remotely with audio-video calls and emails to various senior staff within FRSC and partner agencies, as well as desk analysis of available reports. The report was also supported by investigations into road safety engineering policies and practices, road crash data and road safety education in Nigeria which included field visits, interviews, and desk analysis. These matters are addressed in the body of the report and detailed in Annexes I and II.

5. After a brief status review of road safety in Nigeria, the Nigerian model is discussed, including the establishment of the National Road Safety Advisory Committee (NaRSAC), and the FRSC, and the critical leadership and coordination role it plays. This is followed by an analysis of the key challenges impacting on safety performance in Nigeria, which provides greater insight to the efficiency of the national road safety management system in Nigeria.

¹ Peden M, Scurfield R, Sleet D, Mohan D, Hyder A, Jarawan E, Mathers C, eds (2004). *World Report on Road Traffic Injury Prevention*, World Health Organisation, Geneva.

CURRENT ROAD SAFETY STATUS

6. According to government statistics, there were 5483 reported fatalities and 41,464 reported casualties as a result of road traffic crashes in Nigeria in 2019. Crash data management systems are specifically addressed later in this report, and in more detail in **ANNEX II**. It is important to note that: (a) it is recognized that not all road traffic fatalities and injuries are being reported through to FRSC; (b) the WHO estimates that around seven times more fatalities are occurring, and that the number of fatalities continues to increase; and (c) the FRSC has taken and is taking regular steps to improve the quality and quantity of road crash and injury data in Nigeria.

7. Two examples of the efforts made to improve data merit particular attention. A National Committee on Crash Information System was established, composed of representatives of the FRSC, Nigeria Police, Ministry of Health, National Population Commission and Bureau of Statistics (being the agencies responsible for the collection, collation and analysis of road crash data) to provide multi-sectoral governance for the National Crash Data Management System. Most recently, FRSC personnel have been deployed to 664 Local Government Areas (LGAs)² in Nigeria (out of 774 LGAs) to focus on improving road crash data collection.

8. The high level of concern about the issue is reflected in other estimates and analyses. For example, the Global Burden of Disease study estimates that in 2017 road traffic injury is the 15th highest cause of death and disability in Nigeria, the 10th highest cause of disability for 5-14 year-old children and the 7th highest cause of death for 15-49-year-old adults.³ Using a well-established methodology, the World Bank estimates a socio-economic cost of crashes to Nigeria of USD 29 billion in 2016 alone (over 7 percent of Nigeria's 2016 Gross Domestic Product).⁴

9. Nigeria is the seventh most populous country in the world and is projected to become the third most populous by 2050. The number of motor vehicles in use is estimated to have grown by 33% over a recent ten-year period⁵ and a growing proportion of motorcycles means their involvement in road traffic crashes is growing disproportionately, to 21.5% in 2017.⁶

10. Nigeria's road traffic system is under extreme pressure. Significant additional effort is required each year to get the safety problem under control and begin the process of eliminating fatal and serious injury over time. A major strategic achievement during 2020 was the approval of a second Nigeria Road Safety Strategy (NRSS II) 2021-2030. The strategy has a vision of "a country where road traffic crashes result in zero fatalities" and an overall goal of a 50% reduction in road traffic fatalities by 2030 (2019 baseline).

² Nigeria has three tiers of government: federal (central), state and local governments. Local Government Areas (LGAs) constitute the lowest tier of the government. Each LGA is administered by a Local Government Council, consisting of a Chairman, who is the Chief Executive of the LGA, and other elected members referred to as Councilors. Each of the LGAs is further subdivided into a minimum of 10 and a maximum of 20 Wards. Each Ward is being administered by a Councilor who directly reports to the LGA Chairman. The Councilors fall under the legislative arm of the local government.

³ Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington, 2016. Available from <http://vizhub.healthdata.org/gbd-compare>. Accessed September 2020.

⁴ World Bank (2019). *Guide for Road Safety Opportunities and Challenges: Low- and Middle-Income Countries Country Profiles*. Washington DC, USA: World Bank.

⁵ See Organisation Internationale des Constructeurs d'Automobiles (2018) http://oica.net/wp-content/uploads//Total_in-use-All-Vehicles.pdf.

⁶ FRSC Annual Report 2017.

11. The strategy sets out a series of stakeholder actions, and a proposed budget. A notable headline feature is identification of three critical factors for successful implementation:

- ⊕ Continued support for NRSS II by political leaders
- ⊕ Budgetary allocation for the Technical Working Group of the NaRSAC and
- ⊕ State Road Safety Advisory Councils comprising stakeholders to drive the execution of the NRSS II at State level

12. The relevance of these critical factors is reinforced by the findings of this study.

Table 1: Nigerian Progress Against UN Versus Voluntary Road Safety Targets

UN Voluntary Road Safety Targets	Nigeria Progress
All countries establish a comprehensive multisectoral national road safety action plan with time-bound targets	Achieved, with new national road safety strategy to 2030 recently approved
All countries accede to one or more of the core road safety-related UN legal instruments	Significant Africa-leading progress
All new roads achieve technical standards for all road users that consider road safety, or meet a three-star rating or better	Significant improvement required, kickstarted with an iRAP program which is backed by an interim 5-year investment program to demonstrate scope for possible transformation (a small rating exercise has been conducted)
More than 75% of travel on existing roads is on roads that meet technical standards for all road users that take into account road safety	
100% of new (defined as produced sold or imported) and used vehicles meet high quality safety standards such as the recommended priority UN Regulations, Global Technical Regulations or equivalent recognized national performance requirements.	Significant Africa-leading progress, which will benefit from upcoming review of regulatory systems
Halve the proportion of vehicles travelling over the posted speed limit, and achieve a reduction in speed-related injuries and fatalities	These are yet to be measured – there is significant non-compliance with helmet and seatbelt use, and speed and alcohol enforcement will require significant new and ongoing equipment and systems investment
Increase the proportion of motorcycle riders correctly using standard helmets to close to 100%	
Increase the proportion of motor vehicle occupants using safety belts or standard child restraint systems to close to 100%	
Halve the number of road traffic injuries and fatalities related to drivers using alcohol and/or achieve a reduction in those related to other psychoactive substances	
All countries have national laws to restrict or prohibit the use of mobile phones while driving	Achieved, and being enforced, with significant non-compliance
All countries to enact regulation for driving time and rest periods for professional drivers and/or accede to international/regional regulation in this area	The Road Transport Safety Standardization scheme is an excellent platform to improve the safety of commercial transport
All countries establish and achieve national targets in order to minimize the time interval between road traffic crash and the provision of first professional emergency care	This is yet to be measured, but professional systems are in place that would respond to increased investment

Legend

Achieved/Significant Progress	Moderate Achievement	Insufficient Progress
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13. The strategy is aligned with the United Nations Sustainable Development Goals.⁷ Under this umbrella, Member Countries agreed a number of voluntary road safety targets, which are set out in **Table 1**, with a snapshot summary statement relating to its status in Nigeria. They provide an excellent platform for Nigeria to develop a strong results management framework, focusing on the vital few issues, and pursuing them with vigor, to achieve the country’s road safety goals.

⁷ <https://sdgs.un.org/goals>

THE NIGERIAN MODEL FOR ROAD SAFETY

14. This analysis of Nigeria’s single organizational model for road safety was undertaken within a perspective of road safety management which was first codified in guidelines prepared by the GRSF in 2009 (and revised in 2013). The road safety management framework (see Figure 1)⁸ which underpinned the guidelines addressed road safety as a production process with three interrelated elements: institutional management functions, which generate interventions which, in turn, produce results.

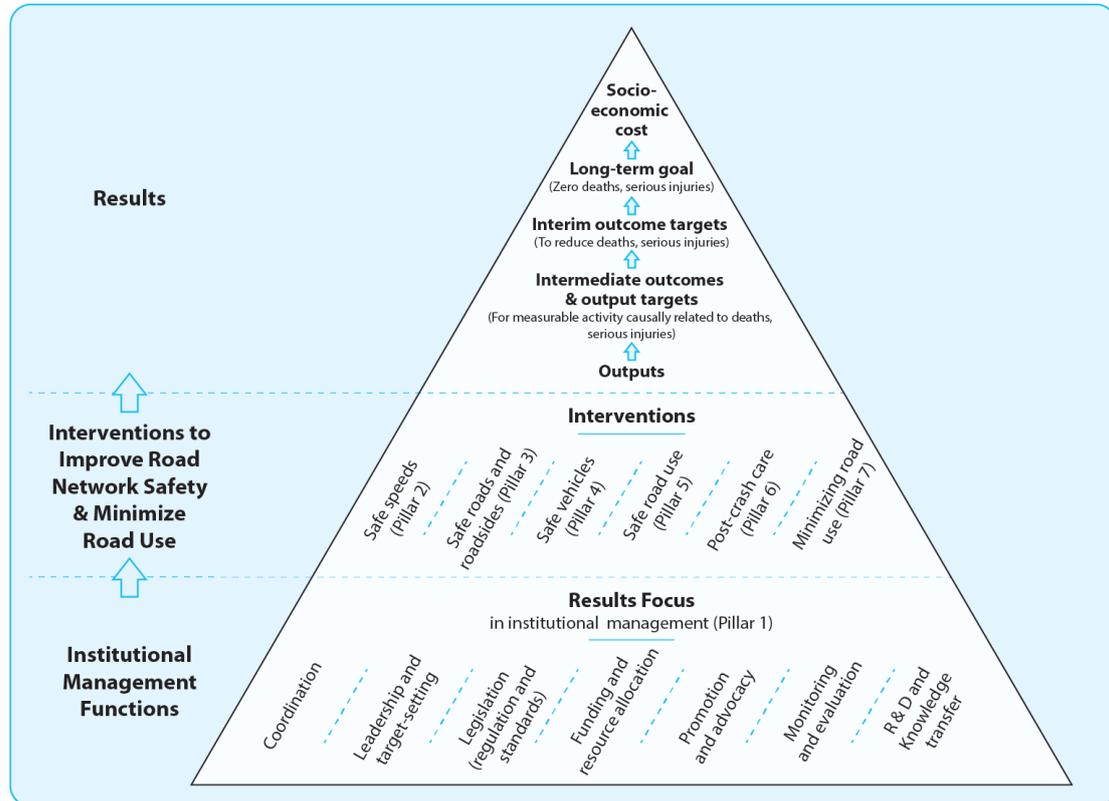


Figure 1: Road Safety Management Framework

15. In particular, institutional management functions were identified which drive more effective interventions and better results. When given full effect, these institutional road safety management functions provide direction on how cost-effective interventions are identified, prioritized, scoped, funded, targeted and delivered. They also assist in building support for sustained road safety improvement and for building the human, financial and institutional capacity needed to sustain that support, and transform it into improved safety results within the community.

16. This framework provided the underpinning logic behind guidance for road safety lead agencies in Africa by the Africa Transport Policy Programme (SSATP)⁹ and continues to provide the most comprehensive and technically strong framework for road safety.

17. This section describes and analyses the Nigerian model by examining the overall governance mechanism for road safety in Nigeria and the leadership of the FRSC within that governance mechanism.

⁸ Source: Under development by GRSF for the Road Safety Training Course.

⁹ M Small and J Runji (2014) “Managing Road Safety in Africa: A Framework for National Lead Agencies”. SSATP (Africa Transport Policy Programme) Working Paper 101, Washington DC.

Governance

18. Good road safety performance requires effective governance, management and coordination across many arms of Government. This generally involves two inter-related institutional arrangements:

- ⊕ A senior governing body, which brings together the heads of national government agencies with road safety responsibilities, and provides a single line of advice to, and point of coordination for, government; and
- ⊕ An agency within government, nominated to act as the lead agency, which supports the governing body, and leads the national effort to achieve the Government’s road safety goals.

19. Road traffic injury connects many government agencies, making effective interagency governance systems essential. Road traffic safety requires attention across multiple sectors of society, and arms of government – principally across health, transport, and police portfolios. Clearly defined road safety roles and functions for each of the key agencies is required. Each agency must remain vertically accountable to its Minister for the delivery of services to the public. They must also assume responsibility for “whole of government” road safety results and take part in the horizontal coordination of its planning and activity that this requires.

20. The African road safety management framework developed by SSATP in 2014 put forward a generic model for the interagency governance systems needed to bring all arms of government together in pursuit of the government’s road safety goals. A number of features identified in this can be found in the governance arrangements subsequently developed in Nigeria, summarized in **Figure 2**. Specifically, three key functions within an interagency governance system for road safety are identified – a Board, an Executive, and a Secretariat.

21. The “Board” function ideally follows a classical governance approach (strategy-planning-implementation-review) to ensure that Ministers can have confidence that the various arms of government are working effectively together to achieve the country’s road safety goals. In Nigeria, this function is performed by the National Road Safety Advisory Council (NaRSAC), which was inaugurated on 17 February 2017. NaRSAC is not specifically established in law but is responsible for road safety target setting; coordination of activities at all levels of governance; monitoring and evaluation; briefing the Federal Executive Council;¹⁰ and the oversight of safety funding.¹¹

22. NaRSAC is yet to meet regularly since its inauguration, although it did meet in late 2020 to review the new national road safety strategy to 2030 and endorse it for approval by the Federal Executive Council. This represented an important milestone and outcome that needs to be followed up through oversight of the ongoing planning, implementation and evaluation of the strategy. It is important that NaRSAC is provided with meaningful opportunities to nourish the national road safety effort and the FRSC’s leadership mandate.

¹⁰ Federal Executive Council (FEC) of the Federation is a body of Ministers of the Government of the Federation, established by the President, with responsibilities for the functions of the Government. Such a provision is made in the 1999 Nigeria Constitution. The President is the Chairman of the FEC.

¹¹ Kayode Olagunju (2018) *The Implementation of the Nigeria Road Safety Strategy and Road Traffic Crashes: An Evaluation*. National Institute for Policy and Strategic Studies, Kuru, Nigeria.

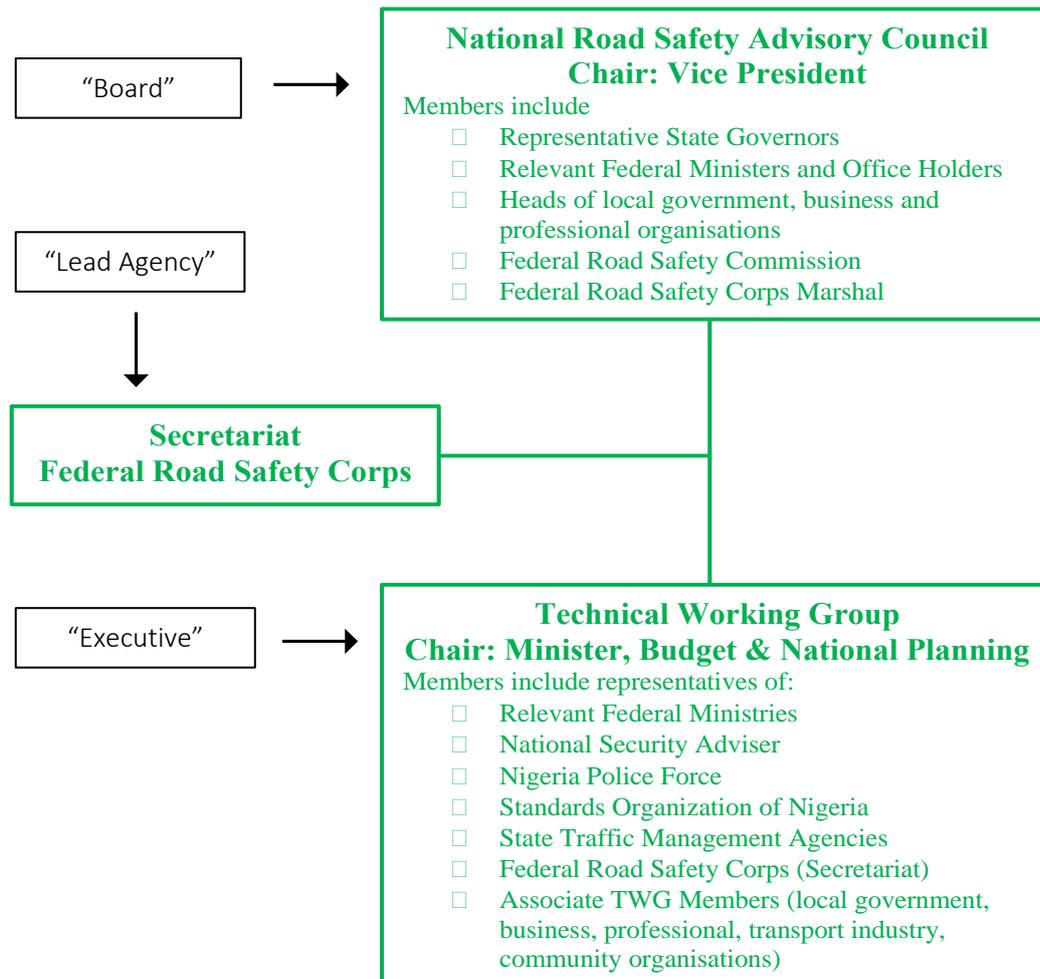


Figure 2: Nigeria Road Safety Governance Structure

23. Membership of NaRSAC comprises the following:

- ⊕ The Vice President (Chair)
- ⊕ Secretary to the Government of the Federation
- ⊕ National Security Adviser
- ⊕ One Governor from each of the six geo-political zones in Nigeria
- ⊕ Federal Ministers of Transport, Works, Health, Justice, Education, Finance, Environment, Police Affairs, Interior, National Planning Commission, Federal Capital Territory, Labor and Productivity
- ⊕ Presidents of Association of Local Governments of Nigeria; National Association of Chambers of Commerce, Industry, Mines and Agriculture; and Nigeria Society of Engineers
- ⊕ Chairman of Federal Road Safety Commission; and
- ⊕ Corps Marshal of Federal Road Safety Corps (Member/Secretary)

24. NaRSAC is comprised of people who, by necessity, must handle multiple aspects of any one government portfolio and cannot be reasonably expected to have sufficient detailed oversight of the critical safety aspects of the road traffic system. The "Executive" function is essential because it regularly brings together a senior group of government executives to assess the current road safety results, coordinate delivery of agreed programs, and prepare technically sound and actionable advice to the Board.

25. The “Executive” meets more regularly through the year to oversee delivery across the road safety partnership of the institutional management functions:

- ⊕ *Leadership* of organizational and multi-sectoral strategies and targets
- ⊕ *Coordinate* the contributions of various government and non-government actor
- ⊕ Review and promote effective change in *legislation*, standards and rules
- ⊕ *Promote* a safe system response to the road safety crisis
- ⊕ Raise safety *funding* and allocate it efficiently
- ⊕ *Monitor* results and evaluate projects and
- ⊕ *Learn* by doing – research, development, and knowledge transfer.

26. These functions serve as a guide for advice to the “Board”. In Nigeria, this function is performed by the Technical Working Group (TWG), which was inaugurated on 3 August 2017. Its main role is to facilitate implementation of the National Road Safety Strategy and provide advice to NaRSAC. The group also makes recommendations to FRSC on issues requiring national regulations and standards setting (traffic enforcement, road signs and markings, vehicle inspection, rescue administration and personnel training), and funding.¹² The FRSC performs a Secretariat function for both the Board and the Executive.

27. Membership of the TWG comprises:

- ⊕ Federal Minister, Budget and National Planning (Chair)
- ⊕ Representatives of
 - Federal Ministries of Power, Works and Housing, Health, Interior, Transport and Budget and National Planning
 - National Security Adviser
 - National Environmental Standard Regulatory and Enforcement Agency
 - National Bureau of Statistics
 - Nigeria Police Force
 - Standards Organization of Nigeria
 - State Traffic Management Agencies and
 - Federal Road Safety Corps (Secretariat).

28. Associate TWG Members are drawn from:

- ⊕ Nigerian Medical Association
- ⊕ Nigeria Society of Engineers
- ⊕ Nigeria Bar Association
- ⊕ Guild of Editors
- ⊕ National Council of Women Societies
- ⊕ Chartered Institute of Logistics and Transport
- ⊕ The Nigeria Institute of Safety Professionals
- ⊕ The Nigeria Institute of Town Planners
- ⊕ The Nigeria Institute of Safety Professionals
- ⊕ National Association of Road Transport Owners and
- ⊕ Human rights organizations.

¹² Kayode Olagunju (2018) *The Implementation of the Nigeria Road Safety Strategy and Road Traffic Crashes: An Evaluation*. National Institute for Policy and Strategic Studies, Kuru, Nigeria.

29. The generic SSATP model put forward another core element of a governance system – a stakeholder group involving non-government stakeholders who aren't directly accountable to Ministers but operate under safety regulations and otherwise have a keen interest in road safety. Formal engagement with these non-government stakeholders can generate legitimacy for road safety actions by the Government and improve road safety results through better understanding and commitment to the safety of their own operations. A well-constituted stakeholder group would draw from universities, researchers, consultants, the transport industry, wider business interests, non-government organizations and other community interests.

30. Government stakeholders in Nigeria are directly accountable to Ministers and are rightly incorporated within the TWG. Rather than establishing a separate stakeholder group, however, many different private sector and community actors are included in the Technical Working Group as Associate Members. While ongoing and sustained engagement outside government is very important, this may have two negative effects: Firstly, increasing the size of the core interagency governance group (reporting to NaRSAC) may make any decision making, or the finalization of advice to NaRSAC, more difficult; Secondly, mixing government and non-government agencies may have an impact upon the frank exchange of views amongst government agencies, and impact upon the extent to which various government agencies can be held to account.

31. The TWG mixes public agencies with strict accountability for delivering services, with private actors who can make their own independent decisions. The establishment of a separate stakeholder group for important actors outside government may assist TWG to focus on the accountabilities of different arms of government for delivering safety.

Lead Agency

32. Good practice road safety requires mandating and resourcing an agency within government to lead the country's road safety effort. The statutory establishment of the Federal Road Safety Commission (Establishment) Act 2007 followed the establishment of a National Road Safety Commission in 1974, and the Federal Road Safety Commission in 1988. The Federal Road Safety Commission comprises a Chair, and six other persons, each appointed by the President of Nigeria. One of these six is the Corps Marshal, the Chief Executive of the Corps. The Commission functions as a board of control for the FRSC, and delegates tasks to the Corps Marshal.

33. Section 11 of the Act sets the functions of the Corps as:

- * making the highways safe for motorists and other road users
- * recommending highway infrastructure improvements to the Federal Ministry of Works and Housing
- * determining requirements for vehicle identification and driver licensing
- * standardizing highway traffic codes
- * educating the public on the proper use of the highways
- * determining and enforcing speed limits for all roads and vehicles, and controlling the use of speed limiting devices
- * giving prompt attention and care to victims of accidents
- * clearing obstructions on any part of the highways
- * conducting road safety research

- * co-operating with organizations engaged in road safety activities and
- * making regulations in pursuance of any of the functions assigned to the Corps.

34. Members of the Corps have the power to arrest, summons, prosecute or serve with a notice of offence any person reasonably suspected of having committed a range of traffic offences.

35. The National Road Traffic Regulations 1997, which are set under the Federal Road Safety Commission Act, establishes State Directorates of Motor Vehicle Administration. This is a critical legislatively defined relationship. Broadly, the FRSC sets all requirements for motor vehicle driver and transport regulation, and the Motor Vehicle Administration administers these rules in each State.

36. Section 11 (1) of the Constitution of the Federal Republic of Nigeria allows the National Assembly to “make laws for the Federation or any part therefore with respect to the maintenance and securing of public safety and public order.” Federal responsibility is thus unequivocal. However, the FRSC has consistently (and quite rightly) advocated for joint ownership of road safety by all Nigerians, and for the States to assume leadership within their areas of responsibility, and this is reflected in the road safety governance structures which were established in 2017. Only 16 States have established their own State Traffic Management Agency, which would be the natural home of a State lead agency.

37. A road safety lead agency can take many forms – for example, it could be housed within a ministry or department and report directly to a Minister, or in a separate agency reporting to a board or Council. A defining feature of the Nigerian road safety model is that the lead agency delivers so many road traffic system functions which other countries allocate across multiple agencies. This is broadly illustrated in **Table 2**, which compares the functional responsibilities of the FRSC with those of the National Transport and Safety Authority (NTSA) in Kenya.

38. The NTSA is a statutory authority, led by a Board, and has overall leadership responsibilities for road safety in Kenya expressed in its founding legislation. It is a large multi-functional road safety lead agency with a full set of motor vehicle and transport regulation responsibilities. However, it only partly spans the functions of the FRSC – road safety audit sits with the road agencies, traffic law enforcement is the responsibility of Kenya Police Service, and the NTSA has no responsibility for post-crash response.

39. The political strength of the ministerial home, the organizational strength of the agency, the legislative mandate, and the scope of the institutional management functions are important factors in the performance of a road safety lead agency. The aggregation of functions within the one single agency in Nigeria is likely to have had a significant beneficial effect on the capacity of the country to tackle its road safety problem. There is an organization in place, it has a very clear purpose, and is accountable for the overall road safety performance. Although significant improvements in Nigeria’s road safety performance are required, the institutional foundation exists from which policy and investment decisions can be made in favor of road safety.

Table 2: A Functional Comparison of FRSC with NTSA in Kenya

	Nigeria	Kenya
Ministry Home	Presidency	Home Affairs
Agency Form	Federal Road Safety Corps, led by a Commission	National Transport and Safety Authority, led by a Board
Legislative Basis	Federal Road Safety Corps (Establishment) Act 2007	National Transport and Safety Act 2012
Road Safety inter-agency Governing Body	National Road Safety Advisory Council	None
Institutional Management Functions	✓	✓
Motor vehicle and driver regulation	✓	✓
Commercial transport regulation	✓	✓
Road network management (safety audit)	✓	
Speed limit regulation	✓	✓
Road traffic law enforcement	✓	
Road safety information and promotion	✓	✓
Post-crash response	✓	

FRSC leadership and coordination

40. The FRSC is a large and powerful national road safety lead agency, unique in Africa, and perhaps, globally, for the sheer breadth of its operations. The size and scope of the FRSC allows the opportunity to develop greater synergies across various safety critical functions and may provide a more systematic response to the road safety challenges which so many LMICs face. However, it also creates its own institutional demands on the organization.

External

41. The external environment discussed above is predicated on the statutory mandate held by the FRSC to lead and deliver on the country’s road safety agenda. This is likely to have had a positive effect for road safety, but the size and scope of the organization may also have an adverse effect on the motivation of other agencies within government, and possibly outside of government, to take on significant safety responsibilities, in their own right. There is a risk that the FRSC is seen as being solely responsible for road safety, rather than as being the leader amongst many agencies and stakeholders which each need to assume responsibility for road safety.

42. No single agency can deliver a safe road environment or achieve as much in road safety on its own as it can in concert with others. Notwithstanding the significant health, transport and police

functions FRSC performs, other government actors in these sectors still have a major role to play. This requires FRSC to adopt an enabling approach at a Federal level, similar to the role it is playing at the State level, where it works within the established division of responsibilities, but is encouraging greater ownership of road safety within State Governments.¹³ Leadership is critical across Nigerian government and society: Federal government agencies need to pick up the road safety reins, State governments must assume greater responsibility, and the wider business and community sector must be further engaged.

Internal

43. The size and scope of the FRSC may also lead the organization to assuming similar levels of understanding and strategic action on road safety across the organization, rather than spending the necessary time to ensure effective horizontal and vertical coordination across the various organizational functions. The FRSC has a strong operational command structure, and this may exacerbate the normal tendencies within large organizations towards internal silos and imbalances between strategy and operation functions, or between national and local functions.

44. Operational command structures are not necessarily well suited to the complexities of handling complex, multi-sectoral, public health issues, such as road traffic safety. These complexities are clearly very well understood within FRSC command. However, the value placed by FRSC on positive engagement with external partners may be overriding the imperative to enforce road traffic law. FRSC must both maintain a positive safety face, and strictly enforce the vital few safety critical laws against repeat and serious offending by motor vehicle drivers and transport operators.

45. With so many of the road safety functions within the one organization, it is vital that this duality is clearly reinforced and championed within the organization. A strong organizational unit is required to drive the organization's safety strategy and performance ahead. This vital road safety management function needs a clearly defined home within the organization, with a strong mandate which goes across the organization.

A lead agency within the lead agency

46. Where a lead agency within a government is yet to be established, or a lead agency for road safety still awaiting a nomination, one needs to be established and/or nominated. Where established the political mandate and/or the resourcing of the lead agency needs to be continually strengthened.¹⁴ The FRSC has various Corps Offices in place, alongside essential Departments such as Operations and Motor Vehicle Administration. Consideration could be given to considerably strengthening the organizational mandate and resourcing of the Policy, Research & Statistics (PRS) Department, as the single point of safety leadership within the organization.

47. PRS Department sees itself as a service function for other organizational units within FRSC. It currently provides the Secretariat for the Technical Working Group, collates data for the National Crash Report Information System, and takes the lead on various policy projects. It has no safety coordination

¹³ States hold joint regulatory responsibilities for motor vehicles, their drivers and commercial operators, are responsible for the State road network, as well as health and education services.

¹⁴ Small and Runji (2014) op cit. These are not issues reserved for low and middle-income countries – for example, Australia has only recently re-established a Federal Office of Road Safety which had been disestablished more than a decade before.

role internally, and while it may make observations, it is unclear what weight these may carry. PRS Department has professional staffing of 25-30 officers, in an organization of around 20,000.¹⁵ FRSC organizational leaders have a strong sense of safety mission, but a stronger centralized road safety strategy and performance capacity is required to ensure operational units are not left to re-analyze safety priorities or re-direct safety resources to other operational activities within FRSC.

48. Consideration should be given to considerably strengthening the safety mandate and resourcing of PRS Department and transforming the safety leadership and coordination function both externally and internally. It needs to be the smartest, most analytical and most influential safety group within FRSC, and have organizational mandate and resources to match. Each of the current PRS Department functions – external coordination, data, and policy – need to be considerably strengthened. Other functions could be added.

49. The department (PRS) mandate could also be transformed and resourced so that it provides the safety oversight across the organization, alongside the corporate oversight functions provided by finance, human resources, internal audit etc. Key here would be developing its internal strategy, planning, budgeting, monitoring and evaluation, and performance management functions. The UN voluntary road safety targets, and the approval of the NRSS II provide a strong basis on which PRS Department could be mandated to systematically work through the internal safety performance impacts on each part of the organization, collaborating with each part to make the best use of safety resources. Capacity building would be another critical area for the department, identifying the critical technical gaps within FRSC and the sector, and working with the Training Department to ensure that training outcomes are fully aligned with the strategic safety needs of such a complex road safety agency.

Strengths, Weaknesses and Possible Replication

50. The principal strengths of the Nigerian model are:

- ⊕ There is one clearly designated public sector head responsible for road safety in Nigeria – the Corps Marshal appointed by the President, through the Federal Road Safety Commission; and
- ⊕ There are many safety related functions at the Corps Marshal's direct disposal: road safety management (although some functions are more or less developed); regulation of motor vehicles, motor vehicle drivers and transport operators; road traffic law enforcement; and post-crash response (delivering call center, ambulance and roadside trauma clinics in conjunction with the health sector).

51. Principal weaknesses of the Nigerian model are:

- ⊕ The dominant role of the FRSC may mean that other key public agencies simply leave responsibility for all matters concerning road safety to the FRSC – key activities of concern in this regard would be the important roles of Nigeria Police, the delivery of a safe road environment by road agencies, and the delivery of health promotion and trauma management services by health agencies; and
- ⊕ The operational command nature of the FRSC may be unsuitable for the complexities of handling the multi-sectoral public health nature of road traffic safety.

¹⁵ <https://www.premiumtimesng.com/news/more-news/275412-frsc-to-recruit-4650-personnel.html>

52. Nigeria's single agency model may be a path forward for other LMICs. However, a decision to pursue this should only come after careful consideration of the national and institutional context of road safety within the country. For example, major structural changes regarding Police agencies (which typically hold significant institutional power) and highways agencies (which typically manage high project budgets) are complex matters, and these agencies will remain critical to road traffic safety even with the aggregation of safety functions into one entity.

53. The potential advantages and benefits involved in implementing the single model may be outweighed by the disadvantages and costs of focusing on major structural and institutional reforms ahead of policy and operational road safety reforms. These reforms should include an institutional focus such as the strengthening of the inter-agency governance mechanism, or the existing lead agency function or – in the case of Kenya's NTSA – the preparation of Road Safety Mainstreaming guidelines for government ministries, departments and agencies.¹⁶ Inevitably, this assessment is required at a country level, taking into account both immediate and longer-term challenges and opportunities.

54. Replication of one country's government agencies and governance systems in another country is fraught with difficulty. Nevertheless, this discussion of the Nigerian model identifies some essential features that can be adopted by other countries:

1. A high-ranking official with substantial legislative power is appointed by the head of government and held accountable for road safety
2. There is a governance system in place through which the national road safety lead agency engages with government and non-government stakeholders
3. This governance system is serviced by the national road safety lead agency, and oversees the development and coordination of national multi-sectoral road safety strategies and plans, and
4. Aside from any other operational responsibilities (such as regulation, enforcement, infrastructure) the national lead agency is functionally responsible for all road safety institutional management functions (apart from of any current role for the FRSC in funding and allocation).

55. The road safety management capacity review methodology developed by the GRSF remains the leading diagnostic tool for a country to consider its current road safety situation in a holistic sense (including both technical insight and national context), and identify institutional reforms, which are required to address this situation. LMICs are encouraged firstly to reflect upon the extent to which their own arrangements compare with items 1 to 4 above. They are encouraged secondly to consider whether they wish to prioritize institutional road safety reforms, in order to establish a much stronger base for tackling their road safety problem, and how this may be best approached.

56. Leading change in institutional road safety management arrangements needs to be grounded in a recognition that road traffic safety performance needs to improve. That transformation is typically first required at a governance and leadership level which is the focus of the discussion above. The institutional management functions led by the road safety lead agency are also critical and these are considered further below.

¹⁶ <https://www.ntsago.ke/site/wp-content/uploads/2020/09/ROAD-SAFETY-POLICY-GUIDELINES-TO-SUPPORT-ROAD-SAFETY-MAINSTREAMING-IN-MDAs-JULY-FINAL-EDT-II.pdf>

KEY CHALLENGES IMPACTING ON SAFETY PERFORMANCE

57. This report does not seek to comprehensively diagnose the road safety problem in Nigeria, or to provide a definitive path forward for the country, or indeed for FRSC. However, this section seeks to deepen understanding of the Nigerian model by looking at some key challenges impacting on safety performance. The focus is on key functional responsibilities of the FRSC – regulatory and compliance systems, road safety engineering, post-crash response, funding and data – and the mechanisms available to the FRSC for addressing these challenges.

Regulatory and Compliance Systems Efficiency

58. It is infeasible within the scope of this study to identify that Nigeria’s single organizational model is more or less efficient, or more or less effective than other models. This would require an activity-based analysis of expenditure, delivery and results, and a complex comparative analysis which would still confront significant contextual issues associated with how governments and societies establish and govern public institutions.

59. Some assessment can be made of the overall quality and efficiency of the FRSC’s regulatory and compliance systems, and this is addressed here in regard to four key aspects of its mandate: driver licensing, vehicle regulation, transport operator safety, and enforcement.

Driver Licensing

60. Driver licensing systems are critical for managing the safety of the road traffic system, by determining:

- ⊕ Who may operate a motor vehicle in the road traffic system (entry)
- ⊕ How the driver’s safety performance is monitored (management) and
- ⊕ In what circumstances the driver’s license to operate a motor vehicle are withdrawn (exit).

61. The effectiveness of the licensing system is at least in part dependent upon the quality of two related business processes:

- ⊕ *Identity proofing.* Poor identity proofing processes and practices within a driver licensing system can allow a person to hold a license even though they have failed necessary tests, or they have been banned from driving due to causing crashes or unsafe driving; and
- ⊕ *License production.* Strengthening controls over the physical production and issue of driver licenses is an important means for protecting the integrity of the licensing system and reinforcing the “one driver one record” principle of good licensing management.¹⁷

62. The current driver licensing system in Nigeria has evolved through many reform programs to improve the quality of the system. It is based on a tripartite arrangement between the Joint Tax Board (which oversees all revenue aspects of motor vehicle and driver regulation), the FRSC (which sets all regulatory standards regarding motor vehicle and driver regulation and manages the vehicle and driver databases) and State run Vehicle Inspection Offices (these are part of the State Traffic Management Agencies, and deliver the core motor vehicle and driver regulation services). The three agencies are co-

¹⁷ Three key steps are to: physically secure license production away from customer counters, to protect against theft; create a time delay between license application and license issue to allow identity checks to be properly conducted; and issue the license by mail to the residential address provided by the customer – to verify the address details provided by the customer.

located at 194 Driver License Centers. The system operates within a “one driver one record” philosophy and provides online options for drivers to renew their license, and for the public to verify license details.

63. The essentials appear to be well addressed, but the system is quite dependent upon the quality of the State Traffic Management Agencies. The overall integrity of the licensing system is likely to be benefiting from FRSC control of the license register. Nonetheless, the identity proofing and license production should be assessed using a well-recognized risk management standard such as ISO 31000.

64. This leaves the more explicit safety standards and compliance issues. For many LMICs, two major driver licensing issues exist:

- ⊕ The licensing requirements are not high enough. Over time, standards need to move to a graduated licensing system which better controls exposure to risk, particularly for younger drivers, and better testing systems; and
- ⊕ Licensing standards are insufficiently enforced. While a driver convicted of causing death may lose their license, after a safety failure, safety improvements come from intervening before a safety failure occurs.

65. There is considerable research literature available to review the safety of any country’s driver licensing arrangements. Some of the critical reform options for young and novice drivers, which are well supported by a comprehensive international literature review on the subject, are:¹⁸

1. Minimum learner age
2. Minimum learner period
3. Minimum learner supervised driving hours
4. Minimum provisional age
5. Hazard perception and on-road tests
6. Night driving restriction
7. Peer passenger restriction
8. Zero alcohol limit.

66. One ongoing issue in many countries is the management of driver training. There is a strong public policy case for regulating the quality of training institutions and professionals but a weak case for relying on these third-party arrangements to deliver safety. The key safety interventions here are the testing of knowledge and practice for motor vehicle drivers, controlled directly by government.

67. There may be higher returns from other safety policy and investment decisions for Nigeria over the next five years. However, given the core of the licensing system (identity proofing, license production and the license registry) appears relatively sound, it may be important for Nigeria to investigate options for strengthening the existing system – the focus being on driver testing, and a future shift towards a graduated licensing system.

Vehicle Regulation

68. Vehicle safety is a critical area of concern for any country, in any continent, seeking to tackle their road traffic safety problems over the long term. The first step is to control the safety quality of the

¹⁸ TM Senserrick and AF Williams (2015), Summary of Literature of the Effective Components of Graduated Driver Licensing Systems, Austroads AP-R476-15, Sydney.

vehicles entering the country (whether as new or used vehicles). The second step is to ensure that the vehicles are properly maintained.

Entry into the Nigerian fleet

69. On 18 October 2018, Nigeria acceded to five international agreements, identified by the United Nations as the five key road safety conventions.¹⁹ The most significant of these, in safety outcome terms, relate to the regulation of motor vehicle safety standards (the 1958, 1997 and 1998 Agreements). From all the vehicle safety regulations which have subsequently been set, the WHO has identified eight vehicle safety standards as being the highest priority for countries to tackle their road safety problem (see below).

- ⊕ Frontal impact protection and side impact protection (R94 and R95)
- ⊕ Electronic stability control (R140)
- ⊕ Pedestrian front protection (R127)
- ⊕ Seatbelts and seatbelt anchorages (R14 & R16)
- ⊕ Child restraints (R129)
- ⊕ Motorcycle anti-lock braking systems (R78)

70. These regulations were applied by Nigeria on the same date the Conventions were acceded to. The Standards Organization of Nigeria is responsible for regulating the safety quality of vehicles being imported into the country and the Nigeria Customs Service is responsible for compliance. This is Africa-leading regulatory action.

71. An audit process is required to check that new vehicles entering the country comply with technical safety requirements set out in the regulations which Nigeria has applied. This can require a relatively complex regulatory framework and vehicle testing infrastructure, which is challenging in LMICs, where regulatory management capacity generally, and automotive safety expertise specifically, is low. A much simpler regulatory alternative to this has been put in place in Ecuador, which has quickly enforced compliance with most of the WHO priority standards.²⁰

72. It is important that Nigeria continues to demonstrate leadership in vehicle safety regulation within Africa by undertaking an implementation review after two years which demonstrates that assurance processes are working effectively for the entry of new vehicles. This implementation review could be used to identify options for strengthening controls on used vehicle imports.

73. The United Nations Environment Program (UNEP) estimates that for every new vehicle imported to Nigeria, many more used vehicles are imported.²¹ Nigeria is one of 25 African countries to ban used vehicle imports over a certain age, as a proxy for the safety quality of the vehicle. In Nigeria

¹⁹ These are: 1957 Agreement concerning the International Carriage of Dangerous Goods by Road; 1958 Agreement concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations; 1968 Convention on Road Traffic; 1997 Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles; 1998 Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts.

²⁰ See OECD/ITF (2017) *Benchmarking Road Safety in Latin America*, Paris. Ecuador simply requires manufacturers to apply for a type approval under the UN 1958 Agreement against the most important safety-relevant UN regulations. This includes regulations for ongoing administrative and production compliance which provide the necessary safety assurance.

²¹ Ariadne Baskin (2018) *Africa Used Vehicle Report*. United Nations Environment Program, Nairobi.

the ban is in place for vehicles over 15 years of age, which is the oldest ban in place. Neighboring countries apply more restrictive age bans – Chad at three years, Niger at five years, Cameroon at seven years, and Benin at ten years.

74. Simply matching the age ban of its neighbors may be an attractive reform option in Nigeria, but a more systemic approach would be to introduce domestic regulations to ensure that used vehicles entering the Nigerian fleet have been built to acceptable safety standards in properly regulated vehicle markets. The UN regulatory structures for vehicle safety were developed for the purposes of improving the safety of new vehicles being built, whether for domestic or international markets. They are also, however, very relevant for the safety of used vehicles entering a national fleet.

75. UNEP reports that, in 2016, the top five exporters of used vehicles into Nigeria were the USA (43%), India (17%), the United Kingdom (8.1%), South Korea (7.9%), and Germany (6.4%). The long-term economic benefits of locking into the cycle of safety improvement in well-regulated vehicle safety markets are likely to be significant for Nigeria, and immensely important for the continent if this leadership were to extend into other significant African used vehicle markets. Indian regulation has significantly improved in recent years, which may limit the immediate economic cost impact of such a move.

76. UNEP also published a 2019 report by the Partnership for Clean Fuels and Vehicles which identified potential strategies for addressing safety and environment issues in the global used vehicles market.²² Potential strategies for both exporting and importing countries addressed roadworthiness, emissions, end-of-life recycling, vehicle age and mileage limits, and aftermarket support. Nigeria could engage more directly with exporting countries regarding their control of technology quality prior to export and can take steps within Nigeria to improve control of technology quality, maintenance, and end-of-life issues. Stronger domestic regulation of vehicle technology in LMICs is vital to support both safety and environmental goals over the remaining period of the UN Sustainable Development Goals. Continued leadership by Nigeria in this area is of global significance.

Maintenance of the Nigerian fleet

77. Vehicle defects are not often the cause of crashes, but there is consistent evidence that the major vehicle defect factors in road crashes, in high income countries at least, are (in descending order of importance): brakes, tires, lights, steering, and loading.²³ This is likely to be the case in Nigeria as well.

78. FRSC regularly undertakes free vehicle safety checks and has been keeping consistent data on the results. Results of the last five years are provided in **Figure 3**. They represent a significant additional number of tests being conducted in 2019.

79. The reported defects relate to physical components of the vehicles which can easily be assessed at the roadside. Equipment based vehicle checks are the responsibility of the State-run Vehicle

²² http://airqualityandmobility.org/PDFs/USED_VEHICLES_WORKING_GROUP_REPORT.pdf

²³ See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755698/rrcgb-2017.pdf

Inspection Offices, at renewal of vehicle registration, which allows for checking of brakes and steering for example.

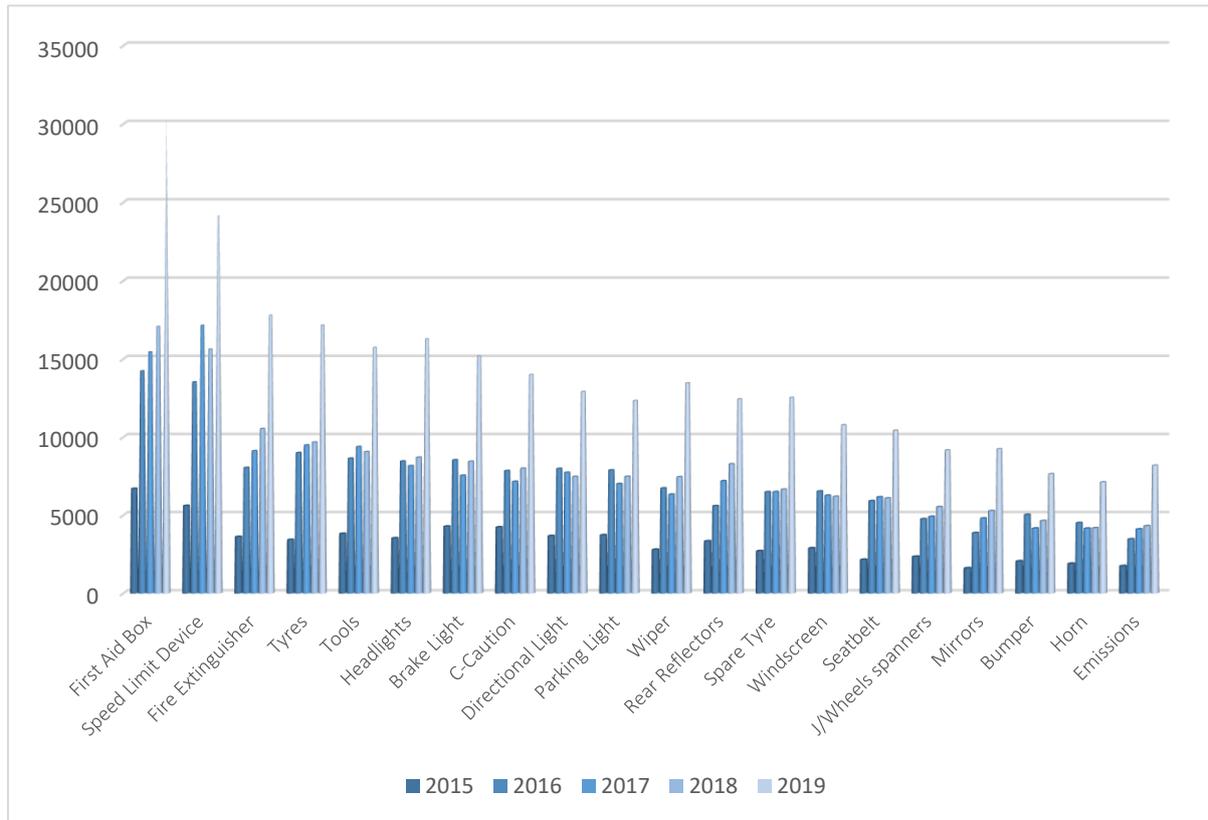


Figure 3: Number of Vehicle Safety Defects at Roadside Checks

80. The data highlights some need to improve the overall compliance regime. There are very high levels of non-compliance in regard to the speed limiter device, tire and lighting requirements. Brakes and steering defects are not being detected at these roadside stops. It is encouraging to see a significant increase in defects being detected, which suggests an increase in enforcement activity, but it poses a question about why defect notices are not being served. It would be relatively simple to use motor vehicle registration processes to inform motor vehicle owners of their legal obligations to maintain the safety of their vehicles’ brakes, tires, steering, lights and seatbelts, and of FRSC programs to enforce compliance regarding these critical defect issues.

81. The global industry body for vehicle inspections CITA (International Motor Vehicle Inspection Committee) has been working with the GRSF to assess vehicle inspection systems in Africa. Detailed reports have now been released on Togo and most recently on Cameroon.²⁴ The same study has been planned in Nigeria and will provide insight into an important reform program over the course of this next decade.

Transport Operator Safety

82. Overall, Nigeria’s motor vehicle regulatory regime reflects a strong recognition of the need to control the safety of motor vehicles and their drivers. Regulatory systems are in place, but they need

²⁴ https://citainsp.org/wp-content/uploads/2020/07/Report_AVIS_Cameroun_final.pdf

continued strengthening. A similar situation is apparent when considering commercial transport operations. The FRSC has a well-established system for regulating the safety of commercial transport operations, through its Road Transport Safety Standardization Scheme (RTSS), under the National Road Transport Regulations.

83. All operators engaging in inter-city road transport services are licensed according to the size of the fleet (5-25 vehicles, 26 to 99 vehicles, and over 100 vehicles), and must meet a series of criteria. These criteria include:

- ⊕ Establish fully functional safety units headed by a qualified, competent, and experienced Safety Manager
- ⊕ Non-engagement of drivers with more than one license or drivers whose license is suspended, removed, cancelled or disqualified
- ⊕ An established policy on training and retraining of drivers, and a comprehensive vehicle maintenance policy
- ⊕ Maintain records on drivers, vehicles and road traffic crashes and submit same to relevant agencies, and
- ⊕ Provide recovery vehicles and well-designed emergency evacuation plan.

84. The Safety Managers face more specific expectations – for example, to ensure that:

- ⊕ Risks arising from driving are recognized as an integral part of the organization safety policy
- ⊕ They have knowledge of the key regulations, and knowledge of basic crash investigation skills/techniques
- ⊕ Ensure that the vehicles meet the minimum safety standard, and that maximum driving period and rest hour requirements are enforced and
- ⊕ A quarterly safety report is sent to the FRSC in an approved format.

85. There is an ongoing audit and compliance program run by the FRSC, and there is evidence that it has taken action about entry and exit to the scheme. For example, over 700 operators were certified on average in the five years between 2011 and 2015, and over 200 failed certifications on average.

86. The RTSS mechanism is important, particularly considering that commercial vehicles comprise 60% of the vehicles involved in road crashes in Nigeria. It is reinforced by another notable regulatory intervention, which is the requirement for all commercial vehicles to install a speed limiter, from a supplier who has been accredited by the FRSC. This has led to a significant commercial market where some private corporations are actively promoting the various benefits of speed control:²⁵ reducing the risk of crashes, deaths and injuries, reducing the cost of maintenance, reducing product losses associated with crashes, reducing fuel costs, and reducing environmental pollution. Speed limiters are being packaged with other fleet management services.

87. FRSC holds one of less than 500 certifications to ISO 9001 Quality Management Systems in Nigeria. Aside from the regulatory requirements on road transport operators, FRSC could promote uptake of ISO 39001 Road Traffic Safety Management Systems over the course of the next decade, focusing initially on commercial transport operators and corporations with major fleets.

²⁵ See for example <http://speedlimiternigeria.com.ng>

Road Traffic Safety Enforcement

88. Extensive enforcement powers provide FRSC with significant direct opportunity to improve national road safety performance. Regular reporting of offences, as illustrated in **Figure 4**, shows a steady number of stops, and either cautions provided or offences detected, or both.



Figure 4: Number of Traffic Violation Stops, Cautions and Offences

89. The best caution for someone engaged in extremely dangerous behavior in road traffic is a fine – the message is clear: if the behavior persists someone may be injured. It is concerning therefore to see such a significant number of cautions provided. Nevertheless, this is important data, and can be improved by reporting on the major offences which are targeted. Key driver safety offences which evidence shows enforcement can directly improve are drunk driving, speeding and non-use of motorcycle helmets and seatbelts.

90. Simply addressing causal factors in road traffic crashes will fail to achieve the best results. However, the fact that three of the top seven factors are vehicle defects (**Figure 5**), suggests enforcement at current stops is warranted. Given speed violation is so dominant (and is very amenable to enforcement), there is also a very strong case for concentrating resources into speed enforcement.

91. The FRSC (Establishment) Act 2007 provides that a fine can be issued for all offences. Special “Cobra” enforcement programs are run each year. In 2018, FRSC acted against 4085 offences in Cobra operations, of which the major offences targeted were:

⊕ Use of Phone	56.5%
⊕ Driving without seatbelt	33.7%
⊕ Light Sign Violation	4.3%
⊕ Route violation	2.5%
⊕ Other	3.0%

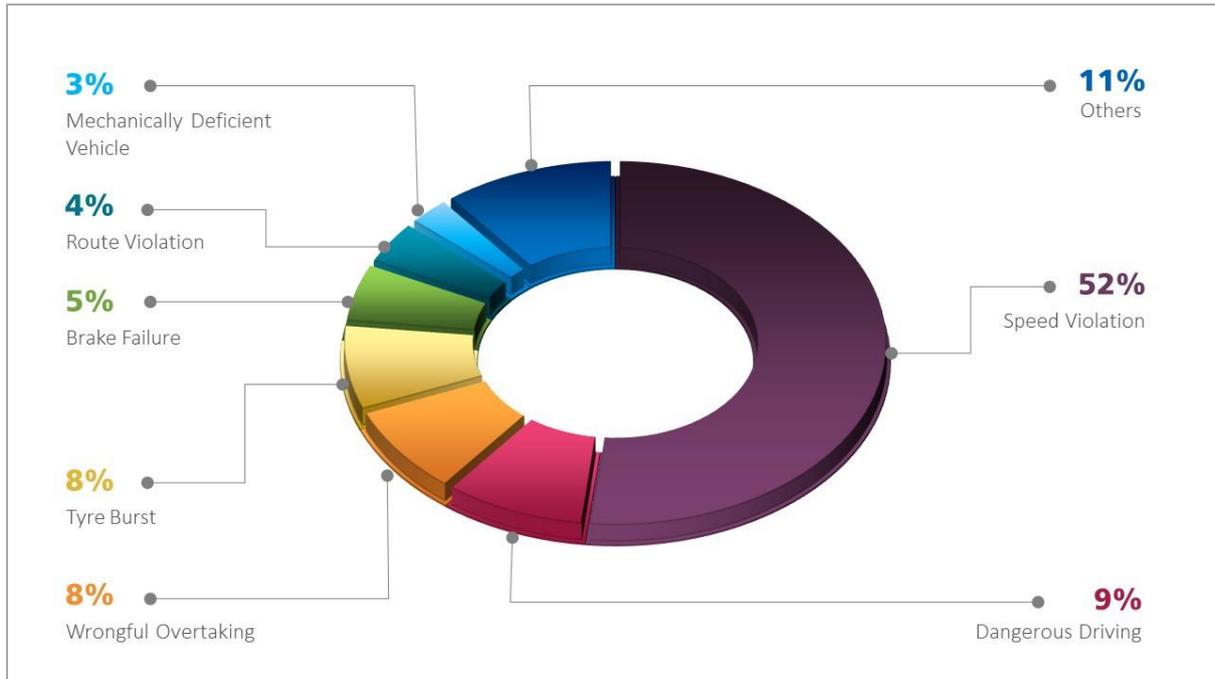


Figure 5: Contributing Factors to Road Traffic Crashes in Nigeria, 2018

92. FRSC need to deploy general deterrent strategies that dramatically increase the actual and perceived risk of apprehension and punishment and supporting communications which promote strong enforcement actions. While enforcement of the use of phones and seatbelts is warranted, two obvious gaps are immediately apparent: speeding and drunk driving.

Speed Enforcement

93. Speeding is clearly a major issue in Nigeria and must be a focus of all enforcement strategies over the course of this decade. While the speed limiter program with transport operators is an excellent initiative, it is important that this is strictly enforced against non-compliant commercial operators within the RTSS and reinforced by systematic enforcement of the limit.

94. The importance of speed management to the FRSC mission cannot be underestimated and is addressed further below in regard to road safety engineering. Insufficient resourcing of speed enforcement appears to be a major gap that is holding back achievement of better road safety results for Nigeria. One option is to resource a dedicated mobile speed enforcement unit, piloted and evaluated in a few states and then scaled up across FRSC. A further step is to consider further investment in automated speed enforcement.

95. A recently released report identified requirements and considerations for successfully developing automated speed enforcement programs.²⁶ A number of these factors were political, organizational, funding, targeting, maintenance, and evaluation – largely able to be addressed in a systematic program development and implementation process. Critically, however, the report identified five additional functionalities which typically require legislation to be passed and information and communication technology systems to be installed. They are:

²⁶ Job S, Cliff D, Fleiter JJ, Flieger M, & Harman B. (2020). Guide for Determining Readiness for Speed Cameras and Other Automated Enforcement. Global Road Safety Facility and the Global Road Safety Partnership, Geneva, Switzerland.

- ⊕ Unique identification of vehicle from an image (vehicle registration)
- ⊕ Linking the vehicle to a registered owner and contacting the registered owner when an infringement is issued
- ⊕ Delivering enforcement notice to relevant offender (through investigation and adjudication systems, ideally supported by owner onus legislation)
- ⊕ A system to manage offence contestability and
- ⊕ Processes for applying penalties and managing repeat offenders.

96. These rely firstly on high quality electronic databases for both motor vehicle registration and motor vehicle driver licenses which incorporate excellent identity proofing systems and include data linkages with each other. These systems are relatively well developed in Nigeria and a full assessment of readiness for the introduction of automated speed enforcement administered by the FRSC should be undertaken.

Alcohol Enforcement

97. Alcohol is a major road traffic safety issue in every country in which it is widely consumed. Any consumption of alcohol prior to use of a motor vehicle increases the risk of a crash,²⁷ and significant increases in alcohol consumption in society can be expected to create a major safety risk on the road.

98. Alcohol consumption per capita in Nigeria is estimated by the WHO to have increased from 11.5 liters of pure alcohol in 2010 to 13.4 liters in 2016.²⁸ This is the highest estimated consumption in Africa, where average consumption remained static at 6.3 liters of pure alcohol per capita over the same time period. The WHO alcohol status report estimates that in 2016 32.1% of female road traffic injuries and 41.5% of male road traffic injuries in Nigeria involve alcohol, and 15,365 alcohol attributable deaths occurred on the road.

99. Nigeria has laws in place to control drunk driving, with a general population limit of 0.05 g/100 mL blood alcohol concentration and a lower limit for young drivers. Good practice drunk driving enforcement requires significant investment and maintenance of equipment, within an overall general deterrence strategy which focuses on large volumes of high visibility operations at high-risk times of the day and week. Consideration should be given to how a credible drunk driving enforcement program can be developed and implemented by FRSC. Piloting a dedicated enforcement unit within FRSC may be considered, similarly with the speed enforcement approach.

100. Consideration could also be given to whether or how in-vehicle technology can be deployed, at least on a voluntary basis. Alcohol interlocks are a well-established vehicle technology that immobilizes the vehicle of a driver who has a positive alcohol reading. If the speed limiter system is functioning in commercial transport, this mechanism could be used to require alcohol interlocks to be introduced for companies that are found to be contravening RTSS requirements.

Strengthening compliance systems

101. There is a comprehensive regulatory framework governing the safety of (a) motor vehicles; (b) motor vehicle drivers; and (c) operators of commercial transport services. These regulatory systems

²⁷ Keall MD, Frith WJ, Patterson TL (2004) The influence of alcohol, age and number of passengers on the night-time risk of driver fatal injury in New Zealand. *Accident Analysis and Prevention*, 2004 36(1).

²⁸ Global status report on alcohol and health 2018. Geneva: World Health Organization; 2018.

should be audited to ensure that there is transparent information about the standards required, the processes in place to check those standards are being complied with, and the enforcement activity which is being taken to ensure that unsafe vehicles, drivers and operators are removed from the road traffic system. A rolling regulatory audit program addressing one major element each year would provide a platform for continually improving these systems over time.

102. Nigeria has assumed a leading African role in national vehicle safety regulation, and the FRSC should work with stakeholders to keep progressing this vital area of road safety. Aside from an audit of regulatory requirements for (new) vehicles entering the market, consideration should be given to using the UN regulatory standards as the basis for strengthening regulatory requirements for the much larger number of used vehicles entering the markets. The upcoming assessment of vehicle inspection systems (AVIS) study by GRSF and CITA will provide a strong platform for a reform program to improve vehicle safety.

103. It is to be noted that there are important regulatory foundations in place to support significant road safety improvements in Nigeria. However, there are also some systemic safety inefficiencies which are apparent in FRSC's regulatory and compliance systems. For example:

- ⊕ Speeding and drunk driving rules are not being enforced, primarily due to the lack of equipment availability. In Nigeria, speeding is a contributing factor in over half of all road traffic crashes and alcohol is consumed at a higher rate than anywhere else in Africa. A way must be found to focus attention on these critical risk factors; and
- ⊕ Hundreds of thousands of vehicle safety stops are being conducted as education rather than enforcement exercises. Although Nigeria has made significant steps forward in vehicle safety regulation, critical vehicle defect issues (tires, brakes, lights, steering, seatbelts) must be enforced.

104. What appears to be a significant limitation on essential traffic enforcement equipment may mean that FRSC is not effectively enforcing two critical safety behavior problems in Nigeria. FRSC crash causation data highlights speeding (and associated behaviors) as the number one cause of crashes, and WHO provides compelling evidence that there is a significant drunk driving in the country. An assessment of the readiness for automated speed enforcement systems is required, and a sustainable path developed to tackle drunk driving, both within a strong general deterrence enforcement strategy. Resourcing may be a barrier for speed and alcohol enforcement – which requires capital investment in equipment and vehicles and ongoing operational expenditures on fuel, maintenance, and calibration – but this needs to be prioritized.

105. An analysis of road safety education practices in Nigeria (see **ANNEX II**) was positive about the quality of material covering major safe behavior and road safety regulation matters, as well as the dissemination and usage of mandatory school curriculum, mass media for road safety awareness and enforcement initiatives, social media and community volunteers. However, there is a significant difference between providing technically strong compliance information for road users and delivering general deterrence enforcement strategy using campaigns to increase the perceived risk of detection amongst motor vehicle drivers. The FRSC is an enforcement agency and needs to strengthen its enforcement of existing road traffic law, while also leading the development of a road traffic system that significantly protects human life and health on the road.

Scoping, Designing and Delivering Safety Engineering Treatments

106. A part of the study, which addressed road safety engineering policies and practices in Nigeria, has concluded that while the institutions are in place to ensure effective road safety engineering in Nigeria, current practices leave much to be desired (see **ANNEX I**). Common understanding of road safety engineering concepts, which are defined in best practice guidelines (definition, procedures, process, rules and outcomes of tools as referenced in international standards and good practices), were compared with current approaches in Nigeria.

107. The engineering part of the study found that more synergistic and robust coordination is needed at an institutional and standards level. Harmonized legislation and regulatory platforms, improved policy, and sustainable funding are essential at the federal and state levels.

108. The general approach for identifying road safety issues is mostly reactive. While important, this approach is not sufficient and proactive approaches are also needed. Failure to collect and analyze relevant non-crash road safety data represents a missed opportunity to assist in this task. Formal road safety audit standards are yet to be developed and adopted and the road safety inspection approach is only partially standardized. Adequate procedures are in place for crash investigation since 2009 but need to be updated.

109. Current safety engineering practices in use in Nigeria need to be considerably strengthened, and widely promoted and enforced. Federal government agencies are yet to adequately incorporate safety engineering components into road design, construction, and maintenance in urban and rural areas. There is limited technical expertise and capacity within agencies, which is contributing to limited results in terms of infrastructure safety improvements.

110. The study provides the following recommendations that may be explored by FRSC to improve road safety engineering policy, capacity and practice (see **ANNEX I** for further recommendations). It is recommended that FRSC and its road safety engineering partner agencies:

- a. Establish *a national road safety engineering capacity building program* to strengthen the technical and leadership capacity of FRSC staff, federal and state road authorities, and design consultancies
- b. Improve *coordination at a state level* by establishing State Road Safety Advisory Commissions with a technical working group in charge of infrastructure safety
- c. *Collaborate with iRAP* and other partners to start systematic evaluation of infrastructure safety, help set realistic federal and state safety targets for all road classes based on UN voluntary road safety performance targets, and begin development of a multi-year infrastructure safety program (not annual or project based)
- d. Begin development of *a comprehensive set of road safety guidelines, manuals, procedures and rules* for all road class for road safety audit, road safety inspection, blackspot management and network safety management, and support their application through regulation where

appropriate – direct integration of the suite of guidance provided by the African Development Bank such as the Road Safety Audit Manual²⁹ would be ideal and

- e. Establish a *speed limit review process* and use learnings from existing controls on commercial vehicles to develop a systematic speed reduction program based on international best practices.

111. Existing safety engineering practices need to be considerably strengthened, beginning with a national capacity building program for FRSC staff, federal and state road authorities. An International Road Assessment Programme (iRAP) project backed by a multi-year infrastructure safety program would support this, and also provide impetus for the development of a comprehensive set of road safety engineering guidelines and manuals, as well as a systematic speed limit review process. Some initial rating activity has taken place, and a more formal program with Government funding and mandate is now needed to establish the Nigeria Road Assessment Programme, or NigeriaRAP.³⁰

Post-crash response and treatment

112. Access to high quality emergency management services is a critical feature of any road safety effort in LIMCs, and FRSC's post-crash response capability is significant. The FRSC operates a well-known national emergency call center (122), Nigeria's first national ambulance service, and a growing network of 28 roadside health clinics.

113. The FRSC employs approximately 40 doctors, 250 nurses and 500 paramedics, and it reports strong relationships with State run hospitals, where road crash victims are transferred, as required. Its operational presence on major roads means that it is also addressing other medical emergencies – indeed, only around 50% of the ambulance call outs are for road traffic crashes with maternal care the other dominant need, as it often is in LMICs.

114. This road traffic safety activity needs to be integrated into a country's health and welfare system, and it is understood that the Federal Ministry of Health is leading an initiative on sustainable emergency medical services. FRSC cannot take responsibility for all aspects through to the strengthening of specialized trauma centers in hospitals, staffed by fully qualified emergency physicians, connected through a national trauma registry etc. The FRSC can however leverage its operational capacity in this critical domain to advocate improved support for road crash victims through Nigeria's national health system.

115. The FRSC can also advocate policies and programs which support the long-term health and welfare of road crash victims, through a national motor vehicle injury insurance scheme, for example. A number of these exist in Africa, and may, such as in Senegal and South Africa, invest in loss reduction programs, working with road traffic safety authorities to prevent road traffic injuries in the first place. There are excellent examples in Australia (Transport Accident Commission in Victoria), Canada (Insurance Corporation of British Columbia) and New Zealand (Accident Compensation Corporation) of monopoly state-run injury insurance corporations playing a leading road safety investment role.

²⁹https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ROAD_SAFETY_MANUALS_FOR_AFRI_CA_-_New_Roads_and_Schemes_Road_Safety_Audit.pdf

³⁰<https://www.irap.org/partnering-to-save-lives/regional-raps/>

116. It would be useful for the Ministry of Health to commission a full review of the post-crash response system, of which FRSC plays a critical but by no means the biggest role. This review should incorporate an analysis of the path towards a national motor vehicle injury insurance scheme to help meet the cost of improved post-crash response and develop a road safety investment stream.

Raising and allocating road safety investment

117. The FRSC is, in any public agency terms, a very big organization, and receives considerable ongoing allocations from the Federal budget, which provides a critical platform for discharging its road safety responsibilities. **Table 3** summarizes current budget allocations over the last decade, based on data from the Budget Office of the Federation.

Table 3: Federal Budget Allocation to FRSC³¹

	Recurrent (NGN Billion)	Capital (NGN Billion)	Total (NGN* Billion)
2010	13.752	0.950	15.742
2015	30.402	2.336	32.758
2020	40.824	2.446	43.270

*November 2020: NGN1Billion = approximately USD2.625Million

118. The average annual rate of inflation in Nigeria was 11.8% over the decade,³² which meant that there was an increase in real budget allocation from 2010 to 2015 (19 percent), and a decrease in real budget allocation from 2015 to 2020 (-24 percent). Nevertheless, it is clear that there have been ongoing investments from the Federal Budget to the FRSC mission.

119. These public investments plus wider private investment are required to achieve Sustainable Development Goals which Nigeria has agreed to for road safety. The analytical paper prepared in support of the establishment of the UN Road Safety Trust Fund estimated that \$260 billion in road safety investments in LMICs is required to ensure achievement of Sustainable Development Goals 3.6 and 11.2.³³

120. Using iRAP analytical tools, the World Bank has estimated in early 2020 that USD 3.77 billion needs to be invested in infrastructure and speed management treatments in Nigeria to achieve the 2030 voluntary road safety performance targets relating to three-star safety rated roads.³⁴ The draft National Road Safety Strategy includes an action plan with a total estimated cost across all Federal and State activity of an additional NGN 475 billion (approximately USD 1.25 billion) over the first four years of implementation.

121. NRSS II identifies several sources of funding, including the Government budget allocation. Other sustainable sources of funds would come from fees and charges on motor vehicle and driver regulation, or a levy on one or both of compulsory vehicle insurance premiums, or transport fuel. These

³¹ See <https://budgetoffice.gov.ng/index.php/resources/internal-resources/budget-documents>

³² See <https://www.macrotrends.net/countries/NGA/nigeria/inflation-rate-cpi>

³³ See https://www.unece.org/fileadmin/DAM/Informal_document_No_9_UN_RS_fund_.pdf. Bliss, T. (2016): Assessment of country road safety financing needs to achieve SDGs 3.6 & 11.2 and related global grant funding requirements. Road Safety Management Limited, Wellington, New Zealand.

³⁴ World Bank (2019). *Guide for Road Safety Opportunities and Challenges: Low- and Middle-Income Countries Country Profiles*. Washington, DC., USA: World Bank.

could be managed in a variety of ways, such as a National Roads Fund (legislation is under consideration by the Parliament), although short-term progress towards this policy goal is difficult. It would be important that any such funding mechanism is developed in a way which specifically identifies safety as the purpose of the charges and the beneficiary of the additional revenue, ideally through a legislated National Road Safety Fund.

122. It is essential that these sustainable funding sources are developed. This will establish a much stronger basis from which additional capital expenditure may be available through multi-lateral development bank loans, or other international sources of possible road safety funding, such as the UN Road Safety Trust Fund or Bloomberg Philanthropies. Fines may be used as a source of revenue, but it is advisable that this is considered as part of a wider safety compliance program – for example, the introduction of a full automated speed enforcement mechanism may be a useful way of generating and legitimizing additional safety revenues.

Collecting, collating and using road crash data

123. A part of this study addressed the road crash data management system in Nigeria, which concluded that in overall terms, it was adequate, and that significant improvement was needed (see ANNEX II).

124. The governance arrangements are sound with FRSC taking the lead for road crash data management from data collection to data analysis and dissemination, as empowered by the FRSC Act 2007 and the National Road Traffic Regulations 2010.

125. While the system for crash analysis and dissemination of road crash data is adequate at the Federal levels, there is a substantial scope for improvement in staff skills for improved crash data collection and crash analysis at the State level, and increased presence to cover all local government authorities, as issued in a recent directive. The current data collection system at the State level is stretched with a single station assigned to multiple local governments, potentially leading to crash data going unrecorded for some state/rural roads.

126. Conformity of the data management system with good international practices was considered across the following elements.

- ⊕ *Governance.* Governance arrangements are sound in Nigeria with the road safety lead agency FRSC empowered by the FRSC Act 2007 and the National Road Traffic Regulations 2010
- ⊕ *Data collection.* Data collection is dependent on the FRSC, whereas globally it is the Police Department which does the major information collection owing to the larger spread of police personnel. Currently the crash data collection and analysis are partially manual as the existing Road Traffic Crash Information System (RTCIS) software is undergoing an upgrade to address previous system deficiencies
- ⊕ *Timeliness.* Data collection timeliness is substantially adequate as FRSC officers typically respond to a reported crash in 10-15 mins and the crashes are investigated, analyzed, consolidated, and shared with Headquarters on a weekly and monthly basis
- ⊕ *Completeness.* The crash data reported by FRSC is adequate, but the crash data reported by Police is incomplete and doesn't conform to the prescribed crash data format

- ⊕ *Integration.* The RTCIS is a standalone system with no linkages with vehicle database, hospital management systems, road agencies, geographic information system, asset management system etc. and
- ⊕ *Accessibility.* The RTCIS is currently being upgraded to give system access rights to the Police Department so it can report crashes directly into the portal. However, there is no data access given to any road agency, or Departments of Transport or Health.

127. The study identified the following recommendations that may be explored for FRSC to improve crash data collection and management:

- ⊕ *Increase local presence.* Immediately implement the Directive to increase the Unit commands to cover all Local Government Areas with adequate vehicle and equipment for crash response and data collection
- ⊕ *Mandate new crash data form.* Revise the FRSC Act 2007 and National Road Traffic Regulations 2010 to mandate the new crash data reporting format to improve compliance by other agencies
- ⊕ *Build Capacity.* Provide training on crash data collection and data analysis at field level
- ⊕ *Regular RTCIS audit and maintenance.* Provide funding through annual budget to audit RTCIS data quality, and to conduct annual functional and technical reviews of RTCIS to support continuous improvement, and
- ⊕ *Revise National Road Traffic Regulations and FRSC Act.* The revisions should clearly lay out stakeholder responsibilities, mandate the new crash data form and jurisdiction to improve data collection compliance and avoid decision conflicts in the field.

128. The establishment of a local data collection capacity across Local Government Areas would be a critical step forward and should be reinforced by sustained capacity building in the field to increase the quality and quantity of crash data. Regular funding is required to ensure ongoing maintenance of the RTCIS, and to conduct annual functional and technical reviews. Some revision is required of the National Road Traffic Regulations and FRSC Act to mandate the new crash data form for all stakeholders.

BUILDING ON THE FOUNDATIONS

129. This report began by looking at single organizational model for road safety in Nigeria, including the multisectoral governance system which has been put in place and the lead agency roles and responsibilities. The strengths, weaknesses and replicability of the model was discussed. The functioning of the model was further subsequently explored by looking at key challenges impacting on safety performance. This deeper analysis of performance allows some conclusions to be drawn regarding how the model responds to the core institutional road safety management functions. **Table 4** briefly assesses the Nigerian model against the seven institutional management functions.

Table 4: Assessment of Model Against Institutional Management Functions

Coordination	The establishment of NaRSAC in 2017 was an important step forward – it meets essential governance needs for oversight of executive collaboration and reinforces FRSC responsibilities as the lead agency for road safety. NaRSAC needs to be further engaged in oversight of the NRSS II, and accountabilities for government agencies could be strengthened with the TWG.
Leadership and target setting	FRSC is clearly the leader of road safety in Nigeria, and it has gained approval of a significant new road safety strategy for the coming decade. Strategy implementation is always challenging and stronger leadership from within FRSC will be essential to ensure that all relevant Federal and State agencies are fully engaged in delivery of NRSS II.
Legislation	There is a strong regulatory foundation, particularly relating to vehicle safety and commercial operators, with motor vehicle and driver systems well organized across Federal and State authorities. This needs continual improvement, while significant focus is given to a stronger on-road enforcement effort and improved compliance.
Funding and resource allocation	There is sustained Federal budget support for the FRSC, but it has not always kept pace with inflation, and there has been difficulty in getting a national road fund established. Internal revenue streams and funding systems need to be developed in favor of safety and used to leverage greater capital investment in major safety-focused projects.
Promotion and advocacy	The FRSC has a strong promotion and advocacy base, which will be important in communicating much stronger compliance expectations amongst users and operators. Strategic communications also need to be fully aligned with the NRSS II and focused on those people and institutions who are most capable of improving the safety of others.
Monitoring and evaluation	FRSC has demonstrated an ongoing concern for, and preparedness to act on, improving crash data quality. Continued attention is required on this over the course of the decade. Monitoring and reporting key safety behaviors will also be essential to drive improved enforcement activity.
R&D and knowledge transfer	There is not a strong research program, but there is a sustained training program within the FRSC, and a leadership program generating improved understanding of issues. This capacity within FRSC needs to be nurtured and extended into critical areas such as the State road safety agencies, key business groups, and non-government organizations.

130. These are the critical functions that need to be the focus of any national road safety lead agency. These functions need to be led by an agency which has been given the political mandate and resourcing to lead the national road safety effort. The organizational form in which these functions are led is open. The single organizational model embodied by the FRSC provides an important option for countries, but this study shows that simply establishing an agency is not enough. The organization must have the capacity to lead and support others, not just focus on itself.

131. Nigeria's essential governance, leadership and regulatory foundations are in place, and can be further strengthened. The road safety governance structure which was implemented in 2017 brings stakeholders together into a structured process of developing and implementing national road safety strategy. Ongoing engagement by the National Road Safety Advisory Council (NaRSAC) is essential in nourishing the FRSC's mandate. A way must be found for NaRSAC to meet on a regular basis, even just once a year, to review progress and renew the political mandate for road safety. The governance system needs to focus on how to significantly lift investment in road safety.

132. The FRSC's strong leadership of road safety must be backed up by Federal government agencies picking up the road safety reins, State governments assuming greater responsibility, and the wider business and community sector being further engaged. The sheer size and scale of the FRSC makes internal coordination of the national road safety agenda vital. By consolidating key safety management functions within PRS Department (rather than simply provide services to other much bigger FRSC departments), it has the potential to improve the quality of work both by FRSC itself, and by its essential road safety partners.

133. The regulatory system for road traffic in Nigeria is well established. Standards can continue to be strengthened, but the focus must be on how to significantly improve compliance with existing standards. While maintaining a strategic focus in its engagement with external partners and the wider community of road users and commercial operators, stronger enforcement systems are needed to deter unsafe behaviors and practices.

134. Nigeria faces persistent serious road trauma problems, but the FRSC is the critical organization for lifting this performance over the next decade. FRSC ownership and accountability over several decades has driven sustained effort and preparedness to act in some vital areas – for example:

- * The relatively recent establishment of the multisectoral governance system
- * The continued updating and upgrading of driver licensing controls
- * The establishment of national regulatory controls over commercial transport operators
- * The recognition of road safety data issues, and preparedness to act, and
- * The decisions made to align itself with critical UN vehicle safety regulations.

135. The FRSC is one of the few organizations in Nigeria certified to ISO 9001, Quality Management Systems, and this is reflected in its pursuit of these reforms. The FRSC recognizes the need to continually improve, and this restlessness for improvement can be further honed in pursuit of the elimination of fatal and serious injury on the road.

ANNEX I: ASSESSING THE CURRENT ROAD SAFETY ASPECTS IN NIGERIA FROM AN ENGINEERING PERSPECTIVE

SUMMARY

136. **The institutional set up to perform the road safety engineering services is adequate, with average level of upgradable capacity at the federal level and weak capacity at state level, but the synergy coordination between institutions is weak.** There are adequate legal frameworks to road safety engineering practices, but they are fragmented, duplicate responsibility and are not effectively coordinated. Thus, there is a need to harmonize and promote the legal frameworks among all agencies, and ensure policies are developed to promote appropriate attention to all road safety engineering aspects.

137. **There is inadequate regulation, and its content is centered around a design manual which is not comprehensive and is largely managed by the Federal Ministry of Works and Housing (FMWH).** Its application seems to be more in theory than in actual practice and regulations to enforce implementation of outcomes inadequately missing. Policies and regulations need to be comprehensive enough to cover pre and post road construction with provisions to ensure implementation of road safety engineering findings.

138. **Current road safety engineering practices in Nigeria are inadequate and need to be strengthened and widely promoted and enforced.** Human resources assigned to road safety engineering activities are not sufficient, the level of expertise is basic, and extensive specialized training and development is needed. Infrastructure safety improvements resulting from road safety engineering services remain limited and insufficient. Comprehensive safety standards, guidelines and rules have to be developed and adopted in line with the safe system approach and associated performance targets need to be set for the planning, design, operation and use of all road classes.

LEGAL, POLICY, REGULATORY AND INSTITUTIONAL ADEQUACY

139. Established by the Federal Road Safety Commission (Establishment) Act 2007, the Federal Road Safety Corps (FRSC) is the road safety lead agency in Nigeria and plays a critical role in addressing road safety issues. According to the draft National Road Safety Strategy (2019-2024), FRSC’s activities cover almost all areas, including the safer roads and mobility pillar.

140. Road safety engineering is one of FRSC’s advisory roles, through its Corps of Safety Engineering (COSEN), and is delivered in partnership with other public institutions both at the federal and state levels.

141. Details on the analysis of the main stakeholders dealing with road safety engineering, both at the federal and state levels, can be referred to in **ANNEX I.A**. Based on observations and analysis, the rating of the elements of legal, policy, regulatory and institutional setup is summarized in **Table 5**.

Table 5: Legal, Policy, Regulatory and Institutional Adequacy

Element	Rating ³⁵	Details
Legal	Adequate	There are adequate legal frameworks to guarantee good road safety engineering practices, but there is fragmentation of the activity, duplication of responsibility, and ineffective coordination, which makes more positive outcomes difficult to achieve. At the federal level, at least three agencies have independent legal responsibility in road safety engineering, yet none is

³⁵ Rating expressed as one of the following: Good, Adequate, Inadequate, Poor

Element	Rating ³⁵	Details
		<p>answerable to the other. There have been efforts to synergize, but this has not been sufficiently successful.</p> <p>In general, weak inter-agency coordination is reported regarding engineering work. Some activities performed by Sector Commands appear to overlap with State Traffic Management Agencies in some states of the Federation.</p>
Policy	Inadequate	<p>It was expected that, where there are adequate laws, adequate policies should have been developed to ensure appropriate attention to all aspects of road safety engineering both at the federal and state levels. This is not currently the case.</p> <p>From a purely engineering perspective, it seems that road administrations are concerned about the credibility of current road safety engineering policies, which are inadequate. This supports an argument for developing a long term effective, funded, road safety engineering program for Nigeria. The African Action Plan for implementing the UN Decade of Action on Road Safety (and the associated Global Road Safety Plan) identified the need to allocated at least 10% of infrastructure project spending, and 5% of road maintenance resources, to road safety measures, but this has not been implemented by African countries.</p>
Regulatory	Inadequate	<p>There is a central road safety regulatory document referred to as the road design manual (the Highway Manual), but it is not comprehensive and is largely managed by one agency, the Federal Ministry of Works and Housing (FMWH), which has the legal responsibility to construct and maintain the roads. It applies more to new road construction and while there are sanctions against contractors who violate the provisions, they seem to be more in theory than in actual practice. This is largely because the FRSC which should be part of the enforcement procedures on new roads is not included at the planning and design stage. Also, while road safety inspections (RSI) and road safety audits (RSA) do take place for existing roads, there are no regulations to enforce implementation of outcome.</p> <p>Regulatory aspects are important since road safety engineering interventions need to be applied to the whole Nigeria road network, to clearly identify legal competences of all entities. Road safety engineering interventions are not currently being applied across all road categories.</p> <p>Federal and state governments are yet to adequately incorporate adequate safety engineering components into road design, construction and maintenance (see ANNEX I.B).</p>
Institutional	Adequate	<p>The necessary institutions are in place, with improvable capacity at the federal level and weak capacity at the state level, but the coordination between them needs to improve. For instance, whereas the FRSC conduct RSIs, the report recommendations are only implemented at the discretion of the FMWH. In fact, recommendations remain advisory with no consequences if they are not implemented.</p> <p>At the federal level, the administrative matters are adequate and questions regarding the responsibility for ordering road safety engineering interventions and execution responsibilities and team are defined.</p>

142. State level arrangements are a direct duplication of the federal level as above, but legal compliance and institutional capacities may decrease at the state level.

ADEQUACY OF TECHNICAL ASPECTS TO ROAD SAFETY ENGINEERING

a) Adequacy of available tools

143. In the context of Nigeria, road safety engineering tools have been assessed against international good practice and definitions³⁶. In general, international good practice expects that tools are adequately defined and include standards regarding applicability, legal compliance, formal safety requirements, authorities and report content (see ANNEX I.D and ANNEX I.E).

144. Various meetings were held with key stakeholders in Nigeria and the state of current road safety engineering practice was analyzed by means of direct interviews and reviewing shared documents (both at the federal and state levels). Selected results are summarized in the following Table 6 (tools available in Nigeria are shaded green).

Table 6: Assessment Summary of Current Road Safety Engineering Tools Available in Nigeria

Country State	Road Safety Engineering	Legal basis	Compulsory	Standardized approach	Applicability	Frequency	Ordering	Report	Adequacy ³⁷
Federal/ Abuja	Road Safety Audit	No	No	No	Federal highways*	On demand	FMWH	Yes	Inadequate
	Road Safety Inspection	No	No	Partial	Federal highways*	On demand	FMWH	Yes	Inadequate
	Crash Investigation	Yes	Yes	Partial	Highest road crash record*	On demand	FRSC	Yes	Adequate
	Road Safety Impact Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	iRAP safety rating	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State/ Kaduna	Road Safety Audit	No	No	No	State roads*	On demand	State Ministry of Works (MoW)	Yes	Inadequate
	Road Safety Inspection	No	No	Partial	State roads*	On demand every 3 months	State MoW	Yes	Inadequate
	Crash Investigation	Yes	Yes	Partial	Highest road crash record*	On demand	State FRSC	Yes	Adequate
	Road Safety Impact Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	iRAP Safety Rating	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: * Partially or depending season events

145. The general approach for identifying road safety issues is mostly reactive, as it is based on a concentration of crashes over time. In addition to some traffic engineering functions, Road Safety

³⁶ Road Safety Manual, PIARC, 2015

³⁷ Rating expressed as one of the following: Good, Adequate, Inadequate and Poor

Inspection (RSI), Road Safety Audit (RSA), and Crash Investigation (CI) are the most used tools, both at the federal and state levels. Formal audit standards have not been developed and adopted and the RSI approach is only partially standardized. CI procedures are in place since 2009 but need to be updated. An analysis of CI report outcomes suggests only basic technical capacity within the team in handling this task. Safety star ratings and targets (such as the International Road Assessment Programme, iRAP) have not been used in Nigeria.

146. Several variances in the way road safety engineering aspects are practiced in Nigeria were detected. First, RSA/RSI are not conducted in all states. It was concluded that the designation of RSI/RSA is not widely associated with the standardized definition as per best practice. Descriptions of current road safety engineering activities consisted of a non-comprehensive mixture of road safety audit, road safety inspection and road maintenance inspection (See **ANNEX I.F**).

147. Road safety engineering activities are carried out by the FRSC both at a federal and (through its Sector Commands) a state level. Both at the federal and state levels, auditors/inspectors don't use a standardized list of deficiencies (checklists) – rather they take notes and use a report template. Generally, the periodical execution of road safety engineering interventions is precluded by the lack of legal obligation to inspect/audit roads. In addition, there are no frequency specifications and no systematic protocol to classify the priority for each type of intervention, based on the risk levels, cost, scope of the safety intervention and budget availability.

148. In most cases both at the federal and state levels, a report is written (see **ANNEX I.F**), containing the field observations, some road crash data analysis, pictures, raised issues and without indicating responsibilities for implementation of safety recommendations. However, indicating responsibilities for implementation is a critical good practice in other countries.

149. Checking road safety from engineering perspectives is not compulsory and systematic for all road network (inadequate). Current technical practices appear to rely on a few training materials and templates and differ from federal to state level. Comprehensive safety standards, guidelines and rules have to be developed and adopted in line with the safe system approach and associated performance targets need to be set for the planning, design, operation and use of all road class.

b) Assessment of technical aspects to carry out road safety engineering activities and conformity with good international practices

150. After reviewing the audit and inspection reports (see **ANNEX I.F**), and although the conclusions of the real situation, it is possible to summarily assess the following technical engineering capacities against the best practice (see **ANNEX I.E**). **Table 7** provides the assessment summary.

Table 7: Assessment Summary of Technical Engineering Aspects

Item	Rating ³⁸	Remarks
Assessment of potential risk (Applies to all tools such as: road safety design, RSA & RSI)	Inadequate	The assessment of potential risk is mainly based on crash data, which is mostly a reactive approach. The crash data has significant weaknesses and is not of much use under current conditions. Failure to collect and analyze relevant non-crash road safety data represents a missed opportunity to assist in this task.

³⁸ Rating expressed as one of the following: Good, Adequate, Inadequate, Poor

Item	Rating ³⁸	Remarks
Identifying issues (Applies to: all tools)	Adequate for reactive tools	The current approach is mostly reactive and not sufficiently associated with proactive identification approaches.
Intervention selection (Applies to: all tools)	Inadequate	Interventions are not selected based on the expected reduction in injury. Other factors should also be considered when selecting interventions. Cost-effective countermeasures selection criteria are currently ignored.
Prioritization (Applies to: all tools)	Poor	Economic appraisals of different interventions at high-risk locations are not used to achieve the greatest benefits based on available budgets.
Monitoring & evaluation (Applies to: all tools)	Poor	Monitoring, analysis and evaluation for assessing the countermeasures effectiveness are not conducted to provide feedback on the implementation phase.

151. The FRSC staff in charge of engineering functions (working for either COSEN or Sector Commands) are not always civil engineers or well trained on road safety engineering. The safe system principles are mentioned in all road safety documents but not reflected in the analysis, risk assessment and in prioritization of measures. The level of expertise is basic at the federal level and weak at the state level and its development should be an immediate priority.

152. It seems that data analysis expertise in Nigeria is inadequate and uses general descriptive methods. For example, the new NRSS II made reference to RTCs by Geo-Political Zones (2013-2017) by showing only the absolute number of road crashes by region or zone. This would be more meaningful and adequate by assigning the risk (RTCs per population of zone or per traffic volume) to Geo-Political Zones. Identifying high-risk zones on the basis of a ranking-based crashes (zones) is like comparing the performances of countries on the basis of absolute number of crashes. Similarly, the level of severity of hazards (i.e. risk assessment) is not well known or referred to the index of severity (such as: Accident Severity Index) which impoverish audit/inspection findings

153. Information on the costs and assigned budget of road safety engineering activities are rare, mainly due to the fact that these activities are carried out by internal teams, as part of the normal activities of the FRSC. Kaduna experience reveals that an inspection/audit team of two engineers and two assistants can examine 65 km in two days, followed by a four to five days of office work to draw up the corresponding report. These numbers depend on the capacity of the team to detect safety hazards in the inspection (more details can be found in ANNEX I.A).

c) Current approaches to road safety engineering In Nigeria

154. The current approach to road safety engineering for greenfield & brownfield road projects, both at the federal and state levels, can be summarized as following:

Federal Level: As it has an advisory role, the FRSC/COSEN coordinates with the main road operators to deliver engineering interventions.

At the federal level, the main stakeholders dealing with road safety engineering are:

- Federal Road Safety Corps/Corps of Safety Engineering (FRSC/COSEN)
- Ministry of Works and Housing (FMWH)

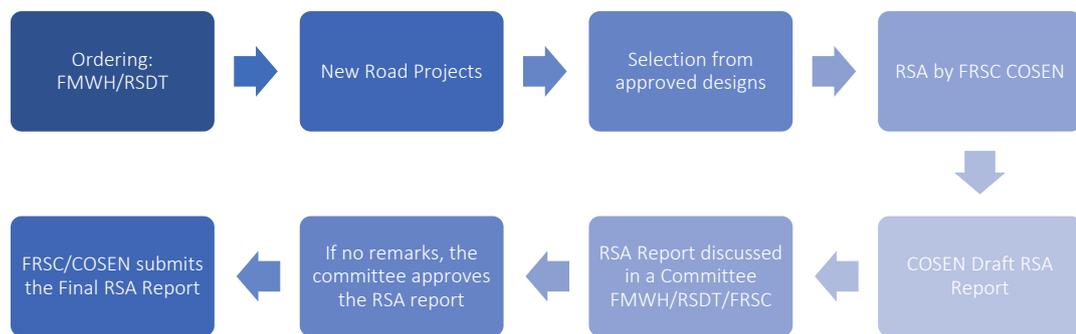
- Federal Road Maintenance Agency (FERMA) and
- Road Sector Development Team (RSDT).

FRSC/COSEN has established coordination working groups with road operators to deliver the engineering interventions, through which they discuss road safety engineering matters such as RSA/RSI, selection of roads, report approval, etc.

Greenfield road construction projects

In the case of new road construction projects at the federal level, once the design is approved, the FMWH/RSDT select a design of new federal road projects and get the FRSC, through COSEN, to conduct RSAs for selected designs. COSEN conducts the Stage 3 RSA on approved designs and prepares a draft report summarizing findings & recommendations. Findings are jointly discussed with FMWH before approving the report. If there is no objection, COSEN submits the final RSA report to the FMWH.

Figure 6: Road Safety Engineering Current Federal Approach to Greenfield Road Construction Projects



The described proactive approach above does not comply with standardized RSA process³⁹ and does not cover all road project stages. In addition, given the current capacity and statutory role of COSEN, conducting a Stage 3 RSA is inadequate to influence a fundamentally unsafe design as early in the life cycle as possible.

As for existing roads, some federal roads will have the advantage of being selected for a RSI based on road crashes, seasonal events or according to demand. The RSI mission is led by a team from COSEN, which organizes field visits and prepares a draft report. Findings are jointly discussed in a meeting with FERMA and FMWH’s Road Sector Development Team, following which the report is updated and / or approved before sharing it with road authorities for possible implementation.

Brownfield road projects

Figure 7: Road Safety Engineering Current Federal Approach to Brownfield Road Projects



The described reactive approach above does not comply with RSI good practices⁴⁰, especially for prioritization, selection and coverage of all in-service roads. In addition, given the current capacity of COSEN and lack of dedicated funding, RSI improvements are partially implemented, which represents a serious challenge to prioritize and improve unsafe in-service roads.

³⁹ See Road Safety Manual, PIARC, 2015, and its associated road safety audit guidelines (p31)

⁴⁰ See Road Safety Manual, PIARC, 2015, and its associated road safety audit guidelines

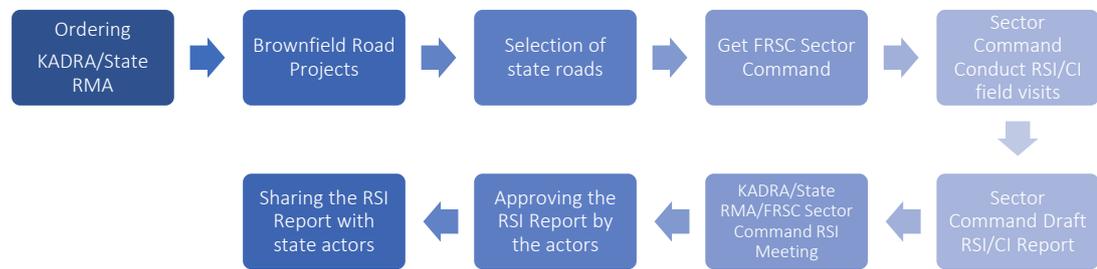
State Level: The FRSC is present at state levels through Zonal Commands and Sector Commands which ensure and implement the FRSC’s strategy at the state level. Depending on the state, the Sector Commands coordinate with the main state road operators to deliver engineering interventions. At the state level, the main road safety engineering stakeholders are:

- * Federal Road Safety Corps/Sector Commands
- * State Road Agency (SRA)
- * State Road Maintenance Agency (SRMA).

Based on the Kaduna State model, and in the same way as at the federal level, some state roads are selected for a RSI, based on road crashes, seasonal events or according to demand. The RSI mission is led by a team from FRSC Sector Commands, which organize field visits and prepare a draft report. Findings are jointly discussed in a meeting with the state road agencies such as the Road Maintenance Agency (SRMA) and the Road Agencies (KADRA), following which the report is updated and/or approved before sharing it with state road actors for possible implementation.

Figure 8: Road Safety Engineering Current State Approach to Greenfield Road Construction Projects

Brownfield road projects



The described reactive approach above does not comply with RSI good practices, especially for the prioritization, selection and coverage of all State roads. In addition, given the current capacity of the Sector Command’s team and lack of dedicated funding, RSI improvements are rarely implemented, which represents a serious challenge to prioritize and improve unsafe State roads.

It is noted that the described approach is based on Kaduna State and might be different or inexistent for other states depending the limited capacity of the FRSC to cover the whole country.

Greenfield road construction projects: **N/A**

To the consultant’s knowledge, road safety audits are not currently carried out on new road projects at State level.

155. Common understanding of road safety engineering concepts, which are defined in best practice guidelines (definition, procedures, process, rules & outcomes of tools as referenced in international standards and good practices⁴¹), were compared with current approaches in Nigeria. Limited to what extend the road safety engineering in Nigeria (i.e., available tools, regulations, guidelines and expertise), it appears that current road safety engineering practices in use in Nigeria are inadequate and need to be strengthened and widely promoted and enforced.

CONCLUSIONS & RECOMMENDATION

(i) Conclusions on the effectiveness and conformity of existing institutional set up with the good international practices:

156. While the institutions are in place to ensure effective road safety engineering in Nigeria, current practices leave much to be desired. More synergistic and robust coordination is needed, particularly

⁴¹ According to Road Safety Manual, PIARC, 2015, and its associated road safety audit guidelines

for infrastructure safety at the State level. Harmonized legislation and regulatory platforms, improved policy, and sustainable funding are essential at the federal and state levels.

(ii) Adequacy of technical aspects to road safety engineering & conformity with the good international practices

157. The general approach for identifying road safety issues is mostly reactive. While important, this approach is not sufficient and proactive approaches are also needed. In fact, failure to collect and analyze relevant non-crash road safety data represents a missed opportunity to assist in this task. Formal audit standards have not been developed and adopted (inadequate) and the RSI approach is only partially standardized (inadequate). As for crash investigation, adequate procedures are in place since 2009 but need to be updated.

158. It appears that current safety engineering practices in use in Nigeria are inadequate and need to be strengthened and widely promoted and enforced. Federal government agencies are yet to adequately incorporate safety engineering components into road design, construction and maintenance in urban and rural areas.

159. There is limited technical expertise and capacity within agencies, which is contributing to limited results in terms of infrastructure safety improvements.

160. Common understanding of road safety engineering concepts, which are defined in best practice guidelines (definition, procedures, process, rules & outcomes of tools as referenced in international standards and good practices), were compared with current approaches in Nigeria.

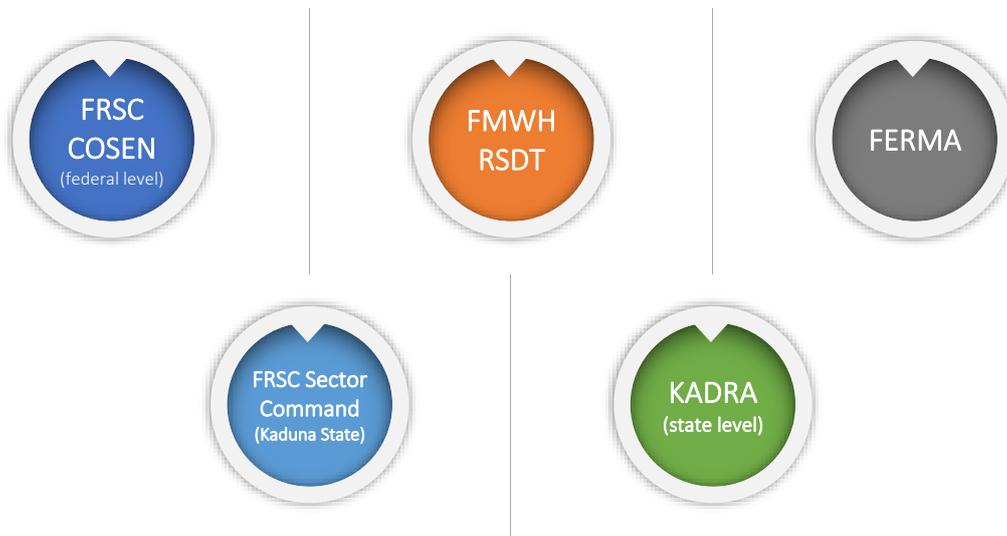
(iii) Steps to reduce the gap between the current road safety engineering practices in Nigeria and the international good practices

161. The following recommendations may be explored by FRSC to improve road safety engineering policy, capacity and practice (further recommendations are found in **ANNEX I.C**). It is recommended that FRSC and its road safety engineering partner agencies:

1. Establish a national road safety engineering capacity building program to strengthen the technical and leadership capacity of FRSC staff, federal and state road authorities and design companies
2. Improve coordination at a state level by establishing State Road Safety Advisory Commissions with a technical working group in charge of infrastructure safety
3. Collaborate with iRAP and other partners to start systematic evaluation of infrastructure safety, help set realistic federal and state safety targets for all road classes based on UN voluntary road safety performance targets, and begin development of a multi-year infrastructure safety program (not annual or project based)
4. Begin development of a comprehensive road safety guidelines, manuals, procedures and rules for all road class for RSIA, RSA, RSI, blackspot management and network safety management, and support their application through regulation where appropriate
5. Establish a speed limit review process and use learnings from existing controls on commercial vehicles to develop a systematic speed reduction program based on international best practices and
6. Increase to at least 10%, that portion of road infrastructure investment that is devoted to road safety intervention in line with the UNRSC recommendation to embed the Safe System approach into the mainstream of road engineering activity.

ANNEX I.A - INSTITUTIONAL ARRANGEMENTS ANALYSIS & OBSERVATIONS

162. Stakeholder analysis & observations are summarized below



Stakeholder	FRSC COSEN (federal level)
Role in RS Engineering	<ul style="list-style-type: none"> * Report on RTC prone areas/roads * Review Sector Command reports on highways * Conduct RTC investigations, highway inspections, traffic surveys and safety audits.
Observations	<p>As the lead agency, the FRSC has a clear vision and mission to improve road safety from engineering aspects. To achieve its objective, a Corps of Safety Engineering (COSEN) has been established which carries out audits, inspections and other traffic safety engineering functions. While capacity is very limited, there is a good understanding that significant improvement in road safety performance could be obtained through implementing safety countermeasures.</p> <p>Improvements in road infrastructure safety are a national priority at the FRSC. For example, 90% score in Road Infrastructure Audits was the target set in the previous NRSS I (2014-2018).</p> <p>Road safety components were partially featured in some road infrastructure projects in recent years.</p> <p>Supported by the World Bank Group, FRSC has implemented a safe corridor approach in 6 major corridors. This project consisted of improving RTC data collection, constructing 6 pedestrian bridges, providing traffic management measures, capacity building and equipment for road obstruction clearing, post-crash rescuing and road communication. This operation is a great learning experience which could be duplicated in other regions.</p> <p>Safety rating surveys (iRAP or other rating surveys) have not been conducted to assess the safety quality of the road network or sections of roads for all road users. However, the Corps Marshal has expressed his intention of starting to use iRAP tool to assess corridor safety in the country.</p>

Improving infrastructure safety through engineering interventions is a role of Federal Governments (federal road operators: FMWH and FERMA), State Governments (State road operators), Local Governments (municipalities) and FRSC. Since the FRSC has local representations, some activities performed by Sector Commands appear to overlap with State Traffic Management Agencies in some States.

Of 150 engineers working at the FRSC, 20 are assigned to COSEN. Seven of them underwent two-week training on RSA and have trained 61 officials in turn at the FRSC academy (in-house training). Given the road network length and safety quality (inadequate), the human resources applied to road safety engineering is not sufficient. More engineering staff are needed, and they need to be highly trained and certified.

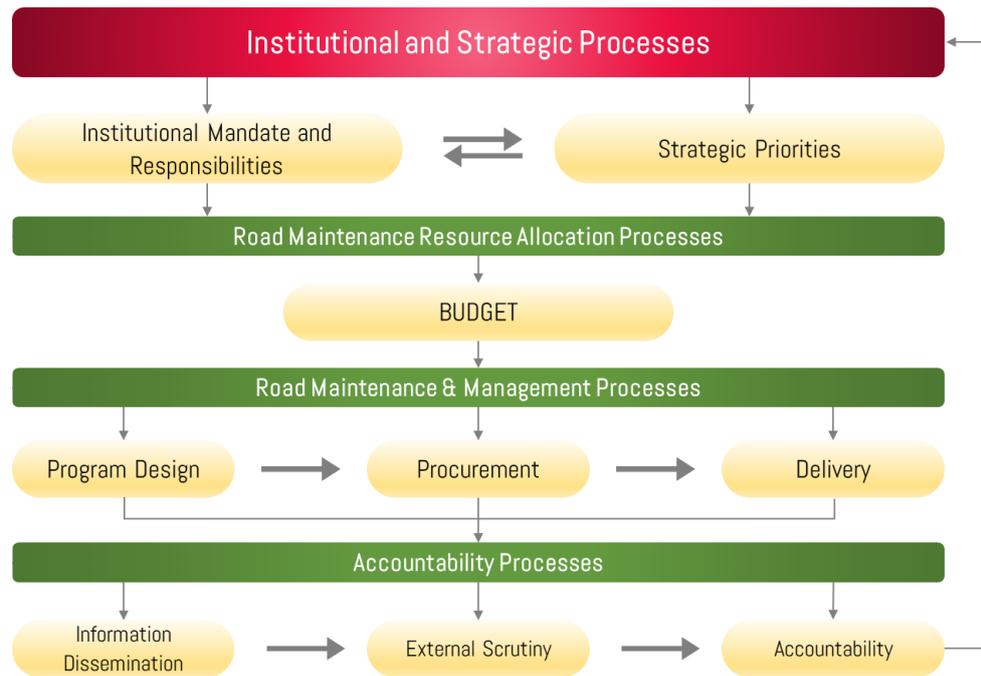
Regarding competencies, RSA and RSI are the most used engineering tools, carried out on federal highways, but they are not used at all road project stages. Methods of analysis of significant hazards and risks is basic. The report findings are mainly based on observations during field visits and recommendations are mostly road-related conditions or furniture. It seems that there is a confusion between RSA and RSI definitions and procedures, which highly impacts the way of conducting them.

There are adequate institutional arrangements for COSEN to regulate road safety engineering services, and some interventions have been made on a few state roads by Sector Commands. The independence of Local Governments is a real challenge for the FRSC's interventions at the local level. Federal Government agencies are yet to adequately incorporate safety engineering components into road design, construction, and maintenance in urban and rural areas. The FRSC's state level set up and capacity are inadequate for carrying out road safety engineering interventions.

Stakeholder	FMWH RSDT
Role in RS Engineering	The main role of FMWH is to build, operate and maintain roads including road safety for users.
Observations	<p>According to the Highway Manual, and to ensure safety for road users, FMWH focuses on design parameters/features.</p> <p>Application of manuals, codes, procedures and regulations at the state level is a direct duplication of the federal FMWH level, but compliance with acts and institutional capacities may be lower at the state level. The FMWH has several departments and units, including those responsible for engineering activities, both at the federal and state levels. From an institutional perspective, this is positive point for future road safety engineering development.</p> <p>The FMWH reported that they ensure coordination with the FRSC through a committee to deliver traffic safety engineering functions.</p> <p>The most important factors in providing safe roads have been theoretically established, and the Highway Manual and its Code of Procedures (2013) refers to road safety audit in all stages of a road project. However, RSA/RSI are not mandatory and apply only for some selected federal roads. Moreover, formal road safety engineering standards, guidelines and procedures have not been developed or adopted.</p> <p>The road design does not reflect safe system principles especially for vulnerable road users and the implementation of the RSA/RSI recommendations is a real issue. There is a need to complete the review of road safety norms and standards for design, construction, maintenance to include road safety for vulnerable road users while maintaining the principle of a uniform set of standards in line with the safe system approach. The FMWH has two road safety engineers trained by the International Road Federation (IRF) in 2019. Increasing the number of qualified road safety professionals is essential.</p> <p>40-60% of design studies are conducted by the private sectors. Road safety capacities within the private sector needs to be taken into consideration for future capacity building program.</p> <p>Taking into consideration all remarks above, the capacity of the FMWH in handling road safety engineering is inadequate and represents a significant improvement opportunity.</p>

Stakeholder	FERMA
Role in RS Engineering	FERMA is part of FMWH and is responsible for ensuring sustainable maintenance of Nigeria Road Network.
Observations	<p>FERMA’s mission is “To efficiently administer road maintenance with the objective of keeping all federal roads in good, safe and comfortable condition for the best value in road transport.”</p>

FERMA's Planning Processes is as follows:



FERMA maintenance activity is based on road design standards developed by Ministry of Works. FERMA has eight zonal offices and 36 state offices.

FERMA does not carry out road safety inspections or black spot management. For this purpose, it relies on the collaboration with the FRSC.

FERMA recognizes that road safety should be a priority. Safety is among the its vision and functions, but it is not clearly reflected in its manual. Furthermore, road safety is not among the performance management indicators or in FERMA's Strategic Objectives (Economic Recovery and Growth Plan). RSI report implementation is not taken into consideration in its road maintenance plan.

It seems that FERMA is under no legal obligation to take into account or implement all RSI recommendations. It may choose to implement only a few measures.

FERMA's current maintenance approach could be described as partly a traditional model and partly commissioned works (~85% of works are outsourced through maintenance-based contracts and ~15% are delivered in-house). Employees only check compliance with third party contracts. It is difficult to control the performance of in-house maintenance works (through ad hoc audit). This represents a missed opportunity for maintaining the current performance of infrastructure safety.

There is no classification of the road network under FERMA's responsibility. Road safety components are less clearly defined for zonal & state offices.

It seems it is difficult to assess the effectiveness of implemented road safety engineering solutions (maintenance, recommended safety measures). The current road safety engineering interventions in the road maintenance component seem weak and need to be strengthened.

Stakeholder	FRSC Sector Command (Kaduna State)
Role in RS Engineering	Road safety engineering support to state road operators.
Observations	<p>The role of the FRSC Sector Command in Kaduna State is to implement the FRSC's strategy at state level, including the road safety engineering support to road operators in the state.</p> <p>The Sector Command conducts RSA/RSI and makes recommendations for road operators.</p> <p>There is no state road safety advisory commission or technical road safety working committee at the state level, but there is an established committee for traffic management. The inter-agency coordination at the state level is inadequate and needs rethinking.</p> <p>In 2019, the Sector Command prepared four RSA reports on state roads. Findings were shared with the State Road Agency and the State Maintenance Agency.</p> <p>The Sector Command does not have a road safety manual or guidelines and instead work using report templates. If a location has a lot of accidents, a team of engineers will investigate to explain why it is a bad location.</p> <p>The Sector Command recognizes that existing roads are not forgiving roads (without safety needs for users, especially for vulnerable users).</p> <p>Recommendations remain advisory with no consequences to road operators if they are not implemented.</p> <p>Some activities performed by Sector Command appear to overlap with State Traffic Management Agencies in some States of the Federation.</p> <p>The Sector Command has 79 officers including six engineers, 17 officers and 62 Kaduna Sector agents. Two engineers (with backgrounds in meteorology and water resources) are assigned to traffic safety engineering activities. Neither have been extensively trained on RSA/RSI/CI but have been briefed on the report template. The road crash investigation officers belong to the zonal office. The human resources applied to road safety engineering is not sufficient. More engineering staff are needed, and they need to be highly trained and certified.</p> <p>At the state level, the institutional leadership for safety is weak and the capacity is very weak. State and Local Governments are yet to adequately incorporate adequate safety engineering components into roads design, construction and maintenance.</p>

Stakeholder	KADRA (state level)
Role in RS Engineering	The main role is construction, rehabilitation, upgrading and maintenance of state roads.
Observations	<p>The overall role of the KADRA (the State Road Agency for Kaduna State) is construction, rehabilitation, upgrading and maintenance of State roads, in close cooperation with MOW. It is quite structured and ensures coordination with other road operators in the state.</p> <p>The current scope of work at KADRA is:</p> <ul style="list-style-type: none"> 🏠 Road design (20% inhouse, 80% by contractors); 🏠 Road construction (20% inhouse, 80% by contractors); and 🏠 Maintenance: (100% inhouse) <p>All its work is based on the MoW Highway Manual.</p> <p>RSA/RSI are conducted from time to time on some selected State roads. It seems that there are no consequences for not having attempted to implement RSA/RSI recommendations.</p> <p>RSI focuses on maintenance aspects of the road, and not safety.</p> <p>The institutional capacity of the road safety engineering aspects at KADRA is very weak and needs considerable development.</p>

ANNEX I.B - FIELD VISITS OBSERVATIONS

163. In addition to informal visits to different districts of the city of Abuja, two formal field visits were organized between the 4th and 5th of March 2020 to:

1. The FRSC factories	2. The State of Kaduna
Manufacturing road signs, Vehicle plates, Driving license	about 200 km via Abuja - Kaduna - Zaria Express Way / A2

164. In general, safety standards are missing in most roads and areas visited and weak consideration is given to road safety engineering in road construction projects and maintenance. Safety facilities are not provided for all road users, particularly vulnerable road users, who are exposed to high risk both in urban and rural areas. High road risk factors and road safety shortcomings could be easily observed. **Table 8** provides summary field visit observations.

Table 8: Summary Field Visit Observations

<ul style="list-style-type: none"> * Mixed traffic modes resulting in mass difference and speed difference represent a serious risk exposure for all road users in dense areas such as marketplaces, villages and downtowns. * Inappropriate or excessive speed was observed in urban areas and on highways. In addition, the occupation of sidewalks by vendors push pedestrians to walk on the carriageway and expose themselves to a high risk of collision. * Basic safety facilities are not systematically provided or maintained. Some road shoulders and road edges are damaged and very dangerous, and the road marking signage and speed limit signs are missing or in a poor condition. 	
	
	

Main shortcomings in infrastructure related safety features are:



Adequate safety barriers are either missing or unchained in different high-risk locations



Unprotected deep slopes / unprotected deep ditches are frequent both in urban and rural areas



Road work zones encountered have poor work zone safety features



Lack of pedestrian crossings neither marked nor protected, especially in urban areas where the need is increased



Accumulation of sand and dust on the road median

Other Observations:



Long-term parking on roads



traffic law violation



excessive speeds

ANNEX I.C - RECOMMENDATIONS TO IMPROVE ROAD SAFETY ENGINEERING SYSTEM IN NIGERIA

165. Recommendations to improve road safety engineering system in Nigeria, particularly relating to institutional and technical matters are summarized below.

Short term (1-2 years) (RE)	Medium term (3-5 years) (RG)
Institutional aspects	
R.E1: Establish State Road Safety Advisory Commissions at State level with a technical working group in charge of infrastructure safety.	R.G1: Establish road safety engineering units both at state and local levels
R.E2: Set realistic federal and state targets for improved safety performances for all road class.	R.G2: The FRSC should strengthen its leadership role in order to increase multi-sectoral collaboration and coordination between road operators, especially at state and local level
R.E3: Promote road safety engineering ownership and accountability among road authorities, road engineers and urban planners	R.G3: Develop and strengthen and update the evidence-based road data driven approach to support monitoring & evaluation
R.E4: Establish a program to strengthen the capacity of staff, road actors and design companies in the field of road safety engineering, RSA/RSI and management of infrastructure safety.	R.G4: encourage research and development in safer roads and non-motorized transport.
R.E5: Establish road safety strategies at the state level with particular attention to non-motorized users	R.G5: Set comprehensive safe speed targets in accordance with safe system principles
R.E6: Establish road safety audit regulations and legal consequences for inaction on recommendations;	
R.E7: Allocate 10% of infrastructure project spending, and 5% of road maintenance spending to road safety measures.	

Short term (1-2 years) (RE)	Medium term (3-5 years) (RG)
Technical Aspects & intervention capacity	
<p>R.E8: Establish a technical working group to analyze, manage and deliver interventions to eliminate high risk sections.</p>	<p>R.G6: Road agencies to adopt road safety audit in all stages of road development and make them mandatory</p>
<p>R.E9: Complete the review of road safety norms and standards for design, construction, maintenance to include road safety for vulnerable road users while maintaining the principle of a uniform set of standards in line with the safe system approach.</p>	<p>R.G7: Initiate peer-to-peer learning and development program at the federal level and establish a center of excellence and Road Safety Auditor Accreditation system</p>
<p>R.E10: Develop comprehensive road safety guidelines, manuals, procedures and rules for all road class for RSIA, RSA, RSI, blackspot management and network safety management NSM.</p>	<p>R.G8: Provide special funding for the gradual implementation of high priority infrastructure safety improvement measures.</p>
<p>R.E11: Adopt and promote a list of effective countermeasures and the safety benefits of different design elements based on international references.</p>	<p>R.G9: Safety rating to be undertaken in order to identify roads with a higher than average crash risk. Extend the iRAP inspection to cover the entire road network, establish a national risk map of existing roads and begin the elimination of very high-risk sections.</p>
<p>R.E12: Collaborate with iRAP to develop a program to eliminate very high-risk sections.</p>	<p>R.G10: Establish a program for revising and improve the zonal/state urban development policies in terms of road safety, in particular for vulnerable road users.</p>
<p>R.E13: Training and capacity building to enhance road safety engineering expertise at FRSC and road operators.</p>	<p>R.G11: Fully implement the speed management program on federal, state and local roads.</p>
<p>R.E14: Establish a speed limit review process and develop a systematic speed reduction program based on international best practices.</p>	<p>R.G12: Increase the use of automatic speed control technologies to enforce speeding both at the federal and local levels</p>
<p>R.E15: Establish a speed limit reduction program, with particular attention to high-risk areas in order to expect quick gains.</p>	<p>R.G13: Conduct systematic monitoring and evaluation of the effectiveness of all road safety engineering interventions.</p>

ANNEX I.D - INTERNATIONAL PRACTICE:⁴² THE ROLE OF POLICIES, STANDARDS, GUIDELINES AND TOOLS IN ROAD SAFETY ENGINEERING

- ☆ The promotion of road safety engineering should be a priority for every road authority. Attention is generally focused on situations where a relatively large number of accidents and/or fatal accidents occur. Measures designed to tackle those accident concentrations should be based on thorough, objective analysis of the problems (determination of the origins). While accident analysis and investigations are very important this is a reactive approach to an existing situation. A proactive approach by the road authority is essential to avoid situations that can result in accidents.
- ☆ Standards, guidelines and tools are the mechanisms that support the consistent interpretation and delivery of policies. Policies set the framework for road safety engineering activity, and without these, delivery of road safety is reactive and lacks structure. The policies will often set the direction at a high level and will also contain direction on how to achieve standards using a predetermined set of criteria.
- ☆ Changing established practice is often difficult, and careful management of this process is required. Strong leadership is needed to facilitate policy shift, and this needs to happen in parallel with an update of corresponding policies, standards and guidelines.
- ☆ Once policies are set, there is need for linkage to standards guidelines and how the associated criteria for meeting the standards can be achieved. Standards (as well as road rules and regulations) dictate those things that must be done to achieve a predetermined level of quality or attainment.
- ☆ In many countries standards also have a legal basis that are adopted in design and operational manuals. Criteria are the specifications for achievement of the standards and are typically detailed as policy.
- ☆ Guidelines provide direction on how things should be done but are not necessarily requirements. Guidelines, because they are not requirements, may contain reasoning for how the standards and policies were developed, how to apply them in different circumstances, and might provide ranges of values to consider based on the conditions encountered.
- ☆ It is important to note that compliance with policy, standards and guidelines does not mean that safety will be maximized, nor minimized when they are not achieved. There are many examples where new roads have been built to standard but have a less than desired safety outcome. Policy, standards and guidelines are often dated, and may not include adequate content based on safe system principles. The manuals that contain the policies, standards and guidelines, generally offer the minimum acceptable values for design.

⁴² Based on Road Safety Manual (PIARC, 2015), with adaptation.

- ★ Also, in many circumstances, policies often provide fewer options for use in constrained environments. It is typical that several compromises need to be made in road design. When combined, these issues can lead to poor safety outcomes. Typically, an assessment of the likely road safety impact is required to ensure that safety objectives are met. It is for this reason that approaches such as road safety audit are required, and that when undertaken, these are not just a check against standards and guidelines.

- ★ Knowledge of the safety implications of design decisions is constantly improving, and with this there is sometimes a need to update policies and procedures. This includes the need to periodically update standards, guidelines and tools.

- ★ Little guidance exists on the mechanisms for transforming road infrastructure safety policy into relevant standards and guidelines. Many countries have developed their own standards and guidelines, and in some cases, these may be adopted for use in other countries (caution should be used where the context is different).

ANNEX I.E - INTERNATIONAL PRACTICE-⁴³ ROAD SAFETY ENGINEERING MANAGEMENT TOOLS

166. The overall approach to the assessment and treatment of road infrastructure for effective road safety outcomes (or the road safety engineering process, summarized in Figure 9) involves the assessment of risk (identifying high risk locations), identifying the issues contributing to these crashes (assessing potential risks) identifying and selecting appropriate solutions and interventions, prioritizing action and monitoring, analysis and evaluation of road safety measures. This process applies to all road safety engineering tools.



Figure 9: Infrastructure Risk Assessment Process

167. A variety of tools and approaches are available to assist in the delivery of infrastructure safety management. In general, road safety managements tools fall into two categories of approaches: reactive approaches, which focus on crash-based identification of high-risk locations such as the treatment of blackspots, and proactive approaches, which aim to avoid future crashes by applying preventive measures. Crash-based tools are always necessary, but are insufficient, therefore and a network wide improvement requires a more strategic proactive tool.

168. As with guidelines, some tools have been prepared for use at the global, regional or country level. Referenced tools for all different stages of infrastructure safety management include⁴⁴:

- ⊕ **Assessment of potential risk:** A variety of tools exist to assist in the collection and analysis of crash and non-crash road safety data to assist in this task.
- ⊕ **Identifying issues:** Traditionally, tools for the assessment of risk have been reactive, as they were based on a concentration of crashes over time. In recent years, more proactive tools have been developed to identify risk locations. Both reactive and proactive tools are required to provide a full assessment of risk. Tools and approaches include:
 - Crash-based Identification (Reactive Approach);
 - Road Safety Impact Assessment (RSIA, Proactive Approach);
 - Road Safety Audit (RSA, Proactive Approach);
 - Road Safety Inspection (RSI, Proactive Identification); and
 - Safety Rating Surveys (iRAP, Proactive Approach).
- ⊕ **Intervention selection:** to help in the selection of appropriate interventions safety risk;
- ⊕ **Prioritization:** to help conduct economic appraisals of different options at a location, and then to prioritize projects to help achieve the greatest benefits based on available budgets;
- ⊕ **Monitoring, analysis and evaluation:** Monitoring, analysis and evaluation is an essential part of infrastructure safety management.

⁴³ Based on Road Safety Manual (PIARC, 2015), with adaptation.

⁴⁴ According to the Road Safety Manual, PIARC, 2015.

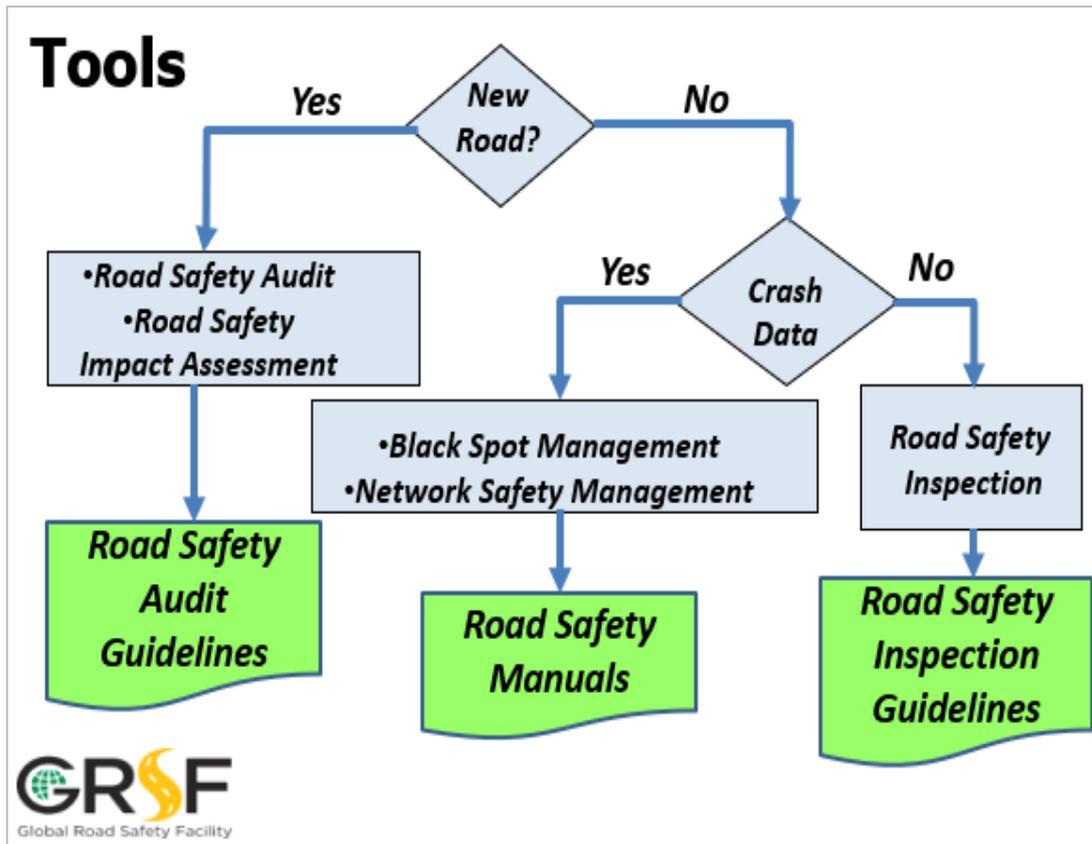


Figure 10: Selection Process of Variety of Tools

CASE STUDY - ROAD SAFETY APPROACHES FOR INFRASTRUCTURE, FRANCE

Since the early 2000s, France has developed and implemented a set of road safety approaches for infrastructure projects. This set of approaches is now outlined in the European Directive 2008/96 on road safety infrastructure management for French infrastructure projects.

A Road Safety Impact Assessment is carried out for all infrastructure projects at the initial planning stage before the infrastructure project is approved. It identifies the road safety considerations which contribute to the selection of the proposed solution and provides all relevant information necessary for a cost-benefit analysis of the different options assessed.

A Road Safety Audit⁴⁵ of the design characteristics from a safety viewpoint is carried out for all infrastructure projects by a trained auditor or a team of auditors. Audits form an integral part of the design process of the infrastructure project and are carried out at different stages of the project: draft and detailed design, pre-opening and early operation. Where unsafe features are identified in the course of the audit, the design is rectified. When it is not rectified before the end of the appropriate stage, the reasons are stated by the authority in an annex of the report.

A Road Safety Inspection⁴⁶ is carried out on the national road network for all existing roads in order to report on the details of the road, its surrounding area and the general environment that can influence the user's behavior or affect their passive safety and thus have repercussions on road safety. The concept is to provide a method that will help the operator to improve their network knowledge.

⁴⁵ Road Safety Audits, Sétra, 2012

⁴⁶ ISRI Initiative: road safety inspections of routes, Sétra, 2008

Inspection visits are made by appropriately qualified personnel, to identify the main road safety issues, and to provide a fresh point of view on the system. The systematic inspection of a section of road thus consists of a quick and practical rating of the main configurations that may not be expected by the road user, considering all modes of transport.

Safety of users on existing roads⁴⁷: this approach, called SURE in France, is carried out on the national road network for all existing roads. It is a general method of which the main innovation is to explicitly and continuously provide a complete approach of road safety improvements, from the road safety issues study to the assessment stage via the implementation of treatments. The aim of this approach is to determine and implement adapted treatments for sections of road where the safety gain is potentially higher.

CASE STUDY – Using safety star ratings for design and evaluation

In 2010 a number of high-risk corridors were identified across the state of Karnataka and identified for upgrade with the support of the Global Road Safety Facility (GRSF) to help prevent road deaths and serious injuries on the Indian road network. As part of the project the Karnataka State Highway Improvement Project (KSHIP) was established and potential road user risk was assessed using the iRAP safety star rating methodology on 550km of road selected for rehabilitation in the Indian state of Karnataka.

Jabatan Kerja Raya (JKR), the Public Works Department in Malaysia, worked with iRAP to undertake Star Rating assessments to estimate the change in road safety risk as a result of infrastructure improvements undertaken at several high-risk sites and hazardous locations in Malaysia by comparing the before and after risk scores.

iRAP Methodology⁴⁸: The RAP Star Rating and Safer Roads Investment Plan (SRIP) methodology improves road users' safety by proposing cost-effective investment plans. Injury levels can be reduced either by taking measures to reduce the likelihood of a crash or by managing the kinetic energy within the crash thereby reducing the severity of injuries.

Road assessments using the RAP Star Rating[®] methodology begin with a real-time road survey, recording more than 50 infrastructure elements which relate to road safety. The video material is then comprehensively analyzed, coded and uploaded in the customized online analytic software ViDA[®]. This leads to the primary ViDA output: a quantification of the safety that the road provides to its users (the Star Rating). The Star Rating scores describe the safety built into the road on a 5-star scale. In the next step the ViDA software identifies the most appropriate countermeasures which can reduce risk and increase the Star Rating. A Safer Roads Investment Plan (SRIP) is then proposed, which includes all the countermeasures economically justified. RAP Star Rating is a pro-active methodology, which is able to identify the most dangerous stretches of a road before a serious road accident occurs. By contrast, the 'Critical-Black-Spot' methodology is reactive. It identifies stretches of road as high risk only after a certain number of people have been killed or seriously injured.

⁴⁷ The SURE initiative, Users safety on existing roads, Sétra, 2006

⁴⁸ <https://www.irap.org/methodology/>

ANNEX I.F - RSA, RSI AND CRASH INVESTIGATION REPORTS

169. The following reports have been checked:

- 🔗 Road Safety Audit: Kontagora Minna Kaduna Road RSA Report; and
- 🔗 Road Safety Inspection: Technical Inspection of Keffi-Kaduna Road Report
- 🔗 Crash Investigation:
 - ⊕ Tashar-Musa-Tashar Yari 11-02-2017 Crash Investigation Report (FRSC Kaduna); and
 - ⊕ Yan Kifi Market 53km Wudil On Gaya-Dutse Road Crash Investigation Report.

ANNEX I.G - CORPS SAFETY ENGINEERING (COSEN) FLOW CHART

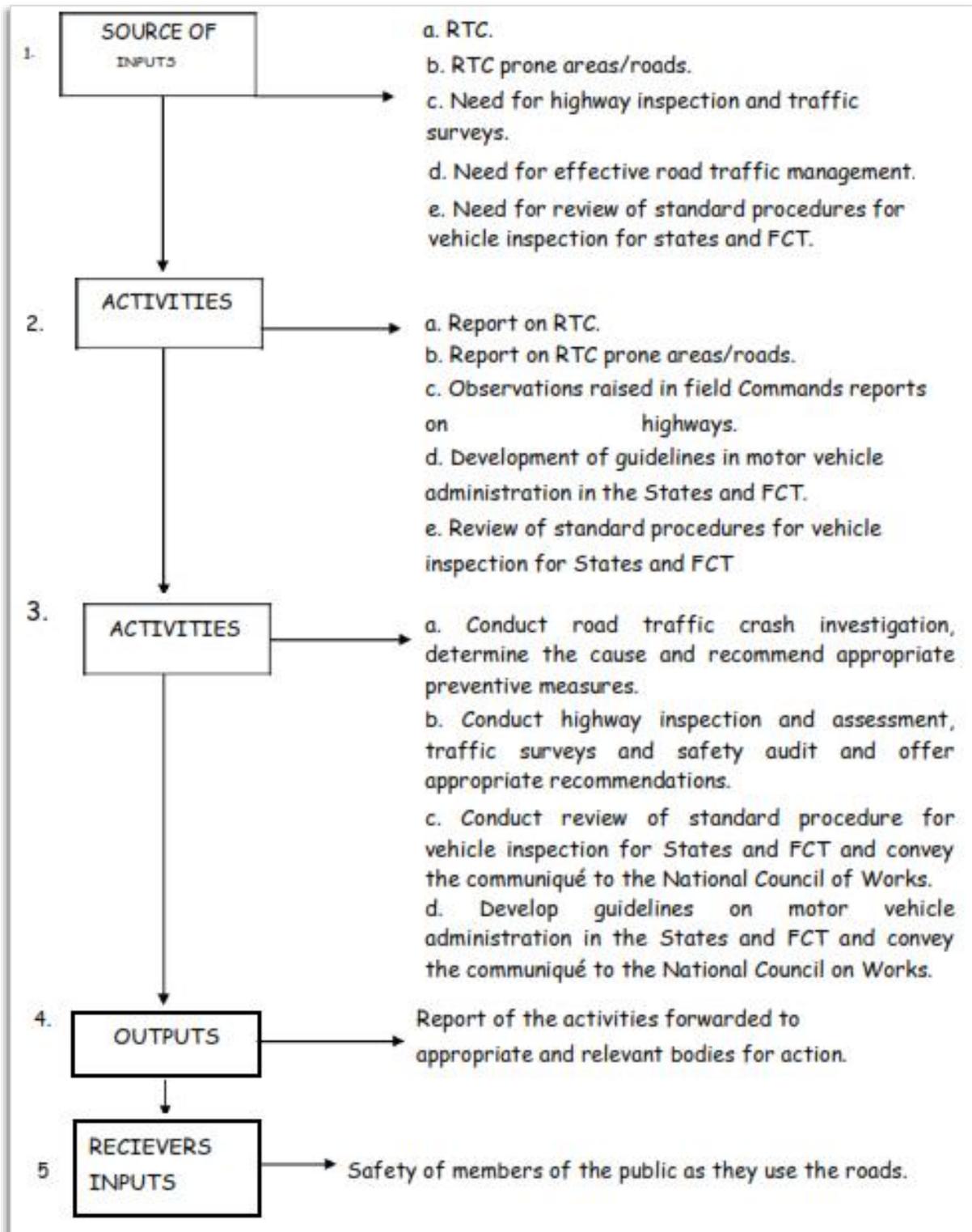


Figure 11: Corps Safety Engineering Flowchart

Source: FRSC Quality Manual 2018, R03

ANNEX I.I - EXAMPLES OF ROAD DESIGN GUIDELINES FROM DIFFERENT COUNTRIES

170. The following references provide examples of road design guidelines from different countries:



The World Bank in association with the Dutch Ministry of Transport, Public Works and Water Management have produced Sustainable Safe Road Design: A Practical Manual, a document targeted at low- and middle-income countries. It provides an overview of relevant safe road design aspects.

https://www.mnt.ee/sites/default/files/content-editors/Failid/Juhendid/ehitus/safe_road_design_manual_final.pdf



The United States has A Policy on Geometric Design of Highways and Streets, 7th Ed. (more commonly known as 'The Green Book') produced by the American Association of State Highway and Transportation Officials (AASHTO). Many other relevant documents also exist, including the Roadside Design Guide, 4th Ed. These documents are available from

<https://store.transportation.org/Item/CollectionDetail?ID=105>



The United Kingdom has the Design Manual for Roads and Bridges (DMRB) available from

<https://www.standardsforhighways.co.uk/dmrb>



Australia and New Zealand have the Austroads Guide to Road Design (comprising 15 parts) available from

<https://austroads.com.au/safety-and-design/road-design/guide-to-road-design>



In December 2013, as part of the SENSor (South East Neighborhood Safe Routes) project, the Slovakian motorway network was surveyed, assessed for safety and given a rating using the iRAP Star Rating protocol. A before and after study improving iRAP Star Ratings and increasing safety using a Safer Roads Investment Plan could be downloaded using the following link : http://www.eurorap.org/wp-content/uploads/NDS-Upgrade_Re-assessment-Case-Study-v1-4_EN-20160603_Final_sdl_edit_mj_....pdf



TAC's Geometric Design Guide for Canadian Roads is a fundamental reference document for roadway design practitioners in Canada. The Guide has contributed to the consistent and safe development and expansion of regional, provincial, and national roadway and highway systems in Canada (<https://www.tac-atc.ca/en/publications-and-resources/geometric-design-guide-canadian-roads>)

ANNEX II: CRASH DATA COLLECTION AND ROAD SAFETY EDUCATION

SUMMARY

171. **The road crash data management system (RCDMS) in Nigeria is overall rated as Adequate⁴⁹.** The RCDMS governance arrangement is very robust, and further digitization improvements are underway, but the crash data system, as a whole, has some gaps. The relatively recent crash data form (developed in 2010) is not mandatory for all enforcement agencies, resulting in incomplete crash data for accidents outside FRSC’s purview. Hence only FRSC’s crash data can be used for crash analysis, which is limited to Federal highways, expressways or other high-priority corridors. Adequate capacity for proper crash data collection also needs to be built in field level agencies of FRSC and Police, covering all local government areas (LGA). Finally, the National Road Traffic Regulations and FRSC Act need to match and clearly lay out the stakeholder responsibilities to ensure mandatory usage of form and avoid decision conflicts. While the overall focus of FRSC’s leadership on crash data is exemplary and there is substantial crash data collected, the quality and quantity of data can be improved manifold by establishing a robust RCDMS.

172. **The road safety education initiatives in Nigeria is overall rated as Very Good.** The content quality covering major safe behavior and road safety regulation aspects, dissemination frequency and usage of mandatory school curriculum, mass media for road safety awareness and enforcement initiatives, social media and community volunteers are commendable. They need to continue to reinforce general deterrence based regulatory and enforcement programs, as their current practices are, in compliance with the African Road Safety Charter. The initiatives also utilize the efforts of NGOs, along with volunteers for advocacy and reaching out to rural areas. While the education initiatives are more concentrated in urban areas, the rural areas may remain under-served in terms of dissemination and relatable content and is thus an area of improvement for FRSC, as rural areas can have a greater likelihood of fatal crashes, despite lesser traffic. This calls for a developing a Rural Road Safety Education Strategy that can educate rural populations on safe behavior and road safety regulations aspects, as per the available resources and education level. Further, FRSC may also explore developing a Public Education Evaluation Framework to evaluate and plan their public enlightenment activities. The detailed analysis of the two components can be referred to in below sections.

CRASH DATA MANAGEMENT IN NIGERIA

Efficiency and effectiveness of the current Road Crash Data Management System (RCDMS) in dealing with capturing, analysis and use of the road crash data in Nigeria.

Table 9: Current Road Crash Data Collection Process in Practice

#	Organization	Current practice
1	Federal Road Safety Corps (FRSC)	Undertake road crash data collection, traffic incidence and offence reporting on Federal Highways, express-ways and other high-priority corridors, road crash analysis and dissemination
2	Nigerian Police	Undertake road crash data collection in FRSC’s absence
3	State Traffic Management Agency (STMA)	Alert the FRSC when road traffic crash occurs in city limits on State Roads. Maintain traffic information within city limits.
4	Health Authority/Emergency Services	Alert the FRSC on road traffic crash victim’s information. Provide accident victim information on case to case basis to FRSC for manual crash data reconciliation.

⁴⁹ The ratings maybe one of the following: Very Good, Adequate, Inadequate and Very Poor

173. Following flowcharts describe two instances of, depending on the road types, data collection processes:

(a) Road crashes occurring on Federal Highways, expressways etc.

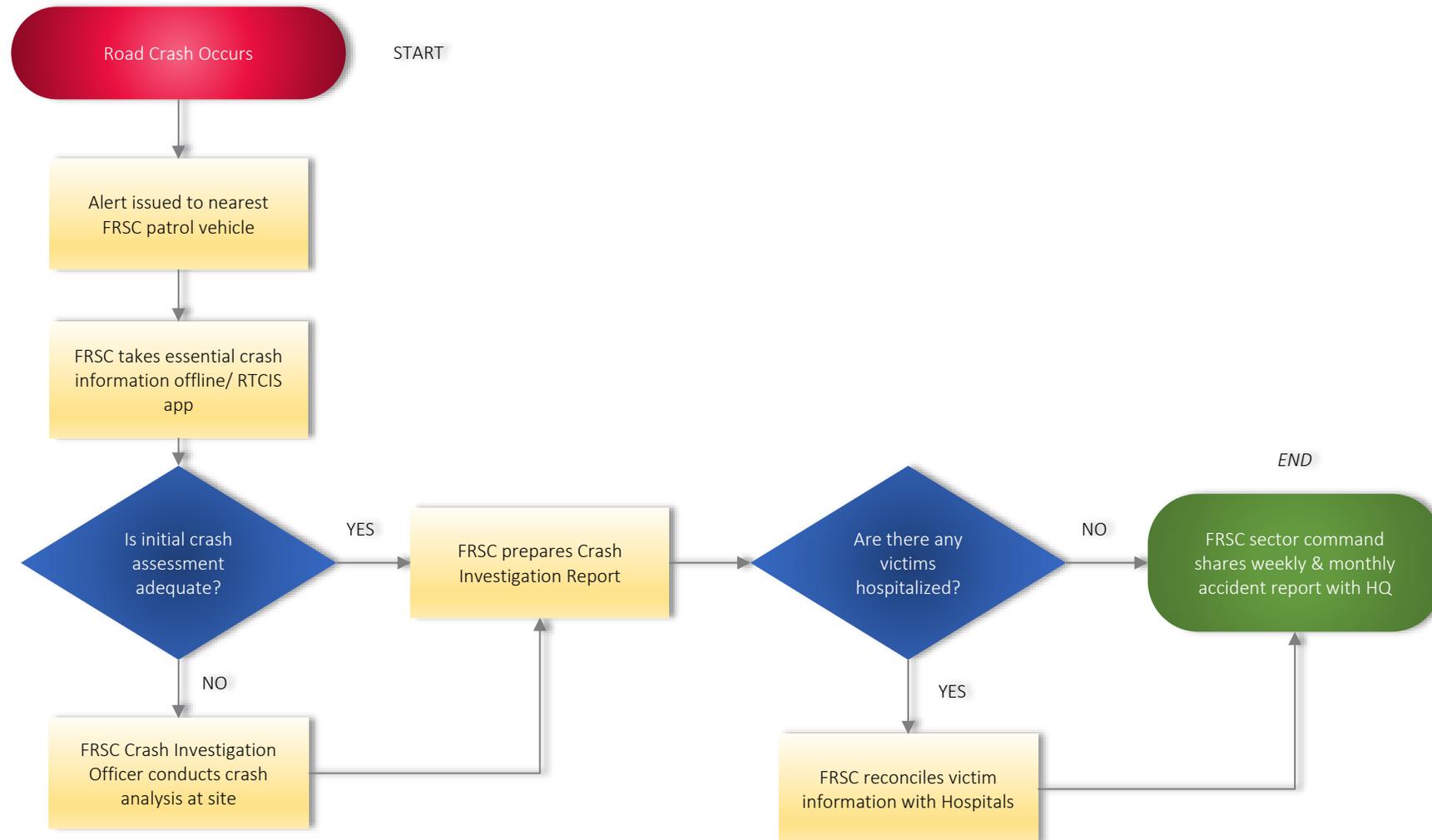


Figure 12: Activity Flowchart for Road Crashes on Federal Highways

(b) Road crashes occurring on State roads, rural roads

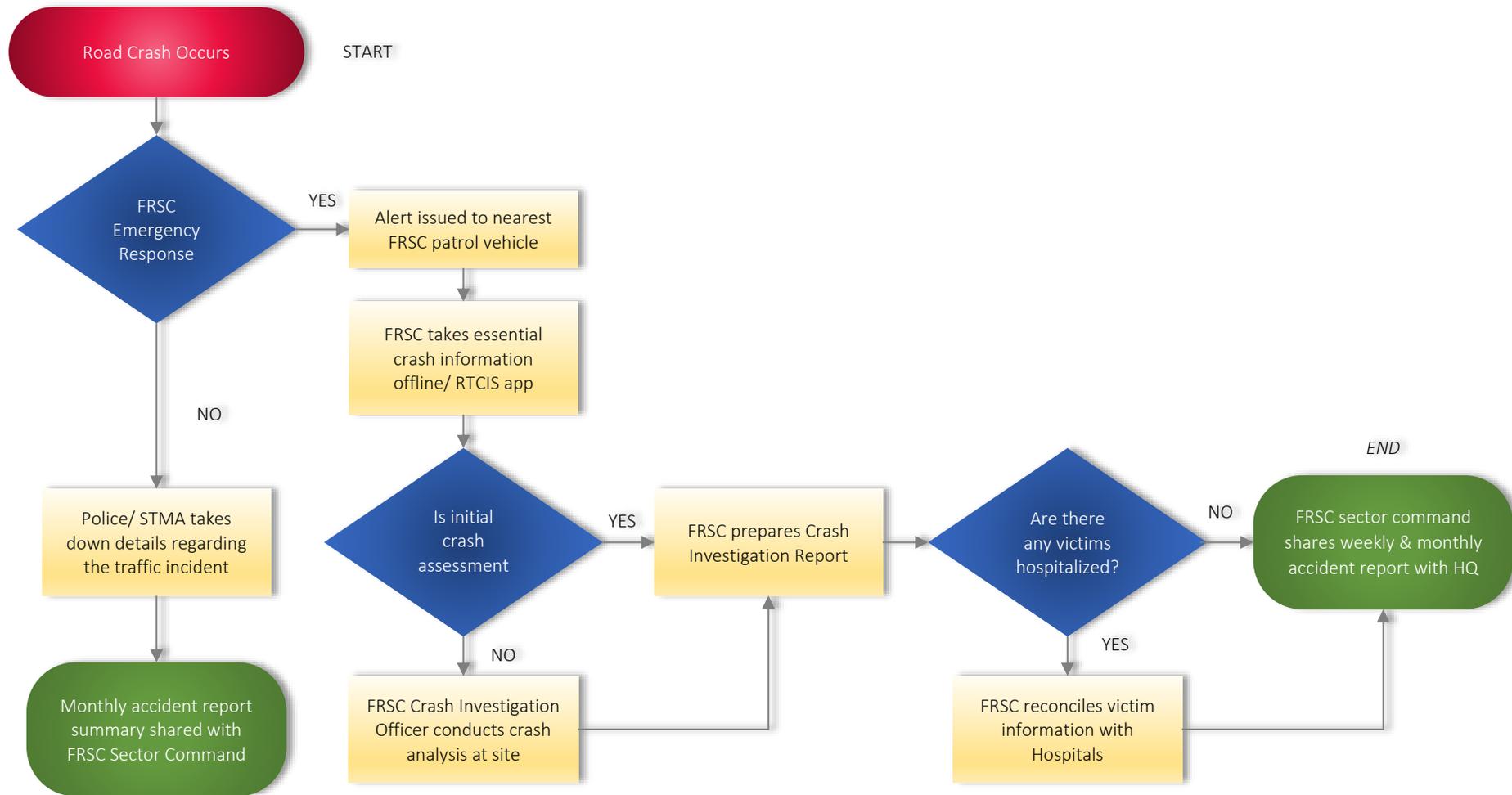


Figure 13: Activity Flowchart for Crashes Occurring on State Roads, Rural Roads

174. While, details of the RTCIS undergoing upgrade is presented in **ANNEX II.A**, Table 10 provides ratings of RTCIS elements.

Table 10: Rating of Elements of Nigeria’s Road Traffic Crash Information System (RTCIS)

#	Elements	Rating ⁵⁰	Remarks
1	Robustness of the RADMS governance arrangement	Very Good	The FRSC has been empowered as the sole agency to lead road crash data collection and analysis in Nigeria, along with owning the RTCIS. The governance arrangement is robust and future ready as a single lead agency ensures ownership of the system and uniform scaling up across the country, resulting in larger data quantity and better crash analysis reports. FRSC also has adequate staff capacity and is legally empowered through the FRSC Act, to plan, implement and enforce road safety initiatives across the country, on all roads.
2	Adequacy of the current data collection system and its deficiencies	Adequate	The crash data form is adequate and is in the process of being digitized in the ongoing RTCIS upgrade. The Crash data form had been developed as an upgrade over previously used MVA Form 23, 24, in 2010. The form has been compared with the ARSO suggested minimum crash data variables and 35/45 fields are complied with already. The comparison can be referred to in ANNEX II.B , section D. The states collect mandatory information from the crash form in field either in WhatsApp or FRSC provided e-Android devices. An e-android device has been configured with FRSC’s RTCIS and deployed for both booking offences and collecting crash data. However, the deployment of e-Android devices is not uniform across the country. As the RTCIS is currently undergoing an upgrade, the crash data is collected on a device in the field but shared with Headquarters manually. The current crash data that are being shared by the field offices is in an excel file (refer to ANNEX II.B , section A). Thus, the element has been rated as Adequate.
3	RCDMS data integrity and storage robustness	N/A	This element could not be assessed as the RTCIS is currently undergoing an upgrade and can be assessed once system is live for at least 2-3 months with adequate data. Assessment of the older system would not be relevant.
4	Adequacy and completeness of the data analysis system	N/A	This element could be partially assessed as the RTCIS is currently undergoing an upgrade and current reports are generated manually. The upgraded RTCIS is planned to comprehensively cover major standard reports including monthly reports – Zonal RTC Report, RTC Zebra Report, Zonal Comparative Report, Vehicle Causative Factors, Zonal Severity Index, Summary Dashboard and Vehicle Classification. The planned weekly reports include – Casualty summary, Gender/Age Analysis, Highlights, Route Analysis, Vehicle Involved by Zone, Time/Period Analysis, Rescue Activities. The report generation quality can be assessed 2-3 months after system goes live, to understand quality of data and adequacy for report-generation.
5	Extent of analysis of the road crash data	Inadequate	Currently the road safety analysis led by FRSC is shared with stakeholder departments like Roads, Transport, Police. This

⁵⁰ Rating expressed as one of the following: Very Good, Adequate, Inadequate and Very Poor

#	Elements	Rating ⁵⁰	Remarks
	and their use in tackling roads safety challenges		analysis has been done manually and such reports are generated on a monthly basis by the HQ. A sample crash investigation report can be referred to in ANNEX II.C . The contents of the monthly report can be referred to in ANNEX II.B . There is no method of evaluating other department's action based on the crash data analysis and feeding the outcomes back into the framework to ensure accountability. The element has thus been rated as inadequate.

Adequacy of current system in handling road safety crash data both at the Federal and State levels

Table 11: Stakeholder Analysis

Stakeholder	Role	Relevance (High/Medium/Low)	Capacity to perform the role
Federal Road Safety Corps (FRSC)	Data collection, Data analysis, Data dissemination	High	FRSC has adequate institutional capacity to perform the lead role. The data collection is undertaken by unit commands, reporting to sector command who undertake data analysis and finally report the consolidated findings to the regional command. However, the current setup is inadequate to completely cover all local government areas (LGAs).
Nigerian Police	Data collection	High	The capacity of Police is inadequate when it comes to collecting crash data in prescribed format. However, they have maximum presence in all LGAs for maintaining law and order in state. To immediately scale up the crash data collection effort uniformly across Nigeria's state and rural roads, the Police presence needs to be leveraged to cover the LGAs which may not have FRSC presence in near future.
State Traffic Management Agency	Data collection	High	The STMAs alert FRSC when a crash occurs in the city area, because of low capacity to collect proper crash data by their staff. In practice, they work in close collaboration with FRSC for responding to road crashes in their jurisdiction.
Department of Transportation	Data collection	Medium	State motor vehicle agencies and vehicle inspection centres have adequate capacity to furnish vehicle information for crash data form, with own databases. However, they are not electronically linked to the NVIS Portal managed by FRSC. Details may be referred to ANNEX II.D
Health Authority/ Emergency Services	Data collection	Medium	Health authorities have adequate capacity to help reconcile victim information on case-by-case basis with the Medical Rescue Officer of FRSC. However, there is no mechanism in the RTCIS to electronically fetch crash victim information from the Health Department.

Stakeholder	Role	Relevance (High/Medium/Low)	Capacity to perform the role
Road Sector Development Team	Data analysis	Low	Not relevant for data collection as safety from engineering perspective is looked after by a dedicated Safety Engineering Department in FRSC

175. **Causes of data gaps:** Data gaps can be mainly attributed to the following causes:

- ⊕ FRSC furnishes crash data of only those incidents which it has taken the ownership of investigation from the crash scene to the crash analysis.
- ⊕ FRSC mainly covers the Federal Highways, Expressways and other priority corridors with greater likelihood of fatal crashes. Other roads are looked after by State Traffic Management Agency and Police, who do not collect crash data in the prescribed format.
- ⊕ Previously FRSC did not have presence in all the Local Governments of a state. However, a recent directive was issued in February 2020, that directed towards establishment of FRSC Station Offices at all the Local Government Headquarters nationwide. This is yet to be implemented.

176. To summarize, the overall issues in crash data reporting in the existing setup in Nigeria broadly pertains to the following:



Overlapping reporting responsibility in the Regulations



Prescribed crash data form not mandatory



Capacity constraint of FRSC

1. Overlapping of crash reporting responsibility in the Regulations between FRSC and Police: As per the FRSC Act 2007, any person failing to report a crash to the nearest FRSC office or Police station shall be fined 1000 Naira. However, as per the National Road Traffic Regulations 2010, any crash shall be reported to the nearest Police Station, FRSC office, or appropriate authority nearest to the scene of crash. Failure to comply shall lead to a fine of 20,000 Naira. These overlapping regulations and mismatch in penalties may dilute FRSC's overall crash data responsibilities, and lead to a dependency on data from Police Department, which are typically inadequate from a crash analysis perspective.

2. Prescribed crash data form not mandatory: The present National Road Traffic Regulations 2010 mentions Form MVA 23 and MVA 24 as crash data collection and reporting formats, but these have been discontinued since 2010. The 2010 crash data recording form is yet to be updated in the Regulations and the Act to ensure mandatory usage of this form across agencies, especially Police.

3. Capacity constraint of FRSC to cover all Local Governments: A recent directive was issued on February 2020 towards establishment of FRSC station offices at all Local Government Headquarters nationwide, to increase Corps visibility and further improve on data collection, advocacy visits, public enlightenment

as well as participation in security matters. However, the directive is awaiting implementation owing to limitations in vehicles, equipment and buildings to cover all LGAs.

CONCLUSIONS AND RECOMMENDATIONS TO IMPROVE ROAD CRASH DATA COLLECTION IN NIGERIA

(i) Efficiency and effectiveness of the current RCDMS in dealing with capturing, analysis and use of the road crash data in Nigeria

177. The RCDMS governance arrangement is fairly effective with FRSC taking the lead for road crash data management from data collection to data analysis and dissemination, as empowered by the FRSC Act 2007 and the National Road Traffic Regulations 2010. There is a 24-hour crash alert phone number for the public (122).

(ii) Adequacy of the current system adequate in handling road crash data both at the federal and state levels

178. While the system for crash analysis and dissemination of road crash data is adequate at the Federal levels, there is scope for improvement at the State level, in terms of improved crash data collection and crash analysis skills of its staff, and increased presence to cover all LGAs, as issued in a recent directive. The current data collection system at the State level is stretched with a single station assigned to multiple local governments, potentially leading to crash data going unrecorded for some state/rural roads.

(iii) Conformity of existing RCDMS practices with the good international practices⁵¹

179. Details on some of the international good practices considered may be referred to **ANNEX II.E**

- 1. Governance:** The RADMS Governance arrangement is robust in Nigeria with the road safety lead agency FRSC empowered by the FRSC Act 2007 and the National Road Traffic Regulations 2010.
- 2. Data collection:** The data collection for crash analysis in Nigeria is dependent on the FRSC, whereas, globally, it is the Police Department which does major information collection owing to the larger spread of police personnel. Currently the crash data collection and analysis are partially manual as the existing software RTCIS is undergoing an upgrade to address previous system deficiencies. The information delivered electronically to FRSC Headquarters may be found in **ANNEX II.B**, section A.
- 3. Timeliness of reporting:** Data collection report timeline is substantially adequate as FRSC officers typically respond to a reported crash in 10-15 mins and the crashes are investigated, analyzed, consolidated and shared with Headquarters on a weekly and monthly basis.
- 4. Completeness:** The crash data reported by FRSC is adequate. However, the crash data reported by Police is incomplete and doesn't conform to the prescribed crash data format.
- 5. Integration:** The RTCIS is a standalone system with no linkages with vehicle database, hospital management systems, road agencies, GIS (Geographic Information System) asset management system etc.

⁵¹ May be rated as – Very Good, Adequate, Inadequate, Very Poor

6. **Accessibility:** The RTCIS is currently being upgraded to give system access rights to the Police Department so it can report crashes directly into the portal. However, there is no data access given to any road’s agency, or Departments of Transport or Health.

180. Article 7 of the African Road Safety Charter⁵² refers to improvements in road crash data management, and the current status in Nigeria is briefly noted against this is presented in Table 12.

Table 12: Current Status Against the Clause of Article 7 of the African Road Safety Charter

Clause	Status
States parties shall build capacity within Lead Agencies to enable them to create and master credible road safety data management system, encompassing quality data collection, storage, collation, analysis and reporting modules	Achieved and ongoing. Currently, FRSC as lead agency has capacity of crash data collection, analysis, and dissemination while a major software upgrade of RTCIS is being undertaken.
Road Safety data management system shall include national databases on vehicles and drivers, accidents, injuries and deaths, intermediate outcomes such as seat belt and helmet wearing rates and economic impacts of road safety injuries.	Not achieved. The databases of vehicles and drivers are not linked to RTCIS. Manual reconciliation is done with the state databases.
The data shall be robust, reliable, continually harmonized, and available for planning, research and development, monitoring and evaluation of progress made.	Not achieved. Currently the crash data is sourced manually, and the upgraded RTCIS data quality can be judged once the system goes live.

181. Nigeria has played a significant role in the establishment of an African Road Safety Observatory and further crash data improvements should take into account the norms established by the Observatory. It is expected that each Member of the Observatory will ratify the African Road Safety Charter.

(iv) Steps to reduce the gap between the current RCDMS practice in Nigeria and international good practices

182. Following initiatives may be explored by FRSC to improve crash data collection and management:



Figure 14: Initiatives to Improve Crash Data Collection and Management

- 1. Increase local presence:** Immediately implement the Directive to increase the Unit commands to cover all Local Government Areas with adequate vehicle and equipment for crash response and data collection.
- 2. Mandate new crash data form:** Revise the FRSC Act 2007 and National Road Traffic Regulations 2010 to mandate the new crash data reporting format to improve compliance by other agencies.
- 3. Capacity Building:** Provide training on crash data collection and data analysis at field level.

⁵² Source: https://au.int/sites/default/files/treaties/37309-treaty-0052 - road_safety_charter_e.pdf

4. **Regular RTCIS data audit and maintenance:** Provide funding through annual budget to conduct data quality audit of RTCIS; conduct annual functional, technical review of RTCIS to identify upgrade needs.
5. **Revise National Road Traffic Regulations and FRSC Act:** The revisions should clearly lay out stakeholder responsibilities, mandate the new crash data form and jurisdiction to improve data collection compliance and avoid decision conflicts in the field.

ROAD SAFETY AWARENESS AND PUBLIC EDUCATION

Past and current road safety education initiatives in Nigeria and their effectiveness

Table 13: Agency-wise Current Practice on Education Initiatives

#	Organization	Current practice
1	FRSC	Public Enlightenment Cell of FRSC undertakes road safety education through workshops, sessions, motor park rallies
2	State Traffic Management Agency	Generating awareness on proper road user behaviour
3	Road Safety NGO's	Generating public awareness, advocating legislative reforms, partnership with FRSC for dissemination.

183. Details on the typical road safety education initiatives undertaken by FRSC sector command office can be referred to in **ANNEX II.F**. Based on the various activities observed, the rating of the elements of road safety education initiatives are given in **Table 14**.

Table 14: Rating of Elements of Nigeria's Road Safety Education Initiatives

#	Elements	Rating	Remarks
1	Design of road safety campaign	Very good	The road safety campaigns content and design perfectly target urban audience of children and adults but are inadequate for rural audience. They comprise of relatable contexts and include a variety of topics – from safe vehicles, safe driving, child safety etc. However, due to the lack of customized content for rural audience, the campaign can be out of context for them. Hence, this element is rated as "Very good".
2	Efficiency of road safety campaign	Very Good	<p>The road safety campaigns are disseminated frequently through various media, with a daily presence through radio and social media.</p> <ul style="list-style-type: none"> ⦿ The education initiatives include mandatory road safety curriculum in schools. The school curriculum can be improved to include both rural and urban context. ⦿ Mass media initiatives like video dissemination, ads in radio, newspaper coverage etc. ⦿ Dedicated national FM channel for FRSC to address road safety concerns and communicate about traffic scenario to public. ⦿ Social media presence for citizen engagement through Facebook and Twitter. The social media presence non-sponsored traction amongst the public, hinting at high recall value. For example, a post on FRSC on number plates for 8459 retweets, 136 engagements.

#	Elements	Rating	Remarks
3	Effectiveness of road safety campaign	Adequate	The road safety campaigns are perceived as effective with urban audience with perceived reduction in risky road user behavior. However, owing to operational and finance constraint, there is a lesser degree of coverage of rural areas in road safety education and it has been observed, that they are less likely to adhere to safe practices as road users. There is a need to explore independent evaluation of the education initiatives to justify the expenses incurred under various education initiatives.

Recommendations to improve road safety education in Nigeria

(i) Past and current road safety education initiatives in Nigeria

184. Road safety education initiatives in Nigeria mainly pertain to the following:

- ✈ Incorporating road safety into Government school curriculum
- ✈ Planned community outreach initiatives led by FRSC in places of social importance
- ✈ Mass media initiatives like video dissemination, ads in radio, newspaper coverage etc.
- ✈ Dedicated national FM channel for FRSC to address road safety concerns and communicate about traffic scenario to public
- ✈ Social media presence for citizen engagement through Facebook and Twitter
- ✈ Developing road safety content and materials centrally in Abuja and distributing to states to disseminate to public
- ✈ Training of drivers through the Driving School Standardization Program (DSSP). DSSP seeks to standardize and create uniformity in driver education and training provided by driver education schools. Minimum technical requirements are set by FRSC and regular inspections are carried out by state committee on DSSP. The DSSP portal is interfaced with Drivers' License application portal such that only a graduate trainee from DSSP portal can initiate application for new driver's license. As of 2018, 925 schools have been accredited and certified, 727,380 graduate trainees are licensed drivers. FRSC also conducts monthly training for driving school instructors,⁵³
- ✈ Ad-hoc education/awareness initiatives like educating traffic offenders while booking their violation, educating vehicle owners in vehicle inspection offices, motor park rally – which are street road safety campaigns in the form of a rally that starts or terminates at motor park and is aimed at educating drivers etc.
- ✈ Collaboration with (non-Government organizations) NGOs to maximize road safety initiatives outreach to general public; and
- ✈ Developing and disseminating awareness material like workbooks, flyers, brochures, cards etc.

(ii) Conformity of road safety education practices with good international practices⁵⁴

185. The Road Safety education initiatives of Nigeria conform with good international practices in the following manner:

- 1. FRSC's leadership in dissemination** – Very good. FRSC leads education initiatives at both Federal and State levels with Chief Public Education Officer directly reporting to Corps Marshal.
- 2. Utilization of mass media, social media** – Adequate. FRSC undertakes dissemination in all mass media like print media, web, television and radio, including FRSC's own radio channel. FRSC's social media presence in Facebook and Twitter is good and has non-sponsored traction amongst the public, hinting at high recall value. For example, a post on FRSC on number plates for 8459 retweets, 136 engagements. The Twitter handle has currently 282,219 followers.
- 3. Community involvement** – Adequate. FRSC makes use of volunteers known as "Special Marshals" to scale up education initiatives in community levels, leveraging Town Hall meetings, allowing FRSC awareness campaigns to penetrate to rural areas.

⁵³ Source: <https://frsc.gov.ng/wp-content/uploads/2018/09/Driver-training-and-testing.pdf>

⁵⁴ May be rated as – Very good, Adequate, Inadequate, Very Poor

4. **Regularity of dissemination** – Adequate.
5. **Private Sector/ Non-government engagement** – Inadequate. Currently, the NGO’s undertake Road Safety initiatives in a fragmented manner or at best, form a consortium, as observed in Lagos (**ANNEX II.G**). NGOs and the private sector typically advocate legislative/policy reforms, sponsor specific education activities and sponsor FRSC education materials.
6. **Content quality for urban audience** – Very Good. The content of dissemination is at par with popular campaigns of private sector and target all age groups effectively. The content is usually designed by private sector, which are then disseminated.
7. **Content quality for rural audience** – Very Poor. The rural education initiatives use the same material as urban initiatives without any rural context and rural focused communication strategy, resulting in lesser impact on rural audience.
8. **Uniformity in dissemination to cover all target audience** – Inadequate. While urban audiences are targeted for all age groups with frequent dissemination, rural populations are targeted inadequately.

186. Article 16 of the African Road Safety Charter refers to improvements for safer road users, and the current status in Nigeria is briefly noted against this.

Table 15: Status Against the Clause of Article 16 of the African Road Safety Charter

Clause	Status
State parties shall promote collaborative efforts at national, regional and continental levels, aimed at improving effectiveness of Road Safety initiatives, knowledge sharing, and monitoring & evaluation	Ongoing. FRSC takes the lead and encourages road safety knowledge sharing initiatives from other government departments, international agencies, NGOs, private sector, to supplement its own public education activities.
State Parties shall create the enabling environment for Private Sector, Civil Society, NGOs, academic and research institution’s participation in Road Safety activities.	Ongoing. FRSC Act directs FRSC to cooperate with agencies or groups involved in Road Safety, conducting Road Safety related researches, availing private sector financing for its activities etc.
State parties shall commemorate the Africa Road Safety Day, every third Sunday of November.	Ongoing
State Parties shall introduce a communication drive to educate and sensitize the population on the principal risk of road crashes.	Ongoing
State Parties shall introduce Road Safety in school curricula	Achieved

(iii) Steps to reduce the gap between the current road safety education practices in Nigeria and the international good practices.

187. The road safety campaigns pertaining to safe behavior, road safety regulations and enforcement are disseminated frequently through various media, with a daily presence through radio and social media. They include road safety curriculum in schools, regular mass media initiatives like video dissemination, ads in radio, newspaper coverage by both FRSC HQ and sector commands, dedicated national FM channel for FRSC to address road safety concerns and communicate about traffic scenario to public, newsletters, brochures, pamphlets and workbooks, social media presence for citizen engagement through Facebook and Twitter and on-site road safety awareness campaigns by FRSC.

These are in compliance to the outputs listed out in African Road Safety Charter, that seeks to improve Road Safety related education, research and dissemination. In addition to continuing their ongoing activities, and using education activities to reinforce general deterrence based regulatory and enforcement programs, the following initiatives may be pursued by FRSC:

1. Develop and implement a Rural Road Safety Education Strategy: Develop a communication strategy to promote road safety awareness for rural population in line with public health campaigns that may include customized rural content, leveraging local languages/dialects, rural context and situations. A good strategy shall build sustainability into the communication, recruit local champions of road safety for rural population, incorporate relevant cultural and social issues and finally, identify financial, technological and human resources to sustain the campaigns.

Bridging the knowledge gap between urban and rural population regarding road safety is critical since rural areas can experience almost twice the fatal crash incidence density of road crashes as compared to urban areas – even with lower human and vehicle population. Victim information from such remote and rural areas also tend to be under-reported, which needs to be addressed through road safety awareness campaigns.⁵⁵ A dedicated rural road safety education strategy can help optimize FRSC's resources by focusing on major behavior issues while increasing their outreach and maintaining the quality and effectiveness of campaigns. LMICs are characterized by substantial seasonal rural to urban migration for economic reasons, and thus such targeted education in their home regions can reduce their chances of engaging risky road behavior in the urban areas.

2. Consolidate road safety NGOs activities: Encourage the consolidation of NGOs working in road safety in Nigeria by establishing a common digital forum to develop a mutually agreeable workplan with FRSC, enable pooling of financial and operational resources and expertise of individual NGOs. This aggregation of efforts of NGOs may lead to better planning, utilization and monitoring their effectiveness.

3. Develop a Public Education Evaluation Framework to evaluate various public education activities: Given the numerous public education activities undertaken by FRSC, it would be useful to evaluate their effectiveness and intended benefits following the guidance of WHO for evaluating complex campaigns.⁵⁶ To enable the same, FRSC may consider developing a Public Education Evaluation Framework that can evaluate the inputs versus the outputs and desired outcomes of the target audience like urban adults/children, rural adults/ children, commercial drivers, private drivers etc., who are intended as the primary beneficiaries of FRSC's public education campaigns. This framework may be used to annually evaluate the benefits derived from various public education investments and provide key focus areas for the upcoming year education activities as well.

⁵⁵ Guide for Road Safety Opportunities and Challenges: Low and Middle income country profiles - GRSF

⁵⁶ <https://www.who.int/about/communications/evaluation/campaigns-evaluation>

ANNEX II.A - ABOUT RTCIS - ROAD TRAFFIC CRASH INFORMATION SYSTEM

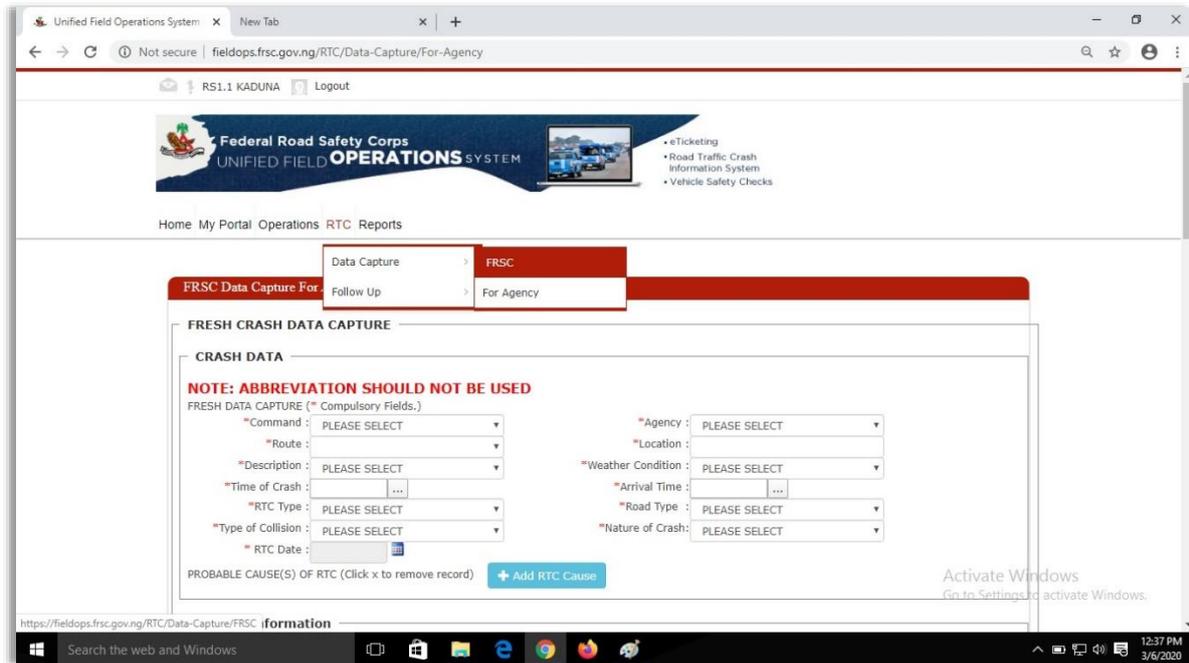


Figure 15: Screenshot of RTCIS Data Capture Page

Road Crash Data Management Governance Setup

The Federal Road Safety Corps' (FRSC) need to have a unified road Crash data in the country informed the creation of the "National Crash Report Information System (NACRIS)". According to their 2015 Annual Report, the NACRIS is a committee responsible for the collation and harmonization of road traffic crash data from all agencies generating data on crashes. The report said the FRSC and Ministry of Health serve as Secretariat of the NACRIS due to the fact that crashes are "a health burden". The other members of the committee were: Police, National Bureau of Statistics (NBS), National Emergency Management Agency, World Health Organization, and Nigeria Security and Civil Defense Corps. Also, in the committee were: Federal Fire Service, Military, Directorate of Road Traffic Service (DRTS) and the National Insurance Commission. A sub-committee with representatives from NBS, FRSC, Police and DRTS had also been established to harmonize road traffic crash data quarterly.

The earlier crash data system had various deficiencies mainly, outdated crash data form, inadequate reports and lack of adoption in other agencies outside FRSC.

About the upgraded system (as shared by the consultants upgrading the system, Vatebra):

The Road Traffic Information System (RTCIS) is a bundled solution designed to give the corps control over traffic crash information. The bundle includes the software solution alongside the infrastructural required necessary for a smooth running of the system. The software component is a set of three dependent systems. These are:

1. Data Capture Client (Field Operations based on Mobile application, e-Android device);
2. Central System; and
3. Synchronization System.

The data capture client is a module residing on the FieldOPs mobile app, for the enforcing authority or emergency responder in field. This allows concise and summary information about the road traffic crash be captured and synchronized with the central system for further update.

The Central system is a web application that allows users to update road traffic crash information. The details captured on the mobile app can be updated on the central system.

The main modules of the RTCIS web application include

1. Data Capture – (a) FRSC; (b) For agency
2. Follow up
3. Reports

The synchronization service is a secured web service that acts as a bridge between the FieldOps mobile and the central system. This service enables information sharing between the FieldOps and Central System. Data upload and download is made possible via the secured webservice.

Fresh Crash Data Capture

Here the essential Crash information is captured on the field using the FieldOps mobile application, while other details would be captured on the central system. The mobile app synchronizes the crash information with the central system where officers can proceed to capture other details. Each crash has a unique reference assigned for proper tracking.

Fields to capture on the mobile include: (a) Date & Time Report Time; (b) Ambulance Arrival Time; (c) State; (d) LGA; (e) Location; (f) Command; (g) Route; (h) Reporting Officer; (i) PIN; (j) Vehicle Reg NO; and (k) Images taken from the crash scene (assigned to Road Crash ID).

Device Details – eAndroid used for Crash Data Collection

Device name	–	Telpo TPS900 EFT POS
Accessories	–	main device, power adapter, battery

TPS900 Specification

Processor	Qualcomm 8909, Quad-core, 1.1G
OS	Android 5.1
Memory	8 GB Flash, 1 GB RAM, Optional 16GB Flash, 2 GB RAM
External Memory	TF Card, up to 32 GB
Display	5.5", TFT1280*720
Magnetic Card Reader	Track 1/2/3, bi-directional swipe, ISO7810, ISO 7811, ISO7812
Smart Card Reader (Optional)	ISO 7816
PSAM	Optional 2 slots
Contactless Card Reader (Optional)	ISO14443 Type A/B, Mifare, ISO18092 compliant
Camera	5 MP, autofocus
Fingerprint	Optional
GPS	Built-in
SIM	2
Communications	FDD-LTE/TDD-LTE/WCDMA/GPRS/WIFI/Bluetooth
Peripheral Ports	1 Micro USB
Power Supply	Input: 100-240 V AC; Output: 5 V DC, 2A
Battery	Li-ion, 7.4 V; 2200 mAh, Optional 4400 mAh, 2500 mAh

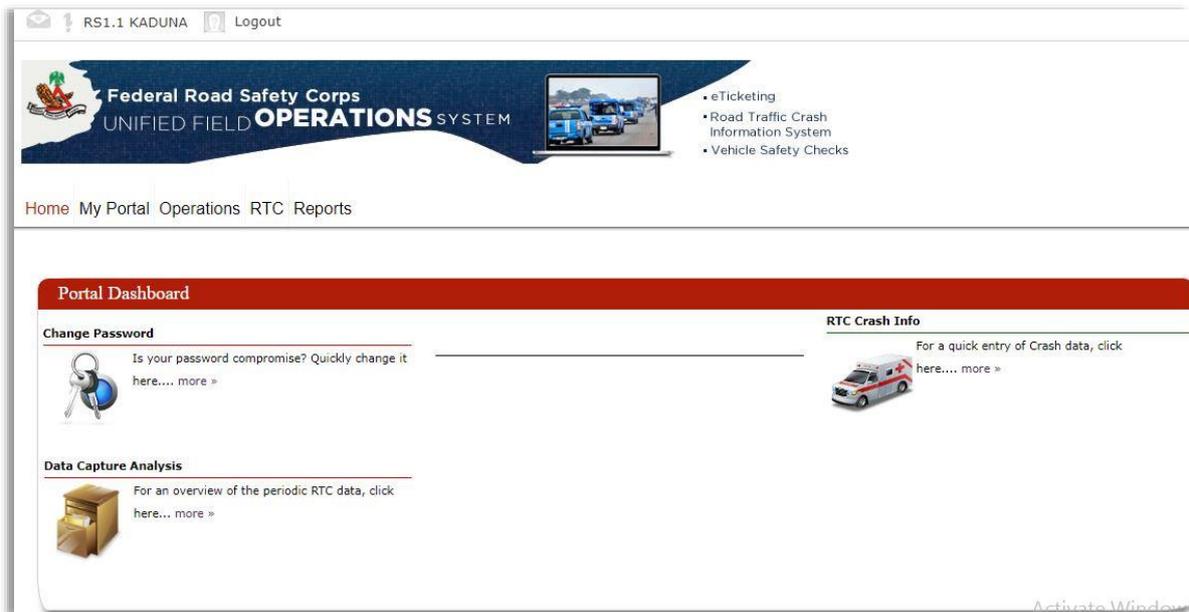


Figure 16: Screenshot of RTCIS Home Page

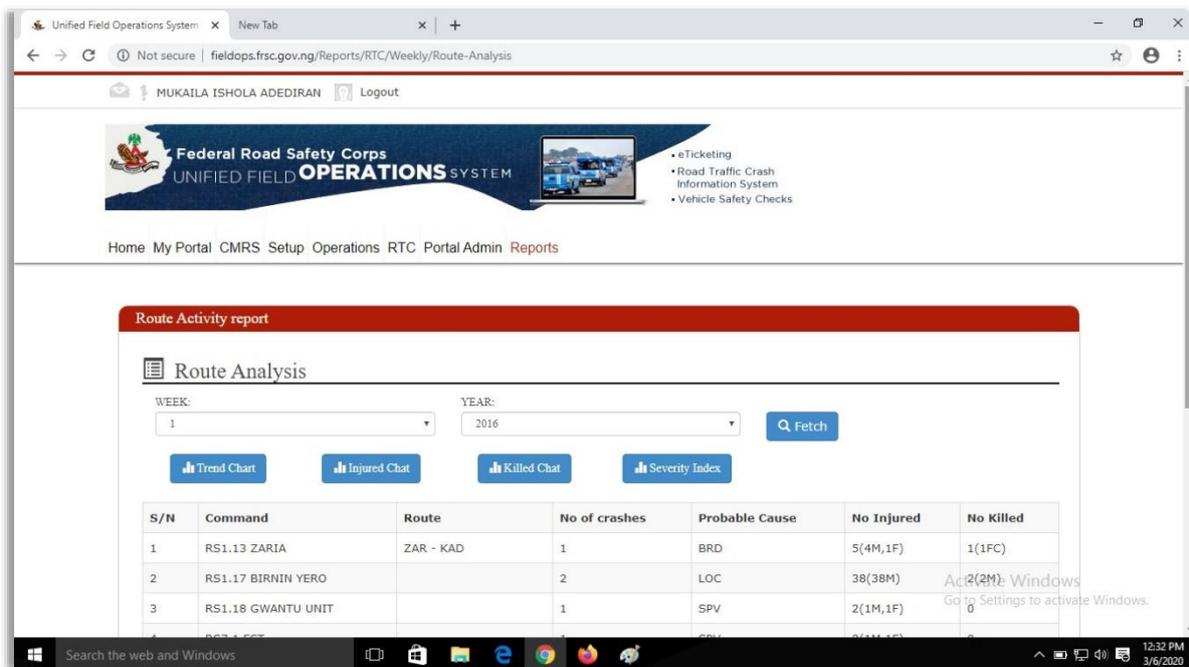


Figure 17: Screenshot of RTCIS Route Activity Report

ANNEX II.B - CRASH DATA REPORT

(A) **Field Offices:** Every Sector command office in Nigeria shares the following standard Crash data manually with the Headquarters on a monthly basis, for their further analysis.

1. Fatal cases	2. Serious cases	3. Minor cases	4. Total cases
5. Number injured Adult (Male/Female); Child (Male/Female); Total	6. Number killed: Adult (Male/Female); Child (Male/Female); Total	7. People involved: Adult (Male/Female); Child (Male/Female); Total	8. Vehicle category: Private, Commercial, Government, Diplomatic
9. Vehicle involved: (Bicycle, Motorcycle, Tricycle, Car, SUV, Van, Minibus, Luxury, Pickup, Truck, Tanker, Trailer, Others)			

(B) **FRSC Headquarters:** FRSC annually publishes the following instances of data, as taken from 2019 Annual Report- executive summary

1. Percentage Change of Crashes and Fatalities (2013-2019)	2. Road Traffic Crashes on monthly basis in 2019
3. State Analysis of RTC (road traffic crashes)	4. Percentage Change of RTCs in 2019 over 2018 on State Basis
5. 2019 RTC on Zonal Basis	6. Male/Female Killed in RTC in 2019
7. Male/Female Injured in RTC in 2019	8. Male/Female Killed in RTC on State Basis in 2019
9. Male/Female Injured in RTC on State Basis in 2019	10. Adult/Child Killed in RTC in 2019
11. Adult/Child Injured in RTC in 2019	12. Adult/Child Killed in RTC on State Basis in 2019
13. Adult/Child Injured in RTC on State Basis in 2019	14. Vehicles Involved in RTC in 2019
15. State Analysis of Vehicles Involved in RTC in 2019	16. Categories of Vehicle Involved in RTC in 2019
17. Causative Factors of RTC in 2019	18. Causative Factors of RTC in Year 2019 by State
19. Cases of Road Traffic by Route in 2019	20. Persons Killed in Road Traffic by Route in 2019
21. Persons Injured in Road Traffic by Route in 2019	22. Trend of RTC from 1960 to 2019 in Nigeria

(C) Key findings as published in FRSC's 2019 Annual Report

- ☆ A total of 11,073 crashes occurred, which claimed 5,483 lives and leaving 35,981 people injured in the year 2019. Analysis reveals that RTC in 2019 **increased by 13.7%** compared to 2018.
- ☆ A sharp increase in RTC in the year was observed compared to year 2018 in the following States: Cross River (84%) increase, Delta (63%), Gombe (61%), Kebbi (58%), Lagos (52%), Borno (54%), Taraba (51%), Sokoto (41%), Abia (38%), and Adamawa State with (31%).
- ☆ There was also a slight **increase of 5.8%** in the number of fatalities in 2019 compared to 2018. The highest increase was recorded in Taraba state (112%), Gombe State with 145%, Adamawa State (84%), Cross River (64%) and Zamfara State (60%). though some state recorded reduction in fatalities, state like Bayelsa 57% reduction, Borno recorded 44% reduction in fatality despite increase in number of RTC in 2019.
- ☆ A total of 35,981 people was injured in 2019, while those injured in 2018 stood at 32,220 revealing **11.7% increase**.
- ☆ Federal Capital Territory, Kaduna, Ogun, Lagos and Nasarawa State recorded the highest number of cases of RTC respectively.
- ☆ Kaduna, Ogun, Bauchi, Niger and Oyo State recorded the highest number of deaths.
- ☆ The number of people killed in the gender category reveals that 78% were males while females accounted for 22%. Also, in the Adult/Child category, analysis reveals that 95% of people killed were adult while 8% were children (below 18 years).
- ☆ On gender category, the number of males injured is 27,120 victims accounted for 75%, while females were 8,861 (25%). Also, analysis shows that 33,831 people injured were adult, while children stood at 2,150 (6%).
- ☆ Vehicle types reveal that 17,500 vehicles were involved in RTC in 2019 across the country, of the total vehicles, the highest were cars 5,479 (31.31%) followed by Motorcycles 3,488 (19.93%), while Minibuses came third at 3,389 (19.37%).
- ☆ Articulated vehicles also recorded relatively high figures; Trucks with 2,214 (12.65%), Trailers 722 (4.13%) and Tankers with 364 (2.08%).
- ☆ Vehicle categorization reveals that Commercial vehicles were mostly involved in RTC with 11,319 (64.68%), Private vehicles accounted for 5,972 (34.13%) while Government vehicles recorded 204 (1.17%) and Diplomatic vehicles accounted 5 (0.03%).
- ☆ Monthly analysis reveals that an average of 923 crashes occurred in year 2019, with the month of December having the highest number of 1260 crashes, next to the month of December in order of magnitude are; the months of April 981 cases, January and November recorded 950 each respectively.
- ☆ In terms of fatalities, an average of 457 deaths were recorded monthly with the month of December having the highest number of 636 deaths, followed by January 530 deaths, April 514 deaths while the month of August recorded 479 deaths. These high crashes were recorded during festive periods. i.e. Christmas/New year, Easter, Eid el Kabir.

- ★ Several causes were responsible for the high RTCs that occurred across the country, with Speed Violation as the highest factor with 5,342 (47.9%), followed by Wrongful Overtaking 966 (8.7%), next is Dangerous Driving 962 (8.6%) while Tire Burst had 772 (6.9%) among others.
- ★ Lagos-Ibadan road with 127.6km length recorded the highest number of RTC cases in year 2019 with 646 crashes.
- ★ Kaduna-Abuja recorded the highest number of deaths with a total of 228 fatalities, very close to that was Lagos-Ibadan with 224 deaths.

(D) Compliance with minimum crash data variables suggested by ARSO for crash data collection

In **Table 16**, a comparison has been presented of Nigeria’s adherence to crash related variables, based on the crash data form developed in 2010. These crash related variables have been produced for ARSO (African Road Safety Observatory) Steering Committee review, in a report titled “Evaluating Country level adherence to cash-related variables.” Nigeria’s crash form complies with 35/45 variables outlined in V 3.0 of the report (which is currently being finalized by ARSO).

Table 16: Nigeria’s Compliance to Crash Related Variables

#	Crash related variable	Compliance	Form field number
1	Pedestrian maneuver	Yes	61
2	Seating position	Yes	46
3	Safety equipment	Yes	45
4	Driver license type fitting for vehicle	Yes	36
5	Driving license issue date	No	
6	Drug use	Yes	39
7	Alcohol test	Yes	39
8	Alcohol use suspected	Yes	39
9	Type of road user	Yes	42
10	Injury severity	Yes	44
11	Driver nationality.	Yes	37
12	Sex	Yes	31
13	Age	Yes	32
14	Date of birth	No	
15	Person ID	Yes	34
16	Country of vehicle’s registration	No	
17	Hit & run	Yes	50
18	Impact type	Yes	48
19	Vehicle maneuver	No	
20	Vehicle year of manufacture	No	
21	Vehicle registration number	Yes	20
22	Vehicle models	Yes	21
23	Vehicle make	No	
24	Engine size	No	
25	Vehicle special function	No	
26	Vehicle type	Yes	19

#	Crash related variable	Compliance	Form field number
27	VIN	No	
28	Vehicle number	Yes	19
29	Crash severity	Yes	2
30	Road segment grade	Yes	60
31	Road curve	Yes	49
32	Road obstacles	No	
33	Surface condition	Yes	52, 54
34	Traffic control at junction	Yes	57
35	Junction	Yes	49
36	Speed limit	Yes	59
37	Type of roadway	Yes	51
38	Road functional class	Yes	51
39	Crash location	Yes	11
40	Crash type	Yes	48
41	Light conditions	Yes	53
42	Weather conditions	Yes	58
43	Crash time	Yes	4
44	Crash date	Yes	3
45	Crash ID	Yes	1

ANNEX II.C - CRASH INVESTIGATION REPORT

Command	Prepared By	Investigation Team	Pin
Rs1.27 Wudil Unit Command	RC A Yikwab	RC A Yikwab, RC RA Ahmad and ARC Isah Abdulazeez	C-03267
Date & Time Of Crash	Date & Time Of Investigation	Vehicles And Drivers	Location
08/01/2020 & 1130hrs	09-01-2020 & 1640hrs	VW Golf Green (BBR 690 AA) Unknown Driver, & Toyota Hiace Bus & Black (KTG 467 YG) Unknown Driver	Yan Kifi Market 53km Wudil On Gaya-Dutse Road

Abstract

A VOLKS WAGEN GOLF WAS HEADED IN THE DIRECTION OF SHUWARIN-DUTSE FROM GAYA AXIS WHILE THE TOYOTA HIACE BUS WAS HEADED IN THE OPPOSITE DIRECTION. AT A LOCATION AROUND YAN KIFI MARKET, THE VW GOLF TRIED TO OVERTAKE SOME VEHICLES BUT COULD NOT MANIPULATE HIS VEHICLE BACK IN LINE RESULTING IN COLLISION WITH AN ONCOMING TOYOTA HIACE BUS.

Causes

The primary cause of this crash appears to be speed by the Toyota Hiace Bus and the VW Golf. A major contributory factor of equal importance was the Wrongful Overtaking by the VW Golf leading to the collision with the Toyota Hiace Bus.

Result

A total of **thirty-three (33) persons (16MA, 6FA, 8MC, 3FC)** were involved in this crash. A total **nine persons (7MA, 1FA, 1MC) died** at the scene of the crash. **Two more persons (1MA, 1FA) later died** after they have been conveyed to a medical facility (General Hospital Gaya). **Eight Male adults (8MA), four female adults (4FA), seven Male Children (7MC) and three Female children (3FC) sustained varying degrees of injuries.** The VW Golf recorded severe and disabling damages while the Toyota Hiace Bus recorded severe damages to its right front side down to its middle section. The Drivers of the Toyota Hiace Bus and VW Golf were among the persons that survive the crash.

Crash Scene

The crash occurred at a location known as Yan Kifi, around 53KM to FRSC office in Wudil Township on the Gaya-Dutse stretch of the Wudil-Gaya-Dutse road. The road is straight with good asphalt surface and markings. The land adjoining the road to the north and south are dry and empty farmlands as the produce have been harvested. There are also few trees sparsely distributed across the land.

Environmental Factor

At 1130hrs on this fateful day, it was hazy as there was harmattan dust. The weather was also cold. There are only remains of plants that once stood on the farmlands like Millet, Maize and Guinea corn

adjoining the road on both sides punctuated by different variety of trees sparsely distributed on the farmlands. The road is asphalt and the surface are in good condition and visibility is at more than 500 meters.

Vehicle Damage Analysis

The Toyota Hiace Bus recorded creases and folds along its front right side down to the middle section as a result of the collision on the side. It had severe and disabling damages. The top on the right-hand side also caved in when it flipped. The Bus had a PDOF of 03 o'clock come into its front right side. Also, its windscreen and side glasses on both sides were shattered during the crash. The VW Golf had its right side from about the middle section down to its booth yanked off completely. The front windshield was also damaged and unstuck during the crash. The VW Golf had a PDOF of 01:30 o'clock come into its middle right side. The VW Golf suffered disabling damage. The front right side of the Car was slightly bent towards the left due to the force that came into it at impact.

At Scene Physical Evidence

Physical evidences derived from the crash scene include the probable final rest position of the Toyota Hiace Bus and the VW Golf, point of impact, tire marks made by the Toyota Hiace Bus and VW Golf.

Crash Scenario

The VW Golf was headed in the direction of Shuwarin-Dutse from Gaya axis while the Toyota Hiace Bus was headed in the opposite direction. At a location around Yan Kifi village the VW Golf tried to overtake three vehicles in a stretch. As the Car was going pass the last of the three vehicles, the Driver suddenly noticed an oncoming Toyota Hiace Bus on the opposite side of the lane which was also on high speed. The Driver of the VW Golf (Car) tried at that instance to avoid a head-on collision but could not manipulate his vehicle back into line before the Bus who had manipulated his vehicle to also avoid a head-on collision hit the rear right side of the VW Golf, continue its movement and then flipped.

Lamp Examination

All the Toyota Hiace Bus's front lamps were damaged at impact and so their functioning states could not be determined. The right rear lamp was also damaged and its functioning state indeterminate while left rear lamp was intact but its functioning state could not also be determined. The VW Golf had all front lamps damaged and unstuck in the crash while the rear lamps were unstuck and probably yanked off with the rear side of the Car and therefore, their functioning states were indeterminate.

Measurement

Unless otherwise stated, all measurements were taken and are here shown with respect to a reference point. The reference point in this case is a utility pole (PHCN pole) standing on the northern side of the Gaya-Dutse road and is 19.20m away from the reference line which is the northern edge of the roadway of the same road.

General Measurements

Distance of RP from RL	19.20m
Roadway width	07.48m
Road width	11.65m
Northern road shoulder width	02.81m
Southern road shoulder width	01.36m

Evidence from The Road

Front left tire of VW Golf	06.43S	56.40E
Rear left tire of VW Golf	08.14S	52.90E
Front left tire Toyota Hiace Bus	03.50S	23.70W
Rear left tire of Toyota Hiace Bus	03.96S	26.15W
Beginning of Mark made by the VW Golf right tire	39.30N	02.70W
End of Tire Mark made by the VW Golf	24.70N	00.09E
Point of Impact	18.57S	28.66E

Summary and Conclusion

Evidences from the scene of the crash together with the damages on the vehicles are consistent with the fact that the VW Golf Driver may have tried to overtake another vehicle(s), saw the oncoming Toyota Hiace Bus from the opposite direction and further manipulated his vehicle to avoid having a head-on collision with it but couldn't avoid the crash from happening as wrongful anticipation of events and poor judgment on his part couldn't make him see the impossibility of overtaking three vehicle in a stretch and falling back into the lane before the approaching Bus on the opposite side gets closer

Recommendation

Speed has remained the major culprit for more than ninety percent (90%) of the Crashes involving high fatalities in the Zone There is the need for the Corps come up with a well-tailored Public Enlightenment program targeted at Commercial Drivers especially and the general motoring public on the need to kill the speed in order to save lives and guarantee safety of everything on board vehicles traveling from one destination to the other.

Photos in respect of Wudil crash investigation of 09/01/2020



Figure 18: Rearview of VW Golf Showing Yanked off Part



Figure 19: Left Side View of VW Golf



Figure 20: Tire Marks Made by VW Golf



Figure 21: Impact Point



Figure 22: Approach View of Crash Scene Showing Tire Marks



Figure 23: Distant View of VW Golf Also Showing Tire Marks



Figure 24: Crash Scene

ANNEX II.D - LIST OF IT SYSTEMS/ PORTALS IN FRSC*

Table 17: List of IT Systems/ Portals in FRSC

#	Application	Description	URL
1	National Vehicle Identification Scheme (NVIS)	The National Vehicle Identification System is a web application connected to a national database of registered motor vehicles and provides the means of verifying each motor vehicle's unique identity.	https://nvis.frsc.gov.ng
2	Nigeria Driver's License (NDL) website	Nigerian Driver's License website is connected to a national database of licensed motor vehicle drivers and supports electronic delivery of some licensing services.	www.nigeriadriverslicence.org
3	Road Transport Standardization Scheme	Road Transport Safety Standardization Scheme is created by law in the National Road Traffic Regulations (NRTR) (2004) Section 115 made pursuant to Sections 5 and 10 (10) of the FRSC (Establishment) Act 2007, to establish safety units by all transport operators so as to bring professionalism into the industry, promote and develop rapid safe, efficient and convenient fleet transportation system in the country	https://rtsss.frsc.gov.ng
4	Speed limiter	To create a safer motoring environment which is core vision, Federal Road Safety Commission in line with the resolutions reached with Standard Organization of Nigeria (SON), Automotive Council of Nigeria, Transport Union Association and other stakeholders intends to implement and enforce the use of Speed Limiting devices in vehicles starting with commercial vehicles , nationwide.	https://speedlimiter.frsc.gov.ng
5	FRSC Dashboard	The application shows the overall activities of the Corps departments and Corps offices	www.intranet.frsc.gov.ng
6	Driving School Standardization Programme	The Driving School Standardization Programme (DSSP) is a web application designed to ensure uniform Standards for Driving Schools in Nigeria.	https://dssp.frsc.gov.ng
7	Information verification portal	The Information verification portal is online verification of Driver's License and Plate Number details.	https://ivp.frsc.gov.ng
8	Annual Performance evaluation Reports System	The Annual Performance Evaluation Reports System is a web application designed to automate the processes involved in the Annual performance Evaluation Report (APER).	https://apers.frsc.gov.ng
9	SharePoint	This application is used for collaboration and document management tool	www.sharepoint.frsc.gov.ng

*As reported by FRSC HQ

ANNEX II.E - INTERNATIONAL ROAD CRASH DATA MANAGEMENT SYSTEMS PRACTICE*

*Sourced from “FINAL REPORT ON MANAGEMENT REVIEW OF THE ROAD ACCIDENT DATA MANAGEMENT SYSTEM (RADMS)”, World Bank funded Second Tamil Nadu Road Sector Project (*TNRSP*), India.

(A) Crash Data Management in Queensland (Australia)

1. **Data Collection** - Data are collected by the Queensland Police Services (QPS)
2. **Data Receipt** - The majority of data is received via weekly electronic load directly into the Queensland Road Crash Database System (QRCDS). Notification and selected details of fatal crashes are received from QPS via daily emails
3. **Data Retrieval** - After loading the data, an audit report is generated which provides details of all crashes that were loaded into the system at that time. Minor validation checks are performed on the data at this time
4. **Data Validation** - The data are then subjected to a series of validation checks. These checks are in the form of both clerical and computerized checks and are designed to check for completeness, accuracy and consistency of information that has been supplied by the Queensland Police Service
5. **Data Storage** - Data are stored in the QRCDS, maintained by Queensland Transport (Department of Transport and Main Roads - DTMR).
6. **Data Backup** - Data is backed up by DTMR system nightly. Officers from the Office of the Economic and Statistical Research of Queensland Government assist DTMR with the monthly back up of the Geographic Information System.
7. **System Operation** - The system consists of a number of steps to receive and process 'raw' data to achieve 'clean' record data for dissemination.
8. **System Maintenance** - Hardware and software maintenance is carried out by the Information Technology Branch of DTMR

(B) New Zealand Crash Analysis System (CAS)

1. **Data Collected** - The New Zealand Transport Agency manages crash data using Police to collect the Data.
2. **Collection of Data** - CAS is an integrated computer system that provides tools to collect, map, query, and report on road crash and related data. It contains data from all traffic crashes reported by police. It provides a platform for the development and implementation of new road safety initiatives, making a huge contribution towards crash prevention.
3. **Data Use** - The information provided by CAS is used to determine and analyze trends, which help direct recommendations around road safety funding allocations, target road safety program and monitor their performance
4. **Data Information** - CAS is a tool that manages, analyses and maps traffic crash and related data. It is a computer system in which people: (a) Select crashes for analysis; (b) Map crashes; (c) View images of the crash report diagrams; (d) Locate and map crash clusters; (e) Report on crashes or crash clusters; (f) Monitor trends at crash sites; (g) Automate the production of collision diagrams; (e) Identify high-risk locations.
5. **Organization Involved** - Major users of crash data include the NZ Transport Agency, NZ Police, local authorities, engineering consultants, Accident Compensation Corporation and universities.

6. **Data covered** - Crash Report Includes 1. Location of crash, 2. When and how it happened, 3. Who was involved, 4. Type of vehicle drivers or passengers were travelling in at the time of the crash, 5. People involved who were not in vehicles, 6. Information about the crash environment; and 7. A crash diagram.
7. **System Validation** - When crash map co-ordinates are calculated by CAS, all the boundary-based information is automatically calculated, along with the crash location in terms of RAMM software and the State Highway route position. The latter two linkages allow CAS crash data to be used externally to CAS in other systems, and data from other systems to be linked to crash data.

(C) Himachal Pradesh RADMS

1. **Data Collected** - Himachal Pradesh has chosen iMAAP and iMAAP Mobile Solutions for the management of its road Crash data. Designed and developed by TRL specifically for developing countries' situation, the UK's Transport Research Laboratory, iMAAP.
2. **Collection of Data in Devices** - TRL's iMAAP and iMAAP Mobile Solutions, which are based on the latest multiple platform technologies will enable police officers in Himachal Pradesh to use tablet computers and mobile phones, to collect real-time road traffic Crash data at the scene of an incident.
3. **System Data** - The system will also provide road safety specialists with powerful analytical tools for identifying Crash trends and cluster sights, enabling more efficient and effective road safety interventions to be developed and deployed. Ultimately, the system will support the Himachal Pradesh authorities in reducing the number of people dying on their roads.
4. **Funding Process** - Supported by the World Bank, the Project was launched in July 2015 and it is still under development process. It is being piloted in Shimla and Mandi districts only at this stage.
5. **Modules** - The main modules in the application are Audit Trail, Cluster Analysis, Corridor Analysis, Cross Tab, Export, Edit, Delete, Manage Blackspots, Map, Query, Standard Reports, Stick Analysis, Summary Prints, User Defined Reports, View Blackspots etc.
6. **System users** - ADMC Cell (Police Department) is the major user of the system for collecting Crash data. The system is additionally used by Health Department and Public Works Department. While Transport Department has been given access, they do not use the system.⁵⁷

⁵⁷ Source: RADMS (Road Accident Data Management System) Operational Support and Training Completion Report, Himachal Pradesh, India

ANNEX II.F - ROAD SAFETY EDUCATION INITIATIVES UNDERTAKEN BY KANO FRSC SECTOR COMMAND

The following training activities are intended to be undertaken in 2020 by the Kano FRSC Sector Command.

- * Training and Retraining of Drivers.
- * Requesting for annual Driving School Operators Workshop.
- * Advocacy visit to Fleet Operators to ensure minimum safety standards are maintained
- * Carry out public enlightenment at motor parks
- * Enhance Corps enforcement, preparedness and strategies by organizing Mobile Court sittings on weekly basis
- * Ensure adequate enlightenment of members of the public
 - ⊕ Evidence of distribution of FRSC flyers
 - ⊕ Report at least one (1) driver enlightenment Campaign program monthly
 - ⊕ Report at least one (1) Motorized rally Quarterly.
 - ⊕ Soft copy of Road Traffic situation on daily basis
 - ⊕ Records of Weekly and monthly reports
- * Advocacy for Children and vulnerable Road users on road traffic safety
- * Conduct town hall meetings on road safety
- * Identify the crash prone community and recruit volunteers under the NCPCCI
- * Training of Drivers and staff of sister Security Agencies on Defensive Driving
- * Invite professionals for staff training on first aid and casualty handling
- * Organize Fleet Operators Safety Managers forum meetings.
- * Identify and classify all Road Safety Stakeholders in the Sector
- * Meeting with relevant Stakeholders (driving schools' operators)
- * Meeting with Ministry of Education and proprietors of private schools
- * Report on monthly monitoring of Youth Safety Education

ANNEX II.G - FIELD VISIT NOTE

LAGOS SITE VISIT

Background about Lagos:

Lagos, Nigeria's lagoon city, Africa's leading City and the world's sixth megacity is a burgeoning global urban agglomeration which attained megacity status in 1995 when its population soared to over 10 million people, per UN-Habitat. From its global city ranking of 31st in 1985, Lagos population exploded to 13.4 million in 2000 to become Africa's foremost urban center and hub of national, regional and global socio-economic and political activities. The megacity region, which has 17 of the State's 20 Local Government and 37 Local Council Development Areas and overlaps on four local government areas of the adjoining Ogun State of Nigeria. Lagos is geographically disjointed in the form of islands, located on wetland and overwhelmed by its urbanization growth rate of 6% – 8%.⁵⁸

(A) Institutional setup of data collection:

There are 3 major stakeholders involved in crash data collection in the field –

1. **FRSC** - There are 12 stations of FRSC sector command in Lagos with 3 command outposts. The unit stations report to the command outpost, which in turn reports to the State Headquarters. Every station has an area of jurisdiction and cover the Federal Highways and Expressways.
2. **Lagos State Traffic Management Authority (LASTMA)** – LASTMA manages traffic and related incidents within the city limits across the state. LASTMA collects conflict information based on incidences within their jurisdiction. In case of crashes, FRSC is alerted on a case basis.
3. **Lagos State Police Command** – The Lagos Police Command is the Lagos State branch of the Nigerian Police Force. It is responsible for law enforcement and crime prevention in the state. Police has greater coverage across the state and gets Crash incidences where there is likelihood of litigation issues.

In addition, secondary information regarding crashes is sourced from the following stakeholders:

1. **Vehicle Inspection Service, Motor Vehicle Administration Agency (MVAA)** – Vehicle related information are sourced from these departments, where the state agencies have their own Vehicle database, as generation of Vehicle information is a state subject. This information is subsequently shared with FRSC's national portal – NVIS (National Vehicle Identification System). MVAA's database is currently not real-time and efforts are underway to make them real-time.
2. **Health Authorities/ Lagos State Government Emergency Management Agency (LASEMA)** – LASEMA can be a first responder in case of crashes, and crash victim information is reconciled with the Health authorities/ LASEMA.

(B) Crash Data Collection process:

Whenever a crash occurs, an alert can be generated either through a call to the FRSC toll-free number 122 or through community volunteers called Special Marshals. When an alert is sent to the

⁵⁸ <https://lagosstate.gov.ng/about-lagos/>

FRSC unit station, the responder is sent to the scene with a hard copy of the crash data form. Crash scene summary information on crash type, vehicle, victim along with photographs is uploaded to WhatsApp group.

(C) Crash Data reconciliation process:

Consolidation and reconciliation of crash data from other sources like LASEMA, Police Department is carried out monthly. However, Police give a composite figure for incidents and don't utilize the crash data form that can aid in proper crash analysis. Medical Rescue Service (MRS) Officers go to hospitals to reconcile victim information with hospital trauma registers on a case-by-case basis.

(D) Crash Analysis process:

On a weekly basis, the crash information collected through the WhatsApp group is shared with the FRSC Headquarters. There are 15 crash investigation officers in Lagos who undertake crash analysis at site.

(E) Data collection gaps identified in discussion with FRSC and VIS

- ⦿ Lesser coverage of FRSC units leaving some local governments out of the purview of FRSC, can be a source of data underreporting. Currently a circular has been issued to ensure every local government has an FRSC unit.
- ⦿ Police has the highest coverage in enforcement; however, they still undertake manual data reporting, without adhering to Crash Data Form, that compromises the quality of crash investigation.
- ⦿ There is a need to improve information sharing between all concerned stakeholders.

(F) Road Safety Education initiatives:

Generally, FRSC undertakes lead in road safety education through a Public Enlightenment Cell and all field officers educate the offender regarding his/her offence, and the appropriate safe behavior to avoid the same. In addition, FRSC Special Marshals, civilian volunteers who have special ID and undertake road safety education and basic enforcement, increase the outreach of FRSC in community level.

(G) Road safety NGO involvement:

Discussion with the following NGOs were conducted in Lagos – Road Safety Beyond Borders, Arrive Alive Road Safety Initiative, Strap & Safe Child Foundation. The overall activities of the NGOs pertain to the following:

- ☆ Advocating legislative reforms to address child passenger safety, school zone enforcement.
- ☆ Road Safety coalition formed to consolidate efforts of all NGO's.
- ☆ Training school bus drivers
- ☆ Safe truck behavior
- ☆ General road safety education initiatives, production of education material, dissemination etc.

The NGO are generally self-funded with some activities partially sponsored by a consortium of private sector players in Nigeria.

KANO SITE VISIT

Background about Kano:

Kano State, the most populous State in Nigeria is located in Northern Nigeria, created on May 27, 1967 from part of the Northern Region. Kano state borders Katsina State to the north-west, Jigawa State to the north-east, Bauchi State to the south-east and Kaduna State to the south-west. The capital of Kano State is Kano, an ancient city that is over 1000 years old. Kano State has a population currently projected at over 20 Million (the highest in Nigeria). Kano State is also the largest industrial center in Northern Nigeria with major industries including textile, tanning, footwear, cosmetics, plastics, enamelware, pharmaceuticals, ceramics, furniture and other industries. Others include agricultural implements, soft drinks, food and beverages, dairy products, vegetable oil, animal feeds etc. Kano State is officially called Nigeria's Center of Commerce, with daily trade volumes of over 20 Billion NGN.⁵⁹

(A) Institutional setup of data collection:

There are 3 major stakeholders involved in crash data collection in the field –

1. **FRSC** - There are 8-unit stations of sector command in Kano state with 1 Headquarter, covering 44 Local Governments among them. As on February 2020, Kano state is staffed by 1035 members, where the Headquarters have 280 headcounts with average 94 staff among the 8-unit stations.
2. **Kano Road and Traffic Agency (KAROTA)** – KAROTA was created in 2016 to address and improve the road traffic situation in the state and operated within the city limits, covering state roads. KAROTA's increased enforcement within city limits has ensured a reduction in traffic offenders (maintaining an offender's database) and road crash fatalities. KAROTA also undertakes Road Safety awareness initiatives in media for sensitization. KAROTA also has health center and medical officers to address Road safety incidents. KAROTA intends expand its presence to all Local Governments but is currently constrained by funding resources.
3. **State Police** – State responsible for law enforcement and crime prevention in the state. Police has greater coverage across the state and gets Crash incidences where there is likelihood of litigation issues.

In addition, secondary information regarding crashes are sourced from the following stakeholders:

1. **Vehicle Inspection Service** – As seen in Lagos, vehicle related information is a State subject and the vehicle data is subsequently shared with FRSC's national portal – NVIS (National Vehicle Identification System).
2. **Health Authorities** – Crash victim information is collected from Health authorities through follow up on Crash on a case-by-case basis.

(B) Crash Data Collection process:

Whenever a Crash occurs, an alert can be generated either through a call to the FRSC toll-free number 122 or Kano's FARC Helpline number or through community volunteers called Special Marshals, or KAROTA staff. When an alert is sent to the FRSC unit station, the responder is sent to the crash scene. On visit to Chiromawa Unit command (RS1-25) it was observed that a 24 hour ZEBRA or a standby emergency vehicle is kept on the corridor under its jurisdiction with a 10-15 minutes crash response

⁵⁹ <https://www.kanostate.gov.ng/?q=about>

time. Thus, there are two sources of crash data reporting in Crash scene – a ZEBRA team (emergency ambulance points who only respond to road traffic crash) and a Patrol team (who undertake enforcement but put highest priority on road traffic crash, as and when they are called).

The crash data is recorded in e-tablet device or the newly introduced e-Android device, that is more robust and has batch synchronization to allow for offline data collection. The prescribed crash data format is populated, and crash photographs are taken to support the crash investigation.

(C) Crash data reconciliation process:

Consolidation and reconciliation of crash data from other sources like Police Department is carried out monthly. However, Police give a composite figure for incidents and don't utilize the crash data form that can aid in proper crash analysis. Medical Rescue Service (MRS) Officers go to hospitals to reconcile victim information with hospital trauma registers on a case-by-case basis.

(D) Crash Analysis process:

While the data is collected in an e-Android device, the data is currently shared with FRSC Headquarters in Abuja manually, due to software limitations. The crash data is collected by FRSC unit command while the crash investigation is undertaken by Crash Investigation Officers in Kano Sector Command office. The summary crash analysis is shared on a weekly and monthly basis with the Headquarters.

(E) Data collection gaps identified in discussion with FRSC:

- ⦿ Police with a greater coverage as compared to FRSC, is a source of crash data. However, their low capacity in collecting crash data in a prescribed format makes it unsuitable for proper crash analysis.
- ⦿ While a recent directive has been issued for FRSC to have presence in all local governments in the state, the same hasn't yet been implemented in terms of vehicle, equipment and buildings. Hence for data regarding State roads and rural roads, gaps in data collection persist.

(F) Road Safety Education initiatives:

Generally, FRSC takes the lead in road safety education through a Public Enlightenment Cell and all field officers educate the offenders regarding their offence and check the same through Mobile Courts. Each sector command and units have their own Enlightenment Officer to educate about road safety. Education officers also educate tourists on proper road traffic behavior. In addition, FRSC Special Marshals, civilian volunteers who have special ID and undertake road safety education and basic enforcement, increase the outreach of FRSC in community level. FRSC Special Marshals support FRSC's enlightenment efforts by organizing workshops, distributing Road Safety education material developed by Headquarters. FRSC also undertakes motor park rallies to raise road safety awareness amongst the general public.

On reviewing the road safety material in use, it also emerged that while road safety materials are centrally designed in Headquarters, the content doesn't differentiate between urban users and rural users. The content predominantly looks like it has been designed to target urban population, and

following good practices of communication, there is no separate content with relatable context for rural users.

(G) Road safety NGOs involvement:

Discussion with the following NGO was conducted in Kano – Travelers’ Safety and Protection Awareness Initiative. The overall activities of the NGOs pertain to the following:

- ☆ Advocating road safety to be included into private school curriculum, creating Road Safety Council in schools
- ☆ Classroom road safety coaching to children aged 15+ and their parents
- ☆ Developing Information, education and communication (IEC) material, like cartoon stories, plays.
- ☆ Developing a Parental Advisory Guide to promote child passenger safety and discourage risky driving behavior.

It is perceived that as the cumulative effect of these initiatives, there has been a marked improvement in driving pattern of the young users. However, the NGO mentioned that there is a need to scale up education initiatives at the university level.



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