



The Safe System Approach in Action

The SARSAI programme in
sub-Saharan Africa

Case study

This case study is part of a package of materials accompanying the final report of a joint International Transport Forum–World Bank Working Group, entitled *The Safe System Approach in Action*.

The case study was authored by Rita Cuypers (FIA Foundation), Mr Jeffrey Witte (Amend), Ayikai Poswaya (Amend) and Juliet Adu (Amend).

The ITF Secretariat would like to thank Soames Job for his edits to the case study. David Prater (ITF) prepared the case study for publication. Veronique Feypell, Asuka Ito and Stephen Perkins (ITF) coordinated the Working Group’s activities.

Any findings, interpretations and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the International Transport Forum, the World Bank or the OECD. Neither the OECD, the ITF, the World Bank nor the authors guarantee the accuracy of any data or other information contained in this publication and accept no responsibility whatsoever for any consequence of their use.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Cite this work as: ITF (2022), “The SARSAI programme in sub-Saharan Africa”, Case Study, ITF, Paris.

Introduction

This case study was prepared by a joint International Transport Forum–World Bank Working Group convened in 2020–2021. The case study forms part of a package of materials accompanying the Working Group’s final report, *The Safe System Approach in Action* (ITF, 2022a).

The Safe System approach to road safety takes as its starting point the ethical position that there is no acceptable level of road deaths and serious injuries. The report proposes a framework for designing, implementing and assessing projects with a Safe System focus. It draws on lessons from real-world case studies to offer guidance on implementing Safe System interventions.

The Working Group analysed 17 case studies in total, paying special attention to their Safe System content. While not every case study was a perfect example of the Safe System approach, all contained valuable lessons. In addition, several common themes emerged. A separate ITF Working Paper (2022b) sets out the thematic analysis.

This case study contains four parts. First, it provides context for the specific intervention and the road-safety problems it aimed to solve. Second, it outlines the interventions implemented to solve these problems and the results. The analysis is structured according to the five key components of the Safe System framework outlined in the main report (ITF, 2022a), namely:

1. **Establish robust institutional governance.** Permanent institutions are required to organise government intervention covering research, funding, legislation, regulation and licencing and to maintain a focus on delivering improved road safety as a matter of national priority.
2. **Share responsibility.** Those who design, build, manage and use roads and vehicles and provide post-crash care have a shared responsibility to prevent crashes resulting in serious injury or death.
3. **Strengthen all pillars.** When all road-safety pillars are stronger, their effects are multiplied; if one part of the system fails, road users are still protected.
4. **Prevent exposure to large forces.** The human body has a limited physical ability to tolerate crash forces before harm occurs; the system should prevent those limits from being exceeded.
5. **Support safe road-user behaviour.** While road-user errors can lead to serious harm, the Safe System focuses on roads and vehicles designed for safe interaction with road users. It supports humans not to make mistakes and tune their tasks as much as possible to their competencies.

Third, the case study identifies lessons from the project, again structured according to the five key components of the Safe System framework. Fourth, it offers conclusions.

Access the full set of case studies on the ITF website: <https://www.itf-oecd.org/safe-system-in-action>.

Context

The School Area Road Safety Assessments Improvements (SARSAI) programme aims to save lives at schools in sub-Saharan Africa where children are at high risk of road-traffic injuries, while working with governments to adopt changes to policy and practice that will result in safe roads for all road users delivered over the long term and at scale. As of January 2022, SARSAI has been implemented in over 50 high-risk school areas (approximately 80 schools) in nine countries across the region.

Road-safety themes: Pedestrian and child safety

Sub-Saharan Africa has the highest road-traffic injury rates in the world and accounts for 16% of road deaths despite only having 2% of the world's vehicles. Most children walk to school and child pedestrians are one of the highest risk groups for road traffic injuries, a leading cause of child death and injury.

Most African cities lack basic infrastructure for pedestrians in general and child pedestrians specifically. Many lack continuous footpaths, safe crossings, street lighting, and effective speed control in high pedestrian areas. There is also inadequate maintenance of pedestrian facilities, such as footpaths, when they do exist. Many footpaths are taken over by commerce or parking, forcing pedestrians to walk on the road. This lack of basic amenities is symptomatic of a wider dysfunction in urban and mobility planning.

Many sub-Saharan African countries also do not have a strong lead road-safety agency. Instead, responsibility for road safety is divided between government bodies. Communication and collaboration between ministries, departments, and agencies is poor, and funding for road safety is inadequate. For example, traffic police may record the numbers of deaths at the scene of a crash but will not follow up with hospitals to find out if other victims died in the hours and days that followed. There is also a lack of capacity within civil society and the media to hold governments to account.

The overall goal of SARSAI is to provide safe journeys to school for children. Some key aspects of the programme include separating children from traffic, providing safe crossing points, reducing vehicle speeds to 30 km/h or less where children walk to school, conducting road-safety education, and advocating for safe infrastructure provision in general. The SARSAI programme involves the following steps:

- A standardised assessment of high-risk school areas that looks at the existing behaviour of children, drivers and other road users;
- Analysis of existing road infrastructure and design of site-specific infrastructure to improve safety;
- Installation of new infrastructure, including speed humps, zebra crossings, bollards, sidewalks, signage, fencing and new school gates;
- Community and school road-safety education;
- Infrastructure “ribbon-cutting” events to use as platforms to advocate for safe school zone infrastructure and safe speeds to the media and government officials; and
- Monitoring, evaluation, and advocacy follow-through.

All these steps are carried out while working with the relevant government and community stakeholders.

Funding

The cost of a SARSAI infrastructure implementation ranges from USD 20 000–40 000, depending on the specific needs of the school. Over the past 10 years, SARSAI has benefited from funding from the FIA Foundation, the Puma Energy Foundation and FedEx. The SARSAI principles are now embedded in a number of World Bank road-infrastructure projects in sub-Saharan Africa with continued support from the FIA Foundation.

Actors and leadership

SARSAI is led by Amend, with support of the FIA Foundation, and involves a wide range of stakeholders, including local governments, schools, and local non-governmental organisations (NGOs).

Interventions and results

Establish robust institutional governance

SARSAI aims to change the philosophy of engineers, road agencies and politicians from designing roads for vehicles to designing roads for people. The SARSAI process involves indirect capacity building of local engineers and project managers where the programme is implemented.

A national 30km/h speed limit around school areas only exists in a few of the nine sub-Saharan countries in which SARSAI has been implemented, and even then such laws are rarely enforced or signposted. In Zambia, a national 30 km/h safe school zone law was passed in 2020, as a result of several SARSAI implementations and accompanying ribbon-cutting events, which caught the attention of the mayor of the capital city, Lusaka, and the Minister of Transport. In Namibia, there is no national law for 30km/h limits around schools; however, as a result of SARSAI projects, local policy in the capital, Windhoek, was changed in 2019 to introduce speed limits of 30 km/h around all schools in the city.

Share responsibility

For each SARSAI project, Amend maps out key road-safety stakeholders, including Amend staff, local NGO partners, school communities and relevant government agencies. Amend also establishes professional relationships with road-safety consultants, engineers, and contractors to understand road infrastructure design standards, as well as materials quality and testing procedures.

Each of the key stakeholders is involved throughout the programme and has well-defined roles and responsibilities. Community members, including shop owners and neighbours outside schools, are engaged from the start and consulted for detailed input at the different stages of the programme. On some projects, they contribute to creating safe infrastructure as well by helping clear litter and overgrowth from pedestrian footpaths.

It is also essential to secure the co-operation of local government authorities. They can also effectively appeal to, and communicate with, higher levels of government that are sometimes harder to reach. The local authorities are the ones that can ban parked vehicles and relocate petty business to allow safe pedestrian movement. It is also important to select high-risk schools with head teachers who show a genuine interest and willingness to co-operate.

Launch events in each country are an important component and they form focal points for subsequent government advocacy for safe school areas. Government representation is a key purpose of the events: when government officials see for themselves that safe infrastructure around schools is popular, affordable and possible, it can help set the stage for future changes to government policy and practices.

In Mozambique, Amend established a Private-Sector Road Safety Forum and used this as a platform for raising the profile of the importance of 30 km/h speed limits around schools.

In Ghana, Amend, with Bloomberg Philanthropies, contributed to the development of a Pedestrian Road Safety Action Plan for Accra in 2017. Subsequent to this, the Accra Metropolitan Assembly agreed to install 30 km/h signage around schools and hospitals in the city. Amend also assisted in installing speed limit signs at two clusters of schools (10 schools in total) in partnership with the Ghanaian Department of Urban Roads, which was undertaking other safety infrastructure works around these schools in 2019.

Strengthen all parts

Collecting data is a crucial element of the SARSAI assessment process and crash data are often difficult to obtain. In partnership with the United States Centers for Disease Control and Prevention, Amend conducted a multi-year population-based control study impact evaluation of SARSAI in Tanzania from 2015 to 2016. A total of 18 schools were identified (9 intervention and 9 control schools) using the SARSAI method. Surveys were carried out in households with 12 957 school-aged children at baseline and 13 555 children at follow-up. Collected data included basic demographic information on all school-aged household members and whether they had sustained a road-traffic injury in the previous 12 months. After the implementation of the infrastructure enhancements and a site-specific educational programme one year later, data were collected in the same manner. The evaluation found that the SARSAI programme results in a statistically significant reduction of over 26% in the number of children injured in road traffic.

Amend has also tested various road-construction materials for the SARSAI programme to attempt to document durable, affordable and safe road-construction materials suitable for the African context. Further, Amend has published a toolkit of the practical infrastructural solutions used in SARSAI which is targeted at government and contracting engineers.

Prevent exposure to large forces

Up to 90% of the streets and roads in sub-Saharan African countries are shared by fast-moving vehicles and pedestrians with no provision of basic footpaths. Using speed policy to minimise the potential kinetic energy released in a road-traffic collision is essential to providing a forgiving road environment. SARSAI uses cost-effective infrastructure solutions to protect pedestrians and vulnerable road users on all forms of road network including in local neighbourhoods and on routes to school.

In Tanzania, for example, at nine intervention schools, a SARSAI programme was fully implemented at a cost of approximately USD 18 000 per school. Infrastructural changes included: 6 asphalt speed humps to

reduce vehicle speeds, 12 asphalt rumble strips, 44 road signs to inform drivers that they are entering Safe School Zones, 10 zebra crossings, 11 chequerboard markings on speed humps, 37 bollards to prevent encroachment by vehicles onto pedestrian areas, 10 natural-earth speed humps and 11 crossing slabs over open drains. For every 286 children whose schools are part of the SARSAI programme, one road traffic injury is prevented per year.

Another example is seen in Zambia where Amend, together with its local NGO partner and local engineer, worked in collaboration with the office of the mayor of Lusaka to implement road-infrastructure improvements around Justin Kabwe Primary School. The road in front of the school was quite busy with vehicular traffic. Following the technical assessments of the school area and interviews with children, teachers and the wider community near the school, proposals were designed and put forward to improve the road-safety situation. These improvements comprised footpaths around the school to facilitate pedestrian movement, a raised zebra crossing to facilitate pedestrians' ability to cross the road safely, rumble strips to alert drivers to the presence of the crossing point ahead, a dedicated pedestrian gate, signage and bollards. Before implementation of the road safety improvements, the 85th percentile speed of vehicles was above 30km/h but this dropped by 56% to 14km/h after implementation, demonstrating a much safer environment for pedestrians.

Support safe road-user behaviour

The baseline assessment of high-risk school areas consists of analysing the surrounding road infrastructure, but also the existing behaviour of children, drivers and other road users. These road-safety assessments have identified that many children are not aware of recommended safe practices while walking to school. Children have been observed playing on the road, crossing at dangerous locations, and walking with their backs to the traffic.

Physical infrastructure designed to improve the safety of pupils is constructed to create a more forgiving environment and this is accompanied by tailored road-safety education provided at the schools. Primary school lessons teach the basics of what it means to be safe when using the road. Via entertaining instruction and songs, classroom teaching and practical lessons, messages include: how to be seen by drivers, how to choose a safe place to cross the road (with specific examples from the immediate school zone), how to cross the road safely, how to walk safely along the road, and how to find a safe place to play.

SARSAI road-safety assessments have identified speeding as a main issue around schools. The risk factor of speeding vehicles is targeted through speed humps, rumble strips and road signs. Post-implementation speed measurements outside SARSAI schools show that the programme consistently results in vehicle speed reductions, usually to less than 30km/h – the globally accepted recommended limit for areas with high pedestrian activity.

Lessons

The most important aspect of a SARSAI implementation – from the point of view of delivering lasting, broad systemic change – is ongoing governmental advocacy. Clearly, a non-profit organisation cannot – and

should not – be responsible for the design and provision of safe infrastructure in a country. That is the role, of course, of governments. But creating lasting change to well-established systems is generally not a simple or quick process. While no financing institution or government wants the roads they finance and build to cause injuries and deaths, changing the practices that lead to such roads can be challenging.

Footpaths and cycle paths lack the political reputation-building potential of new highways or bridges. But the perception of footpaths as a side-line activity needs to be changed, so that they are recognised and celebrated as a cornerstone of an urban liveability/public health strategic approach. For the international donor community, their national or city counterparts, and the charity-giving public, footpaths should be as compelling a solution as mosquito nets for malaria.

As evidenced by SARSAI, the ways to prevent road-traffic injury are well-established and readily available. But if changing policies and practices were easy – as easy as simply demonstrating to financing institutions and governments how roads can be designed and built safely – the change would have already happened. Therefore, taking the lifesaving principles demonstrated in SARSAI to scale is going to be the ongoing work of many years and will necessarily involve the goodwill, commitment and effort of a huge number of concerned stakeholders from hundreds of governments and other institutions operating across Africa.

Advocacy challenges are multi-faceted and profound and go to the heart of the question of why vulnerable road users are dying on sub-Saharan Africa's roads. Approaches need to be both based on the promotion of evidence-based solutions as well as a display of high-level cultural and political sensitivity.

Conclusions

Long-term advocacy and capacity building through demonstration projects such the SARSAI programme are a vital step in broader road-safety improvements. In this respect several aspects of this programme highlight good practice for scaling up road-safety works, including sound evaluations to demonstrate success, visible infrastructure changes, ribbon-cutting (opening) ceremonies to give political visibility, and successfully embedding lessons into World Bank projects. Further expansion to broader local and national government policy, and expansion into policy for other multilateral development banks, will further enhance these successes.

Strong features of this programme include stakeholder mapping and collaboration, and the success of an effective NGO (Amend) in bringing the projects to completion. This is an important model of successful implementation of low-cost engineering programmes which is also working through an NGO, the Eastern Alliance for Safe and Sustainable Transport (EASST), in Central Asia.

Finally, in a Safe System, it is vital that safety interventions do not rely on just improving the behaviours of road users (especially children) but rather address the many elements of the system – as this project does – by adding footpaths and safe crossing infrastructure, and by forcing speeds down.

References

ITF (2022a), *The Safe System Approach in Action*, Research Report, OECD Publishing, Paris, <https://www.itf-oecd.org/safe-system-in-action>.

ITF (2022b), “Safe System Implementation in Practice”, ITF Working Paper, available on request.

The Safe System Approach in Action

The SARSAI programme in sub-Saharan Africa

This case study tells the story of the School Area Road Safety Assessments Improvements (SARSAI) programme, which aims to save lives on school journeys in sub-Saharan Africa, where children are at high risk of road-traffic injuries.

The case study is part of a package of materials accompanying the final report of a joint International Transport Forum–World Bank Working Group, entitled *The Safe System Approach in Action*.

The Safe System approach to road safety takes as its starting point the ethical position that there is no acceptable level of road deaths and serious injuries. The report proposes a framework for designing, implementing and assessing projects with a Safe System focus.

The report also draws on lessons from real-world case studies to offer guidance on implementing Safe System interventions. While not every case study was a perfect example of the Safe System approach, all contain valuable lessons for policy makers and road-safety actors.