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AUTOSAFETY-UG

Africa's automobile maintenance structure

A policy brief highlighting the safety and emission risks of automobile maintenance in Kampala

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1. Introduction

Africa's rapid urbanisation and the growth in vehicle numbers have contributed not only to a rise in the number of road crashes but to increased emissions which have significantly affected environmental degradation and adversely impacted on public health.

The structure of automobile maintenance across the African continent is a critical factor that exacerbates these issues. This policy brief explores existing automobile maintenance practices in Uganda and their impact on road safety and emissions, and proposes actionable policy reforms to address these challenges, which are generally applicable to several other African countries.

This document seeks to draw the attention of key stakeholders to Uganda's Road Transport Development and urban mobility strategies. It highlights critical gaps in the current structure as provided in the National Road Safety Action Plan 2021/2022 - 2025/2026 by the Ministry of Works and Transport and the National Transport and Logistics Policy 2021, among others.

The report summarises key findings from the Autosafety Uganda, Rubaga Chapter research project, which was funded by UKAID through the UK Foreign, Commonwealth & Development Office under the High Volume Transport Applied Research Programme, managed by DT Global UK.

1.1 Policy context

Road safety and vehicular emissions in Africa are complex and involve multiple factors related to road users, vehicles, infrastructure and the environment. Urban areas face more challenges due to transport operations' high volumes and nature, such as roadside human settlements, high traffic volumes, an unmanaged mix of motorised and non-motorised users, and mixed-speed road environments. The informal transport sector in Uganda dominates road transport operations amidst very minimal regulatory measures.

Previous research and best practice interventions were instrumental in developing the National Road Safety Action Plan and the National Transport and Logistics Policy. However, a strategic policy on structured automobile maintenance is still lacking. This would significantly enhance the plans, which clearly define an inclusive set of road safety actions by all stakeholders in the country. The current strategy and policy were developed within the country's current policy and legal framework. This also includes regional and international commitments and frameworks on road safety and emissions reduction.

The informal and under-regulated structure of Uganda's automobile maintenance industry is a key contributor to the high rates of road crashes and increased transport-related emissions in urban areas. The following challenges highlight the critical gaps:

Prevalence of informal garages.

Most vehicle repairs are conducted in informal settings on the outskirts of Kampala city, often by poorly trained, mechanics lacking formal education and adequate knowledge of modern vehicle technologies. These mechanics often work without the proper tools and skills, contributing to substandard repair services and exacerbating vehicle malfunctions.

Use of substandard spare parts.

The widespread use of counterfeit or low-quality spare parts significantly compromises vehicle safety, leading to mechanical failures and road accidents. Counterfeited automobile parts, accessories and consumables are entering the local market; potentially increasing the risk for high emissions and road crashes.

The Uganda National Bureau of Standards (UNBS) struggles to control counterfeit car parts due to resource limitations, widespread informal markets, weak enforcement, and insufficient consumer awareness, all of which impact road safety and emissions.

Safety and emissions control systems fitted by the manufacturer are often bypassed or removed. This is particularly true for catalytic converters that are removed on imported second hand vehicles or are stolen at a very high rate. Challenges in enforcing standards, laws and regulations contribute to higher levels of air pollution.

The Lack of a regulatory oversight.

The inconsistent enforcement of vehicle inspection standards and maintenance regulations allows unsafe and high-emission vehicles to remain on the roads. Many African countries lack effective policies to monitor or enforce proper vehicular emissions standards. In Uganda, mandatory roadworthiness inspection for vehicles is non-existent.

Very limited public awareness.

Motorists are often unaware of the importance of regular and proper vehicle maintenance, particularly in relation to emissions control and road safety. This was clearly articulated by mechanics during focus group discussions in Rubaga, as part of this project. Financial constraints, the unfair taxation and a lack of enforced regulations often lead many motorists to opt for cheaper, short-term fixes rather than comprehensive maintenance that could lead to safer and less polluting vehicles.

1.2 The overall policy landscape

Uganda's current transport policy landscape focuses on improving infrastructure, enhancing connectivity, and fostering economic development. Some critical aspects of Uganda's transport policy include:

- investing in road infrastructure to improve connectivity within the country and through transport corridors to neighbouring regions,
- improving public transportation services, particularly in urban areas like Kampala, through initiatives such as the Bus Rapid Transit (BRT) system,
- making efforts to improve road safety through regulations, and awareness campaigns given the high incidence of road crashes in the country.

There is growing awareness of the need for sustainable transport practices, including promoting electric mobility, using cleaner fuels and alternative modes of transportation like cycling and walking. However, most of these plans are nascent or initiated and failed owing to several factors ranging from resource limitations to lack of governance, and political influence.

Uganda’s Traffic and Road Safety (Amendment) Bill, 2023, provides for registration of mechanics and auto repair garages countrywide, but does not establish a precise regulation and monitoring strategy.

In Uganda’s extensively used car market, poorly maintained vehicles, together with poorly maintained roads, contribute significantly to road traffic accidents. For example, data from Uganda Traffic Police report of 2023 shows that of the 17,443 reported road accidents in 2021, 1,059 cases were due to faults with the vehicle (burst tyres, mechanical deficiency, brake failure, etc.). 2022 saw a 16.9% increase in road crashes

Besides frequent road crashes with a high rate of fatalities or serious injuries, there is heavy environmental contamination, consisting mainly of air pollution or diesel and petrol leakage. Ugandans spend a significant amount of time and financial resources dealing with vehicle issues, with problems on both the demand and supply sides. On the demand side, there is no structured system around vehicle maintenance.

However, in countries where buying new cars is the norm, receiving after-sales services, including regular car maintenance, is typical, which can ease drivers into a habit. Additionally, insurers have caveats in their contracts that can deny claims if a servicing schedule has not been followed, further incentivising drivers to ensure they comply. In Uganda, however, the primary incentive is to avoid a breakdown. The difficulty and cost of finding and engaging an affordable and reliable car technician often lead drivers to defer maintenance until they need to. As a result, drivers tend not to consider preventative maintenance but rather address mechanical failures when they occur.

This draws focus to the supply deficiencies. There are two primary options when it comes to finding a car technician. Qualified, reliable technicians are generally employed by (or connected to) expensive car dealerships that often partner with Original Equipment Manufacturers (OEMs). Their quality is guaranteed, but their costs are prohibitive. They are also only present in Kampala city, making them inaccessible to most drivers.

At the other end of the spectrum, you have roadside mechanics that can be found on most corners and in makeshift garages among settlements in Kampala suburbs and major towns. They are much more

affordable, but their competence is more questionable. It is not unusual for a car to go in with one issue and return with additional ones.

Many vehicle owners cannot afford reliable technicians at the few well-organised auto-repair shops, so instead they take a risk with unvetted, cheaper mechanics.

Major businesses cannot take the same risks, so they often rely on costlier, reliable technicians, meaning they spend considerable amounts of money on fleet maintenance.

Uganda's transport system would benefit from a more robust system of policy and regulations that addresses the issue of vehicle maintenance. One that allows motorists to quickly access competent, skilled, organised, and affordable technicians, allowing them to trust that their vehicles are in the hands of experts who care about safety and the environment.

1.3 How the HVT programme fits

The Autosafety – Uganda, Rubaga Chapter project is one of a number of research projects focussing on improving transport in low- and middle-income countries in Africa, funded by the High Volume Transport Applied Research Programme under the Transport-Technology Research and Innovation for International Development (T-TRIID) theme.

1.4 Key policy actors

These include several government agencies such as the Ministry of Works and Transport, National Bureau of Standards, National Environment Management Authority, Kampala Capital City Authority, research and academic institutions, sustainable mobility activists, non-governmental organisations, civil society organisations and communities, and individuals.

2. Informing policy

This involves providing decision-makers and other stakeholders in Uganda's transport system with the relevant data, analysis, and recommendations to support policy development, implementation, and evaluation. It includes research, data collection, analysis, stakeholder engagement, policy development, and communication and advocacy.

2.1 What we did

The Autosafety Uganda, Rubaga chapter project had three major project deliverables, through which relevant information was acquired to support the policy brief. These were:

Emissions data collection and analysis

Tailpipe emissions data was measured and collected from 50 vehicles in Rubaga Division to estimate the level of emissions from the average vehicle in Uganda. This activity considered several parameters currently not required under Uganda's current vehicle importation and operational regulations.

The objectives of collecting emissions data included assessing the environmental impact of motorised road transport and related activities, such as vehicle maintenance, to identify areas for improvement or mitigation; evaluating the effectiveness of proper and timely vehicle maintenance towards keeping tailpipe emissions contained; assessing the effectiveness of any available local emissions standards and regulations; and identifying potential environmental risks associated with vehicular emissions in emerging economies.

Local mechanics' engagement through capacity building

Four training workshops were organised and conducted successfully with local automobile technicians targeting those working in makeshift garage settings within the Rubaga Division. For example, technicians who tend to motorcycles, passenger vehicles, and heavy-duty trucks, as well as some people dealing in vehicle-related fabrications and spare parts. The focus was on the informal sector, and participants were mainly in the 18 – 35 age group. 503 mechanics (fabricators, parts dealers and mechanics for automobiles) took part in the training, which followed a thorough needs assessment conducted through

focus group discussions that were held in the Rubaga division. The aim of the focus group discussions was to identify what participants knew about inbuilt safety and emission control systems in the automobiles they maintain, air quality, and transport-induced air pollution and how some of their practices potentially contribute to increased road crashes and air pollution in Kampala. There was a need to better understand their concerns and challenges as well.

Based on the findings of the focus group discussions, a tailored training workshop manual and toolkit was developed to foster interactive practical sessions that equip local automotive technicians with knowledge and skills for best practices in automobile maintenance. The overall goal was to support local mechanics in becoming change agents for improving road safety and air quality in Kampala and beyond.

2.2 What we found

- Data collection and analysis revealed that most vehicles operating in Uganda for at least five years, lack functional emission controls. Service quality, which is often carried out at makeshift garages by mechanics with limited capacity, further escalates tailpipe emission levels. In addition, the catalytic converter theft rate is much higher in Kampala than in other regions of the country.
- It became evident that most vehicle and motorcycle mechanics within the Rubaga Division (and Kampala at large) lack some of the knowledge and skills to carry out sustainable vehicle maintenance and are unaware of the availability of air quality information in the country. It is important to note that throughout the needs assessment, most of the mechanics engaged lacked knowledge of the various safety and emission control measures in the vehicles they tend to use daily. This has led to massive compromises of the inbuilt emission and safety control systems by mechanics, which has had the impact of increasing transport-related air pollution.

  Collected data showed that over 85% of the mechanics working in informal, makeshift settings had never received formal training. Many did not exceed primary level education and learnt their trade “on the job”. However, several of them are creative and receptive enough to acquire and adopt new skills for best practices around automobile maintenance that could help preserve and enhance the integrity of inbuilt vehicular emission control systems. There is a willingness to learn and appetite for an opportunity to enhance their skills.

2.3 The issue with used vehicle imports in Africa

It is important to note that there is a need to amend the current regulation on importing light-duty vehicles where the age limit is capped at 15 years. Some vehicles within the acceptable range are imported, but still have numerous issues affecting safety and local emissions. In addition to requiring adequate pre-shipment inspection data, a proper maintenance scheme needs to be set up to ensure that low-emission vehicles continue to be low emitters. It is likely that many cease to be so within a few years of operating in Uganda due to poor maintenance and infrastructure.

3. Policy recommendations

This policy brief recommends the following measures to substantially improve the vehicular maintenance structure, which will, in turn, promote road safety and lower vehicular emissions in Uganda. The recommendations could be of use to several government departments and agencies including the Ministry of Works and Transport, Ministry of Energy, Uganda National Bureau of Standards, among others. Our current engagement with these government ministries includes actively contributing to the development of automotive repair and maintenance regulations and policies.

We also share insights from our data collection to support potential regulatory reforms. While these agencies primarily offer us technical support, our partnership with a key academic institution like Makerere University provides valuable in-kind contributions that help to take forward project activities. We will endeavour to engage with these organisations to disseminate the research outputs and findings of this project.

Registration or licensing of vehicle repair shops/garages within the Kampala Metropolitan Area.

This can offer several advantages, such as allowing authorities to regulate the industry more effectively and ensuring that repair shops meet specific standards for quality, safety, and environmental compliance.

This can foster inclusive urban planning and protect consumers, for instance, in Kampala, it is common to find a motor repair garage next to a preschool or children's clinic without any barriers to prevent children from being exposed to toxicity from daily garage operations, including open-space spray painting and excessive engine idling.

In addition to registering garages and mechanics, accreditation of mechanics should be considered.

Accreditation ensures that mechanics have undergone specific training and meet certain competency standards. This can result in higher-quality vehicle repairs and maintenance services, reducing the likelihood of recurring issues or substandard workmanship that often compromises safety and emission control systems. Accredited mechanics may have access to specialised training, tools, and equipment that enable them to diagnose and repair complex automotive issues more effectively. This can result in faster turnaround times and more accurate diagnoses for vehicle problems.

Regulating the quality of vehicle spare parts and consumables on the local market.

This is crucial for ensuring road safety, improving fuel economy, lowering emissions, and maintaining vehicle reliability and performance. Standards for manufacturing, distributing, and selling vehicle spare parts can be established and enforced to ensure compliance with these standards. They can cover aspects such as material quality, performance specifications, durability, and safety requirements. Certification processes can be put in place to verify compliance with these standards.

Massive awareness campaigns are needed to guide consumers and technicians in identifying genuine parts, understanding product labels and specifications, and recognising the risks associated with counterfeit or substandard parts.

Prioritise resuming and enforcing strict mandatory vehicle inspections.

This is essential for promoting road safety, reducing crashes, and ensuring that vehicles meet minimum safety and emissions standards. The policy can incorporate the development of comprehensive inspection procedures covering various aspects of vehicle safety, including brakes, tyres, lights, steering, suspension, exhaust emissions, and vehicle emissions control systems. Inspections should also verify compliance with vehicle registration and documentation requirements. In this way, motorists can be encouraged to keep their vehicles in good condition.

The capacity of traffic police can be boosted to conduct random spot checks and roadside inspections to ensure compliance with vehicle inspection requirements. This helps deter non-compliance and ensures that vehicles remain roadworthy between scheduled inspections.

Public awareness about the importance of vehicle inspections for road safety and environmental protection is widely needed.

Establishing incentives that promote innovation and the adoption of cleaner mobility alternatives.

3.1 Key policy themes

The policy themes below are aimed at improving vehicle safety, reducing emissions, and creating a more sustainable transport system across Africa.

The formalisation of makeshift garages.

The government of Uganda needs to establish certification and licensing systems for informal mechanics to raise industry standards as well as providing training programs to improve technical skills, especially in modern vehicle technologies.

The enforcement of maintenance and mandatory inspections.

There is urgent need to re-establish and enforce the mandatory vehicle inspection programme in the country to ensure compliance with safety and emissions standards.

Promotion of genuine spare parts.

The government of Uganda should regulate the sale of counterfeit parts and promote the use of quality spare parts, particularly those related to safety and emissions. It could provide incentives like fair taxation to make genuine parts more affordable.

Increased public awareness and education.

More public campaigns are required to educate vehicle owners and motorists on the importance of proper vehicle maintenance for road safety and emissions control. Extensive collaboration with local governments, NGOs, and transport associations to disseminate information is required.

Incentives for clean vehicle technologies.

Key players need to encourage the adoption of electric vehicles (EVs) or hybrids by offering tax incentives, import duty reductions, or subsidies as well as promoting research on retrofitting existing vehicles with cleaner technologies.

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