Conditions and Barriers for Vehicle Efficiency Regulation in Kenya

Scoping Study

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1. Introduction and context

1.1. Objective of the Study

The "Introducing Measures, Pathways and Roadmaps for Optimizing Vehicle Efficiency and Electrification (IMPROVE)" project has been funded by the German government's International Climate Initiative. It means to address one of the key mobility challenges of our time: the need to accelerate the phase-out of the internal combustion engine, the transition to zero-emission vehicles and the improvement of energy efficiency. Over a four-year period, the project intends to ensure that the partner countries (Kenya, Colombia, Morocco, Thailand) adopt regulatory frameworks to address these challenges.

With this Kenya scoping study, the IMPROVE project aims to assist its cooperation partners in selecting appropriate regulatory instruments that appear feasible to implement. The study describes the regulatory status quo by vehicle type (passenger cars, 2/3 wheelers, freight vehicles), which vehicle-related policies and regulations are in place and which government department(s) are responsible.

The study further provides a detailed insight into the local type approval and registration process, the actors involved, and the data collected, with a particular focus on how CO2 emissions are assessed and collected. The study clarifies what fleet data is collected by the authorities in this process and highlights missing data.

Based on the analysis, the study identifies options for vehicle efficiency regulation (defined as any regulatory measure that directly or indirectly improves the energy consumption or CO2 emissions per kilometre of vehicles) in Kenya as a basis for analysis and discussion with policy partners and input to the extended steering group.

1.2. Executive Summary

As part of the project "Introducing Measures, Pathways and Roadmaps for Optimizing Vehicle Efficiency and Electrification" (IMPROVE), funded by the International Climate Initiative of the German government, this study aims to present the technical and political status quo regarding vehicle efficiency in Kenya.

This scoping study will support the selection of appropriate regulatory instruments that appear feasible for implementation under the IMPROVE project. Below are the main findings from the study:

Climate Change and Transport 

- The transport sector currently accounts for 11% of the country's total emissions and 67% of Kenya's energy-related CO2 emissions. In 2020, Kenya committed to reducing net national emissions by 32% by 2030.
- The transport sector accounts for 70% of total **oil consumption**. As motorization increases, so does oil consumption: Between 2014 and 2018, petroleum consumption in the automotive sector increased by 32.1% due to the growing number of vehicles and the increased mobility of people and goods.
- Kenya's **climate change commitments** include a phased reduction of emissions from the transport sector. The targets are as follows: 1.9 $MtCO_{2e}$ by 2022, 3 $MtCO_{2e}$ by 2025 and 4.7 $MtCO_{2e}$ by 2030.
- Kenya is a signatory of the "COP 26 Glasgow Declaration on Zero-Emission Cars and Vans".

Transport sector developments 

- Kenya has the **highest motorization rate in East Africa**. By 2030 the motorization rate is projected to reach 70 vehicles per 1,000 persons. Vehicle ownership is growing faster than Kenya's population.
- **Prices of motor vehicles** are low: A consumer perspective study 2018 showed that about 50% of all vehicles purchased costed consumers less than KES 1M (approx. USD 10,000)
- **New vehicle registrations** range between 250.00 and 400.000 new vehicles per year (2015-2022). While motor vehicles remain stable at about 100.000 new registrations annually, two and three wheelers' registration vary from 115.000 to 290.000 units.
- Kenya, like most of other Sub-Sahara African countries relies heavily on **second-hand imported vehicles.** Currently, **80%** of vehicles imported into Kenya are second hand.
- The main effort to tackle the second-hand market is that Kenya currently **prohibits the import of vehicles older than 8 years**, while neighbouring countries like Tanzania allow the import of cars up to 10 years old. Other efforts include the policy plan set out in the

National Automotive Policy 2019 to gradually phase out the import of old vehicles, restricting age limits to 5 years in 2020, 3 years in 2022 and 0 years in 2024.

- Kenya is promoting the use of more sustainable vehicles, but these efforts have not yet achieved tangible results. The main policy instrument supporting this action is the **National Transport Policy 2020**. This sets a target of 5% of all newly registered vehicles to be electric by 2025. In addition, the **Excise Duty Act** (revised 2021) provides for a reduction in excise duty to 10% for 100% electric vehicles (KRA, 2021).

Automotive Industry

- Kenya has **4 major motor vehicle assemblers** and 1 original equipment manufacturer (OEM). The automotive industry has the potential to become key to the country's manufacturing sector, however, the industry has declined over the last decades and is currently operating only at 30% of its capacity.
- In 2019 Kenya produced approximately 7.100 motor vehicles domestically and exported only 218 units to other countries. Value of exports reached USD 16,4M in 2021.
- In the same year Kenya imported cars with a value of USD 549M, making it the 4th most imported good.
- **Japan is the top vehicle exporter to Kenya** accounting for 82.6% all of imports (used and new) in 2019. Within the exported vehicles, second-hand vehicles represented a share of 57%. Most imported brands are Toyota (46%), Nissan (10%).
- Due to the influx of used vehicles, contribution of Kenya's motor vehicle industry to the manufacturing GDP is marginal: it has stagnated at about 1.5% over the last decade, whereas manufacturing itself accounted for 7.8% of national GDP in 2022 (KNBS, 2023).

Vehicle testing and data management

- Kenya's registration systems **do not** currently capture the vehicle carbon footprint (tailpipe emissions) or fuel consumption levels.
- In 2014, the Government of Kenya formulated the target to establish motor vehicle inspection centers. So far, 17 test centers have been set up, with 2 out of the 17 performing emission testing.
- Registration and licensing of motor vehicles in Kenya is handled by the **Registrar of Motor Vehicles** which is part of the in the Road Transport Department. The latter is managed by the National Transport and Safety Authority (NTSA).
- Vehicle registration process in Kenya is digitalized with the tool called Transport Integrated Management System (TIMS).
- The **National Transport and Safety Authority** maintains all vehicle data including data for all imports and exports as well as in-use vehicles.

- Fuel consumption data is needed to assess vehicle efficiency performance in the country. An opportunity for Kenya is to develop a data labeling tool and digitization measures to improve the ease of access to data (historical and current) for different stakeholders.
- The need for **data harmonization** is also critical to ensure accuracy and ease of information management. The lack of a data management framework is a major impediment to effective sector assessment and evaluation for policy development.

Vehicle efficiency efforts

- Two comprehensive studies were conducted in Kenya by the Global Fuel Economy Initiative (GFEI) which developed a **fuel economy baseline** for Kenyan motor vehicles. These studies have been used to model various emissions scenarios, including the detailed scenario building modelling for Kenya's NDC targets.
- Currently, Kenya does not have fuel economy standards and does not have an explicit carbon tax. Nevertheless, **Kenya National Energy Efficiency and Conservation Strategy** (2020) formulates goals to improve fuel economy performance of vehicles in Kenya including the development and adoption of fuel economy standards and labelling for vehicles.
- The National Energy Efficiency and Conservation Strategy 2020 targets to attain emission levels of 160gCO_2/km by 2025 for Light Duty Vehicles (GoK, 2020).
- **Vehicle taxation** in Kenya is based on four areas: vehicle function, engine capacity, fuel type and gross vehicle weight. Also, the year of manufacture (and registration in a different country) is relevant for calculation of the imported vehicle tax.
- **Fuel prices** in Kenya have increased by about 85% in February 2023 (PIEA, 2023) and are expected to increase by about 105% by July 2023 due to increased taxes. The total taxes and levies on fuel is approximately 35% for gasoline and 31% for diesel and occasionally drifts to approximately 40%.
- As fuel prices are already high in the country, additional taxation to improve fuel economy may suffer from acceptance issues by consumers. However, the draft **Green Fiscal Incentive Policy Framework** (currently under review), includes fuel tax options / tax feebate systems in relation to CO_2 emissions and fuel efficiency standards.
- Efforts to promote the adoption of electric vehicles are based on the Energy, Petroleum and Regulatory Authority (EPRA), which has approved a **two-tier tariff structure for electric vehicles.** The adoption of electric vehicles in Kenya is expected to mature by 2040. However, as most European countries will have reached their zero-emission vehicle targets by 2035, this may result in a large influx of used ICE vehicles into Sub-Saharan African (SSA) markets. This will consequently slow down the growth of transport electrification in several SSA countries, including Kenya.

Summary Table for the IMPROVE Project Scoping Study in Kenya

Policy	***Yes / No***	***Brief description***
Fuel economy labelling	No	Recommended under the Energy Act, 2019 and the National Energy Efficiency and Conservation Strategy, 2020.
Import duties	Yes	35%
Import Declaration Fees (IDF)	Yes	3.5% (calculated on the customs value)
Import restrictions	Yes	Age limit (must be below 8 years for non-commercial vehicles). Left-hand driven not allowed. Certificate of Conformity/roadworthiness required.
Purchase Tax	Yes	Purchase tax charged based on vehicle engine capacity at maximum KES 5,290 for CC above 3000.
Value Added Tax (VAT)	Yes	VAT on vehicles charged at 16% of [customs value + import duty + excise duty]. VAT on fuel charged at same rate of 16% but on overall cost of fuel.
Excise duty	Yes	20%-35% depending on vehicle engine capacity
Registration fee	Yes	Charged based on CC at maximum KES 6,465 for CC above 3000. Paid via TIMS
Annual tax /fee	Yes	Insurance costs (All vehicles) & Advance tax (for commercial vehicles)
Fuel tax	Yes	16% (2023) + other taxes and levies
Clean vehicle subsidy	Yes	Electric Vehicles (Excise duty reduction - 10%)
Vehicle Efficiency subsidy	No	Recommended (develop baselines for feebates)
Fuel economy standard	No	Recommended under the Energy Act, 2019.
CO2-Based Taxation on fuel	No	Proposed under the Green Fiscal Incentive Policy Framework
Congestion Pricing	No	Proposed under the Green Fiscal Incentive Policy Framework

1.3. Country overview

1.3.1. Economic Status

With a gross domestic product (GDP) of over USD 100 billion, Kenya recently attained **lower-middle income status**. Kenya has successfully established a diverse and dynamic economy serving as the point of entry to the East African market of 300 million people (USAID, 2023). In its quest to build a sustainable and progressive economy, Kenya's economic blueprint Vision 2030 aims to transform the country into an industrialized, middle-income country providing a high quality of life and a clean and secure environment for its citizenry (GoK, 2007). Progressively, Kenya has witnessed significant growth in its GDP and GDP per capita amidst key national and global shocks including the 2007/2008 post-election violence and the global covid-19 pandemic reaching **USD 110.35 billion in 2021** against USD 12.71 billion in 2000, a 768.2% growth in GDP. Equivalently, the GDP per capita grew from a low of USD 411.8 in 2000 reaching USD 2,081.8 in 2021, a significant 405.5% growth (Worldbank, 2022).

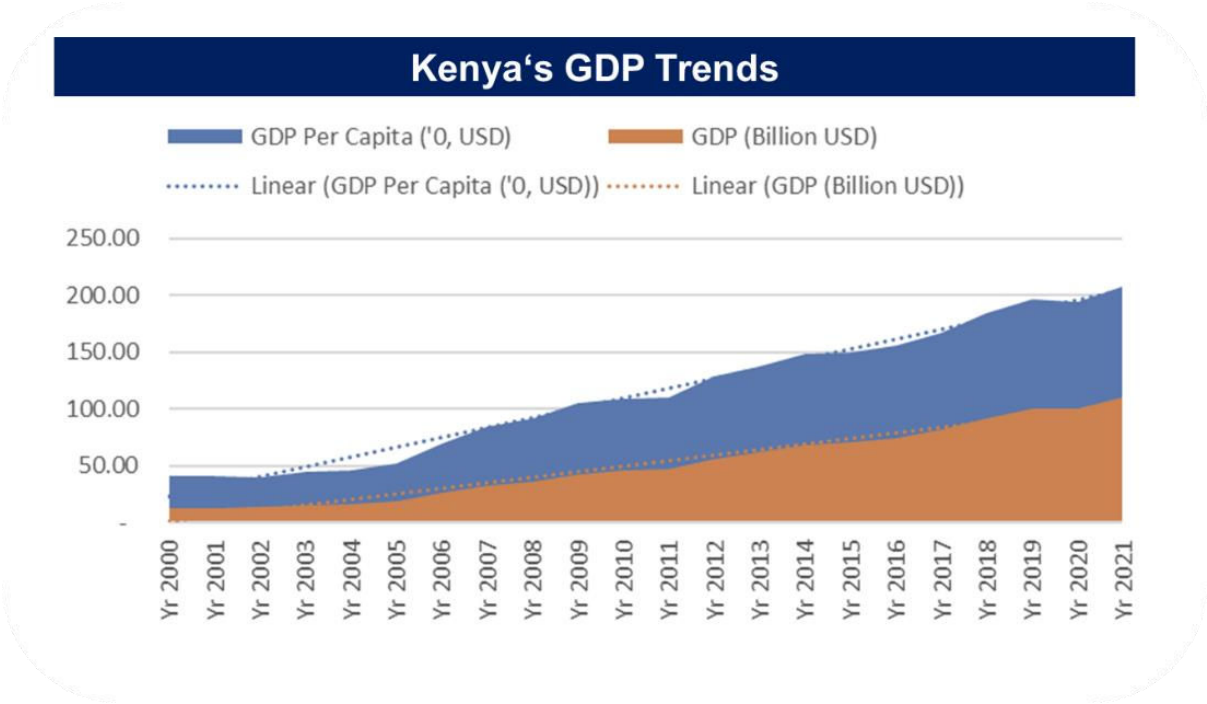


Figure 1: Kenya's GDP Trends (Author Generated)

The annual GDP growth rate has, however, been non-linear fluctuating between the period of 2000-2022 to a maximum 8.1% in 2010 when the new constitution was promulgated and a low of -0.3% during the 2020 global covid-19 pandemic. In the same period, the average annual **GDP growth in Kenya was 4.29%** against a global average growth rate of 2.9% (Worldbank, 2022). Figure 2 indicates the two highest maxima and two lowest minima in the reporting period.

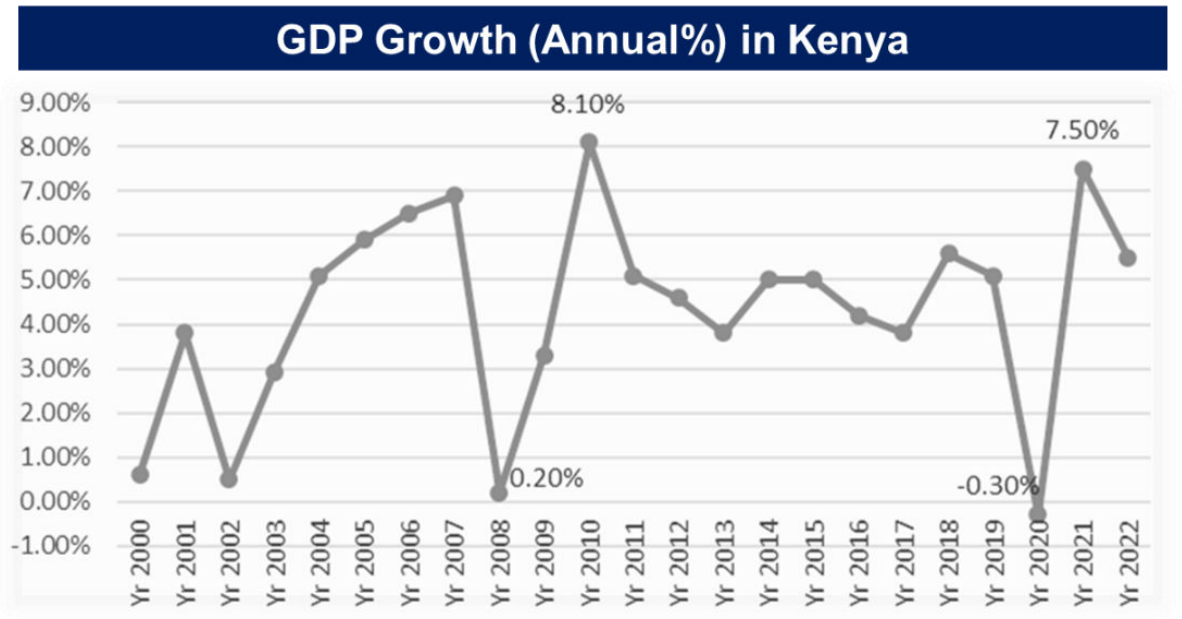


Figure 2: Annual GDP Growth rate (Author Generated)

Kenya's trade balance has been negative throughout various years. In 2022, the expenditure on imports rose by 17.5% reaching KES 2.5 trillion while earnings from exports increased to KES 873 billion leading to a **Terms of Trade (TOT) of just 35%** (KNBS, 2023).

Balance of Trade 2018-2022 (KSh Million)					
	2018	2019	2020	2021	2022
Exports (f.o.b):	614.3	596.7	643.7	743.7	873.1
Imports (c.i.f)):	1,764.5	1,806.3	1,643.6	2,119.4	2,490.8
Balance of Trade	-1,150.2	-1,209.7	-999.9	-1,375.7	-1,617.6
Total Trade	2,378.8	2,403.0	2,287.3	2,863.0	3,363.9
Cover Ratio (%)	34.8	33.0	39.2	35.1	35.1

Figure 3: Balance of Trade Trends in Kenya (2018-2022) (KNBS)

In 2020, transport and storage accounted for **12.9% of the Gross Domestic Product** (GDP) in Kenya (Kamer, 2022). However, Kenya's motor vehicle industry to manufacturing GDP has stagnated at about **1.5% over the last decade**, whereas manufacturing itself accounted for 7.8% of national GDP in 2022 (KNBS, 2023).

1.3.2. Demographic Status

Demographically, Kenya's population has grown significantly reaching **47.6 million** people in the 2019 census, a 65.85% growth compared with the population in the 1999 census. **77.5% of the total population in Kenya reside in rural areas** (KNBS, 2019). However, it is estimated that **by 2050, 46% of Kenyans will live in urban areas** reaching 44 million people from an estimated current urban population of 13.8 million people.

The 2019 Census Report further shows that Kenya has slightly **over 12million households** with a population density of 82 persons per KM^2 and an average household size of 3.9 (KNBS, 2019). Most recently measured in 2019, **the Gini Coefficient for Kenya was determined as 51.3%** highlighting the high-income inequalities in Kenya (Economics, n.d.) **against 40.8% reported in 2015**. The daily consumption of less than US$1.90 per person accounted for 37.1% of the population in the same year (2015) (Worldbank, 2021). In September 2022, the World Bank replaced the $1.90 poverty line with a new extreme poverty line of $2.15 per person per day based on the 2017 purchasing power parity (PPP). Kenya will need to update its data based on this new revision.

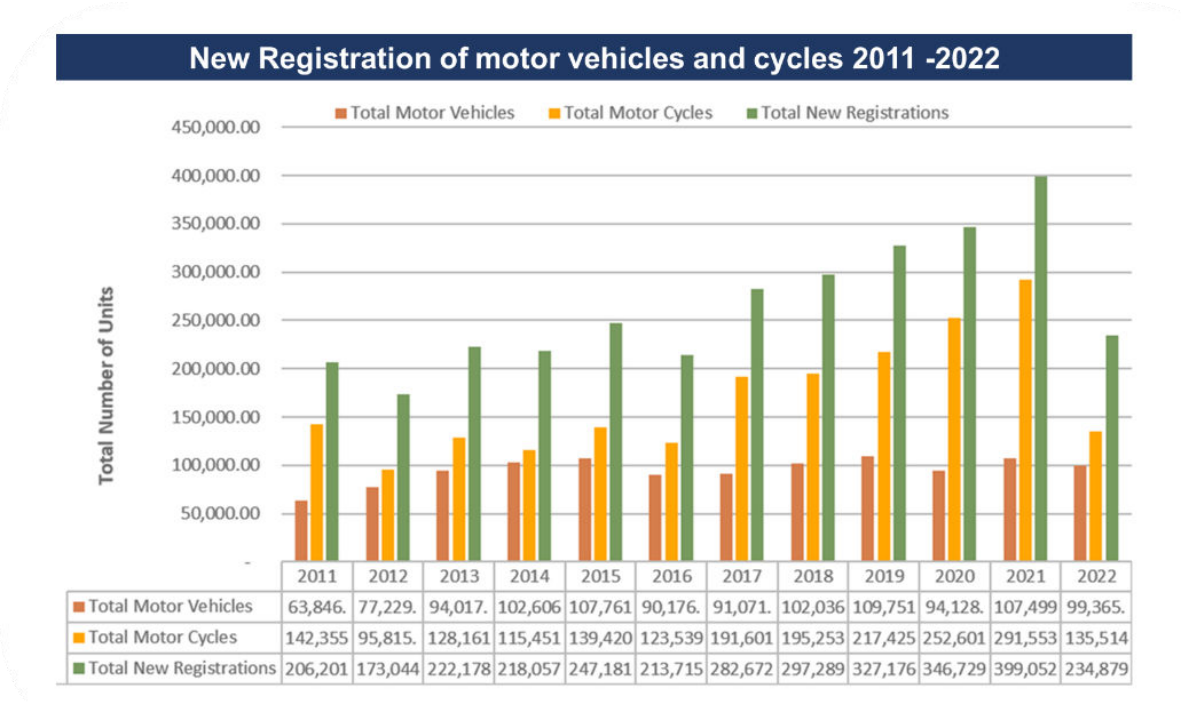
- *"Achieving sustained growth in transport contribution towards the GDP and the related co-benefits including job creation amidst a bulging population, improved income distribution within a strained economy, increased forex earnings and reduced transport emissions will require a collaborative approach in building the local manufacturing capacity of energy efficient vehicles fit for the Kenyan consumers. Comprehensive data-driven demand and supply assessments in the road-transport sector will be required including improved consumer confidence towards mass and public transportation. These will need to be projected towards 2030 and 2050 significantly in relation to Kenya's Vision 2030 and the net zero commitment by 2050." (Author)*

1.4. Automobile Import market overview

1.4.1. Vehicle imports Overview

The automobile market in Kenya primarily consists of internal combustion engine (ICE) vehicles which accounts for approximately 99%. However, there has been a growing interest in electric vehicles (EVs) as the government and various stakeholders aim to promote sustainable transportation and reduce greenhouse gas emissions hence the target of 5% of all newly registered vehicles to be electric by 2025 (GoK, 2020).

Kenya, like most of other Sub-Sahara African countries however, relies heavily on second hand imported vehicles. The volume of imported cars and motorcycles has been on the increase due to the availability of attractive credit from financial institutions and the rise of the middle class (Deloitte, 2018). **Between 2011 and 2019, Kenya's share of imports of used motor vehicles averaged at 84.67%** (KAM, 2020)**.**



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Motor Vehicles	63,846.	77,229.	94,017.	102,606	107,761	90,176.	91,071.	102,036	109,751	94,128.	107,499	99,365.
Total Motor Cycles	142,355	95,815.	128,161	115,451	139,420	123,539	191,601	195,253	217,425	252,601	291,553	135,514
Total New Registrations	206,201	173,044	222,178	218,057	247,181	213,715	282,672	297,289	327,176	346,729	399,052	234,879

Figure 4: New registration of road motor vehicles and Motor Cycles 2011-2022 (Author Generated, KNBS, KAM)

Between the same period (2011-2019), the number of registered vehicles increased by a compound average growth rate (CAGR) of 9%, rising from 1.6 million in 2011 to 3.6 Million in 2019. This was largely driven by motor and autocycle and motor cars sub-sectors which accounted for 46% and 32% respectively for all vehicle registered in 2019.

Equivalently, the Kenyan market has a high affinity towards vehicles of **engine displacements ranging between 1301CC and 2000CC constituting 64.12% of Light-Duty Vehicles**. Other displacements are preferred as indicated in figure 6 (Omar Al-Guthmy, 2019).

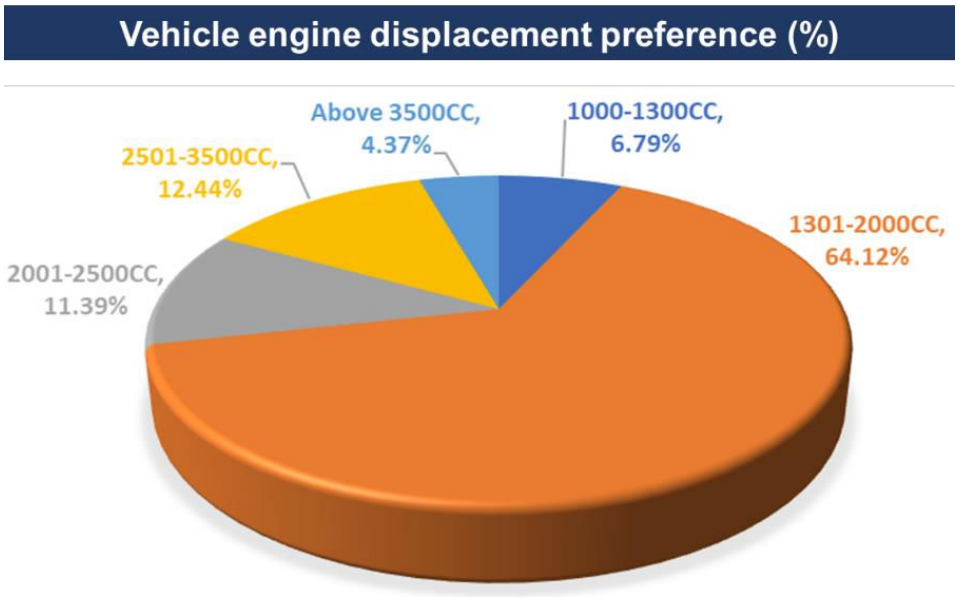


Figure 5: Vehicle Engine Displacement Preference (Omar Al-Guthmy)

Kenya also has a local assembly industry, and some vehicles are imported in completely knocked down (CKD) form, which are assembled locally. Other vehicles are imported as fully built-up (FBU) units, which are fully assembled and ready for use. The share of FBUs has over the years been more compared with CKDs except for 2019 in which the share of CKDs surpassed that of FBU. This would be seen to promote local assembly of vehicles (KAM, 2020). The Sessional Paper No. 1 of 2022 on the National Automotive Policy proposes a phased-out plan on importation of used FBU passenger vehicles and vehicles with engine capacity exceeding 1500CC (GoK, 2022).

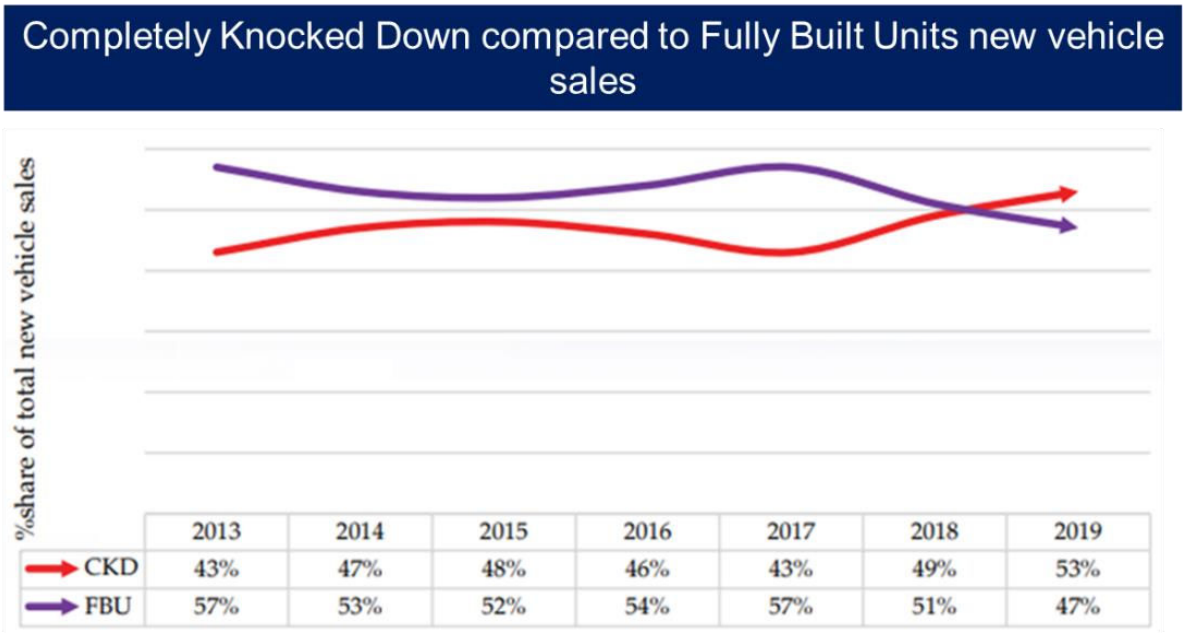


Figure 6: Completely Knocked Down compared to Fully Built Units new vehicle sales, 2013-19 (KAM)

Kenya currently **restricts the importation of vehicles older than 8 years** while Tanzania allows imports of cars as old as ten (10) years. In 2018, Uganda's parliament passed legislation banning the import of vehicles older than 15 years. There is no formal age limit for Burundi, Rwanda and South Sudan (KAM, 2020). However, most vehicles imported into Kenya remain in use up to their 30th year upon which they are scrapped. Therefore, motor vehicles imported at 8 years remain in use for 22 years in Kenya before scrappaging (GIZ, 2018). The Sessional Paper No. 1 of 2022 on National Automotive Policy 2019 however, pursued the need for graduated phase-out of old vehicle importations from 8 years to 5 years in 2020, 5 years to 3 years in 2022 and from 3 years to 0 years in 2024 (GoK, 2022). However, this plan has not been implemented.

1.4.2. Vehicle Imports by Type and Make

Between 2019 and 2020, the total number of newly registered motor vehicles decreased by 14.23% resulting from the economic downturn during the Covid-19 pandemic. 2021, however witnessed a rebound with a 14.2% growth in the number of importations which were subsequently affected by the uncertainly in national elections outcome in 2022 as highlighted in table 1. The 2022 uptake was particularly strong in the High Duty Vehicle (HVD) segment with lorries/vans and trailers exceeding 2018 and 2019 registration levels perhaps mostly for use during election campaigns (KNBS, 2023).

Table 1: New Registration of Road Motor Vehicles and Motorcycles, 2018-2022 (KNBS)

New Registration of Road Motor Vehicles and Motorcycles, 2018-2022 (KNBS)					
Type of Vehicle/Motor Cycle	**2018**	**2019**	**2020**	**2021**	**2022***
Saloon Cars	10,504	9,971	7,754	8,170	6,350
Station Wagons	64,179	72,512	57,962	64,350	55,004
Panel Vans, Pick-ups,etc	11,220	10,189	6,065	5,986	10,901
Lorries/Trucks	6,514	6,518	6,476	7,071	10,075
Buses and Coaches	1,065	1,339	900	893	2,173
Mini Buses/Matatu	812	1,932	1,084	822	907
Trailers	2,083	1,639	2,382	3,187	3,457
Wheeled Tractors	4,040	1,815	2,545	2,818	2,553
Other vehicles	1,619	3,836	8,960	14,202	7,945
Total Motor Vehicles	**102,036**	**109,751**	**94,128**	**107,499**	**99,365**
Motor and AutoCycles	188,994	210,103	246,705	285,203	131,513
Three Wheelers	6,259	7,322	5,896	6,350	4,001
Total Motor Cycles	**195,253**	**217,425**	**252,601**	**291,553**	**135,514**
Total Units Registered	**297,289**	**327,176**	**346,729**	**399,052**	**234,879**

In 2021, 67.5% of all registered vehicles accounted for personal cars (saloon cars and station wagons) while large carrying capacity passenger vehicles (buses, coaches and mini-buses/matatus) accounted for a dismal 1.6% of all imports (KNBS, 2023). In 2020, vehicle importation by brands are distributed as represented below. Each of the other car brands accounted for less than 3% (Ofafa, 2021).

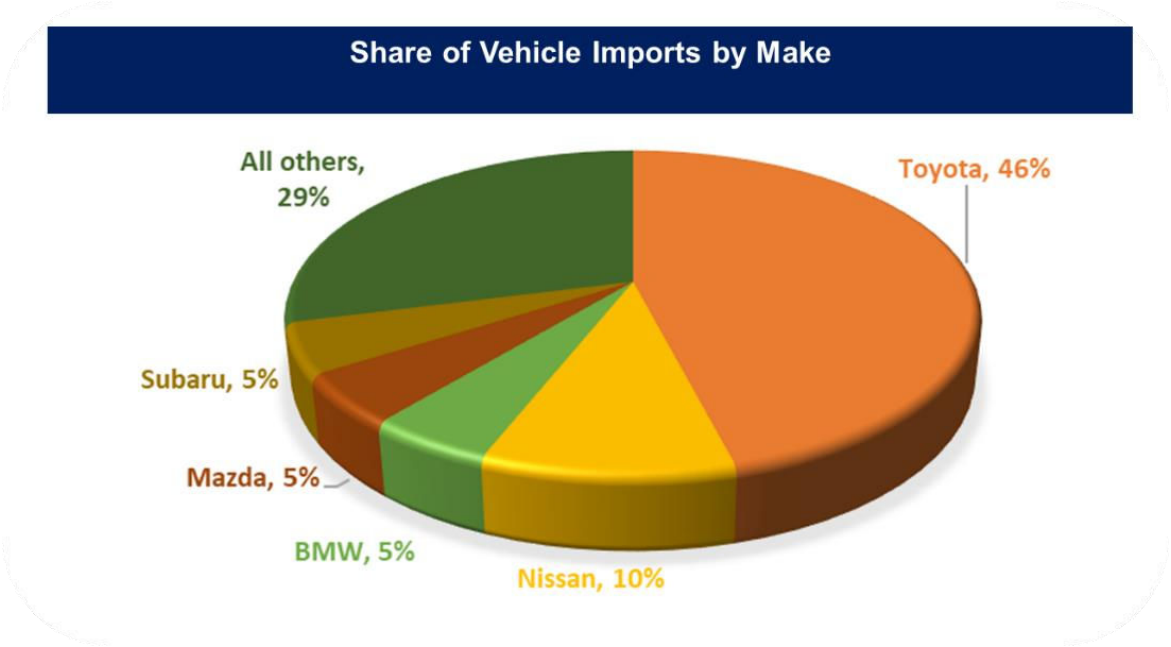


Figure 7: Share of Vehicle Imports by Make in 2020 (Ofafa)

1.4.3. Vehicle Import Value by Country of Origin

A consumer perspective study conducted by Deloitte in 2018 showed that about 50% of all vehicles purchased costed consumers less than KES 1m (approx. USD 10,000) (Deloitte,

2018). The total import value of cars in Kenya for 2021 was USD 549M, ranking as the 83rd largest car importer globally. Cars were Kenya's fourth-most-imported goods that year. Primarily, most imports were from:

1. Japan (USD 423M),
2. United Kingdom (USD 51.4M),
3. South Africa (USD 14.9M),
4. Thailand (USD 9.8M), and
5. India (USD 8.88M).

The high importation of used vehicles limits the scope for new car manufacturing locally. Regional analysis indicates that the East African Community (EAC) currently loses more than USD 2.01 billion in foreign exchange for importation of motor vehicles per year (KAM, 2020). During 2017 to 2021, Kenya's annual value of imports of parts and components of motor vehicles, and fully built motor vehicle units (FBUs) averaged KES 11.3 billion and KES 90.2 billion, respectively accounting for 5.6% of total imports (KNBS, 2022).

- *"Kenya has had a growing number of imported used vehicles over the past decades. Reducing this trend is instrumental in the shift towards local manufacturing. As part of the strategies to curtail this trend, there is need for capacitation for the implementation of the various identified measures including the limit of age of importation of old vehicles. As Europe and other developed countries focus on achieving zero-emission vehicles in their productions in line with the COP26 Glasgow Declaration on mobility, it is propounded that most of the used internal combustion vehicles will find their way into Sub-Saharan markets. Imperatively, implementing fuel economy standards and efficiency labelling schemes will enhance consumer approach towards low-carbon vehicles. Moreover, motor vehicle insurers policy needs to be developed to guide the insurance of vehicles deemed written-off based on their state of damage, age and mileage. Kenya currently lacks a motor vehicle salvage policy." (Author)*

1.5. Automobile Local Production and Export Market Overview

1.5.1. Automobile Local Production Capacity

The liberalization of the Kenyan market in the 1990s led to a high influx of cheap imported second-hand vehicles which subsequently slowed the local vehicle manufacturing. To date, the vehicle assembly industry has struggled to stay afloat (SDoI, 2019). In lieu of these challenges, the Kenya's motor vehicle industry to manufacturing GDP has stagnated at about 1.5% over the last decade (KNBS, 2023).

Nevertheless, The National Automotive Policy is keen to promote local manufacturing and assembly of motor vehicles if implemented. It covers the comprehensive revitalization and development of the automotive industry in Kenya as well as the promotion of a phased incubation process and recommends the hastening of the progression and phased advancement from Semi-Knocked Down (SKD) to Complete Knocked Down (CKD) (GoK,

2022). **In 2017, Kenya's motor vehicle assembly industry had an annual turnover of USD 600 million (including regional dealerships)**. Over USD 135 million of locally produced materials were consumed by the commercial car assembly. The industry further contributed to an annual tax revenue of USD 80 million (SDoI, 2019).

As at the beginning of 2019, the vehicle assembly plants were operating at an average of 20% capacity producing only 7,000 vehicles against an installed capacity of 34,000 vehicles per single shift per year. In the 1980s, Kenya produced over 13,000 vehicles through 3 major plants (GoK, 2022).The highest achieved capacity utilization factor (CUF) was 47% in 1989. During that year, a total of 13,473 units were manufactured (SDoI, 2019).

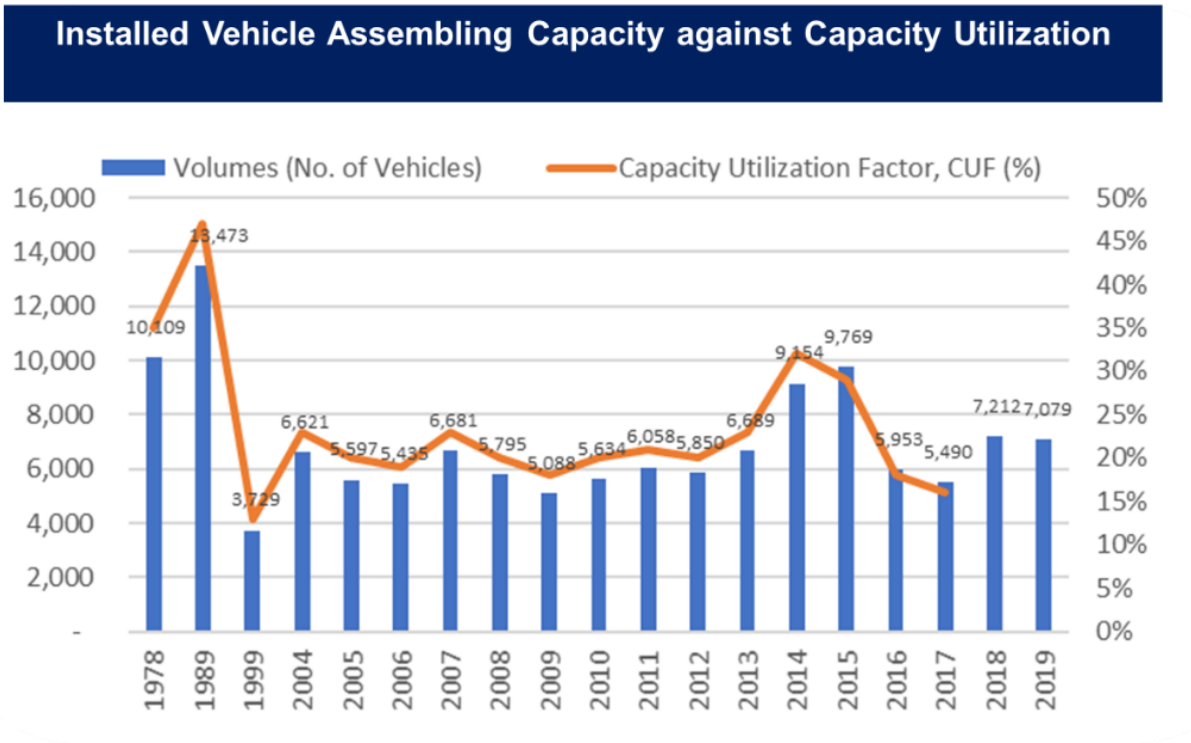


Figure 8: Installed vs Utilized Capacity, 1978-2017 (Author generated, SDoI)

1.5.2. Motor Vehicle Assemblers and OEM in Kenya

Currently, Kenya has 4 main motor vehicle assemblers and 1 Original Equipment Manufacturer (OEM) as highlighted:

i. **Associated Vehicle Assemblers (AVA)** based in Mombasa. AVA's brands and franchises include; SIMBA CORP– Mitsubishi, FUSO, TATA – Tata, Toyota East Africa – Toyota, Hino, Kenya Grange – Scania, Foton – Foton, Aumark, Volvo – Volvo and Daewoo.

ii. **Kenya Vehicle Manufacturers (KVA)** based in Thika. KVA's brands and franchises include; Cooper Motors Corporation -Nissan Diesel, Eicher, MAN, Crown Motors – Nissan, Peugeot (PSA Group) – Peugeot, Volkswagen – Volkswagen, Bus Body

Building - 33-seater bodies for Hyundai, Eicher, Isuzu, Mitsubishi; 51-seater bodies for UD, TATA, Hino; 62-seater bodies for Scania, MAN, and Ashok Leyland

iii. **Isuzu East Africa Limited (ISUZU)** based in Nairobi, Industrial Area. ISUZU specializes in the assembly of Isuzu commercial vehicles, Passage Service Vehicles (PSV), Pick-ups, Buses, Light and heavy trucks.

iv. **Transafrica Motors Limited (TML)** based in Mombasa. TML deals in commercial trucks (FAW), IVESCO trucks and road tractors and TCM Forklifts brands.

v. **Mobius Motors Limited**, **an OEM** based in Nairobi. Mobius Motors specializes in the design and assembly of Mobius Brand motor vehicles and is the second home-grown Original OEM in the region, with brand recognition across East Africa. Its capacity utilization is nevertheless not recorded in this report.

In 2019, these assemblers and OEM produced a total of 7,079 motor vehicles. **Their total investment is estimated at USD 148 million.** However, they currently operate at a single shift averaging a 20% utilization as a result of continued importation of cheap used vehicles into the country but have a capacity to do three shifts a day (KAM, 2020) (SDoI, 2019).

Table 2: Motor vehicle assembly plants in Kenya ((KAM, 2020)

Motor vehicle assembly plants in Kenya (KAM)							
S/N	**Assembler**	**Est. Investment 2019 (USD)**	**Installed Capacity**	**Utilized Capacity**	**Ownership**	**Brand**	**Type of vehicle**
1.	Isuzu East Africa	100 Million	12,000	375 (31%)	100% foreign	Single	MCV HCV
2.	Associated vehicle Assemblers (AVA)	20 Million	10,000	2860 (29%)	100% local	Multiple	LCV HCV
3.	Kenya Vehicle Manufacturers	20 Million	18,000	1000 (6%)	35% local 64% foreign	Multiple	LCV HCV
4.	Trans Africa Limited	5 Million	1000	400 (40%)	-	Multiple	
5.	Mobius Motors ltd	2.5 Million	5760	0	100% foreign	Multiple	
	Total	147.5	46,760	8,067(20%)			
NB:	LCV – Light Commercial Vehicles; MHV – Medium heavy Commercial; HVC – Heavy Commercial Vehicles, MUV (Multi-Utility Vehicles) and SUV (Sport Utility Vehicles)						

The 2022 report on the analysis of motor vehicle industry value chain in Kenya assessed the various reasons for capacity under-utilization by input level enterprises and propounded that political uncertainty is the major bottleneck to full utilization. Uncertainty on market prospects and low demand are the second and third major reasons while insufficient material inputs and obsolete machinery/equipment were identified as having the least causality (Shibia, 2022). The Kenya Association of Manufacturers 2020 Automotive Sector Profile identified 8 key challenges facing the motor vehicle assemblers in Kenya including (KAM, 2020):

i. Lack of regional policy to regulate the sector and accord certainty to investors.

ii. Competition from cheap used motor vehicle imports.

iii. Exemptions and stays of application on Common External Tariff (CET) rates in the East African region especially for units that are locally manufactured.

iv. High cost of financing and lack of financial institution with risk appetite to fund sector ventures.
v. Lack of harmonized vehicle standards in EAC particularly on used car imports age limit.
vi. Lack of sufficient funds and incentives to support Research and Development.
vii. Insufficient availability of automotive parts in the region.
viii. Slow technological upgradation due to lack of incentives.

1.5.3. Vehicle Export Value by Country

The Kenya Association of Manufacturers 2020 Automotive Sector Profile report shows that Kenya exported an average 350 motor vehicles between 2012 and 2019. The **total exports of new vehicles decreased by 51% from 446 units in 2012 to 218 units in 2019** (KAM, 2020). In 2021, Kenya exported USD 16.4M in cars, making it the 72nd largest exporter of cars in the world. At the same year, cars represented the 69th most exported product in Kenya. The main destination of car exports from Kenya are (OEC, 2021):

i. France (USD 8.79M),
ii. Uganda (USD 3.13M),
iii. Tanzania (USD 1.21M),
iv. South Africa (USD 817k),
v. and Zambia (USD 797k).

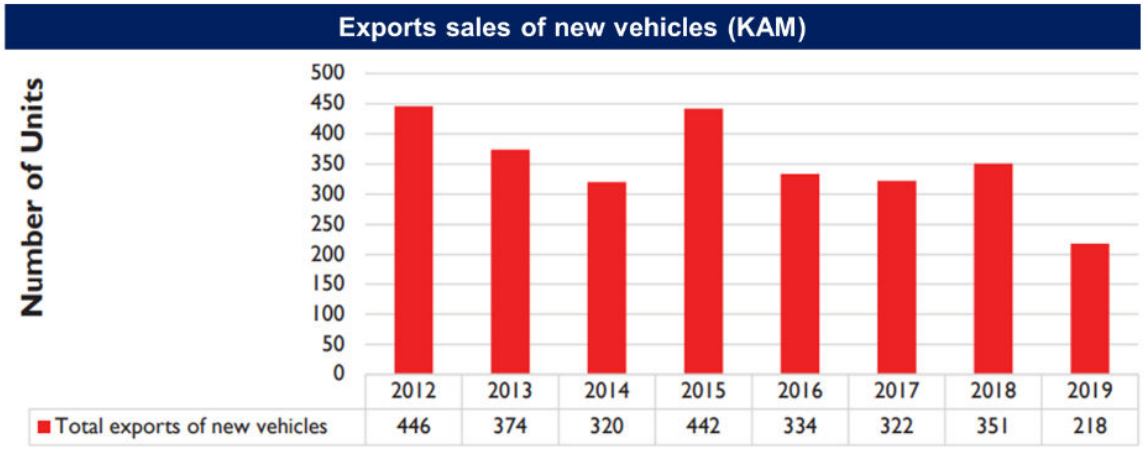


Figure 9: Exports sales of new vehicles (KAM)

‡ *"The 2020 KAM report identified 8 challenges to locally assembled and produced vehicles. As part of promoting the local manufacturing sector, alongside other strategies identified in previous chapters, incentives and subsidies for local manufacturers are important. Provision of tax holidays and addressing the identified challenges will be instrumental towards achieving the over 134,000 production capacity. Moreover, vehicle manufacturers must be encouraged to produce energy-efficient vehicles that meets the country's climate ambitions alongside standards and regulations on vehicle efficiency which should be developed and implemented. As*

Kenya grows its affinity towards electric mobility, the assembly and production of the same must be strongly encouraged. As most of the imported electric vehicles are used, further limits on these zero-emitting FBU vehicles must be instituted to safeguard the country against future challenges related to hazardous batteries and local assembly encouraged. Additionally, there is need to have a transport-integrated comprehensive industrialization policy and roadmap for the country." (Author)

1.6. Kenya Motorization Trend

Kenya's motorization rate differs depending on the reference source and ranges between 26 and 40 vehicles per 1,000 persons. By 2030, the motorization rate in Kenya is projected to reach 70 vehicles per 1,000 persons, reflecting vehicle ownership growing faster than Kenya's population (KAM, 2020). Kenya's motorization rate is lower than the SSA average of 42 but is the highest in East Africa (Deloitte, 2018). The average motorization rate between 2010 and 2021 for Kenya was determined to be **32.12 for every 1000 persons.** The maximum motorization rate was recorded in 2021 at **39.53 for every 1000 persons**. These values align with those reported by KAM as ranging between 26 and 40 with the values analyzed in figure 11 indicating a range between 25 and 39.5.

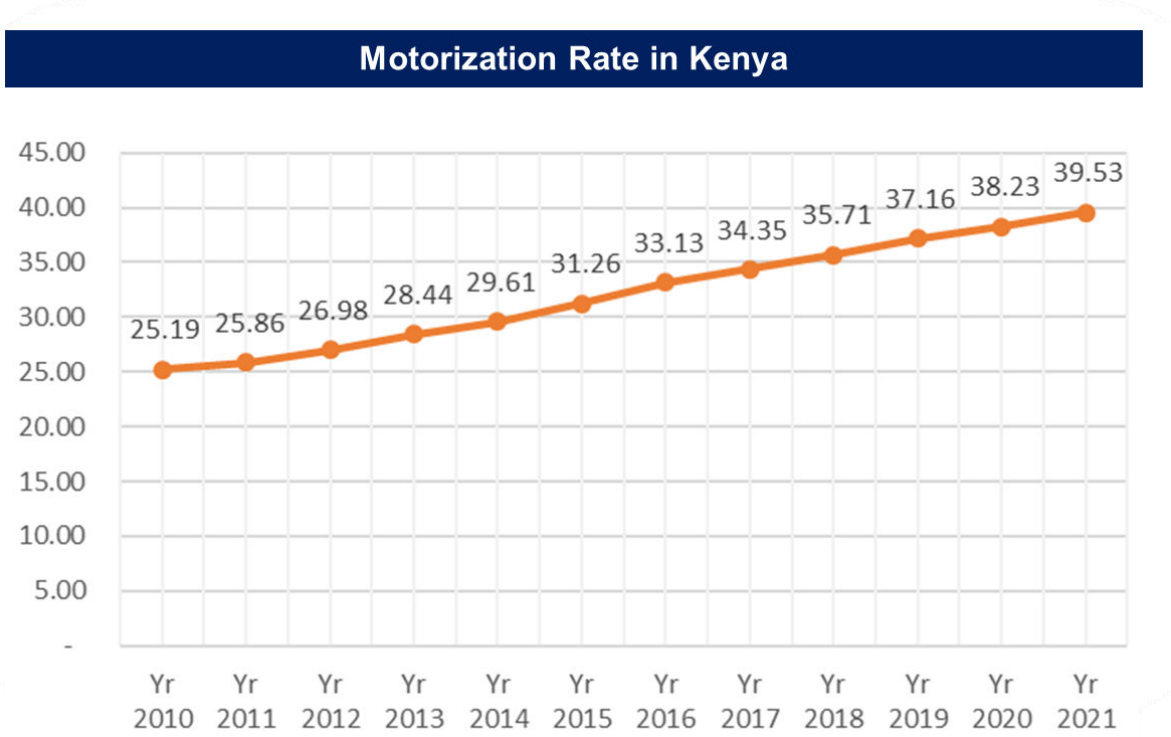


Figure 10: Number of vehicles per 1000 persons in Kenya (Author Generated)

The assessed data showed that the **average annual growth in motorization rate in Kenya stands at 4.19% with a projected increase to a motorization rate of 60 vehicles per 1000 persons in 2030**.

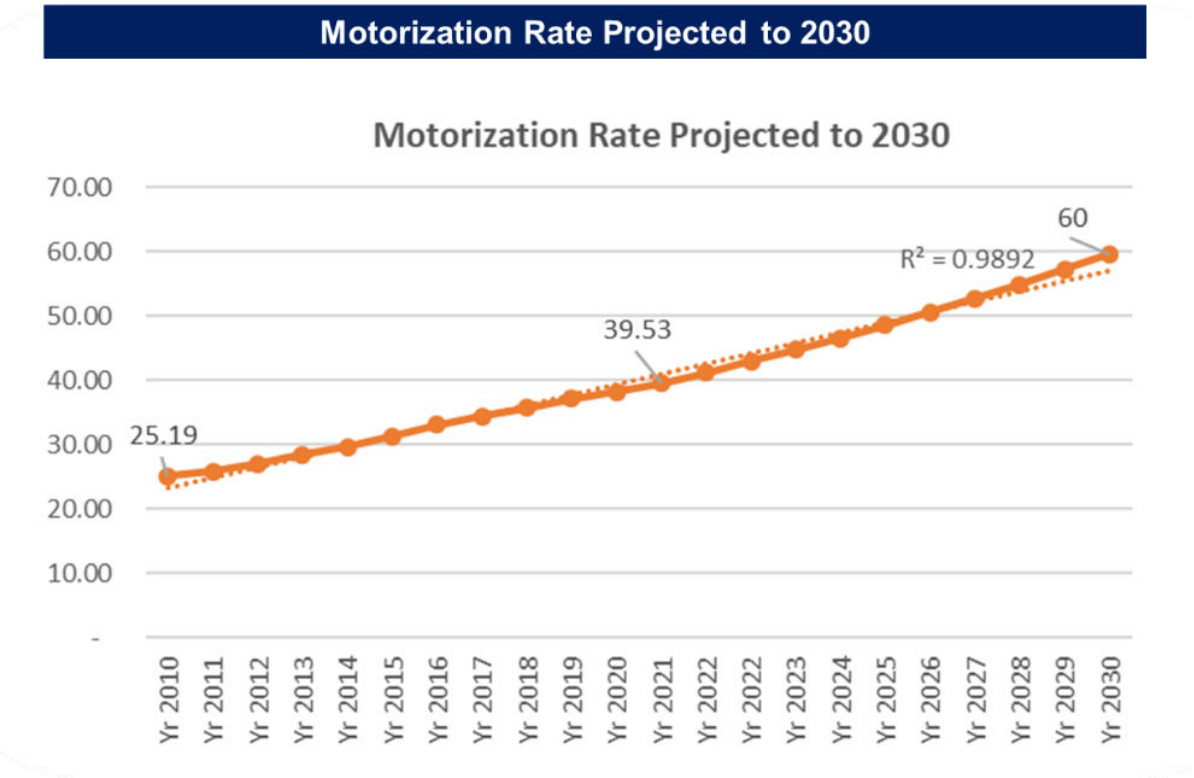


Figure 11: Motorization rate by 2030 (Author Computation)

A 2018 study on the characteristics of the in-service vehicle fleet in Kenya showed that the average annual vehicle kilometers travelled (VKT) by passenger cars was 22,671 ± 2,496 km/annum and 30,811 ± 3,138 km/annum for light commercial vehicles for vehicles registered between 1985 and 2016 (Madara Ogot, 2018).

- *"Informed by the 2030 and 2050 projections on Kenya's population and urbanization trends, this study posits that by 2030, the motorization rate will be 60 vehicles for 1000 persons. The urban motorization rate will nevertheless be higher leading to more congestions and related transport emissions. Sustainable urban transport-oriented development planning including zoning will be crucial in meeting safer and cleaner cities in line with the Sustainable Development Goal (SDG) 11 on sustainable cities and communities, SDG 12 (12.C) on responsible consumption and production and SDG 3 (3.9) on good health and well-being. Achieving these goals will require the reduction in motorization rate whose growth in Kenya is largely driven by the consumer preference towards personal vehicle ownership and provide incentives and pull measures towards mass transit." (Author)*

1.7. Automotive Sector Fuel Consumption and Pricing

Over the years, the **transport sector has accounted for 70% of all the petroleum consumption** in Kenya with the overall amount of petroleum demanded by the transport sector projected to rise from 1.9 million tonnes in 2004 to 8.6 million tonnes, 5.3 million tonnes or 6.8 million tonnes (depending on Business As Usual, Medium and Low scenarios) by 2030 (GFEI, 2020). **Between 2014 to 2018, petroleum consumption in the automotive sector**

grew by 32.1% resulting from increased number of motor vehicles and the increased mobility for people and freight (GoK, 2020). In 2022, petroleum products accounted for nearly **22% of all imports** into Kenya (KNBS, 2023).

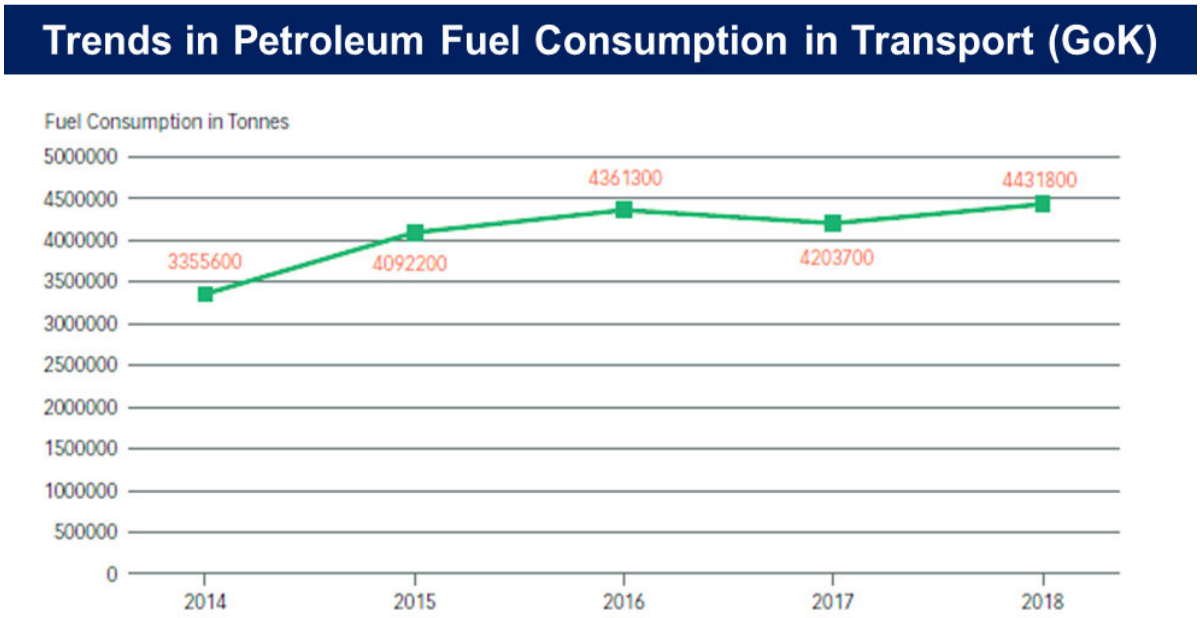


Figure 12: Trends in Petroleum Fuel Consumption in Transport (GoK)

Due to the challenges resulting from the economic stability of the country and the high dependency of imported petroleum products which are susceptible to global shocks the prices of fuel in Kenya has continued to increase significantly (PIEA, 2023). Additionally, the Finance Act 2023 has reinstated the 16% VAT on fuel up from 8% in few previous years (GoK, 2023). Compared to November 2015, the **prices of automotive fuel in Kenya have risen by approximately 85% up to February 2023** (PIEA, 2023) and are **expected to rise by approximately 105% from July 2023** in the same comparable period once the 16% VAT is enforced.

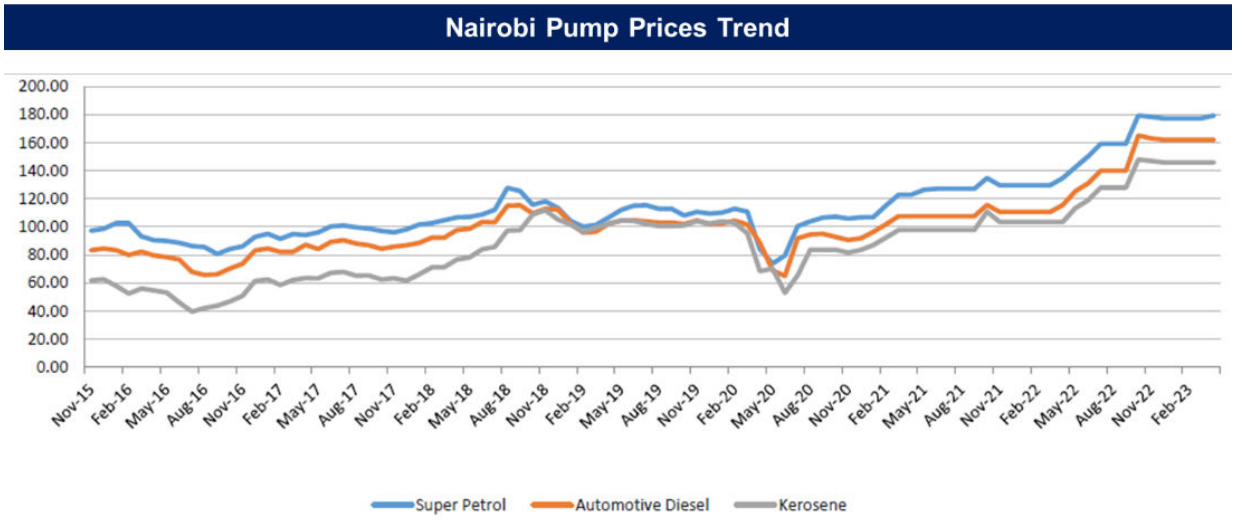


Figure 13: Petroleum Products Price in KES Trend (2015 -2023)

With the goal to achieve a 5% electric vehicle adoption by 2025; the Energy, Petroleum and Regulatory Authority (EPRA) approved a two-tier tariff structure for electric mobility. This took effect on 01st April 2023. A base tariff of KES 16/kWh is to be charged during peak period and KES 8/kWh charged during off-peak period. Additional charges are included as highlighted in figure 15 for the month of June 2023 (EPRA, 2023).

Cost Inputs	Charges as at June 2023 (KShs./kWh)	
	Peak Scenario	Off-peak Scenario
Energy Charge/ Base tariff (KSh/kWh)	16	8
Fuel Cost Charge (KSh/kWh)	4.49	4.49
Forex Adjustment (KSh/kWh)	2.06	2.06
Inflation Adjustment (KSh/kWh)	0.85	0.85
WARMA Levy (KSh/kWh)	0.013	0.013
ERC Levy (KSh/kWh)	0.03	0.03
REP Levy -5% of revenue from unit sales	0.8	0.8
VAT (16%)	3.37	3.37
Total cost per kWh	**27.52**	**19.52**

Figure 14: E-Mobility End-user Tariff Breakdown for June 2023 (EPRA)

- *"Driven by the growing number of vehicles and mobility, there is a concerted need to decouple the growth in fuel consumption through enhanced fuel efficiency including the use of intelligent route planning as a form of improving on vehicle fuel economy. Consequently, other strategic measures on fuel economy and vehicle efficiency can be implemented to minimize the transportation costs on fuel consumption and enhance environmental benefits related with such measures." (Author)*

2. Land Transport Climate Objectives and Strategies in Kenya

2.1. Transport Sector Emissions Contribution

The transport sector is a key carbon emissions source for the fossil-based industries (Crippa, 2021) and is **responsible for 67% of Kenya's energy-related CO_2 emissions** (GIZ, 2021) and **11% of the total emissions** in the country (Cynthia N. Sitati, 2022). In its revised Nationally Determined Contributions (NDC) submitted on 28th December 2020 to the United Nations Framework Convention on Climate Change (UNFCCC), **Kenya committed towards reducing the net national emissions by 32% by 2030** (IGES, 2021).

The transport sector committed to emission reductions of 1.9 $MtCO_{2e}$, 3 $MtCO_{2e}$ and **4.7 $MtCO_{2e}$ by** years 2022, 2025 and **2030** respectively. (IGES, 2021). In 2019, the total emissions from the road transport sector in Kenya amounted to **12.09 $MtCO_{2e}$** (GoK, 2020) compared to 10.97 MtCO2e in 2015 (GoK, 2019).

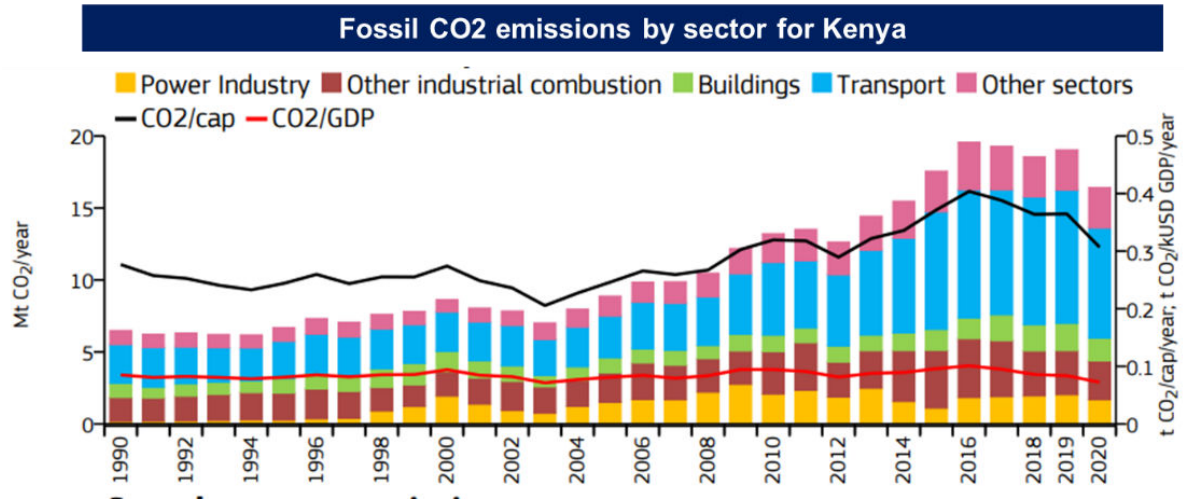


Figure 15: Fossil CO2 emissions by sector for Kenya (Crippa, 2021)

Kenya is a signatory of the "COP 26 Glasgow Declaration on Zero-Emission Cars and Vans". Signatory countries agreed to support an accelerated transition to zero emission vehicles including all sales of new cars and vans to be zero emission in 2035 in leading markets and 2040 for the rest of the world (SLOCAT, 2021). The updated NDC intends to mobilize domestic resources to meet 13.2% of the estimated USD 62 billion implementation costs to achieve its commitments including those in transport. It further recognizes the potential of low-carbon and efficient transportation systems in climate change mitigation (GoK, 2020) contributing to Kenya's commitment towards the COP 26 Declaration. Additionally, the transport sector is encouraged to reduce its energy intensity and improve energy efficiency rather than give up development opportunities (Njuguna Ndungu, 2023).

2.2. Emission Contribution by Engine Displacement

Different engine capacities have been determined to have varying emission factors per kilometer travelled. The 2019 study on projections for motor vehicle emissions in Kenya as part of meeting Kenya's NDC targets, which adopted the scenario building approach, showed that **engine capacities above 3500CC contribute an average 313.50 gCO2/km** while those below 1000CC contribute 127.99 gCO2/km. Vehicles of engine displacement between 1301-2000CC were observed to have an average emission rates of **176.48 gCO2e/km** (Omar Al-Guthmy, 2019).

Scenario Building Methodology used by the study (Omar Al-Guthmy, 2019)

Scenario building is a method of determining future possibilities of a given case study based on the analysis of the present and historical trends. The simulation's aim was to establish vehicle inventory distribution and use that dataset to project emissions and revenues by 2030. Actual vehicle data was used to determine the emissions using 2018 as the base year. Secondary data was also used from several sources to project scenarios of emissions to 2030. Methods of projection used included interpolation and linear trend analysis.

Each scenario used historical data from several sources including:

1. Historical vehicle distribution, efficiency, emissions and other statistics from the GFEI study conducted in conjunction with the UNEP
2. A University of Nairobi Enterprises and Services Ltd Final draft report of a fuel economy labeling and feebate program for cars in Kenya.
3. Historical vehicle inventory statistics from 2013 to 2016 Kenya National Bureau of Statistics Economic Surveys.
4. Hybrid vehicles fuel efficiency and emissions data from the UK—Vehicle Certifications Agency.

Based upon the Scenario Building Projections, **vehicles above 3500CC were determined to have the lowest average fuel economy at 12.10L/100km** while those below 1000CC had the highest average fuel economy of 6.34L/100km.

Table 3: Vehicle Emissions tabulation for Kenya (Al-Guthmy)

Vehicle Emissions tabulation for Kenya (Al-Guthmy)

Engine Size	Vehicle Age (Y)	8	7	6	5	4	3	2	0-1	Average Emissions (gCO_2 eq/KM
	Efficiency Loss	13.16%	11.28%	9.40%	7.52%	5.64%	3.76%	1.88%	0.00%	
	Average Emissions gCO_2 eq/km	gCO_2 eq/km								
<1000cc	113.94	128.93	126.79	124.65	122.51	120.37	118.22	116.08	113.94	127.99
1001 - 1,300cc	148.63	168.19	165.39	162.60	159.81	157.01	154.22	151.42	148.63	166.96
1301 - 1500cc	146.86	166.18	163.42	160.66	157.90	155.14	152.38	149.62	146.86	164.97
1501 - 2,000cc	167.35	189.37	186.22	183.08	179.93	176.79	173.64	170.50	167.35	187.99
2001 - 2500cc	194.27	219.83	216.18	212.53	208.88	205.23	201.57	197.92	194.27	218.23
2501 - 3500cc	214.66	242.90	238.87	234.83	230.80	226.76	222.73	218.69	214.66	241.13
3500+cc	279.08	315.80	310.56	305.31	300.06	294.82	289.57	284.33	279.08	313.50
Averages	180.68	204.46	201.06	197.67	194.27	190.87	187.48	184.08	180.68	

2.3. Transport Emission Reduction Targets

A 2015 analytical evaluation of the vehicle segments in Kenya provided the carbon emission potential for each vehicle type. Buses have the highest emission potential of 860.1 gCO2/km while motor cycles contribute about 70.1 gCO2/km. The analytical evaluation was based on the bottom-up approach adopted in a research that was conducted by the University of Nairobi and the Swiss INFRAS institute for the road-transport emissions in Kenya (GoK, 2019).

Emission Factors Derivation Methodology for Kenya

The bottom-up approach calculated the emissions for different vehicle categories by segment (i.e., vehicle size) based on the number of vehicles in each category segment and their responding emission factors in gCO_{2e} /km, which had been derived as part of the cited University of Nairobi research. The CO2 emission factors were locally adapted based on values from the Handbook for Emission Factors for Road Transport (HBEFA), a European platform that maintains emission factors developed through collection of original data from various test laboratories and processed with the Passenger Car and Heavy-Duty Emission Model (PHEM4) of the Technical University of Graz (Austria). They were transformed into CO_2 equivalent (CO_{2e}) emission factors by using the ratio between CO_2 and CO_{2e} from the EN 16258 standard (EU methodology for calculation and declaration of energy consumption and GHG emissions of transport services). These ratios (CO2e per CO_2) amount to 102.45% for petrol and 101.64% for diesel.

The analytical evaluation resulted in GHG emissions from each category as represented in figure 17.

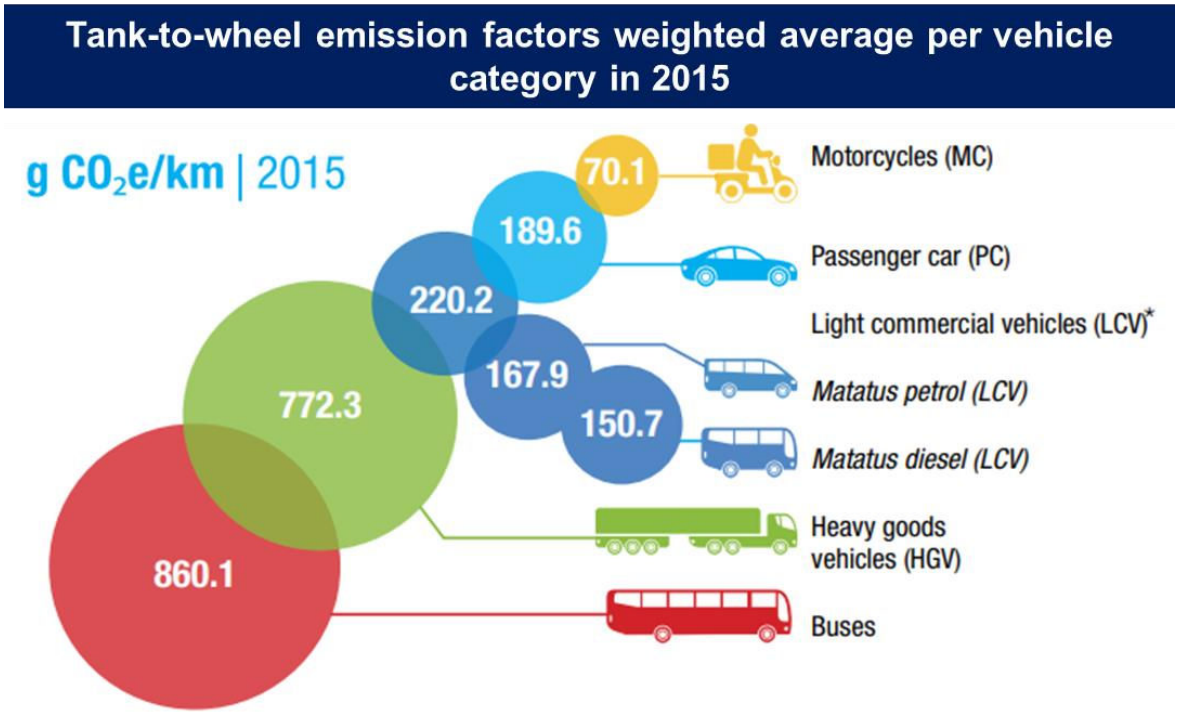


Figure 16: Tank-to-wheel emission factors weighted average per vehicle category in 2015 (GoK)

Through these emission factors, the total road transport emissions for the period between 2010 to 2019 were determined as plotted in figure 18. A spike in 2016 may have resulted from the increased fuel consumption during the election's campaigns (GoK, 2020).

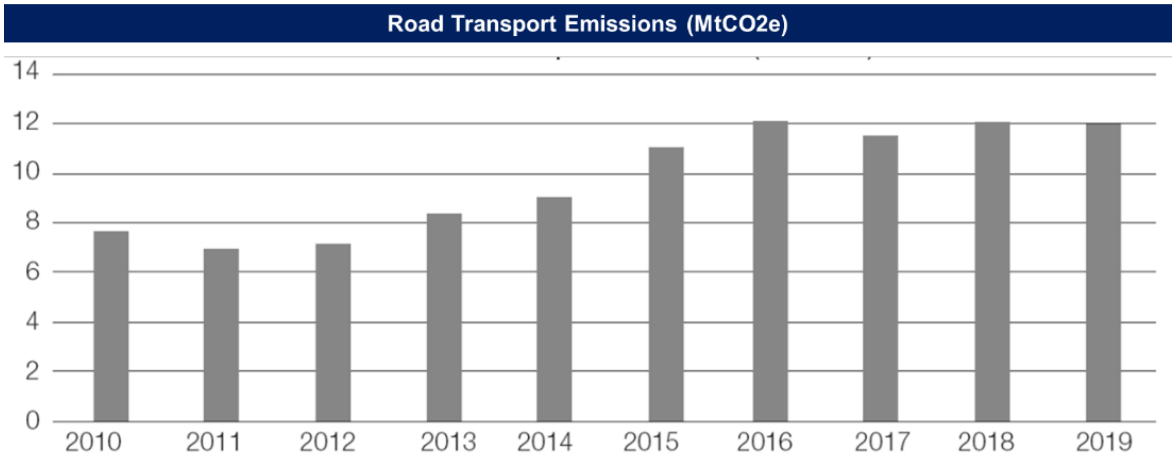


Figure 17: Trend of road transport emissions (MtCO2) (GoK)

The Kenya National Energy Efficiency and Conservation Strategy, 2020 **targets to attain emission levels of 160gCO_2/km by 2025 for Light Duty Vehicles** (GoK, 2020) against the 2012 emissions value of 181.8 gCO_2/km (UNES, 2016).

- *"Prompted by the increase in population, motor vehicles and motorcycles and the growing need for more housing and compounded by the strained economic growth, strategic urban transport planning and consumer preferences on choice of mobility will be crucial for improved transport and mobility efficiency enabling reduced road transport carbon emissions in line with the 2030 NDC targets. Achieving the 2030 targets will further require more actions on improving transport and vehicle efficiency and the implementation of the related measures." (Author)*

3. Regulatory status quo in Kenya

The operations of the road transport sector are governed by Acts of Parliament. Principally, the Traffic Act Chapter 403, which among other provisions, stipulates the registration of vehicles, licensing of motor vehicles and drivers and motor vehicle inspection (GoK, 2015). The Transport Licensing Act Chapter 404 on the other hand provides the coordination and control of the means of, and facilities for, transport in Kenya (GoK, 2012) (Bernadette Wanjala, 2005). Multiple other Acts of parliament and regulations govern the daily operations of the sector. Various provisions of these policies and regulations are discussed under this chapter providing a high-level overview focused on the implementation of vehicle efficiency in Kenya.

3.1. Type approval

Kenya currently does not have type approval processes/framework for the automotive sector. However, the 2019 Code of Practice on the Inspection of Road Vehicles indicates that all new diesel powered vehicles shall be type-approved to meet the requirements of Euro II/2 as from 1st January 2021 and Euro IV/4 as from 1st January 2024 while all new petrol (gasoline) powered vehicles shall be type-approved to a minimum of Euro IV/4 (KEBS, 2019). Additionally, the Standards (Verification of Conformity to Standards and Other Applicable Regulations) Order, 2020 requires that new road vehicles to have manufacturer's warranty or type approval. The Order however requires that for Completely Knocked Down (CKDs) kits for road vehicles, certificate of registration of the manufacturer or assembler issued by the Bureau or any other regulatory agency responsible for regulating manufactured products be provided (GoK, 2020).

A 2020 report by the Kenya Association of Manufacturers (KAM)," Automotive Sector Profile", asserts that to promote local assembly and manufacturing of parts, completely knocked down (CKDs) vehicles are to undergo rigorous type approval testing and approval by **NTSA** and **KEBS** before registration. The registration process in connection with **KRA is yet to be developed**. Identified as one of the key challenges of the Kenyan Automotive Sector, the absence of homologation of vehicles has affected local parts manufacturing in terms of perceived quality and market positioning (KAM, 2020).

The Sessional Paper No. 1 of 2022 on National Automotive Policy in Kenya targets to gradually and systematically reduce and eliminate the importation of used vehicles and used parts share in the domestic market by ***promoting the assembly and production of environmentally friendly vehicles and parts locally and ensure adherence to internationally set standards of emissions***. Therefore, as a priority area, the policy recognizes the need to establish regulations for the implementation of the policy (GoK, 2022). To ensure conformance with regional (EAC) emission standards, the Environmental Management and Coordination (Air Quality) Regulations, 2014 mandates that **all commercial and public service vehicles undergo emission tests annually and all private vehicles over five years old undergo emission tests once in every two years to limits included in the schedules**. This is to be achieved through the establishment of Vehicle Emissions Testing Centres (GoK, 2014).

Additionally, the 2019 Code of Practice provides the criteria for conformity asserting that, for a vehicle to be registered for use in Kenya it shall be required to have the following:

i. A certificate of roadworthiness from a recognized agency of the exporting country. The Certificate of Road Worthiness must be provided by the owner of the vehicle to the Kenya Bureau of Standards agent (JEVIC); it is required for a pre-inspection at origin to obtain the Certificate of Conformity (COC) for cars coming from Japan / Dubai Singapore /South Africa / UK (cars from origins than these can be inspected in Kenya by KBS for a fee of EUR 150) (IAM, 2012).
ii. A vehicle inspection report from an authorized vehicle inspection centre.

Some of the envisioned vehicle emission tests among the listed 26 tests in the 2019 code of practice (KEBS, 2019) include:

i. 10.15-mode fuel economy test (10.15-mode test cycle)

ii. Diesel smoke concentration test (3- mode, no load quick acceleration)

iii. Diesel 13-mode exhaust emission test

iv. Diesel 10.15-mode exhaust emission test and

v. Diesel 6-mode exhaust emission test

3.2. Import regulations

Kenya is historically one of the world's top importers of used vehicles. **Japan is the top exporter to Kenya** accounting for 82.6% in 2019 and does differentiate between new and used vehicles in its trade data. These used exports alone would account for over 57% of global exports to Kenya in 2019 (Simon Adhanom, 2020). 85% of all the imported vehicles in Kenya comprise of the Fully Built Units (FBU) (GoK, 2022).

The 2019 code of practice (KEBS, 2019) stipulates that:

i. All non-commercial road vehicles which more than eight years are old from the year of first registration shall not be allowed for importation. The difference between the year of first registration and the year of manufacture shall not be more than one year.

ii. All commercial road vehicles, which are more, than:
   a. five years old from the year of first registration shall not be allowed for importation as from 1st July 2019
   b. three years old from the year of first registration shall not be allowed for importation as from 1st July 2021
   c. zero years old from the year of first registration shall not be allowed for importation as from 1st July 2024.

iii. Left hand vehicles shall be not accepted.

On the other hand, The National Transport and Safety Authority (Transport Network Companies, Owners, Drivers and Passengers) Regulations 2022 provides that for transport network vehicles ("a motor vehicle with a manufacturer's seating capacity originally designed for not more than seven passengers excluding the driver, used to provide transport network services through a transport network platform, but does include a taxicab, motorcycle or shared pool motor vehicle") to start operation in Kenya, it should **not be more than 16 years** from the date of manufacture (GoK, 2022). Besides the age of vehicles and conformance with the vehicle type of drive, for one to import a vehicle (FBU) into the country, a structured procedure is followed in conformance with the Verification of Conformity to Kenya Standards of Imports Order, 2005 (GoK, 2005).

i. Customs clearance through a licensed clearing agent for the processing of declaration in the Kenya Revenue Authority (KRA) system is undertaken through the Simba 2005 online system.

ii. The clearing agent lodges an import entry in the KRA system, pays the required duties and taxes and presents all the relevant documents for Customs to pass the entry.

Documents required are:

a. Original Commercial Invoice.

b. Original Bill of Lading.
c. Import Declaration Form obtained from Customs.
d. Authentic Original Logbook from country of origin.
e. Certificate of road worthiness
f. Copy of your KRA PIN certificate/ Copy of certificate of Incorporation (applicable to companies)

iii. If one purchases a vehicle that was previously exempt, one is required to contact a licensed clearing agent to lodge an entry with Customs. The vehicle must be presented for inspection by Customs before the entry document is accepted. If found to conform to the required standards, the processing officer will accept payment and pass the entry upon full payment of the relevant duties and taxes.

Note: The inspection of all import used cars in Kenya is conducted to rate the overall road condition of the car. If the vehicle fails, it will not be cleared by the customs. Through the Pre-Export Verification of Conformity to Standards (PVoC) programme operation manual, KEBS have contracted 3 PVoC partners on the motor vehicles, motor vehicle spare parts and mobile equipment inspections (KEBS, 2020).

a. Auto Terminal Japan Limited (ATJ)
b. EAA Company Ltd (EAA)
c. Quality Inspection Services Inc. Japan (QISJ).

The National Transport and Safety Authority maintains all vehicle data including data for all imports and exports as well as in use vehicles. At the point of vehicle importation and registration, data collected include:

i. Make and type
ii. Chassis Number
iii. Engine number
iv. Engine Displacement (CC)
v. Engine transmission (Manual, automatic)
vi. Type of engine (Petrol, diesel)
vii. Year of manufacture
viii. Date of first registration
ix. Colour
x. Sitting capacity

3.3. Vehicle registration

Registration and licensing of motor vehicles in Kenya is handled by the **Registrar of Motor vehicles.** This is undertaken in the Road Transport Department which is managed by the **National Transport and Safety Authority** (NTSA) as stipulated under the Traffic Act, CAP 403 (GoK, 2015). Vehicle registration involves adding a vehicle's details to the motor vehicle register upon payment of the relevant duties and compliance with KEBS standards on vehicle importation. To facilitate the registration process, the following documents are required:

i. Duty and VAT receipts
ii. Import entry form (Form 63)

iii. Foreign log book translated into English
iv. Port Release Order
v. Bill of Lading or Airway Bill
vi. Clean Report of Findings (CRF)
vii. Import Declaration Form (IDF)
viii. Authority to enter goods for home use from the Commissioner of Customs & Excise
ix. Vehicle Inspection Report (VIR) if the vehicle is for commercial use.
x. A temporary Importation Document (Form C44A or C44)
xi. Road manifest or Carnet de Passages in the case of vehicles imported by road
xii. Foreign Vehicle Receipt/License
xiii. Personal Identification Certificate Number (PIN) card
xiv. Certified copy of national identity card of vehicle owner or valid Passport.
xv. Insurance cover
xvi. A duly filled Form "A" personally signed by the Importer.

Vehicle registration process in Kenya is digitalized. One (individual, dealer, agent, financial institution or company) must have a **Transport Integrated Management System (TIMS) account (https://timsvirl.ntsa.go.ke).** TIMS offers various essential services to drivers of vehicles and other road users. Accessing the TIMS account requires one to register on NTSA's citizen self-service portal. The portal offers diverse services including:

i. Vehicle Registration (online registration)
    a. Vehicle registration (Application for vehicle registration, Pending registrations, vehicle registration records)
    b. Vehicle reregistration
    c. Vehicle transfer (application for vehicle ownership transfer in case of sale of vehicle or through any other form of transfer).
    d. Change of particulars
    e. Reflective number plates (application)
    f. Vehicle de-registration
    g. Alternative transfers (special transfer of ownership)
    h. Asset register report (pertains to ownership and provides registered vehicle details).
ii. Vehicle Inspection (Online application for inspection)
    a. Payment of inspection booking
    b. Inspection booking
    c. Inspection report

iii. Online search through the use of the vehicle register record (for confirmation of vehicle ownership)

The vehicle details captured in the **asset register** report include:

i. Vehicle registration number e.g. KZZ 999Z
ii. Chassis/Frame Number
iii. Owners name (Full official names)
iv. Type of ownership
v. Type of vehicle e.g. Motor vehicle
vi. Body type e.g. 0-saloon
vii. Make of vehicle e.g. Toyota and
viii. Model e.g. Premio

The cost of vehicle registration via TIMS varies based on the vehicle engine capacity up to a maximum of KES 6,465 for vehicles above 3,000CC. During this initial registration, a flat fee of KES 750 is paid for the issuance of an electronic sticker (e-sticker). An e-sticker has the following details in an electronic format; Chassis Number, make, color, registration number, motor vehicle ownership which are connected to a central database. A sample e-sticker is provided as figure 19 (NTSA, 2023).

Figure 18: Sample electronic sticker with embedded QR code

A change of vehicle ownership can be initiated when a transaction with another person (purchase, sale, exchange or donation) has been completed, in the event of the death of the owner of a vehicle, donation of a vehicle to an organization or the sale of a vehicle to a merchant (with or without the purchase of a new vehicle) and can only be legal if:

i. The previous owner has de-registered the vehicle from the registry
ii. The new owner has re-registered the vehicle in the registry
iii. The new owner has acquired a revised vehicle registration certificate (Logbook) indicating his/her legal ownership of the vehicle (see sample logbook template).

When transferring ownership of a used vehicle, the total mileage travelled by that vehicle must be declared, except in the case of a moped or motorcycle with a cylinder capacity of 125 cm^3 or less.

Vehicles are registered based on their primary fuel type i.e. diesel or petrol. Registration categories that capture other fuel category types such as; biofuels, hybrids (mild hybrids, full hybrids, plug-in hybrids and Electric Vehicles with Range Extender Hybrids), full electric (Battery-electric etc.) and its characteristics **are not captured**. Electric vehicle (EV) companies, however, are able to update their vehicle volumes in various reports and forums informing on the approximate number of EVs in Kenya. **Furthermore, the registration systems do not currently capture the vehicle carbon footprint (tailpipe emissions) or fuel efficiency levels** (SDoT, 2021).


Registration Certificate

REPUBLIC OF KENYA

TRAFFIC ACT (CAP 403)

(Section 6(5))

Entry No Original No

Particulars:

Registration:
Chassis/Frame:
Make:
Model:
Type:
Body:
Fuel:
Man Year:
Rating:
Engine No:
Color:
Reg. Date:
Gross weight:
Duty: Paid
Number of previous owners:0

For official use only:-
Authorising Signature and official seal

Particulars:

Passengers:
Tare Weight:
Tax class:
Axles:
Load Capacity(Kg):
Previous Reg. country:
Previous registration:

Registered Owner(s)

PIN:
Name:
Box No.:
Code:
Town:

Usual signature: _____

Important:-
The person in whose name a vehicle is registered shall unless the contrary be proved, be deemed to be the owner of the vehicle. Before you use any vehicle on the road,please ensure that your insurance against third party risk is in order. It is a serious offence to drive without proper insurance.

Figure 19: Sample Vehicle registration Certificate (Logbook)(https://infotradekenya.go.ke/)

3.4. Taxation

Vehicle taxation in Kenya is based on four areas which KRA is responsible for:

i. vehicle function (carrying passengers, prime movers, heavy machinery, special purpose)
ii. engine capacity
iii. fuel type (petrol, diesel, electric)
iv. gross vehicle weight

The year of manufacture (and registration in a different country) is relevant for calculation of **the imported vehicle tax**. Vehicles imported into the country are imposed several taxes as outlined below:

i. **Import duty:**

Effective 1st July 2023, the import duty charged on motor vehicles in Kenya is **35%** following ***an approval by the East African Community (EAC) Council of Ministers to raise the rates from 25% in view of the application made by the Kenyan Government.***

ii. Value added tax (VAT):

The value added tax is charged at 16% of [customs value + import duty + excise duty]. However, during Covid, from the period between 2020 and 2021, VAT was charged at 14% (KRA, 2021).

iii. Railway development levy (RDL):

The RDL fees is calculated on the customs value of the goods and must be paid by the importer at the time of entering the vehicle into the country. It is regulated by the Miscellaneous Fees and Levies Act NO. 29 of 2016 and charged at a rate of 2% of customs value (KRA, 2020).

iv. Import declaration fees (IDF):

Consequently, the IDF is also calculated on the customs value of the goods and must be paid by the importer at the time of entering vehicle into the country. It is also regulated by the Miscellaneous Fees and Levies Act No. 29 of 2016 as amended first by the Finance Act, 2019, that increased the RDL rate from 1.5% to 3.5% of customs value (KRA, 2020) (GoK, 2019).

v. Excise duty:

The excise duty is calculated as a percentage of [customs value + Import duty] and desegregated as below (KRA, 2021) (GoK, 2019);

Table 4: Excise Duty Charges (Author Generated)

Excise Duty Charges		
Fuel Type	**Cylinder Capacity**	**Excise Duty Rate**
Gasoline	1000-1500 cc	20%
Gasoline	1500-3000 cc	25%
Gasoline	>3000 cc	35%
Diesel	<1500 cc	25%
Diesel	1500-2500 cc	25%
Diesel	>2500 cc	35%
Hybrid	unspecified	25%
Full Electric	unspecified	10%

The customs value is generated from the year of manufacture where a depreciation rate is generated as per table 5, and from the current retail selling price (CRSP) which is provided by a licensed local dealer or a vehicle manufacturer. KRA depreciates the CRSP price of a car by 10% per year (since the year of manufacture) to which then adds the insurance and freight costs to arrive at the customs value.

Table 5: Depreciation rates for direct imported vehicles in Kenya (Author generated)

Depreciation rates for direct imported vehicles in Kenya

Duration	0-6m	>6m	>1-2y	>1-3y	>1-4y	>1-5y	>1-6y	>1-7y	>1-8y
Depreciation Rate	5%	10%	15%	20%	30%	40%	50%	60%	70%

It is to be noted that the above taxations/levies are subject to periodic adjustments informed by the country's economic status and government's priority on revenue. In the press release on the FY 2023/24 budget statement, the Government of Kenya offered a reduction of IDF from the current rate of 3.5% to 2.5% and RDL from the current rate of 2% to 1.5% to bring fairness and equity (Treasury, 2023) in line with the approved 2023 Finance Act (GoK, 2023).

3.4.1. Purchase taxes

The Second-hand Motor Vehicles Purchase Tax Act, 1991 (revised 2012) dictates the amount of charges that are imposed upon the direct purchase of a motor vehicle in Kenya. Under schedule 1 of the Act, motor vehicles are charged between KES 1,035 and KES 5,290 depending on their engine capacities as provided in table 6 below (GoK, 2012):

Table 6: Motor Vehicle Purchasing tax rates in Kenya

Engine capacity (cc)	Rates (KES)
Not exceeding 1000cc	1,035.00
>1000cc ≤1200cc	1,265,00
>1200cc ≤1500cc	1,440.00
>1500cc ≤1700cc	1,785.00
>1700cc ≤2000cc	2,070.00
>2000cc ≤ 2500cc	3,220.00
>2500cc ≤ 3000cc	4,430.00
>3000cc	5,290.00

Purchase through a Dealer:

Most Kenyans prefer purchasing vehicles through and from dealers in the various parts of the country mostly in the 5 major towns (Nairobi, Mombasa, Kisumu, Eldoret and Nakuru). Purchasing a car from the dealers take a specific process as detailed below (Motors, 2022).

a. **Identification of a suitable dealer** to purchase the car from (usually carried out via online or through physical visits).

b. **Vehicle viewing and physical Inspection including test driving** which may be carried out by the prospective buyer alone or together with a mechanic or through a pre-purchase inspector.

c. **Provision of a sale agreement** signed together and in presence of a witnesses or a lawyer. This agreement should contain the seller and buyer details and the terms of

the agreement. It should state the mode of payment. The sales agreement should also state that the vehicle ownership will be transferred to the buyer immediately after he/she provides the full payment. The **payment** is preferably made through a bank transfer as a reference in case of future validations. The payment **does not include VAT** as this is already paid during importation.

d. **Issuance of a vehicle number plate** by the dealer if the number plate of the car is already registered. Most dealers however register the vehicle when it is purchased, in this case, **the dealer undertakes the registration** and the vehicle is assigned a registration number within hours. A new number plate for the new owner takes about two weeks to be processed.

e. **Ownership transfer/logbook transfer process** is then conducted by the dealer. The buyer is required to accept the transfer through their NTSA TIMS account. The new Logbook indicating the new owner of the motor vehicle is processed within 2 weeks by NTSA.

f. **Payment for the motor vehicle insurance Cover** is then undertaken by the new owner. For any car to be allowed on Kenyan roads, an Insurance cover is required. A comprehensive insurance cover is recommended. Typically, most insurance companies charge about **4%-7% of the total value of the car per annum** paid one off annually or staggered as agreed with the insurer. Kenya, nevertheless, lacks a motor vehicle salvage policy to guide insurers on handling damaged and written-off vehicles. A National Salvage Handling and Management Policy would prescribe what happens to the various levels of salvages.

The 2021 revised Income Tax Act, however, restricts capital expenditure on motor vehicles other than a commercial vehicle **from exceeding three million shillings.** Where the motor vehicle is sold, the sale price shall be deemed to be the proportion of the proceeds of sale, having regard to the original purchase price and three million shillings. Capital expenditure on motor vehicles attracts an investment allowance deduction at the rate of 25% per year, in equal installments (KRA, 2021).

3.4.2. Annual taxes

Besides the cost of insurance highlighted under section 3.4.1, the Income Tax (Advance Tax) (Conditions and Procedures) Rules, 2012 requires that any person who owns a commercial vehicle liable to pay an advance tax payable for each year of income on or before the twentieth day of the first month of the year of income or in the case of transfer of ownership of the commercial vehicle, before the new owner is registered as such (GoK, 2012).This tax is paid to Kenya Revenue Authority through their digital iTax Portal (https://itax.kra.go.ke/KRA-Portal/). For a motor vehicle to be classified as commercial by the Commissioner it should be;

i. Manufactured for the carriage of goods and so used in connection with a trade or business; or

ii. A motor omnibus i.e. a public service vehicle having seating accommodation for more than 25 passengers exclusive of the driver; or

iii. Used for the carriage of members of the public for hire or reward e.g. using saloon cars.

Effective 1 January 2024, the 2023 Finance Bill proposes to amend the advance tax payable on passenger and commercial vehicles, excluding tractors / trailers used for agricultural purposes, doubling the tax as follows (GoK, 2023) (KPMG, 2023):

Advance tax rates		
Item	**Proposed rates**	**Current rates**
Passenger vehicles	Higher of KES 100 per passenger per month or KES 5,000 per year	Higher of KES 60 per person per month, or KES 2,400 per year
Cargo vehicles	Higher of KES 3,000 per ton per year of KES 5,000 per year	Higher of KES 1,500 KES per ton per year of KES 2,400 per year

Figure 20: Advance tax rates (GoK, 2023).

3.4.3. Fuel taxes

Governed through the Finance Act, which has subsequently been one of the most revised laws in Kenya, the National Treasury deleted sections of the law (VAT Act revised through Finance Act 2020) (GoK, 2020) that allowed the halving of value-added tax (VAT) on all petroleum products to 8% and reinstating the levy to 16% (GoK, 2023). The variance in petroleum VAT is passed through the consumer (vehicle owner/operator) through an increase in fuel pump prices. The 2016 report on fuel economy in Kenya recommended The National Treasury to establish mechanisms to develop fuel **tax options** / **tax rebate systems in relation to CO2 emissions and fuel efficiency standards** (UNES, 2016) which has been included in the **Draft Green Fiscal Incentive Policy Framework.** The policy framework further recommended congestion charging as a source of revenue for greening the sector (Treasury, 2022).

It is to be noted that the revenues obtained from this taxation are, among other uses, utilized in road maintenance. Road maintenance levy was established in 1993 through the Road Maintenance Levy Fund Act, 1993 imposed on any or all petroleum fuels entered for home use in Kenya (GoK, 1993). Figure 22 shows amount of road maintenance funds disbursed by the Kenya Roads Board (KRB) from 2018/19 to 2022/23 (KNBS, 2023).

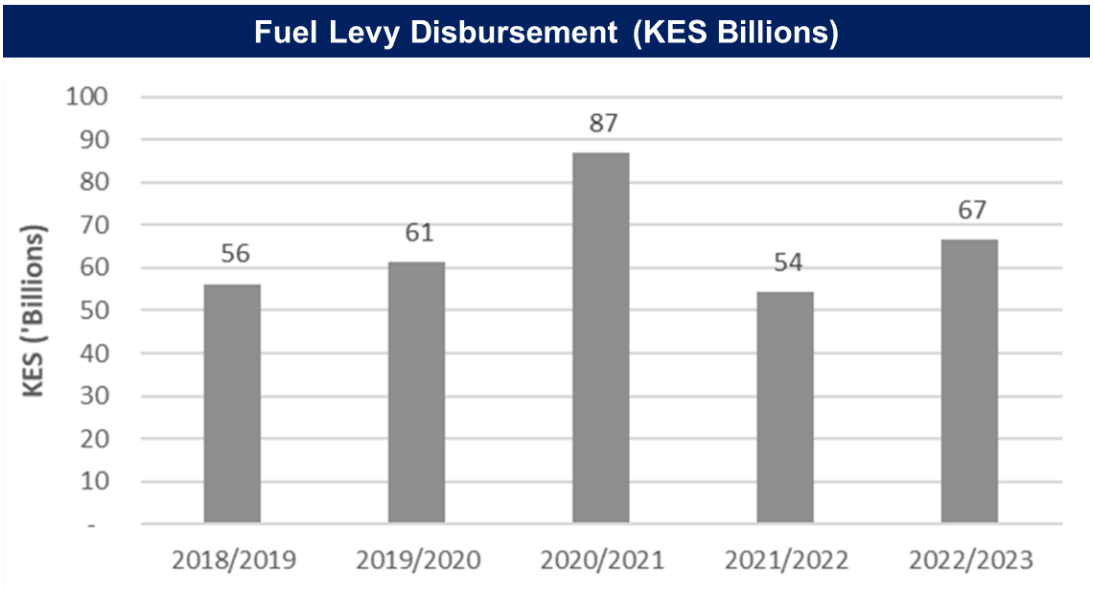


Figure 21: Fuel Levy disbursement in Billions (Kenya Roads Board)

The cost of automotive fuel varies monthly and pump prices for proceeding month published every 14th of each month by the Energy and Petroleum Regulatory Authority (EPRA). **The total taxes and levies on fuel is approximately 35% for gasoline and 31% for diesel and occasionally drifts to approximately 40%.** All associated taxes and levies are highlighted in figure 23 with their respective approximate costs for each liter of fuel. As evidenced from the documented levies and taxes on fuel, there is no CO2-related taxation on either diesel or gasoline (EPRA, 2023).

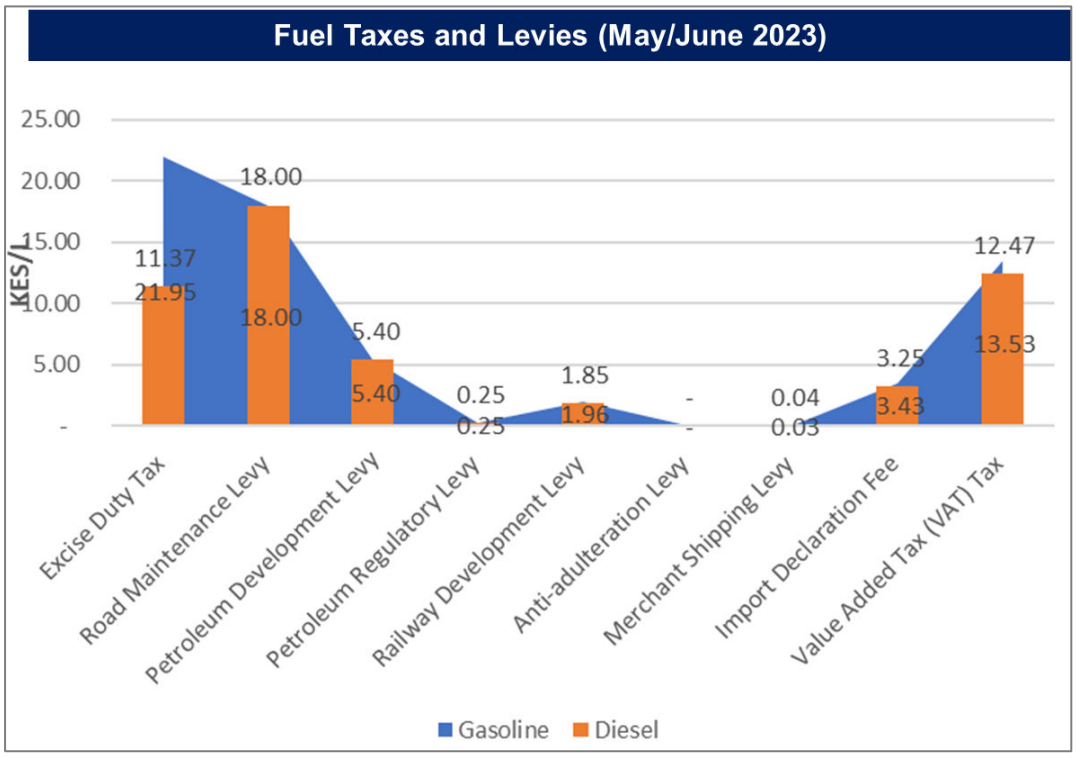


Figure 22: Fuel taxes and levies (EPRA)

3.5. Subsidies/ incentive programs

The excise duty act (2021 revised edition) provides for a reduction in excise duty to 10% for 100% electric powered motor vehicles (KRA, 2021). However, there are no subsidies in existence for low-carbon vehicles that are not electric in nature nor in the manufacturing of the same. The Draft Green Fiscal Incentive Policy Framework nevertheless proposes to provide incentives for the import, manufacture and assembly of electric and hybrid motor vehicles, motorcycles and their spare parts (Treasury, 2022).

Additionally, the Draft National Tax Policy 2022 proposed to exempt locally assembled motor vehicles and motorcycles from **excise duty** (Treasury, 2022). Moreover, the Income Tax (CAP 470) 2021 revised edition provides for reduced corporate tax at 15% relative to the applicable 30% for a company whose business is local assembling of motor vehicles, for the first five years from the year of commencement of its operations provided that this rate (15%) shall be extended for a further period of five years if the company achieves a local content equivalent to 50% of the ex-factory value of the motor vehicles (KRA, 2021).

Subsequently, as Kenya seeks to position itself as a market leader in vehicle manufacturing and assembly, the Sessional Paper No. 1 of 2022 on National Automotive Policy targets to gradually and systematically reduce and eliminate the imports of used vehicles and used parts share in the domestic market by promoting local production and assembling of environmentally-friendly automotive products and ensure adherence to internationally set standards of emissions. The policy further reckons that the 8 years age limit does not provide adequate incentive for local assembly of environmentally-friendly vehicles (GoK, 2022).

3.6. Fuel economy/ energy efficiency labelling

Although **currently not implemented**, the 2016 Energy and Petroleum Regulatory Authority (EPRA) and UNEP study on the development of a fuel economy labeling and feebate programme for motor vehicles in Kenya (UNES, 2016) proposed three options for labels for vehicles in Kenya which EPRA would have implemented. Moreover, the Kenya National Energy Efficiency and Conservation Strategy, 2020 highlights efforts to improve fuel economy performance of vehicles in Kenya including the development and adoption of fuel economy standards and labelling for vehicles. The labels will include average fuel consumption per mile and CO2 emissions (GoK, 2020). Specifically, the strategy targets to promote:

i. Vehicle efficiency standards and labelling for all vehicles imported and sold in Kenya,
ii. Policy restricting the age of second-hand vehicles imported into Kenya to a **maximum of five years**,
iii. Collecting annual license fees based on the results of annual inspections on fuel economy and CO2 emissions and
iv. Implementation of vehicle inspection for emissions.

Guided by the Provisions of the Energy Act, 2019, EPRA has a mandate to develop motor vehicle energy efficiency labelling regulations. Section 198 (2) of the Act provides that the cabinet secretary, through recommendations by EPRA may make regulations on the labelling for energy efficiency purposes of household appliances, devices and **motor vehicles** as well

as energy efficiency standards for specific technologies, processes, appliances, devices, **motor vehicles** and buildings. Additionally, Section 201 of the Act stipulates that EPRA may from time to time, through regulations made in that respect, establish and monitor specific energy consumption and fuel efficiency benchmarks for land motor vehicles in association with relevant agencies (GoK, 2019).

The proposed labelling options in the UNEP study are as outlined:

a. Proposed Option 1

The first proposed option (UNES, 2016) indicated both the fuel consumption and CO2 emission.

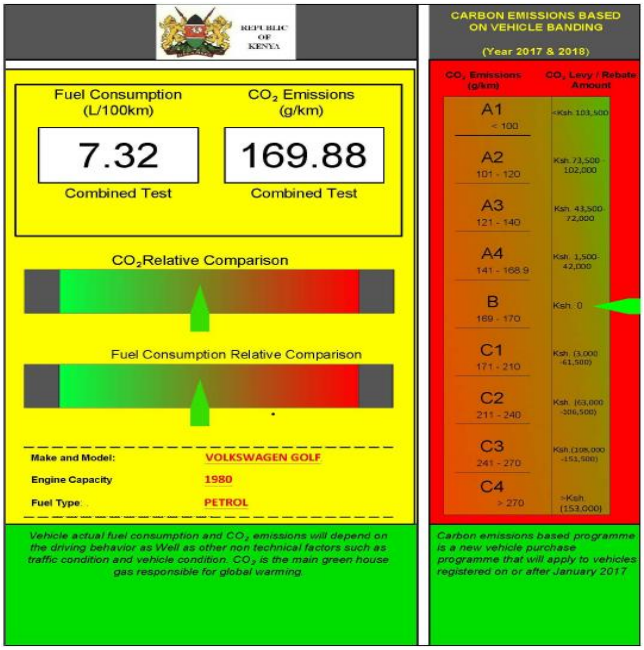


Figure 23: Proposed Vehicle Fuel Label (Option 1)

b. Proposed Option 2

The second proposed option assigned each vehicle a rating from 1 (Best) to 5 (Worst) for fuel economy and greenhouse gas (GHG) emissions (i.e., how much carbon dioxide the vehicle's tailpipe emits per kilometer).

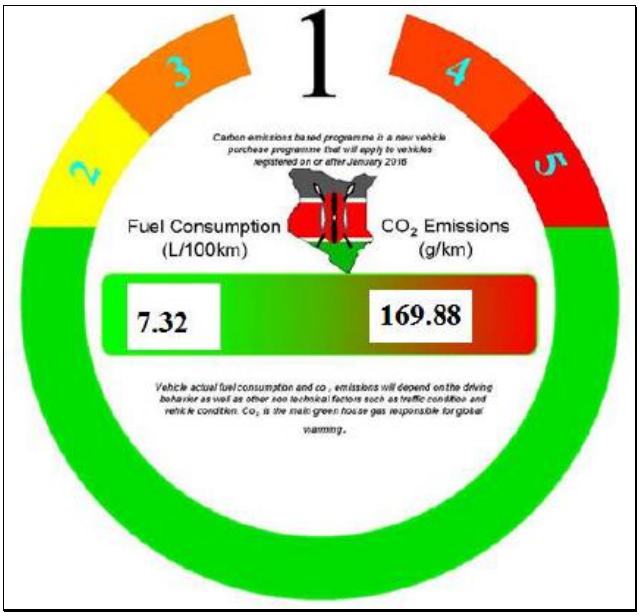


Figure 24: Proposed Vehicle Fuel Label (Option 2)

c. Proposed Option 3

The third proposed option assigned each vehicle a star rating for fuel economy and greenhouse gas (GHG) emissions ranging from 1 to 5, with more stars indicating better savings on the part of the consumer (UNES, 2016). This approach is similar to the implemented approach under the Minimum Energy Performance Standards (MEPS) for refrigerators in Kenya (KEBS, 2019) implemented through the Energy (Appliances' Energy Performance and Labelling) Regulations, 2016 (GoK, 2016). This regulation highlights the appliances that must conform to the energy performance and labelling.

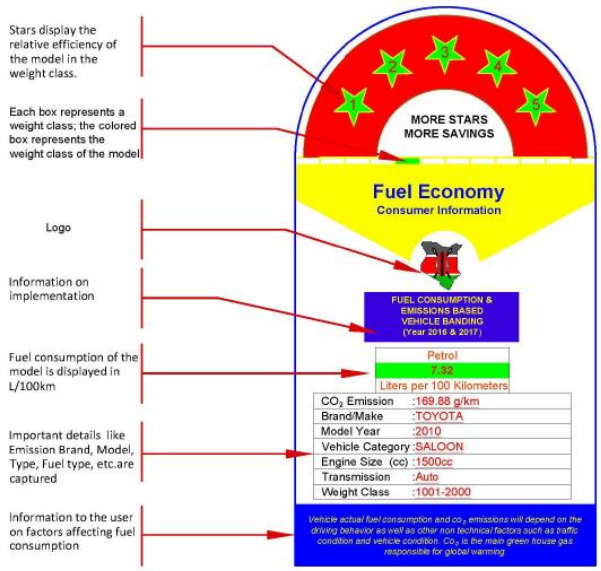


Figure 25: Proposed Vehicle Fuel Label (Option 3)

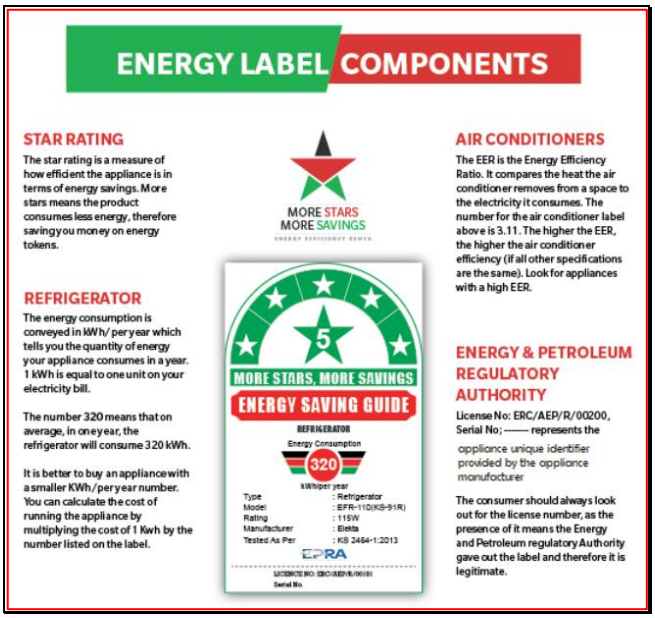


Figure 26: Sample energy efficiency label in Kenya (EPRA)

The Kenyan market has seen significant growth in the vehicle fuel types including the continued growth in electric mobility. The labelling strategy can be reviewed to accommodate changes that have already taken place in the sector.

The 2016 National Policy on Climate Finance recognized that climate finance provides opportunities and incentives for the transport sector to considerably reduce GHG emissions and increase resilience. The Policy identified Improvements in heavy duty and passenger vehicle efficiency through improved fuel economy, motor vehicle labelling and feebate systems as key priority areas (Treasury, 2016).

3.7. Fuel economy/ CO2 fleet standards

Currently, **Kenya does not have fuel economy standards** (Aderiana Mutheu Mbandi, 2019). The Kenya National Environment Policy 2013 nevertheless highlights two roles of the government in relation to sustainable mobility including (GoK, 2013);

i. to promote efficient non-motorized, non-polluting and efficient infrastructure for mass transport system and

ii. to promote non-polluting modes of transport.

A 2018 GIZ report," Road transport GHG emission factors for Kenya" showed that the road transport CO2 emission factors for Kenya for the reference year 2015, by vehicle category were as plotted in figure 28 (GIZ, 2018);

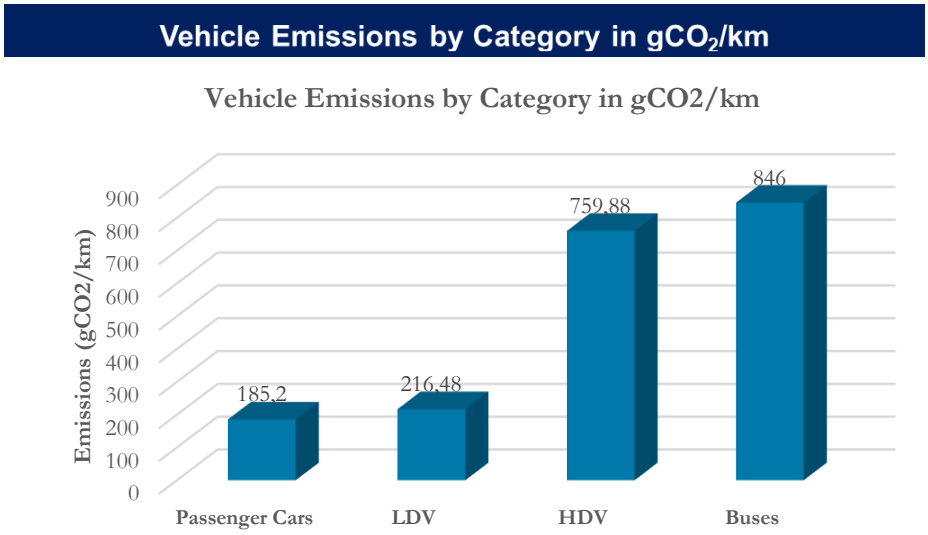


Figure 27: Vehicle Emissions by category in gCO2/km (GIZ)

Comparatively, the 2016 UNEP and EPRA study on the development of a fuel economy labeling and feebate programme for motor vehicles in Kenya for the Light Commercial Vehicles **established that the average CO2 emission using the 2010-2014 dataset was 169.88 gCO2/km and the average fuel consumption as 7.12 L/100km** (UNES, 2016).

The Kenya National Energy Efficiency and Conservation Strategy, 2020 targets to attain an average CO2 emissions per km travelled of 160gCO2/km and an average fuel consumption (light duty vehicles) per 100 km travelled of 6.5L/100km by 2025 informed through the UNEP study. The 2020 strategy identified six gaps within the transport sector challenging the effective implementation of vehicle energy efficiency including (GoK, 2020);

i. The lack of programmes aiming at reducing transport energy demands,
ii. The lack of a programme encouraging people to use more energy-efficient modes of transport,
iii. The absence of a national reporting system to track and report key transport efficiency metrics,
iv. The lack of a sub-sectoral energy efficiency goal for transport,
v. Limited research and data on the gap between current vehicle emission standards and gasoline/on-road diesel quality and,
vi. The absence of a clear initiative to improve the diesel emission standards in Kenya to Euro 4 from the current Euro 2 equivalent.

To address some of the established gaps, the 2020 strategy recommends the initialization of Fuel Economy Standards and Labelling for vehicles as part of the strategic actions towards the improvement of the fuel economy performance of vehicles in Kenya. Part of the expected outputs from the strategy include:

i. Vehicle efficiency standards and labelling for all vehicles imported and sold in Kenya,
ii. Policy restricting the age of second-hand vehicles imported into Kenya to a maximum of five years,

iii. Collecting annual license fees based on the results of annual inspections on fuel economy and CO2 emissions,

iv. Implementation of vehicle inspection for emissions.

Additionally, the Green Economy Strategy and Implementation Plan (2016-2030) targets to reduce vehicular emissions through legal and fiscal measures (GoK, 2016).

GFEI Studies in Kenya

In March 2013, the Government of Kenya through the Energy Regulatory Commission (now EPRA) signed an agreement with UNEP to establish the country's average fuel economy (baseline setting) and to carry out a Cost Benefit Analysis (CBA) of different policy options that promote fuel efficient vehicles. The focus of the study was the category of vehicles with a gross weight of less than 3,500 kilograms and referred to as Light Duty Vehicles (LDVs). Computed records of 2010, 2011 and 2012 were used to develop the fuel economy of the local fleet of LDVs. This initial report, published on July 2014, established that the average fuel consumption was 7.5L/100 km while the average CO2 was 181.9g/km for the period of study.

In February 2015 the Energy Regulatory Commission (now EPRA) contracted the University of Nairobi Enterprises and Services Ltd (UNES) to carry out a feebate and vehicle labeling study as a follow-up to recommendations proposed in the Global Fuel Economy Initiative (GFEI) study carried out in 2014 with the additional dataset from 2012-2014. This updated study, published in June 2016, established that the average fuel consumption was 7.12L/100 km while the average CO2 was 169.88g/km for the period of study that utilized 2010-2014 data. The literature review for this updated study indicated typical benchmarks for CO2 emissions to range from 120 to 160g CO2/km.

A 2017 World Bank report, "Motorization Management in Kenya", indicated the need for the implementation of the GFEI study recommendations on feebate program from 2019, where official CO2 emissions rates are established through import certification process. Assuming fiscally neutrality (and hence no impact on fleet size), the study modelled the potential impacts of the adoption of a CO2-based light vehicle fiscal policy which showed significant shift towards the purchase of more fuel economical vehicles as indicated in figure 29 (WorldBank, 2017).

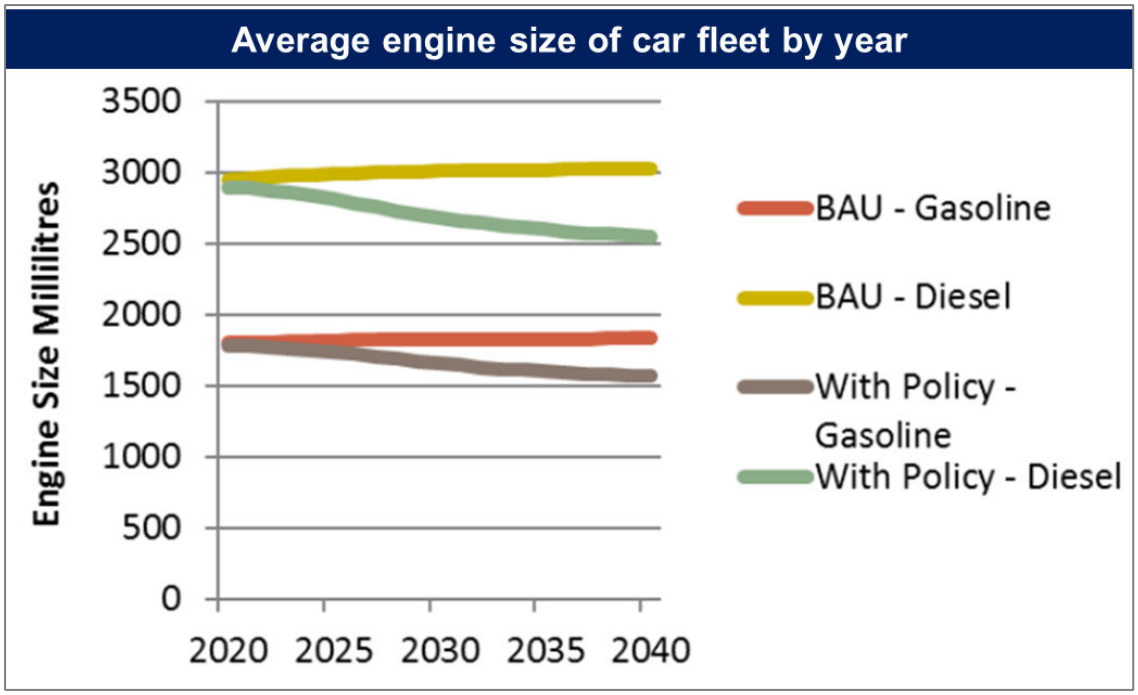


Figure 28: Average engine size of car fleet by year (World bank)

3.8. Zero/low emissions vehicles mandates

Kenya **does not have an explicit carbon tax nor binding mandates for zero-emission vehicle production/import**. Nevertheless, Kenya has continued to be a continental market leader on voluntary carbon market being responsible for 23% of the value of carbon credit issuances in Africa (Were, 2023) and is part of the 5 countries in Africa that accounts to over 65% of the total VCM market value (ACMI, 2022). In its support to the carbon market development, the 2022 Finance Act provides for reduced (halved) income tax charged at the rate of 15% for companies operating a carbon market exchange or emission trading system that is certified by the Nairobi International Financial Centre Authority (NIFC) for the first ten years from the year of commencement of operations (GoK, 2022). Under consolidation, the Climate Change Bill, 2023 seeks to introduce regulations for carbon markets in Kenya (GoK, 2023).

Such opportunities could be explored in the transport sector for financing the manufacturing and adoption of low-carbon vehicles and the integration of well-to-wheel emission reduction assessments and tank-to-wheel efficiency assessments. **In its strategic plan on energy efficiency and conservation, Kenya aims to have at least 5% of its imported vehicles to be electric by 2025** (GoK, 2020). Through the National Climate Change Action Plan (2018-2022), Kenya had aimed at importing and piloting the use of 150 electric hybrid vehicles (buses, GoK cars) by 2019 and providing appropriate incentives for their use by 2022. Further, the plan envisioned to develop and implement standards for electric/hybrid vehicles in Kenya by 2019 (GoK, 2018). However, these targets have not been fully realized and the action plan is under review to cover the period between 2023-2027. Progressively, Kenya aims at providing incentives for local manufacturers of electric vehicles as encouraged during the 2023 KPLC conference on electric mobility (KPLC, 2023). The Integrated National Transport Policy,

2020 recognizes the need to incorporate environmental policies into the road transport sector management policies to limit the growth in road transport-related emissions (GoK, 2020).

- *"Kenya has significant number of regulatory instruments governing and associated with the road transport sector. The sector however, requires a comprehensive and Integrated National Road Transport Planning Roadmap to provide:*
  - ✓ *a strategic pathway for the sector enabling an inclusive and sustainable mobility development in Kenya. Inclusivity in this roadmap will require both the road infrastructural and transport service development to take cognizance of multi-modal approaches currently in use. Additionally, the roadmap should be able to adapt global best practices from countries with most efficient and sustainable transportation networks to achieve its intended transport-related objectives.*
  - ✓ *Provide for a strategic and implementable phase out of importation of used ICE vehicles with additional criteria for pre-inspection included such as requirement for specific emission standards (g/Km) including implementation of EURO IV to EURO VI standards especially for vehicles below 2000CC which account for over 60% of all vehicle purchases in Kenya.*
  - ✓ *Provide guidance for the implementation of vehicle efficiency feebate and labelling schemes (either to be defined per vehicle type i.e. Buses, vans, LDV, HDV etc or per engine displacement i.e. CC) informed from specific vehicle efficiency regulations to be recommended for development. The roadmap could guide on if/when these regulations are voluntary and or mandatory. A cost benefit analysis on these regulations can further strengthen the roadmap in achieving its core purpose of climate-proofing the transport sector*
  - ✓ *Provide a Monitoring, Reporting and Verification (MRV) Framework for vehicle efficiency in Kenya. This can further be compounded with establishing 2030/2040/2050 targets on vehicle efficiency against a new baseline preferably 2022 benchmark to be stablished through a comprehensive study (Currently in existence is the 2010-2014 data taken as the 2019 baseline of 7.12L/100km on fuel economy and 169.88* gCO2/km) on the average CO2 emission per kilometer travelled by light duty vehicles*." (Author)*

3. Cooperation Stakeholder analysis

4.1. Stakeholder Mapping

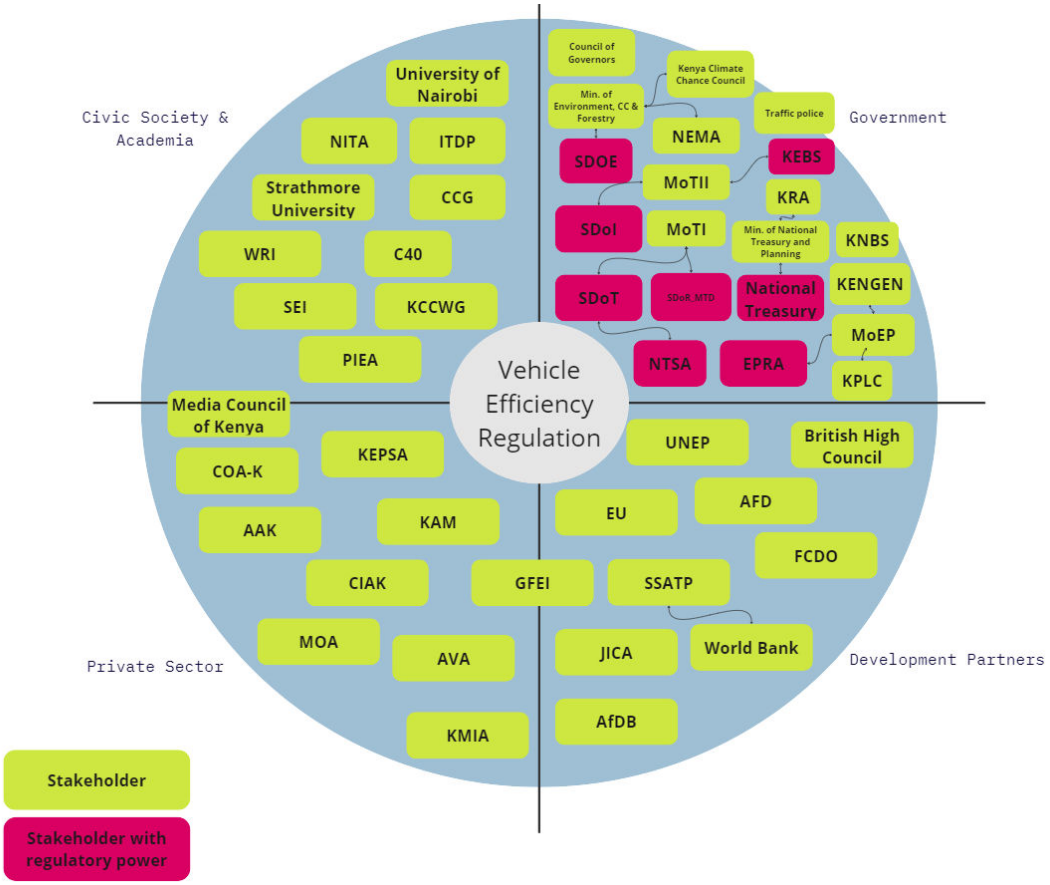


Figure 29: Proposed Stakeholder Map

4.1.1. Stakeholder Map Legend

List of Abbreviations	
AAK	Automobile Association of Kenya
AFD	Agence Française de Développement -French Development Agency
AfDB	African Development Bank
AVA	Associated Vehicles Assemblers
BHC	British High Commission
CIAK	Car Importers Association of Kenya
CCG	Climate Compatible Growth
COAK	Car Owners Association of Kenya
COG	Council of Governors
EPRA	Energy & Petroleum Regulatory Authority

EU	European Union
FCDO	Foreign, Commonwealth & Development Office
GFEI	Global Fuel Economy Initiative
ITDP	Institute for Transportation and Development Policy
JICA	Japan International Cooperation Agency
KAM	Kenya Association of Manufacturers
KCCWG	Kenya Climate Change Working Group
KEBS	Kenya Bureau of Standards
KENGEN	Kenya Electricity Generating Company
KEPSA	Kenya Private Sector Alliance
KMIA	Kenya Motor Industry Association
KNBS	Kenya National Bureau of Statistics
KPLC	Kenya Power & Lightning Company
KRA	Kenya Revenue Authority
MCK	Media Council of Kenya
MOA	Matatu Owners Association of Kenya
MOEP	Ministry of Energy and Petroleum
MOTI	Ministry of Transport and Infrastructure
MOTII	Ministry of Trade, Investment and Industrialization
MTD	Mechanical and Transport Division
NEMA	National Environment & Management Authority
NITA	National Industrial Training Authority
NTSA	National Transport and Safety Authority
PIEA	Petroleum Institute of East Africa
SDOI	State Department of Industrialization
SDOE	State Department of Environment
SDoR_MTD	State Department of Roads, Mechanical Transport Division
SDOT	State Department of Transport
SEI	Stockholm Environment Institute
SSATP	Sub-Saharan Africa Transport Policy Program
UNEP	United Nations Environmental Program
WRI	World Resources Institute

4.2. Stakeholder interests, relationships and networks

As a low-hanging fruit, **Motor vehicle efficiency labelling** could be explored as a first vehicle efficiency measure in the country. To achieve this, stakeholder collaboration is essential alongside:

i. Updating of baseline data on vehicle fuel economy for the light duty vehicles from 2014 to-date. Initial Global Fuel Economy Initiative (GFEI) studies in Kenya were conducted by United Nations Environment Program (UNEP) and University of Nairobi Enterprise Services Limited (UNES) on behalf of the then Energy Regulatory Commissions (Currently EPRA). More synergies with these institutions together with the National Transport and Safety Authority (NTSA)- the custodian of vehicle importation data would be instrumental for the IMPROVE Project towards the goal to support the State

Department of Transport in Kenya in the development of a policy proposal in the line of vehicle efficiency labelling.

ii. Development of Minimum Energy Performance Standards (MEPS) for motor vehicles through the Kenya Bureau of Standards (KEBS) in conjunction with EPRA. Currently, only MEPS for few household appliances have been developed in which labelling schemes are operational. Development of motor vehicle MEPS would therefore be an instrumental step.

iii. Development of the Energy (Motor Vehicle's Energy Performance and Labelling) Regulations through the Energy and Petroleum Regulatory Authority (EPRA) in line with the provisions of the Energy Act, 2019 (Sections 198 and 201).

4.3. Barriers and challenges

Beyond the six gaps identified under the National Energy Efficiency and Conservation Strategy, 2020, additional barriers have hindered the development and implementation of vehicle efficiency strategies and measures within the automotive sector:

i. Over 80% of vehicles imported into Kenya are second hand. As part of the importation restriction, Kenya has only focused on the age of the vehicles without consideration for the mileage of the car. Mileage dictates the use factor of cars and is a measure of the technical performance of the vehicle depending on the country of origin.

ii. Achieving zero emission vehicles and energy efficiency within the vehicle fleet in Kenya requires subsidies and incentives. For electric vehicles market to thrive, there is need for zero-rating of the excise duty. The lack of carbon-based incentives for efficient vehicles further limits the accelerated development and adoption of sustainable mobility in Kenya.

iii. Despite there being stringent importation compliance metrics including the age limit, most of the vehicles coming into Kenya are almost at their tail end of the age limit and others whose year of manufacture surpasses 8 years finds their way into the country. The limited capacity to enforce and implement identified compliance measures outweighs the gains made in sustainable mobility in Kenya.

iv. Assessing the vehicle efficiency performance in the country requires data including fuel consumption information. However, there is need for the development of a data captioning tool and digitalization measures to enhance ease of data access (historical and present) to the various actors. The need for data harmonization is further crucial to ensure accuracy and ease of information management. The lack of the data management framework is a key impediment to effective sector assessment and evaluation for policy development.

Other foreseeable barriers include but are not limited to; delayed approvals from the various authorities handling various steps of the regulatory development process, delayed operationalization hindering the benefits identified from the regulatory measure, uncertain political goodwill which might influence the successful implementation process, limited financial capacity to facilitate the implementation, monitoring and evaluation of the regulatory measure.

4.4. Analysis of findings

Policy	***Yes / No***	***Brief description***
Fuel economy labelling	No	Recommended under the Energy Act, 2019 and the National Energy Efficiency and Conservation Strategy, 2020.
Import duties	Yes	35%
Import Declaration Fees (IDF)	Yes	3.5% (calculated on the customs value)
Import restrictions	Yes	Age limit (must be below 8 years for non-commercial vehicles). Left-hand driven not allowed. Certificate of Conformity/roadworthiness required.
Purchase Tax	Yes	Purchase tax charged based on vehicle engine capacity at maximum KES 5,290 for CC above 3000.
Value Added Tax (VAT)	Yes	VAT on vehicles charged at 16% of [customs value + import duty + excise duty]. VAT on fuel charged at same rate of 16% but on overall cost of fuel.
Excise duty	Yes	20%-35% depending on vehicle engine capacity
Registration fee	Yes	Charged based on CC at maximum KES 6,465 for CC above 3000. Paid via TIMS
Annual tax /fee	Yes	Insurance costs (All vehicles) & Advance tax (for commercial vehicles)
Fuel tax	Yes	16% (2023) + other taxes and levies
Clean vehicle subsidy	Yes	Electric Vehicles (Excise duty reduction - 10%)
Vehicle Efficiency subsidy	No	Recommended (develop baselines for feebates)
Fuel economy standard	No	Recommended under the Energy Act, 2019.
CO2-Based Taxation on fuel	No	Proposed under the Green Fiscal Incentive Policy Framework
Congestion Pricing	No	Proposed under the Green Fiscal Incentive Policy Framework

4.5. Sector SWOT Analysis in Relation to Vehicle Efficiency

Achieving universal vehicle efficiency goals in the road transport sector in Kenya has its fair share of challenges and opportunities. The identified SWOTs can be used as benchmarks for improving the sector.

Strengths

i. Vehicle energy efficiency and fuel economy development and monitoring is anchored on an Act of parliament (The Energy Act, 2019) which mandates EPRA to oversee its implementation through the establishment of governing regulations. This forms a solid basis for the IMPROVE Project to support the initiative together with all the relevant agencies/stakeholders.

ii. Strong policy and regulatory frameworks on road transportation including the Integrated National Transport Policy, 2020 and The Sessional Paper No.1 on National Automotive Policy recommending vehicle efficiency as a priority area.

iii. Specific 2025 targets on fuel economy highlighted in the National Energy Efficiency and Conservation Strategy 2020 on achieving a fuel economy target of 6.5L/Km and 161gCO2/km for the light commercial vehicles.

iv. Government subsidies and incentives on zero emission vehicles and local vehicle assemblers and manufacturers an avenue potential for exploitation in the importation and manufacturing of efficient low-carbon vehicles.

v. Presence of strong institutions across the motor vehicle value chain all guided under the Ministry of Roads and Transport. This creates efficiency and ease of operation in the vast transport sector.

vi. Strong support of the sector especially on low-carbon transportation and policy proposal development by different development actors/partners.

vii. Kenya is strategically positioned on climate goals with strong government support towards low-carbon pathways and clearly defined climate change action plans. Kenya further has a strengthening voluntary carbon trading market. Nairobi International Financial Centre Authority (NIFC) is mandated as the certification authority for carbon market exchange or emission trading system.

Weaknesses

i. Lack of an implementation framework for most of the reviewed policies. Mostly resulting from low budgets and minimal implementation capacities by the relevant agencies and line ministries.

ii. The KS 1515:2019 guiding standard on motor vehicle lacks identification on mileage and vehicle carbon footprint as a specific restriction measure for used vehicles imported into the country.

iii. Lack of a sector coordination framework for road transportation and amongst development actors creating duplication of interventions especially in the development and support of low carbon pathways. Synergies and collaborations amongst partners would pool resources (human and capital) enhancing a broader strategic approach on sustainable mobility in Kenya.

iv. Absence of homologation of vehicles affecting local parts manufacturing in terms of perceived quality and market positioning.

v. Lack of a data captioning tool and or highly disaggregated transport database on imports and in-use vehicles. Currently, various datapoints are obtained from NTSA, KEBS, KRA, EPRA, KNBS among other agencies. The decentralized approach in data management leads to inaccuracies and inconsistencies in effective transport modelling. Sector partners can provide insights on vehicle metadata necessary for modelling and assessing transport carbon footprint and climate strategies.

Opportunities

i. Lessons can be drawn from other sectors including the approaches towards energy efficiency and Minimum Energy Performance Standards (MEPS) implementation

adaptable to vehicle efficiency implementation in Kenya through the Energy and Petroleum Regulatory Authority (EPRA).

ii. There are about 10 taxes and levies imposed on transport fuels in Kenya today. Part of these taxes and levies could be harmonized and restructured to incorporate a carbon tax that would scale the adoption of efficient low-carbon vehicles.

iii. Vehicle efficiency and fuel economy strategies could be evaluated as potential candidates in the voluntary carbon markets as an impetus towards zero emission pathways in the transport sector. Other sectoral lessons in climate finance especially in the adoption and scale up of renewable energy technologies particularly solar power, geothermal and climate-friendly clean cooking solutions can be explored in positioning clean mobility as a frontier climate finance market in Kenya.

Threats

i. A consumer appetite on cheap imported used vehicles with low fuel efficiencies and its impacts on increased motorization rate especially in urban areas leading to congestion and subsequently GHG emissions.

ii. Further taxation on fuel potentially detrimental on the overall transportation costs and ultimately the cost of doing business in Kenya impacting on cost of products and services within a constrained economy as an unintended consequence of fiscal measures towards vehicle efficiency.

iii. Perceived Resistance by consumers and associations including vehicle traders towards fuel efficiency labelling schemes. Initial implementation stages can be provided as voluntary upon which they are made mandatory after some years.

iv. Lack of sustained funding and capacity by the relevant government agencies (NTSA, NEMA, EPRA, KEBS) towards the implementation of vehicle efficiency strategies and roadmaps for Kenya.

4. Summary and conclusion

Two comprehensive Global Fuel Economy Initiative (GFEI) studies have been conducted in Kenya. The initial study conducted by the United Nations Environment Programme (UNEP) utilized 2010, 2011 and 2012 motor vehicle data while the second study, conducted by the University of Nairobi Enterprise Services Limited (UNES), focused on updating the UNEP study and utilized further motor vehicle data from 2013 and 2014 establishing the fuel economies of the light duty vehicles at those study periods. These studies have been referenced extensively and have been used in modelling various emission scenarios including the detailed scenario building modelling for the 2019 study on projections for motor vehicle emissions in Kenya as part of meeting Kenya's NDC targets. Additionally, the 2017 World Bank report, "Motorization Management in Kenya", utilized the GFEI studies in Kenya in modelling the potential impacts of the adoption of a CO_2-based light vehicle fiscal policy and compelled the Kenyan Government to implement the recommendations of the 2016 GFEI publication. Consequently, the National Energy Efficiency and Conservation Strategy, 2020, set out national targets on fuel economy for the Kenyan Light Commercial Vehicle fleets to be achieved by 2025 based upon the 2014 GFEI publication adopted as 2019 baseline.

Through push measures, the Kenyan government has over time revised the Value Added Tax (VAT) on fuel, passed through to the consumer with the recently (July 2023) approved Finance Act, 2023 reinstating the VAT on fuel to 16%. Fuel in Kenya faces nine taxes and levies making it among the most expensive within the region. Consequently, the high fuel prices have been observed to reduce the use of private vehicles. However, subsequently, the high fuel prices have a sharp trickle-down effect on costs of transport, production and further cost of electricity pushing the consumer purchasing power to the extreme strain. As a result, this study posits that, additional taxes on fuel as part of enhancing the fuel economy standards would not be welcome by the majority of consumers. However, the nine taxes and levies on fuel could alternatively be restructured to have a CO_2-based taxation that does not increase the overall prices of fuel.

Based upon the implementation of energy efficiency labeling schemes in Kenya and the establishment of Minimum Energy Performance Standards (MEPS) on various electrical appliances through the Energy and Petroleum Regulatory Authority (EPRA), the transport sector could learn and adopt the strategic approaches employed in the energy sector in mainstreaming the development and implementation of vehicle/fuel efficiency labelling schemes for the Kenyan Light Duty Vehicle (LDV) fleets in line with sections 198 and 201 of the Energy Act of 2019 . However, this will require:

i. Updating of the GFEI studies in Kenyan (as a third phase) to cover the LDV data from 2014-2022 incorporating the initially collected data from 2010-2014 by UNEP and UNES. This exercise will require close collaboration with state agencies involved in motor vehicle data processing including NTSA as the custodian of motor vehicle data in Kenya.
ii. Establishing new baselines (considering year 2022 as the reference year) for the fuel economy in Kenya (L/100km) and related carbon footprint (gCO2e/km) as a result from the third GFEI phase through the IMPROVE project. This exercise will require the adoption of recent precise modelling techniques building current and future scenarios for effective policy development especially taking into account the Glasgow Commitment on the phasing out of ICE vehicles by 2035. Consequently, it will tackle the limitation observed in the 2020 National Energy Efficiency and Conservation Strategy that adopted 2014 results as 2019 baseline and used the data to determine the 2025 targets.
iii. Development of a concise Implementation, Monitoring and Evaluation Framework (IMEF) to support the realization of the new targets that will be established through the third phase of the GFEI studies in Kenya. This will incorporate;
    a) Measurement and verification tools and methodologies for determining LDV fuel economy and emissions in Kenya,
    b) Capacity building framework for the implementing agencies
    c) Consumer awareness creation methodologies and approaches for a wider reach of the masses. This could include simplified digital platforms with vehicle fuel economies and emission thresholds as practiced in countries such as Chile (See link below).
    https://www.consumovehicular.cl/etiqueta/buscador#/

The National Energy Efficiency and Conservation Strategy, 2020 indicates the need for consumer awareness schemes like **mandatory vehicle labelling** as one of the capacity

considerations in the transport sector (GoK, 2020). However, observations made in the implementation of energy efficiency and renewable energy schemes such as the solar water heating regulations in Kenya indicates the difficulty in implementing mandatory schemes in Kenya. Therefore, first few years of the vehicle efficiency implementation would best be considered voluntary. During these voluntary years, the IMEF Framework would be largely tested, reviewed and updated in line with the industry complexities.

With a growing second-hand ICE fleets, Kenya has the opportunity to achieve its transport-related climate protection ambitions and targets in line with its updated NDC commitment of 32% emission reductions by 2030, through the implementation of fuel economy standards. Compounding this achievement will require strong motor vehicle importation regulations and inspection guidelines from the countries of origin, that encompass vehicle efficiency of required baselines as will be established through the third phase of the GFEI studies.

Energy efficiency has been wholesomely considered as the first renewable energy within the energy sector. Equivalently, vehicle efficiency and fuel economy approaches offer compelling sustainability (cost, environment and social) benefits as a precursor to full realization of transport electrification. The Kenyan Government aims at achieving a 5% share of electric vehicles (EVs) by 2025. Achieving this target and future projections on EV will nevertheless require a host of factors, including absolute infrastructural development especially in extending and densification of fast charging stations across the country. Moreover, this will prompt the need to expand energy infrastructures including upgrading of substations and grid extension. Imperatively, EV adoption in Kenya is expected to mature by 2040. Within the same timeframe, most of the European Countries will have attained their zero-emission vehicles by 2035 leading to a high influx of second-hand ICE vehicles in Sub-Saharan African (SSA) markets. This will consequently lead to slowed growth of transport electrification in various SSA countries, Kenya included. Therefore, vehicle efficiency implementation will remain critical within the timeframe and hence its development in Kenya is very paramount.

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