GLOBAL FUEL ECONOMY INITIATIVE
FOR ZERO CARBON VEHICLES BY 2050

EAST AFRICA

Promoting Cleaner and More Fuel-Efficient Vehicles in Africa

The 'Challenge'

Many African cities are grappling with high vehicle growth rates, inadequate transport infrastructure and an increasingly inefficient and aging vehicle fleet.

As a result, the transport sector in Africa is one of the leading contributors to poor air quality in cities and is expected to be a significant source of climate emissions. This situation will get worse as the world's light duty vehicle fleet is set to triple by 2050, at which time two-thirds of the global vehicle fleet will be found in developing countries - compared to about a quarter today. Africa is already experiencing this unprecedented growth in her vehicle fleet as the continent is urbanizing faster than any other region in the world.

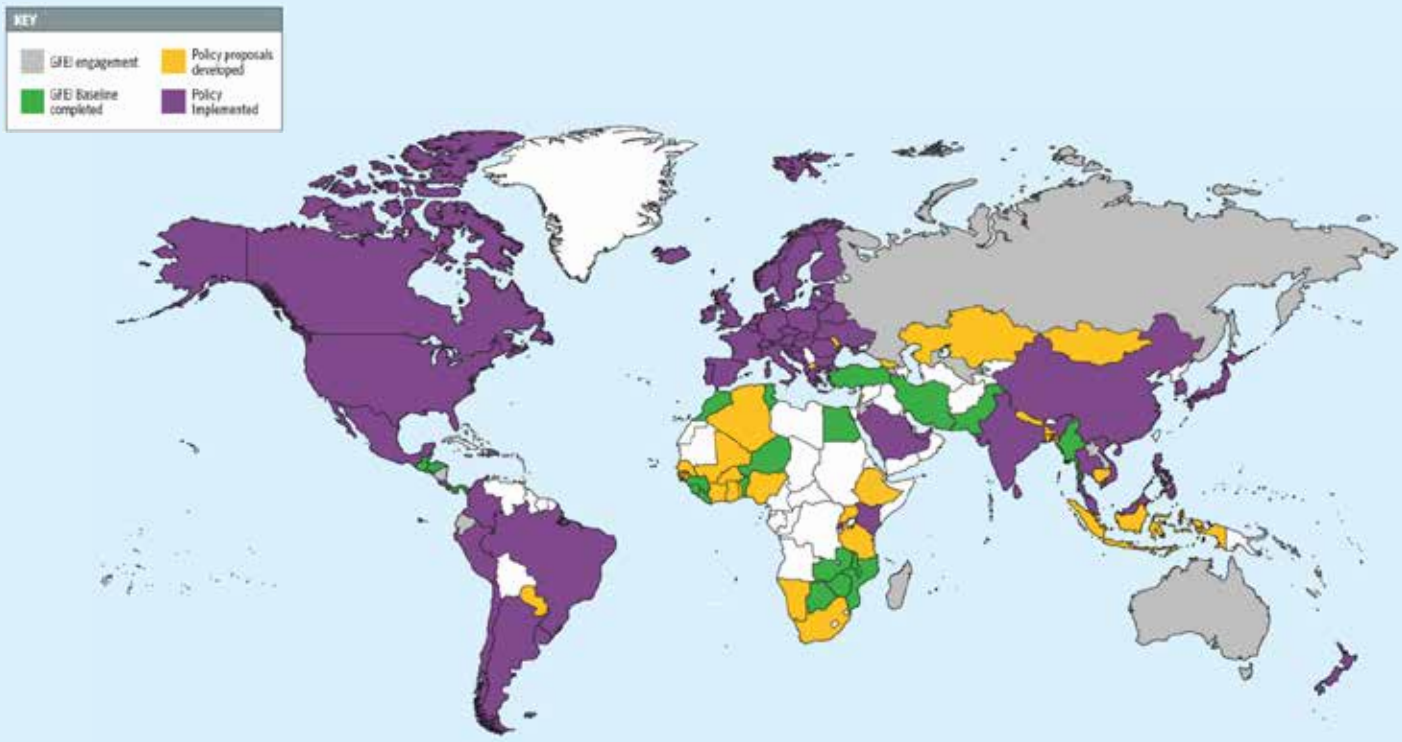
In recent years, the developed world has progressively improved their vehicle fuel economy through technological and policy measures, while setting even stricter targets.

However, the same is not observed in many developing and transitional countries. The Global Fuel Economy Initiative (GFEI) aims at a global doubling of vehicle fuel efficiency by 2050, thus halving carbon emissions from road transport.

Through the GFEI, developing and transitional countries have been supported to analyze the fuel economy of vehicles imported into their countries over a period, which also informs policies to be implemented to promote the import of cleaner efficient cars. In Africa, over 30 countries have been engaged to carry out fuel economy inventories and develop appropriate policies.

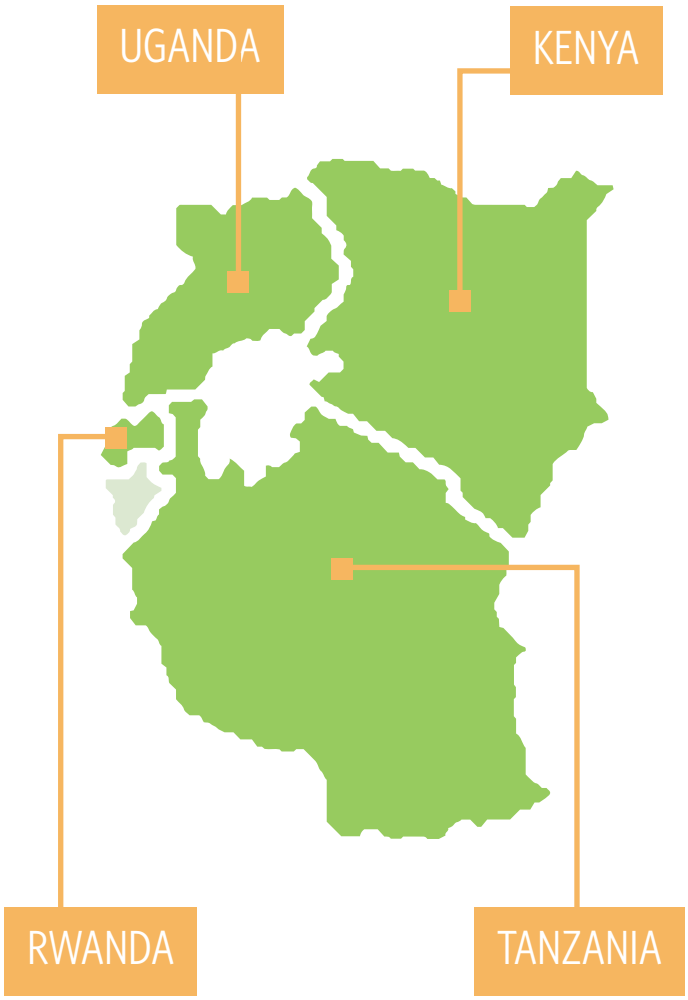
Map 1 below shows the slow progress in Africa to implement fuel economy policies, despite fuel economy vehicle inventories showing that the region is not taking advantage of global vehicle advancements and continues to import less fuel-efficient vehicles. In East Africa, Kenya, Uganda, Tanzania and Rwanda have been supported through this Initiative. This booklet summarizes the key findings of the fuel economy analysis in the four countries.

Map 1: **Light-duty Vehicle (LDV) Fuel Economy Policy Progress** *(Source: GFEI, 2021)*



Key Findings

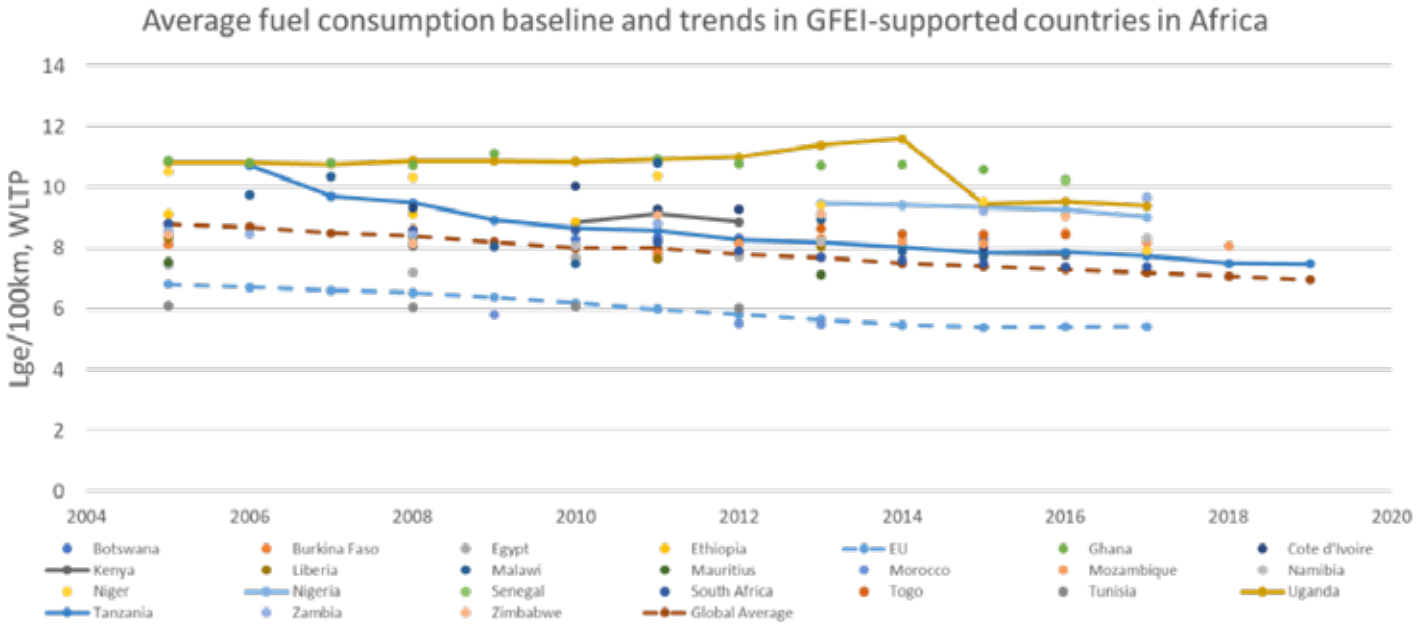
With a limited vehicle manufacturing or assembly industry, the East Africa sub-region largely relies on used vehicles importation to meet its vehicle demand. For example, between 2010 and 2016, on average about 98% of light duty vehicles added into the Kenyan fleet were imported as used cars.



This presents an opportunity to the region to promote cleaner and more fuel-efficient vehicles, including electric vehicles, thus leapfrog to the most advanced vehicle technologies through selective vehicle import policies.

While the fuel economy studies carried out in the four countries show an improvement in the overall fuel economy trend over time, the average fuel consumption of cars imported into the region was above the global average levels (a compilation of the 70 developing and transitional countries studies) and well above the levels observed in the European Union – see figure 1. Uganda was observed as having the most relaxed vehicle import regulations in the sub-region, with the average import age of diesel vehicles in 2014 being 16.4 years. As a result, the country was importing the most fuel inefficient cars from the countries studied in Africa.

Figure 1: **Light-duty vehicle fleet in many African countries** *(Source: UNEP, 2021 - unpublished)*



Outlook

There is now keen interest by governments in the sub-region to review their vehicle policies and incentivize cleaner, more efficient vehicles including electric vehicles.

For example, in 2021, Rwanda exempted electric vehicles, spare parts, batteries and charging station equipment from import and excise duties, and Value Added Tax (VAT). In 2019, Kenya reduced the excise duty of electric cars to 10%. Uganda introduced a vehicle age restriction of 15 years in 2018.

However, for significant improvements in the fuel economy in the region, there is need for additional measures and incentives to shift consumer choices to more fuel-efficient vehicles.

These could be undertaken within a sub-regional harmonized framework such as the introduction of uniform tax incentives and vehicle labelling to inform consumers wanting to buy vehicles of their fuel efficiency levels.

At city level, segregation of low emission zones, free parking for fuel efficient vehicles and a ban on high polluting vehicles are some strategies that could be implemented. At national level, setting vehicle import or manufacturing standards, progressive taxation or ban of inefficient vehicles, or feebate schemes which provide rebates for efficient cars while imposing penalties to inefficient cars could be some of the strategies that governments could adopt.

In the sub-region, the private sector is taking the initiative and has taken proactive steps to shift to cleaner, more efficient vehicles, for example through local assembly of electric vehicles or providing all electric taxi hailing services.

Country Analysis

1. Kenya

In 2011 the United Nations Environment Programme (UNEP) engaged Climate XL Africa, a non-governmental organization, to develop a methodology to analyze vehicle fuel economy in developing and transitional countries, noting the challenge that the bulk of imported vehicle fleet in some of these countries was used.

There was also no information on their average fuel consumption nor CO2 emissions. At the time, the year 2005 was agreed as the baseline year, from which subsequent fuel economy trends would be analyzed.

A methodology to analyze the average fuel economy levels in the countries was developed and agreed on with GFEI partners, with Kenya's fuel economy baseline and 2008 average level estimated.

Table 1: **Fuel Consumption by Year and Fuel Type**

	2005	2008
Average (l/100km)	7.69	7.6
Diesel	8.67	9.09
Petrol	7.52	7.2

Follow up studies were carried out in partnership with the Energy Regulatory Commission (now Energy and Petroleum Regulatory Authority) and the University of Nairobi for vehicles imported into the country in 2010 – 2012, and 2013 - 2016 Kenya predominately imports used light duty vehicles as shown in Table 2 with petrol cars dominating the market as depicted by Table 3.

The bulk of vehicles imported into the country are on average 7 years due to a maximum import age restriction of 8 years as shown in Figure 2.

Table 2: **New and Used LDV population**

Year	2010	2011	2012	2013	2014	2015	2016	Grand Total	
									%
New	728	1,032	1,212	290	3,750	3,941	2,285	13,238	2.5
Used	92,410	95,452	109,260	8,028	49,390	79,770	68,889	503,199	97.5
Total	**93,138**	**96,484**	**110,472**	**8,318**	**53,140**	**83,711**	**71,174**	**516,437**	**100**

Figure 2: **Kenya's vehicle registration by Age from 2010-2016**

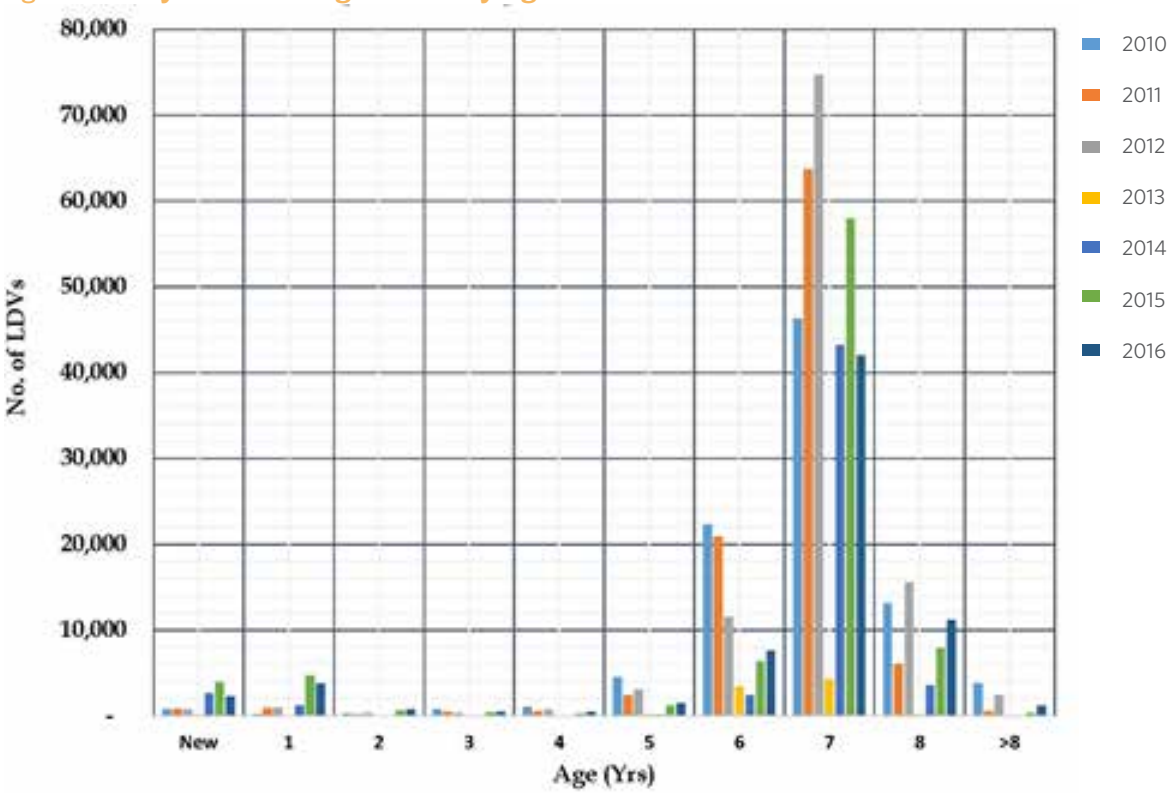


Table 3: **Percentage of LDVs by fuel type in Kenya**

Fuel Type	2010	2011	2012	2013	2014	2015	2016	Grand Total
Diesel	16.36	13.58	12.04	17.89	10.31	21.43	21.65	16.18
Petrol	83.62	86.42	87.96	82.11	89.62	78.57	78.35	83.81
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 4: **Fuel Consumption (L/100km) for Diesel and Petrol Engines**

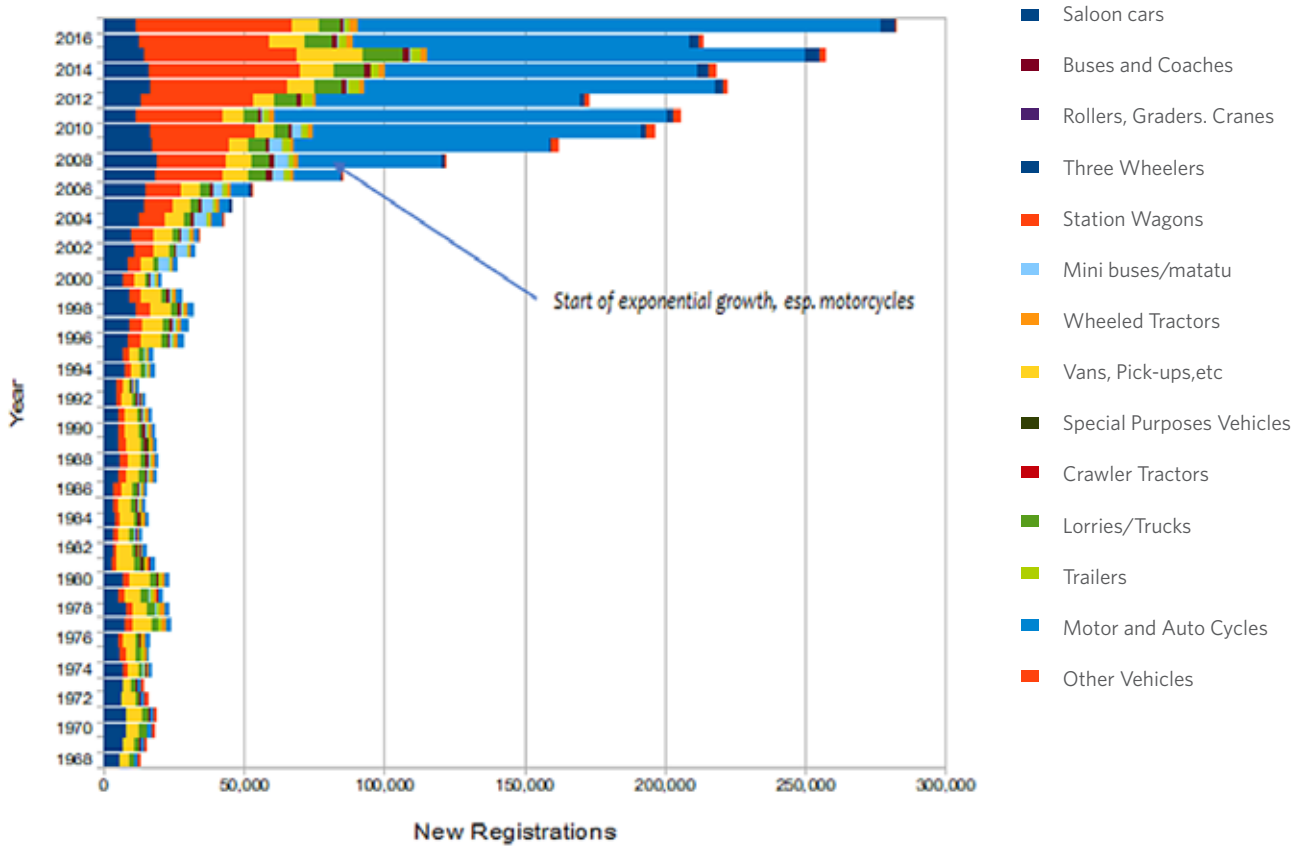
Engine Displacement	Diesel							Petrol						
	2010	2011	2012	2013	2014	2015	2016	2010	2011	2012	2013	2014	2015	2016
0-1000	0.0	5.5	0.0	5.5	0	5.7	0.0	5.9	0.0	4.6	4.3	5.2	4.3	5.2
1001-1300	6.7	6.3	7.1	6.5	6.4	6.7	0.0	6.3	0.0	5.8	4.2	5.9	4.2	5.8
1301-1500	6.6	6.3	6.3	6.5	6.4	6.5	0.0	6.3	4.7	6.5	4.9	5.8	4.6	5.7
1501-2000	7.3	7.2	6.9	7.2	6.8	7.2	7.1	7.4	8.5	7.0	7.0	7.6	7.1	7.4
2001-2500	7.7	7.6	7.8	7.8	7.8	8	7.7	7.9	8.2	8.9	8.4	9.3	8.3	9.3
2500-3500	8.1	8.5	7.9	8.8	8.1	8.8	8.1	8.7	8.9	9.2	9.2	11.8	9.3	11.3
3500+	9.6	13.2	9.9	13.7	9.8	13.6	9.4	12.1	11.1	11.2	10.5	12.9	10.5	12.2

Table 5. **Cumulative Total Vehicle Registrations: Observed and Predicted Values**

Year	Status	Cumulative Vehicle Registrations
2008	Actual	1,297,520
2009	Actual	1,454,249
2010	Actual	1,651,257
2011	Actual	1,849,911
2012	Actual	2,022,955
2013	Actual	2,031,273
2014	Actual	2,084,413
2015	Actual	2,168,124
2016	Actual	2,239,298
2030	Predicted	3,862,570
2050	Predicted	6,181,266

Figure 4 below presents the additional vehicle fleet in Kenya from 1968 -2017. From the mid-2000, an exceptionally high growth rate in the number of two-wheeler motorcycles and station wagon vehicles is observed. These are mainly used to transport people and goods. Hence any policy interventions in the country needs to also target these two vehicle types.

Table 4: **Average Fuel Consumption (L/100km) and CO2 Emission (g/km)**



A key priority for the government to promote cleaner and more fuel economy vehicles could start with incentives to shift to electric 2&3 wheeler motorcycles.

These technologies are already widely available and cost-effective, and when linked to renewable energies and battery swapping schemes, could be widely adopted. Another segment would be to promote low carbon public transportation as the 2&3 wheeler growth has been occasioned by an inefficient public transport system. The 2&3 wheelers could serve as first and last mile connectivity for the public transport.

The country has also seen a slow uptake of electric passenger cars, as by 2019, only about 350 electric vehicles had been registered in the country. It is presumed that this could be due to a combination of factors - from lack of knowledge on the benefits of electric vehicles, to perceived range anxiety and limited charging infrastructure.

Government policy, additional incentives, consumer outreach and investment in required infrastructure will shift consumer choices towards cleaner and more efficient vehicles, including electric vehicles.

2. Uganda

In 2014, UNEP engaged the Ministry of Energy and Minerals Development and Makerere University College of Business and Management Sciences to support Uganda to carry out fuel economy studies.

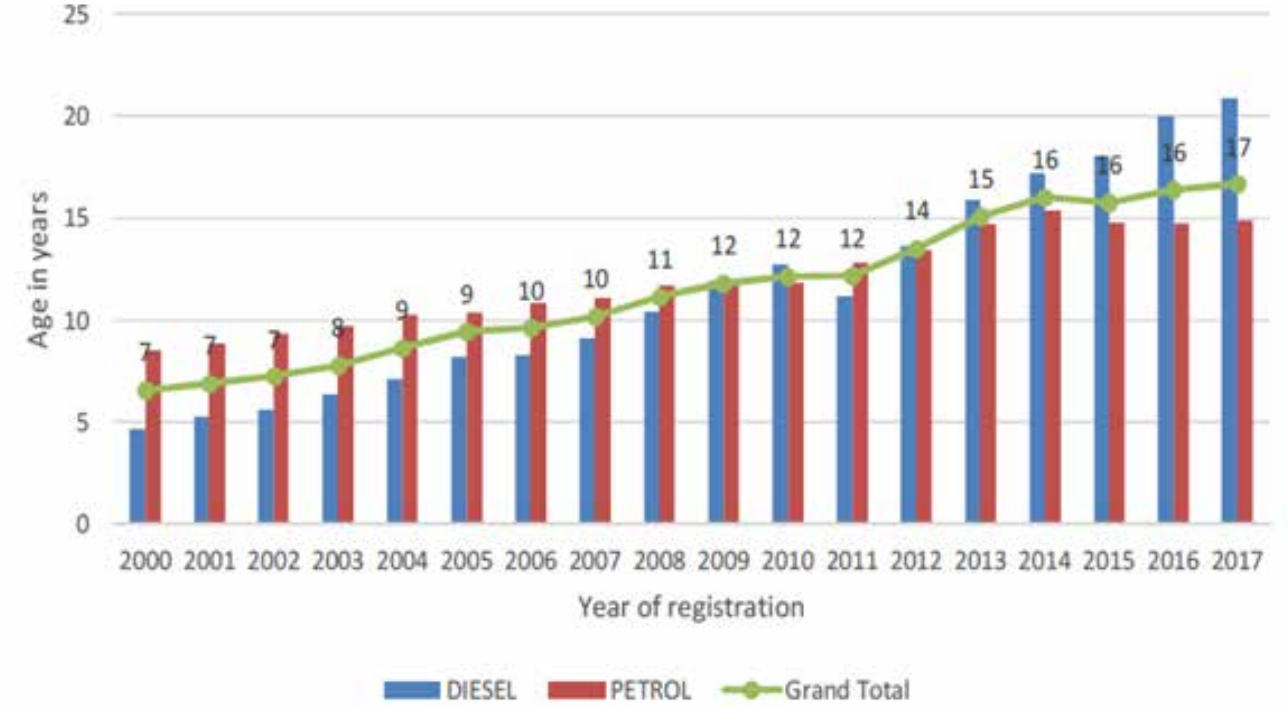
Follow up studies to review the country's fuel economy policies and to develop a data capturing tool were later supported. Some of the key outcomes of the studies that will be expounded in this summary include the fact that the country has the worst fuel economy in the region, despite having a penalty for importation of older vehicles, and the need to have a system that captures key fuel economy information at the time of vehicle import registration.

While there is no vehicle age restriction, from 2008 the government introduced an environmental tax - in addition to the other vehicle import duties and levels.

This is at 35% on vehicles that are 5-10 years old at the time of importation and 50% tax on vehicles older than 10 years. It was observed that the age of imported vehicles increased over the years as shown in the figure 5 below, with only 5.6% of petrol cars and 33.6% of diesel cars being below 8 years.

At the same time, vehicle import data for this analysis was found to be domiciled in three different agencies; namely: Uganda Revenue Authority (URA (for privately-owned automobiles), and Ministry of Works and Transport (MoW&T for state owned automobiles) and Ministry of Defense (armored vehicles). The study looked at vehicle import data for the years 2005, 2008, 2011 & 2014.

Figure 5: **Average Age of Petrol and Diesel Engine Vehicles**
(Source: Computations based on combined dataset - URA e-tax and MoW&T datasets)



The average age of imported vehicles by engine capacity and fuel type is shown below. Petrol vehicles with over 5000cc appear to have a lower import age, while diesel vehicles with 3500 – 4000cc have the highest import age – at an average of over 22 years in 2014.

Table 7: **Average Age and Engine capacity by Fuel type and year of Registration**
(Source: Computations based on combined dataset - URA e-tax and MoW&T datasets)

Engine_CC	Diesel				Petrol			
	2005	2008	2011	2014	2005	2008	2011	2014
500_1200CC	14.0		6.4	16.1	13.5	11.9	14.3	16.3
1201_1500CC	12.0	8.0	5.0	14.8	10.8	12.4	13.1	15.8
1501_2000CC	8.8	13.5	17.1	18.5	10.4	11.9	13.1	15.7
2001_2500CC	9.3	6.5	3.9	8.6	7.3	8.6	11.3	13.6
2501_3000CC	5.8	9.3	11.1	16.6	9.2	9.9	12.5	14.7
3001_3500CC	4.1	5.4	6.3	15.8	4.5	9.5	11.6	13.5
3501_4000CC	14.2	17.9	20.5	22.7	11.0	8.5	7.0	11.2
4001_5000CC	7.7	8.1	8.9	16.2	4.8	7.8	10.4	12.3
>5000CC	9.6	12.8	12.0	15.9	4.0	8.8	8.6	6.3
Total ave. age	8.1	10.3	10.6	16.4	10.4	11.7	12.8	15.4

As shown in Table 6 below, the bulk of both petrol engine and diesel engine vehicles registered in 2015/16 financial year were over 10 year. However, in 2018 Uganda adopted a 15-year vehicle age limit, which may still not be effective to attract advanced cleaner and more efficient vehicle technologies, unless it is combined with fiscal measures and tighter vehicle standards.

Table 6: **Age of registered vehicles by year and fuel type: 2015/16**

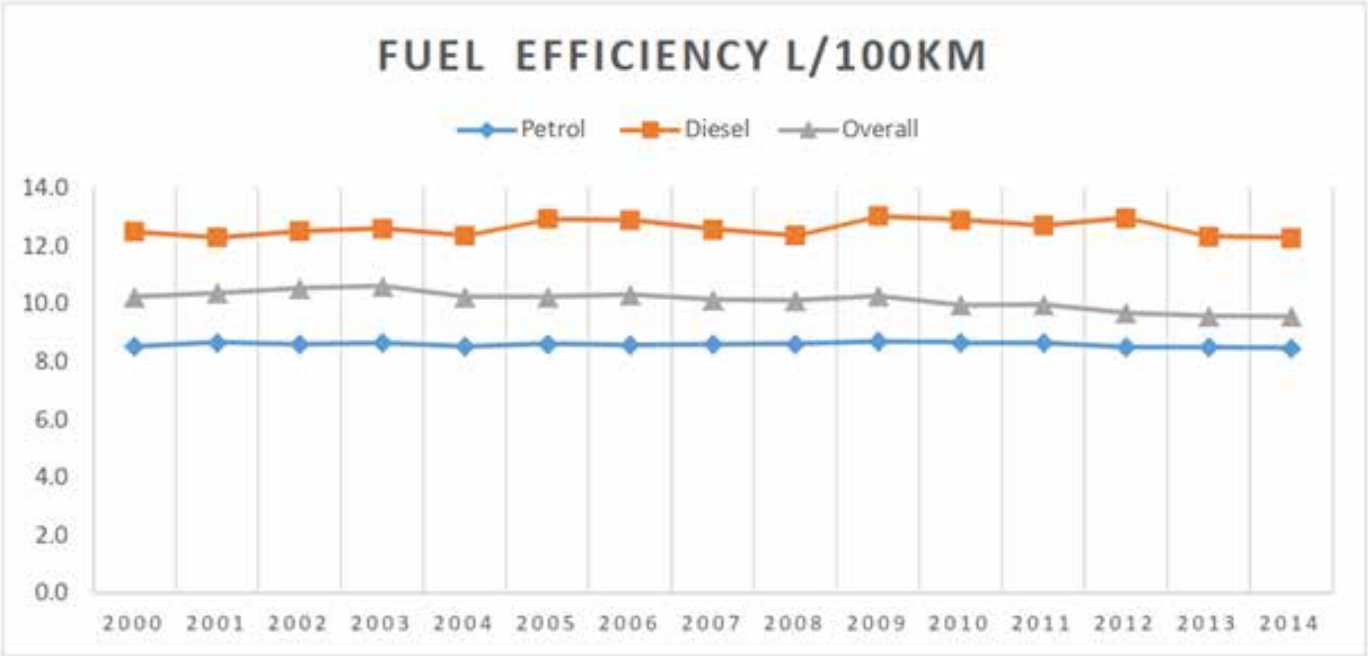
Age	Diesel		Petrol		Total
< 5	1.738	87%	262	13%	2,000
5 - 10	662	38%	1,063	62%	1,725
> 10	6,961	42%	9,609	58%	16,570
Total	9,361	46%	10,934	54%	20,295
	9,361	**100%**	**10,934**	**100%**	**20,295**

As a result of the high vehicle import age, Uganda imports vehicles that are highly inefficient in terms of fuel consumption as summarized in Table 7 and figure 6 below. For example, the EU average fuel consumption in 2014 was 5.5 L/100 km compared to Uganda at 9.5 L/100km. This means that vehicles imported into Uganda that year were consuming on average about double the fuel amount compare to the EU, this costing the countries and consumers more in terms of fuel bill.

Table 7: **Harmonic average annual fuel economy**

Year of registration	Diesel fleet	Petrol fleet	Overall
2000	12.5	8.5	10.2
2001	12.3	8.6	10.3
2002	12.5	8.6	10.5
2003	12.6	8.6	10.6
2004	12.3	8.5	10.2
2005	12.9	8.6	10.2
2006	12.9	8.6	10.3
2007	12.5	8.6	10.1
2008	12.3	8.6	10.1
2009	13.0	8.7	10.2
2010	12.9	8.6	9.9
2011	12.7	8.6	9.9
2012	12.9	8.5	9.7
2013	12.3	8.5	9.6
2014	12.2	8.4	9.5

Figure 6: **Harmonic average annual fuel economy**



The table below summarizes the vehicle taxes at the time of first registration in Uganda.

Table 8: **Taxes associated with vehicle registration**

Tax	Percentages
Import Duty	25% of CIF Value
VAT	18% of the sum of Import Duty and Customs Value
Withholding Tax	6% of Customs Value
Environment Levy	35% of CIF Value (Vehicles 5 to 10 years old) 50% of CIF Value (Vehicles above 10 years old)
Domestic VAT	15% of Customs Value
Infrastracture Levy	1.5% of Customs Value

Uganda has the highest number and growth in 2-wheeler/motorcycles in Africa. It is estimated that the average annual vehicle growth rate from 2002/3 has been 15%, with the fastest growth rate registered in the motorcycles category estimated at 17%. This presents an opportunity for the country to incentivize a shift to electric modes.

The city of Kampala is also planning mass transport systems and has already introduced electric buses. An electric mobility roadshow was organized late 2021, which showed consumer interest in electric mobility. Similarly, though the GFEI programme, a data entry tool has been developed, which when implemented will help stakeholders to monitor and track vehicle fuel efficiency and carbon emissions in the country.

Figure 7: **Sample report from the data capture tool**

Figure 8: **Uganda's Average Fuel Economy Compared to Global Average** *(Source: UNEP)*

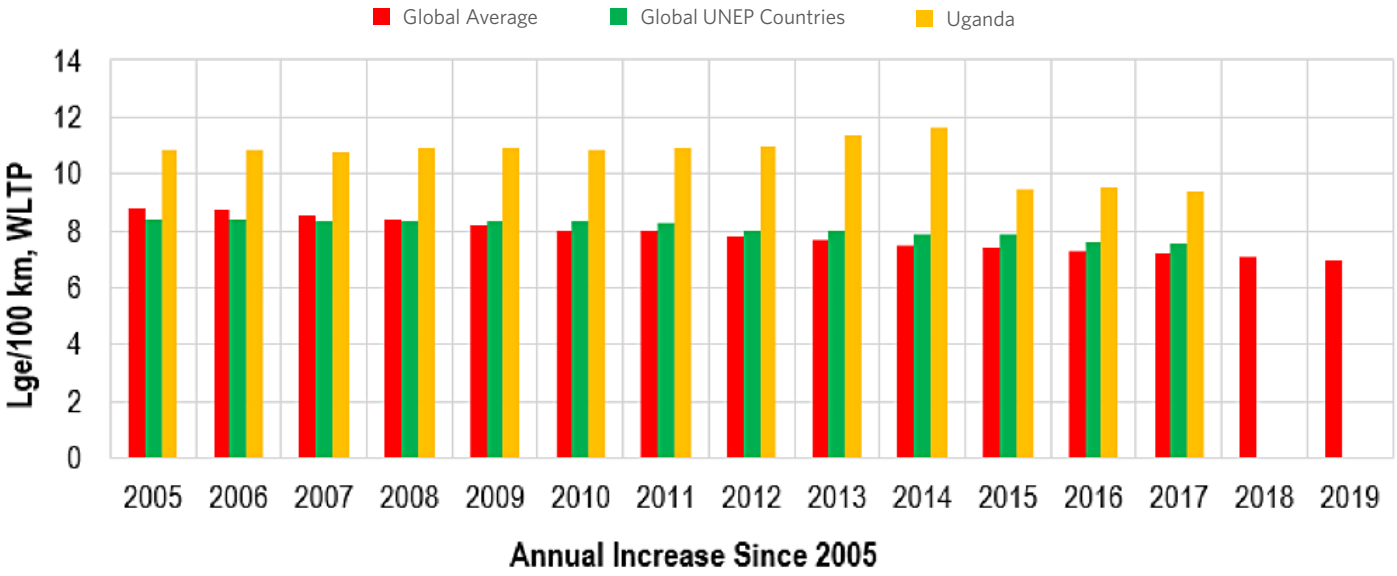


Figure 8 compares Uganda's average fuel economy against the global average and that of the developing and transitional countries analyzed through the GFEI. For the country to reach the GFEI target of 4L/100 km in 2050 for the entire fleet, an annual fuel efficiency improvement of 6.7% is required.

However, only a 2.1% annual improvement has been realized since 2010. Consumer buy-in to procure fuel efficient vehicles coupled with government incentives and taxation to limit import of old and inefficient vehicles will play a critical role in promoting cleaner efficient vehicle into Uganda.

3. Tanzania

In Tanzania, UNEP partnered with the Bureau for Industrial Cooperation (BICO), under the College of Engineering and Technology, University of Dar es Salaam to carry out the fuel economy vehicle inventory and develop proposed policy measures to promote cleaner and more fuel-efficient vehicles.

The GFEI study found that despite the country imposing higher taxation on vehicles older than 8 years (between 50% and 65% of the CIF value), vehicles more than 8 years old are predominately imported as shown in Figure 9, with 97% of new vehicle registrations being imported as used cars as summarized in Table 9 below.

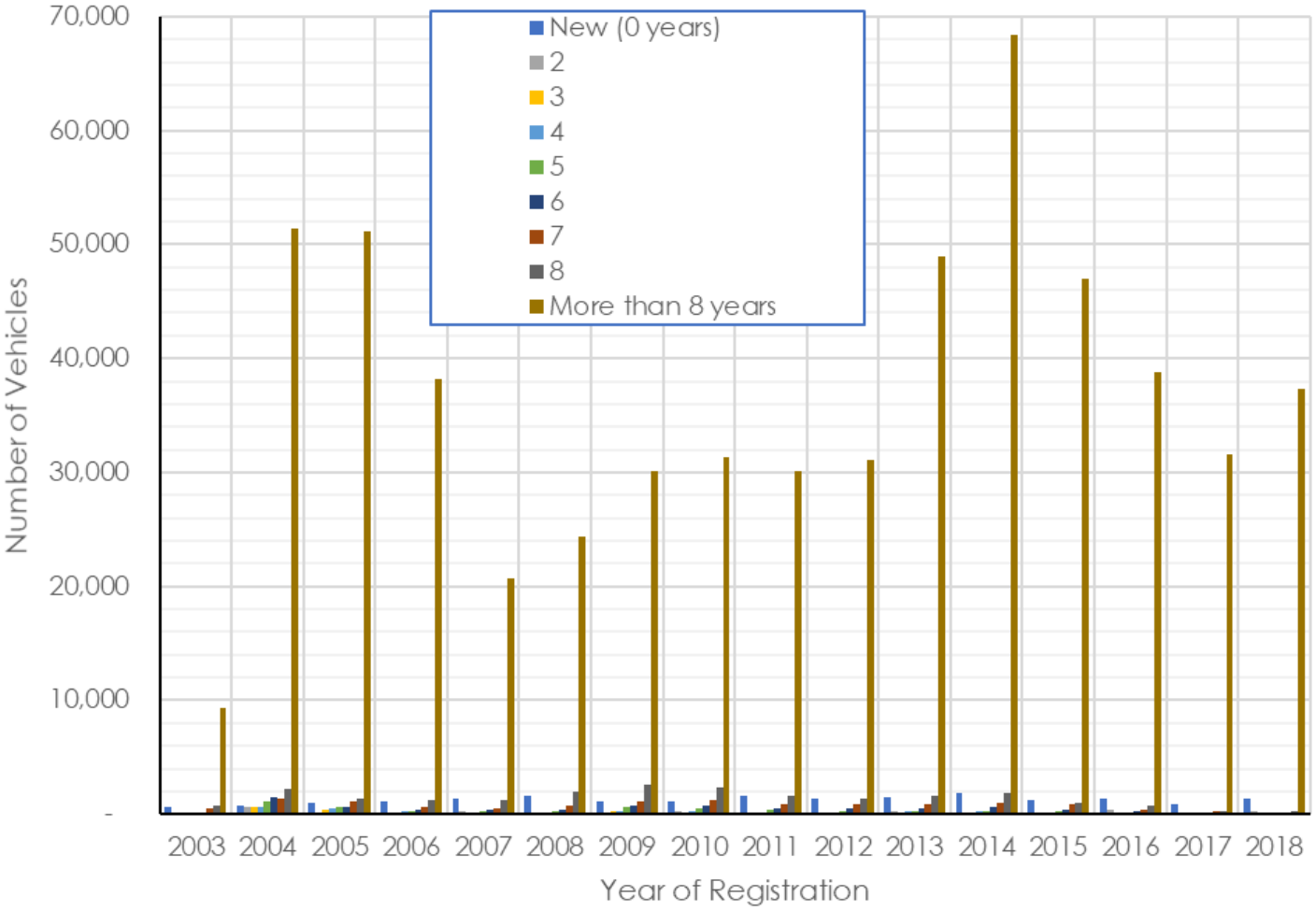


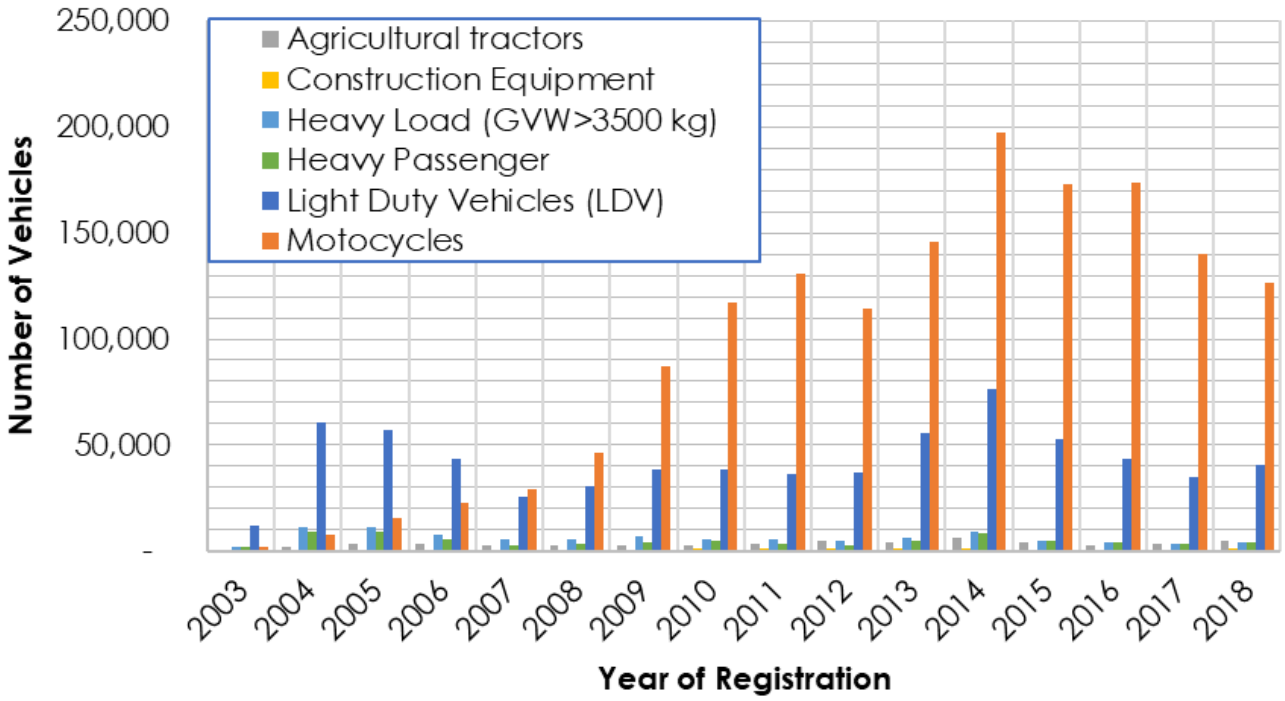
Figure 9: **Tanzania's Average LDV Import Age (2003-2018)**

Table 9: **Proportion of Used and New LDV (2003-2018)**

Year of registration	New	Used	Total	% New
2003	624	11,268	11,892	5.2
2004	712	59,873	60,585	1.2
2005	1,032	56,365	57,397	1.8
2006	1,142	42,208	43,350	2.6
2007	1,317	24,425	25,742	5.1
2008	1,653	29,298	30,951	5.3
2009	1,133	37,255	38,388	3.0
2010	1,098	37,639	38,737	2.8
2011	1,562	34,918	36,480	4.3
2012	1.330	35,785	37,115	3.6
2013	1,505	54,188	55,693	2.7
2014	1,852	74,430	76,282	2.4
2015	1,278	51,624	52,902	2.4
2016	1,331	42,320	43,651	3.0
2017	871	33,942	34,813	2.5
2018	1,311	39,632	40,943	3.2
Grand Total	19,751	665,170	648,921	
Percentage	2.9	97.1	100.0	

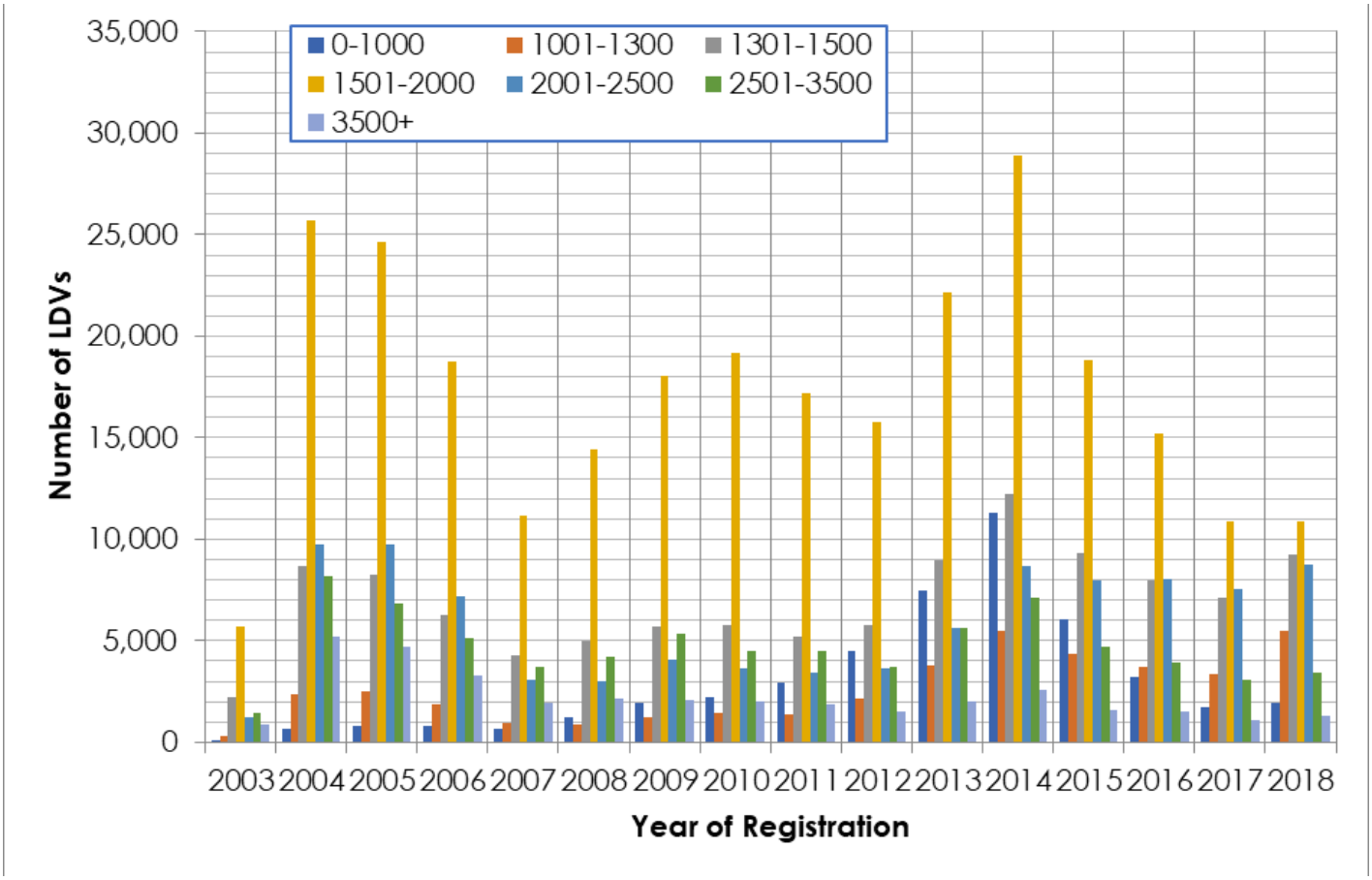
Like the other East African countries, there has been a surge in the import of motorcycles, increasing from 8.4% of vehicle imports in 2004 to 75.7% of total imported vehicles in 2016. This was followed by light duty vehicles decreasing from 66.4% of total imported vehicles in 2004 to just 18.7% in 2017.

Figure 10: **Yearly Motor Vehicle Registration by Category**



At the same time, the bulk of LDVs imported had an engine displacement of 1501 to 2000 cc as shown in Figure 11 below.

Figure 11: **LDVs by Engine Displacement**



The average fuel efficiency of petrol vehicles was slightly better than for diesel vehicles, due mainly to the import of bigger diesel engine vehicles. The combined fuel economy and CO2 emission of the LDVs in Tanzania has improved since 2005, the baseline year to 2018 as depicted in Figure 12.

However, the average fuel economy is still significantly above the global average as seen in Figure 12, and the EU and Japan levels where most of the vehicles are manufactured. The trend indicates that by 2030 fuel economy is projected to reach 5.7 and 7.7 L/100 km respectively for petrol and diesel vehicles, which is above the GFEI of 4.2 L/100 km.

Figure 12: **Trends in LDV fuel consumption and CO2 emission**

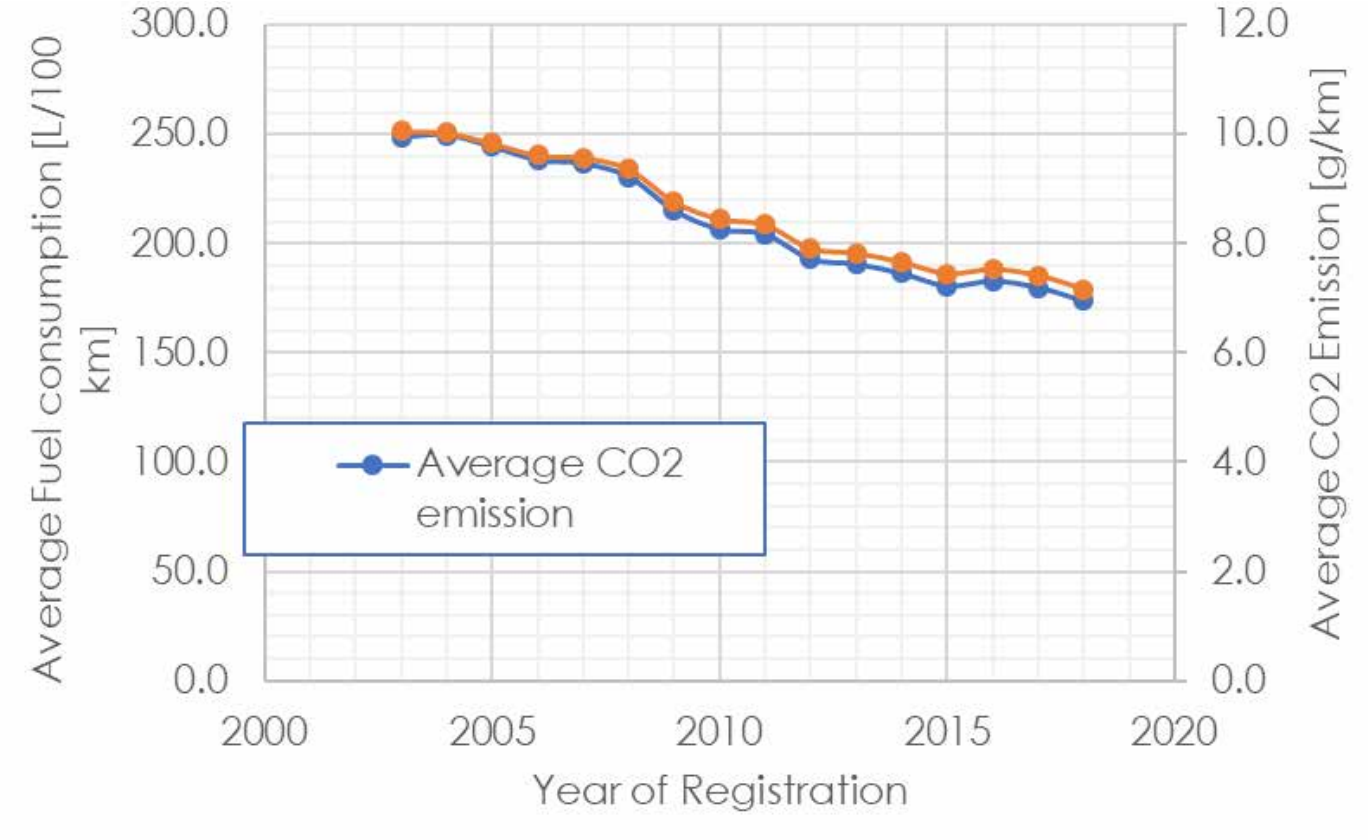
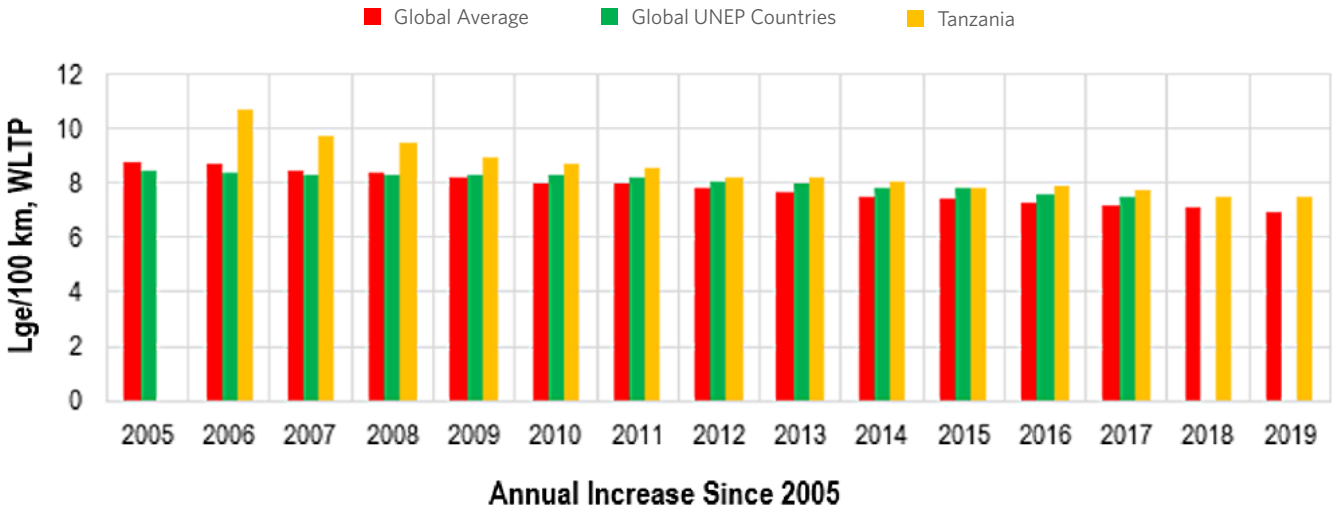


Figure 13: **Trends in LDV fuel consumption and CO2 emission as compared to other countries**



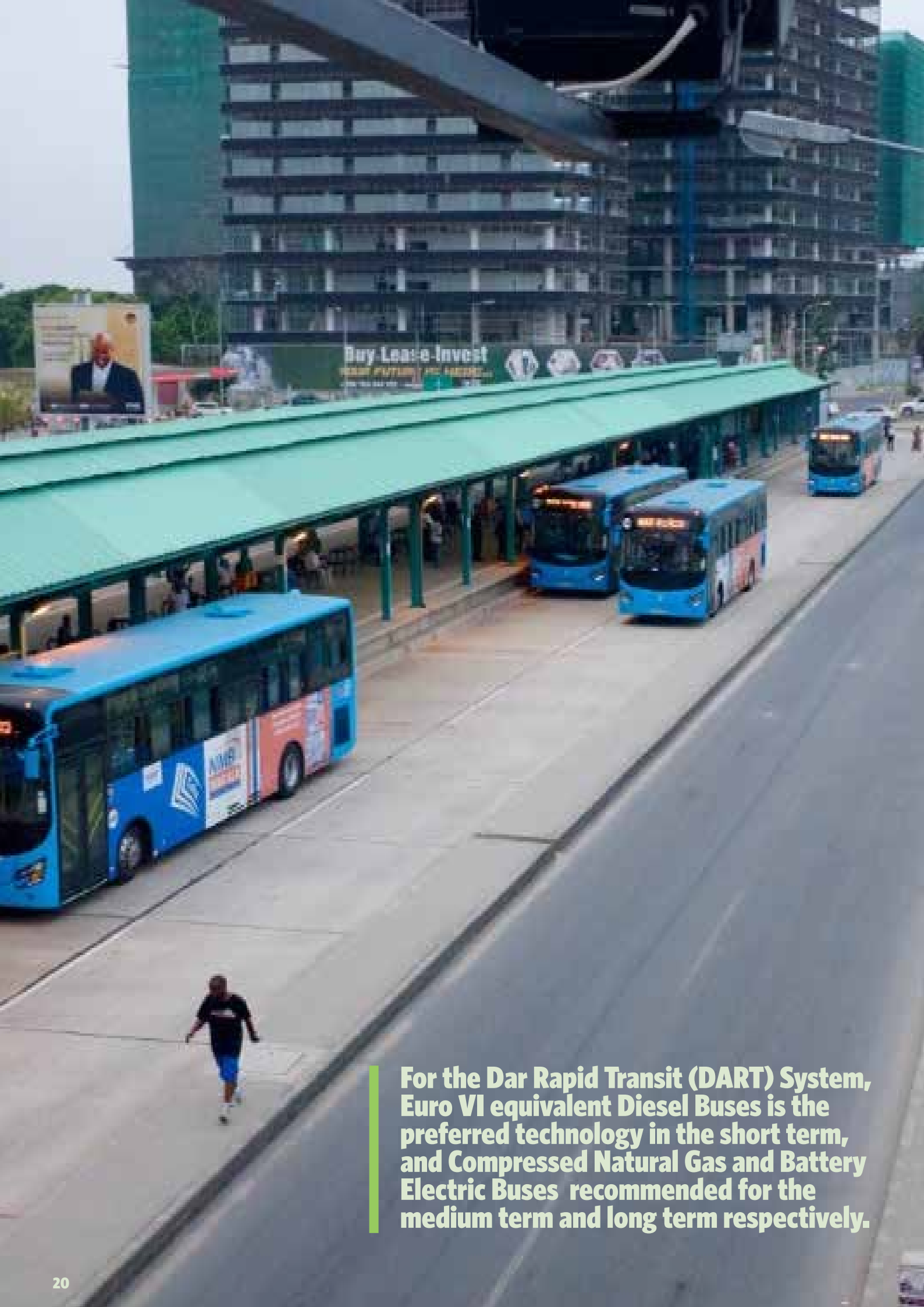
The study also revealed that in addition to being a major source of carbon dioxide emissions, most of the vehicles imported into Tanzania also lacked the requisite vehicle emission control technologies to reduce harmful pollutants.

Assuming all vehicles manufactured after 2005 fulfill Euro 4 emission standard, it was found that hardly 25% of the LDVs registered in Tanzania met this standard and hardly 4% and 6% of vehicle imports met Euro 5 and 6 emission standards respectively in subsequent years.

This therefore calls for concerted efforts by all stakeholders, led by government to put in place policies and incentives to promote the importation of cleaner, and more fuel economy vehicles. Consumer outreach towards purchase of cleaner and more efficient vehicles coupled with the expansion and deployment of cleaner soot-free buses along the DART bus system, will ensure a low carbon pathway for Tanzania.

The country today has abundance of natural gas which is currently used to generate more than 50% of the grid electricity. This electricity can be used to power electric vehicles. At the same time, there has been an expression of using CNG to run the DART bus fleet. Any low carbon mobility measures will also need to target 2&3 wheelers motorcycles that are now leading the vehicle market growth.

A sub-regional harmonized approach may also be ideal for some of the proposed policies, standards and measures flowing the regional harmonization of fuels and vehicle emission standards.



For the Dar Rapid Transit (DART) System, Euro VI equivalent Diesel Buses is the preferred technology in the short term, and Compressed Natural Gas and Battery Electric Buses recommended for the medium term and long term respectively.

4. Rwanda

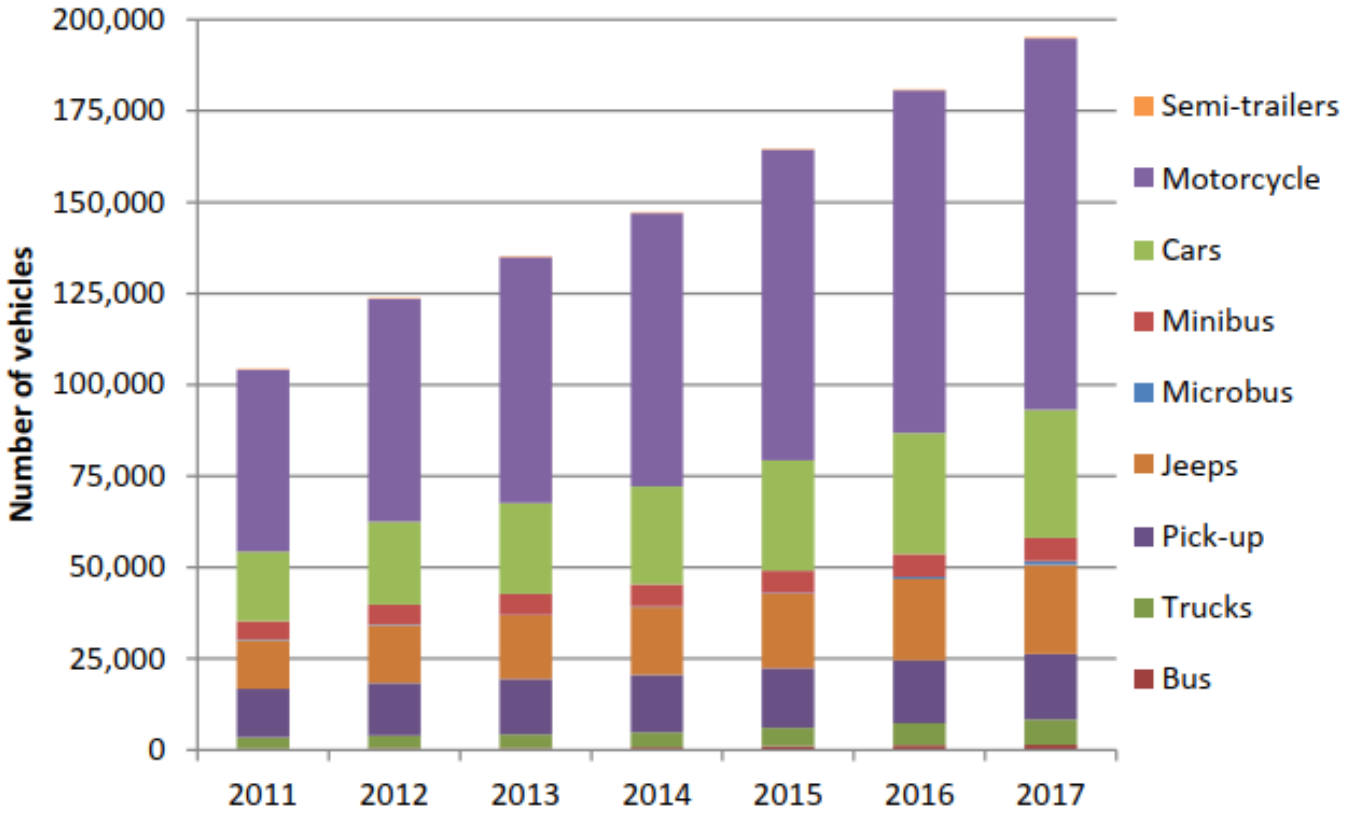
Rwanda's fuel economy study was undertaken from 2018 by the Rwanda Environment Management Authority in partnership with the Ministry of Infrastructure, as part of the government's feasibility study for introduction and implementation of electric mobility in Rwanda.

Compared to other countries in the East Africa Sub-region, Rwanda has the least annual vehicle registrations as shown in Table 10 and Figure 13 below. In 2017, the country had 16.8 motor vehicles for every 1,000 inhabitants. Similar to the East African countries, motorcycles recorded the highest growth rate, followed by passenger cars and jeeps.

Table 10: **Vehicle Population by Category from 2005-2015**

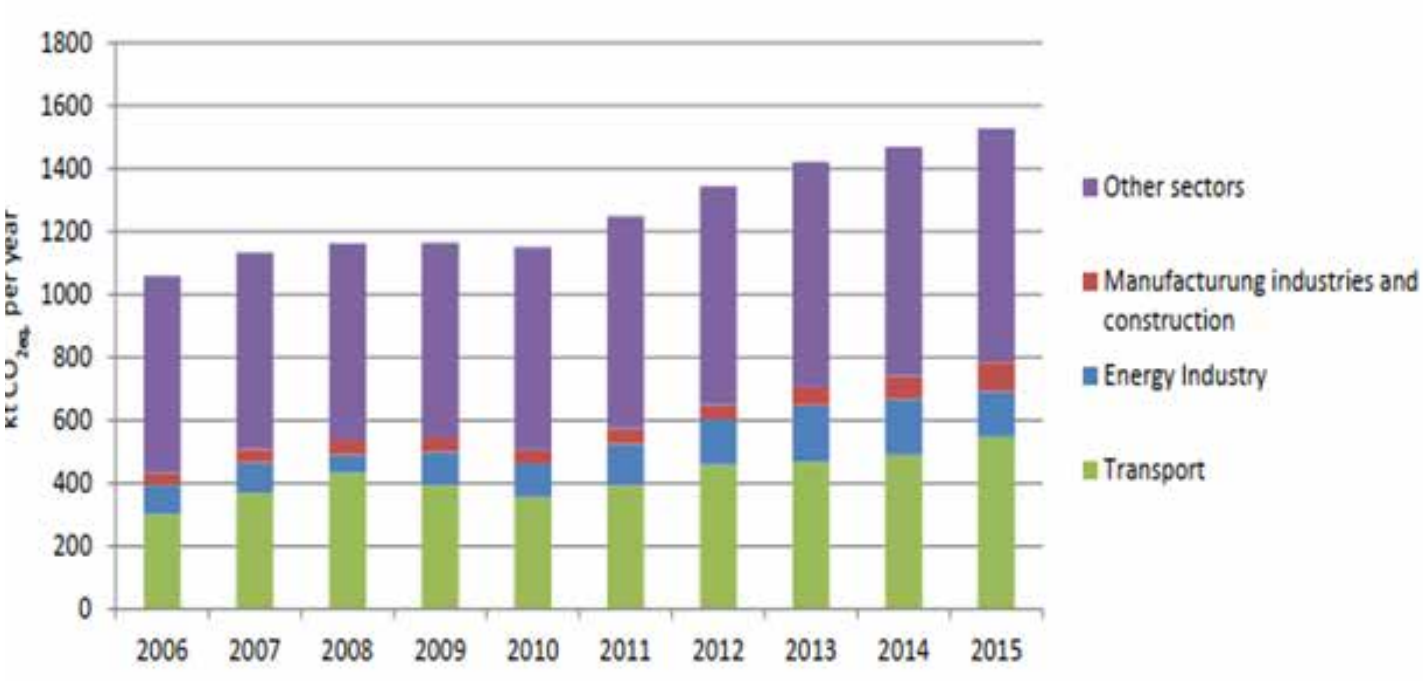
Category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bus	71	87	133	224	250	397	469	531	597	794	1,020
Car	10,309	11,198	13,003	14,925	16,292	17,220	19,177	22,772	25,471	27,312	29,519
Half trailer	77	89	101	124	162	178	186	189	188	196	203
Jeep	6,121	6,797	7,829	9,156	10,387	11,549	13,567	16,083	18,026	20,156	19,324
Microbus	59	61	74	89	115	130	144	150	155	161	235
Minibus	3,419	3,698	3,910	4,567	4,760	4,853	5,021	5,503	6,223	6,118	5,952
Motorcycle	11,653	15,224	20,598	28,416	33,121	38,521	49,349	60,624	68,779	75,017	83,268
Pick up	7,260	8,119	9,409	10,634	11,448	11,932	12,974	14,225	15,067	16,113	15,766
Special engine	82	96	179	241	327	423	548	645	757	854	1,117
Trailer	389	457	577	626	667	694	733	764	831	874	808
Tricycle	0	0	0	0	0	0	18	61	67	70	70
Truck	1,634	1,805	2,106	2,304	2,490	2,723	3,134	3,435	3,931	4,315	4,502
Unknown	0	0	0		0	1	4	17	17	25	27
Caterpillar	0	0	0	0	0	0	0	2	40	80	107
Forklift	0	0	0	0		0	0	0	0	1	7
Total	41,074	47,631	57,919	71,306	80,019	88,621	105,324	124,999	140,109	152,005	161,925
Change		13.77%	17.76%	18.77%	10.89%	9.71%	15.86%	15.74%	10.78%	7.83%	6.13%

Figure 13: **Vehicle growth by Category from 2011 -2017**



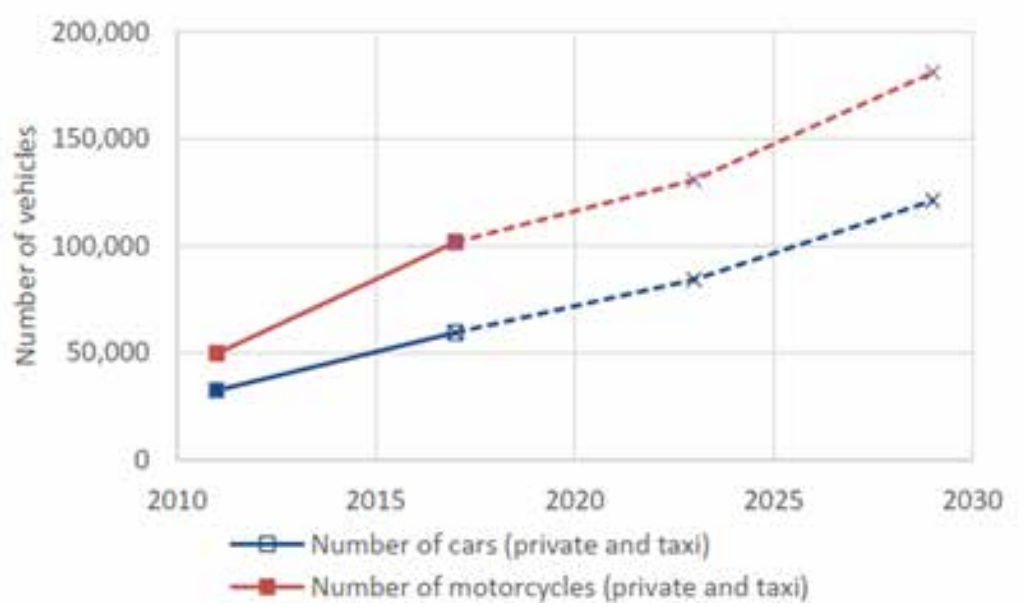
According to the Final Report on Electric Mobility in Rwanda - Background and Feasibility Report (2019), the transport sector remains an important contributor to Rwanda's energy related greenhouse gas emissions, with the share of transport to total energy-related emissions increasing from 29% to 36% between 2005 and 2016 as shown in the Figure 14 below.

Figure 14: **GHG Emissions by Sector (2006 - 2015)**



The country is projected to see a doubling in the number of vehicles and motorcycles by 2030 as estimated in Figure 15 below.

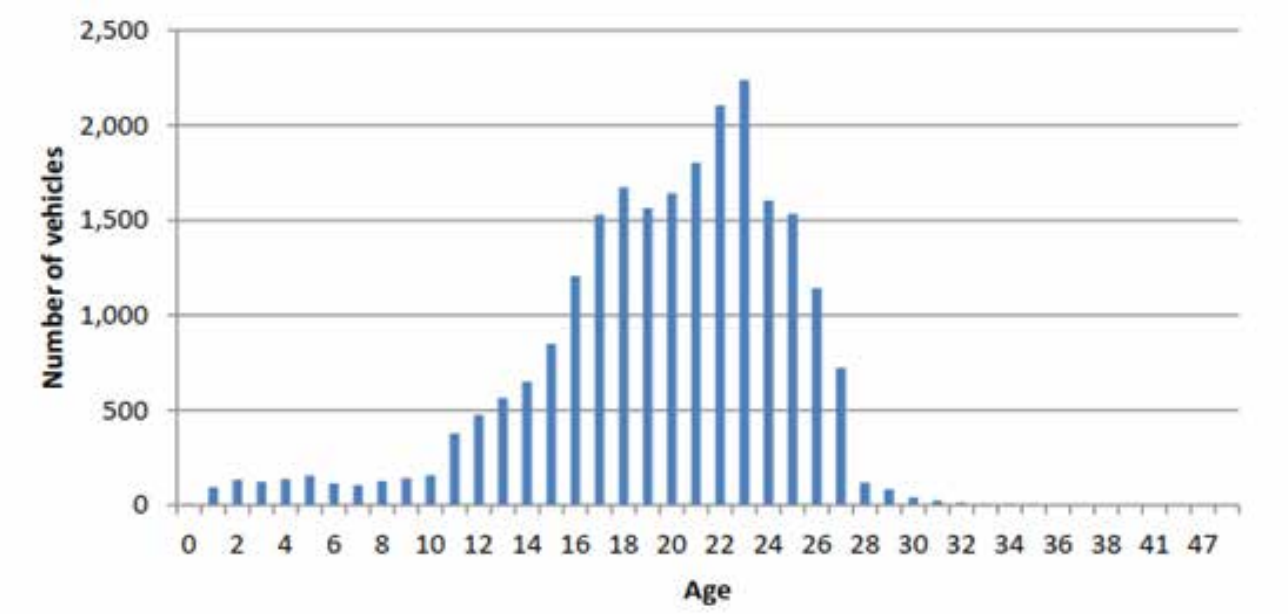
Figure 15: **Projected Growth in the Number of Cars and Motorcycles**



Prior to 2019, the country did not have any vehicle import restrictions. In 2019, Euro 4/IV equivalent vehicle emissions standards were adopted. There were no policies put in place specifically to address import of cleaner, more fuel-efficient vehicles until only recently when the Government of Rwanda has introduced fiscal incentives for electric vehicles and charging facilities.

Rwanda predominantly imports vehicles and an analysis of the vehicles imported between 2016 and 2019 show an average import age of 20 years, peaking at 23 years as shown in Figure 16 below. Vehicles below 5 years represented only 3 % of the entire fleet.

Figure 16: **Age of Imported Cars from 2016 – June 2019**



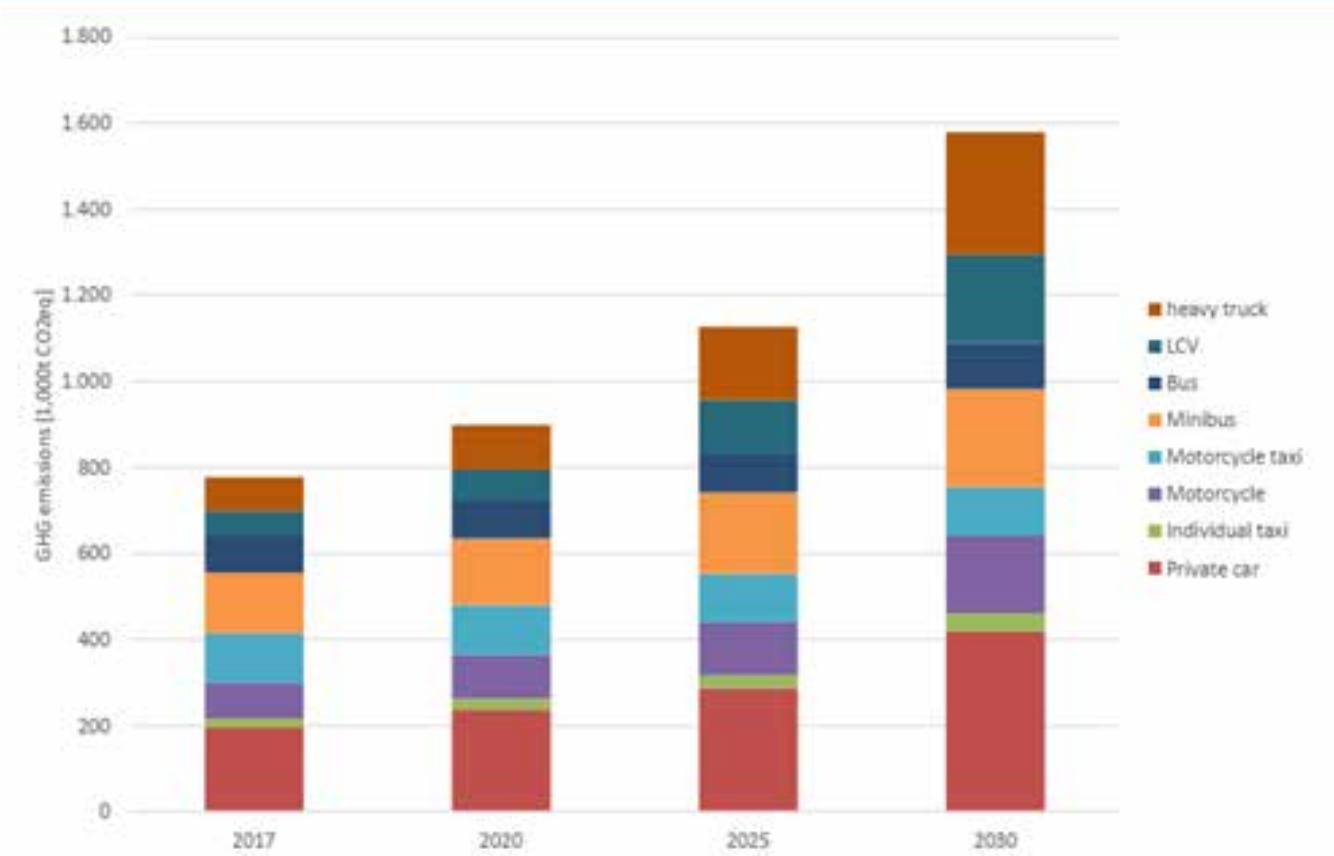
As a result, GFEI study showed that country was importing vehicles that were not fuel efficient as shown in Table 11 below. Even though the fuel economy improved marginally from 9.8 L/100km in 2005 to 9.1 L/100Km in 2015, this was still above global and other countries analyzed through the GFEI. This can be largely attributed to the high number of jeeps in the fleet.

Table 11: **Vehicle Population**

Year of Registration	Average Fuel Economy(L/100Km)
2006	9.8
2007	9.1
2008	9.1
2009	9.2
2010	9.1
2011	9.1
2012	9.2
2013	9.1
2014	9.2
2015	9.1

In a business as usual scenario, it is estimated that by 2030, private cars will contribute the highest share of total transport GHG emissions (WTW) in Rwanda at 43% followed by buses and minibuses at 34% and motorcycles at 18% as shown in Figure 17.

Figure 17: **Projected Transport Emission in a BAU scenario from 2017-2030**



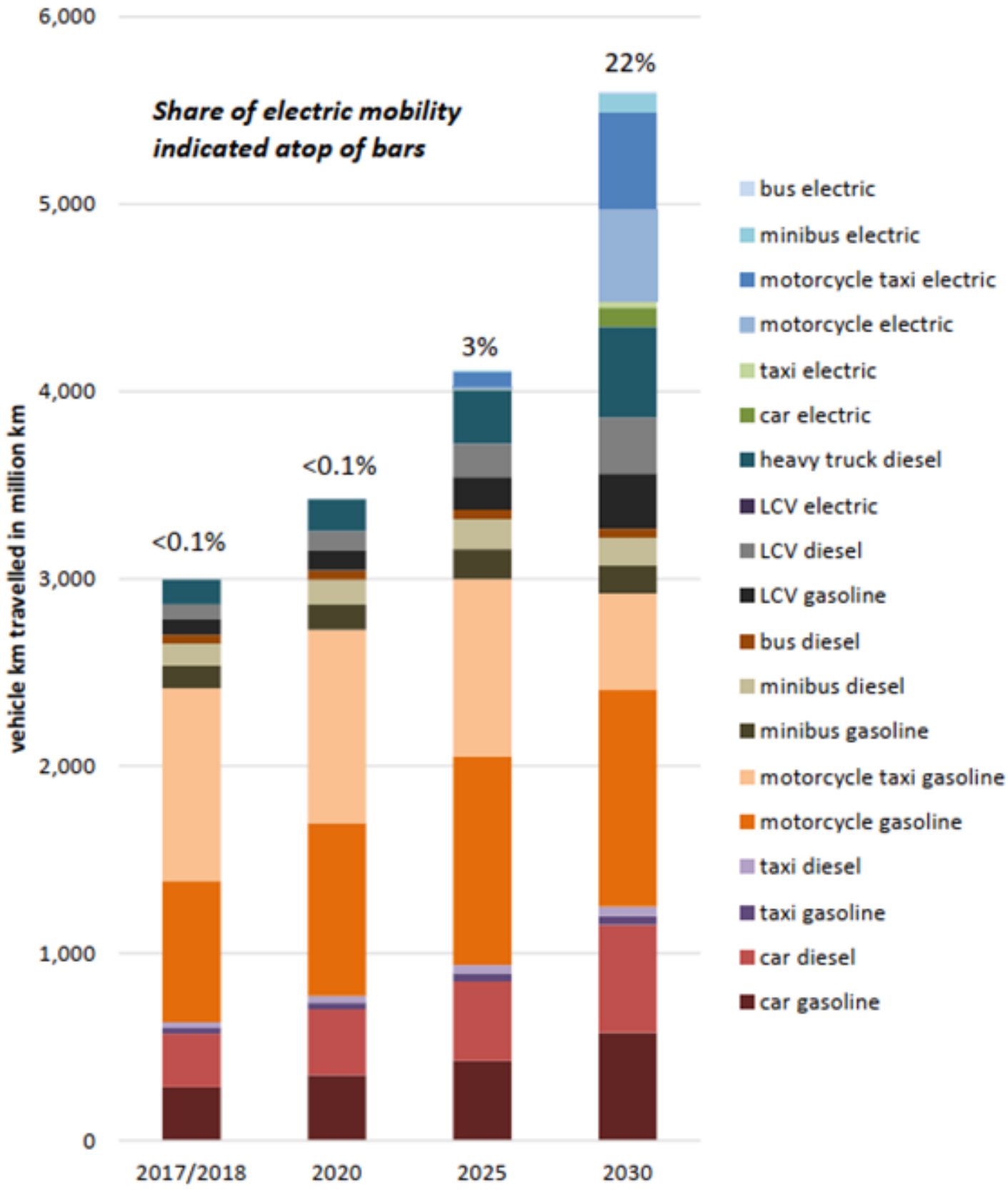
In 2021, Rwanda introduced fiscal measures to incentivize the adoption of electric vehicles in the country. Electric vehicles, spare parts, batteries and charging station equipment were exempted from import and excise duties, the Value Added Tax was zero rated and the withholding tax reduced to 5% at customs.

At the same time, companies manufacturing and assembling electric vehicles in Rwanda have been given incentives under the investment code such as 15% Corporate Income Tax (CIT) and tax holiday (irrespective of the investment value). Rwanda is thus leading in the East African sub-region in promoting electric mobility.

Additional measures are under consideration but not yet implemented such as capping electricity tariff for charging stations at the industrial tariff level; electric vehicles to benefit from a reduced tariff during the off-peak time; provision of rent-free government owned land for setting up charging stations; provisions of electric vehicle charging stations in the building code; provision of free licenses and authorization for commercial EVs; preference to electric vehicles for Government hired vehicles; establishing restricted zones for green transport; provision of special license plate for EVS allow preferential parking and entry into low emission zones; EV access to High Occupancy Vehicle lanes; enforcement of existing emission standards to discourage the purchase of polluting vehicles; regulating importation of used vehicles by imposing an age limit and introducing a carbon tax to discourage polluting vehicles.

As shown in Figure 18, Rwanda is projected to have 22% of its vehicle fleet electrified by 2030.

Figure 18: **Share of Electric Mobility by Category**



Conclusion

The global trend indicates continuous improvements in vehicle fuel economy. This is driven by the developed countries setting stricter fuel economy targets on vehicle manufacturers and shifting consumer choices to cleaner vehicles.

As is evident in this summary, countries in the East Africa sub-region are already looking into ways to promote cleaner, more efficient vehicles. There is however need for a regional approach. Below are just a few measures that could considered, if not already implemented, to promote cleaner, more efficient vehicles:

- **Development of zero emissions and low carbon transport policy** – to provide an enabling environment transition to low carbon mobility.
- **Provision of tax incentives for zero emission/electric vehicles purchase and manufacturing** – since the upfront costs of such vehicles may be higher, and to encourage investment in local manufacturing or assembling.
- **Access to financing** - for procurement of low emission vehicles and affiliated infrastructure.
- **Provision of adequate supportive infrastructure.** - Such as for charging, free parking and access to low emission zones.
- **Greater consumer awareness through information and vehicle labelling schemes** - having publicly available information will support consumer to make informed decisions during vehicle purchase.
- **Setting of standards** -national and regional standardization provides the basis for innovation within the industry without compromising the safety of the end consumer.

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