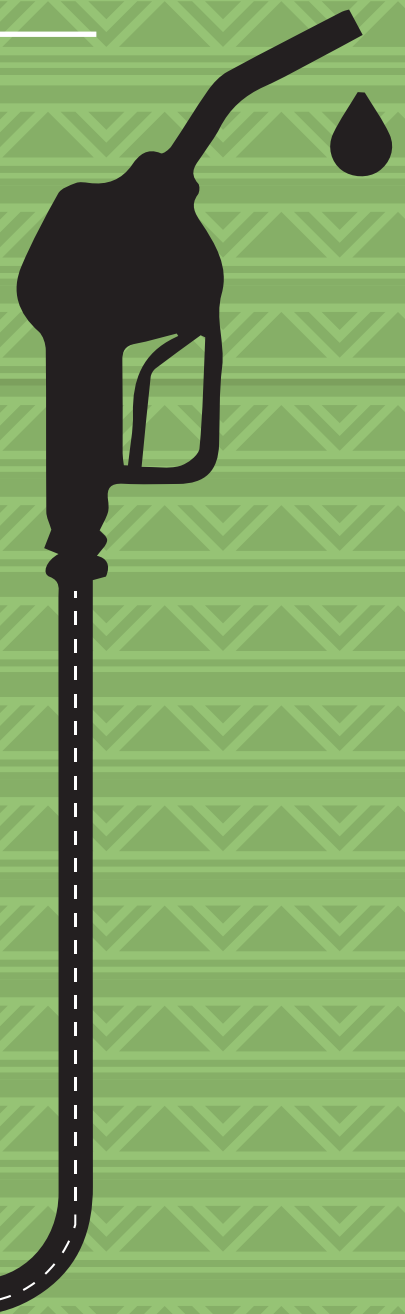




WEST AFRICA FUEL ECONOMY ROADMAP

Summary booklet of the Roadmap



About the ECOWAS Region

The Economic Community of West African States (ECOWAS) is a 15-member regional group with a mandate of promoting economic integration across its member States in all fields of activity including industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial issues, social as well as cultural matters.



As a trading union of approximately 400 million people, ECOWAS seeks to be a single, large trading bloc through economic cooperation. Established to foster the ideal of collective self-sufficiency for its member States, ECOWAS has a core vision to create a borderless and integrated region -- governed in accordance with the principles of democracy, rule of law and good governance -- where the population enjoys free movement, have access to efficient education and health systems and

engage in economic and commercial activities while living in dignity in an atmosphere of peace and security. Member States making up ECOWAS are Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, and Togo. To achieve its objectives, the organization has introduced the transformational ECOWAS Vision 2020 seeking to transform ECOWAS from a body of states to a community of people.

About the Global Fuel Economy Initiative (GFEI)

The Global Fuel Economy Initiative (GFEI) is a partnership of six organizations – The FIA Foundation, The United Nations Environment Programme (UNEP), The Institute of Transportation Studies of the University of California Davis (ITS UC Davis), the International Energy Agency (IEA), The International Council on Clean Transportation (ICCT), and the International Transport Forum (ITF) – which seeks to improve vehicle fuel efficiency including electrification through effective and targeted fuel economy policies to make for a more sustainable, cleaner world.

The partnership focuses on improving the fuel economy of all road vehicles including light-duty vehicles (for example passenger cars and light vans), heavy-duty trucks, buses, and 2- and 3-wheelers. The GFEI's approach cuts across three core activities: research, global advocacy, and support to governments around the world.

At the national levels, policymakers need to make informed decisions by understanding their country's vehicle 'baseline', the historical and current average fuel economy of all vehicles in use, and other key factors, such as dominant fuel types and the proportion of new or used vehicles.



The GFEI provides such expertise by working with local experts to develop an appropriate national approach, establish the national baseline and put forward tailored targets and policy options based on the national context. Workshops with key national and regional vehicle policy stakeholders are held to share key findings and explore the most effective policy options. Furthermore, the GFEI has developed a number of tools to help countries understand the potential impact of alternative fuel economy policies.

To achieve its overarching goal, the GFEI has developed the following sets of targets relative to the 2005 baseline for Light-duty vehicles (LDVs), heavy-duty trucks (HDTs), buses, and two and three wheelers (2- and 3-Ws).

GFEI TARGETS

Passenger light-duty vehicle targets

Double global fuel economy of new vehicles by 2030, reduce CO₂ emissions 90% by 2050



Heavy-duty vehicle targets

Improve new vehicle fuel consumption 35% by 2035 - CO₂ reduction target of 70% by 2050



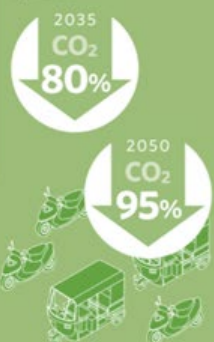
Transit bus targets

Improve fuel economy to reduce CO₂ emissions by 65% by 2035 and 95% by 2050



Two & three wheel vehicle targets

Improve fuel economy to reduce CO₂ emissions by 80% by 2035 and 95% by 2050



Decarbonising road transport to tackle climate change

A new fleetwide CO₂ reduction target of 65% by 2050 compared with 2005. To comply with the Paris Agreement's less than 2 degree scenario, better fuel efficiency of conventional vehicle technologies; a faster transition to electric vehicles; a faster decarbonisation of the electricity grid; and additional 'avoid' and 'shift' measures eg more non-motorised mobility, are all needed



Source: GFEI Working Paper 20 - Data based upon 2005 baseline

The ECOWAS Regional Fuel Economy Roadmap

1. Introduction and Background

Despite relatively low motorization rates (number of vehicles per thousand people), ECOWAS countries are confronted with rapid growth of the vehicle fleet as a result of increasing transport demand, population growth, rapid urbanization, and other factors.

In most States, fleetwide average fuel economy is among the lowest in the world, meaning higher fuel consumption per kilometre traveled. With limited vehicle manufacturing capacity, the region relies predominantly on the imports of used and older-technology vehicles from large markets to respond to the growing need for mobility. Yet this reliance on inefficient vehicles comes with significant environmental and health costs.

Worldwide vehicle fleet is projected to triple by 2050, with over 90% of this growth taking place in developing and transition countries. To limit the environmental impacts of their vehicle fleet, several governments around the world have committed to

the GFEI targets. The achievement of these targets is expected to yield substantial benefits in terms of reduced CO₂ emissions, better air quality, improved energy security, lower import bills and financial savings for consumers.

In West Africa where outdoor air pollution and emissions from vehicles have become significantly growing concerns, ECOWAS Commission and its Member States have partnered with UNEP to examine the vehicle fleet and existing policies. Under the support of the GFEI, 13 of the West African countries have been engaged to carry out the analysis of the vehicles imported in terms of age, fuel efficiency, CO₂ emission and technology.



These countries include Benin, Burkina Faso, Cote d'Ivoire, The Gambia, Ghana, Guinea Bissau, Liberia, Mali, Niger, Nigeria Senegal, Sierra Leone and Togo. The remaining States (Guinea and Cape Verde) have yet to join the partnership.

The vehicle information gathered is critical to support the region to develop policies and guidelines to attract cleaner vehicles. The transition to fuel-efficient vehicles is particularly urgent in the ECOWAS region where unprecedented urbanization continues to put pressure on decisionmakers to respond to the increasing needs for mobility. As large vehicle markets around the world tighten their fuel economy and vehicle emissions standards, electrify their fleet, or impose strict bans on internal combustion engine (ICE) vehicles, the ECOWAS region could continue to be a destination for used and polluting vehicles that do not comply with the policies of the countries from which they are imported. On the contrary, by introducing appropriate policies, there is a large window of opportunities for ECOWAS States to easily benefit from importing vehicles with the cleanest technologies readily available in the global market.

In addition to the in-country baseline analyses, ECOWAS Commission and its member States have taken a step further to develop a regional fuel economy roadmap toward meeting the GFEI targets. With 15 Member States, the region constitutes a large vehicle market. Harmonized clean vehicle policies across the region will deliver more rapid progress than isolated actions taken by individual States. The ECOWAS harmonized fuel economy roadmap is a regional effort that aligns with the "Vision 2020" seeking to transform "ECOWAS from a body of States to a Community of People".

Fuel quality in the region and vehicle emissions standards have also been one of the cornerstones of ECOWAS' efforts with the UNEP to reduce transport-related air pollution and CO₂ emissions in West Africa. Vehicle and fuel work as a single system,

with vehicle emission control technologies requiring clean fuels to operate. Consequently, in combination with the Regional Fuel Economy Roadmap, ECOWAS States have developed a regional framework for the harmonization of fuel specifications and vehicle emission standards in the region. The directives mandate a maximum of 50 ppm sulfur content in diesel and gasoline, limits on other fuel parameters, and Euro 4/IV or more stringent vehicle emissions standards for all imported vehicles in the region starting from 2021. The regulation also imposes import age limits of 5 years for LDVs and 10 years for HDVs with a transition period of 10 years for all States to domesticate and implement the age limit.

Import of cleaner and more efficient vehicles will support the implementation of the ECOWAS Environmental Policy, especially in addressing local and global air pollution, as well provide economic gain to the region through reduced fuel consumption. At the same time, improvements in energy efficiency, including vehicle fuel efficiency, are contained in international agreements such as the Sustainable Development Goals (SDG - Goal 7.3) and the Paris Climate Agreement where some countries have specified improvements in vehicle fuel efficiency as part of their Nationally Determined Contributions (NDCs).

This roadmap builds on a thorough review of the national fuel economy findings, consultations with national stakeholders, sharing of experiences between States, meetings of technical experts, and several regional discussions convened by ECOWAS to evaluate proposals for actions to accelerate the implementation of the strategies.

The regional fuel economy roadmap was further adopted by ECOWAS Sector Ministers in charge of the Environment, reviewed by the ECOWAS Parliament, and ratified by the ECOWAS Council of Statutory Ministers, and the Head of States Summit.

2. Data Collection and Methodology

The baseline analyses in ECOWAS Member States have been conducted following the methodology defined by the GFEI. Under this guideline, the vehicle data needed for the calculation of the weighted average fuel economy each year should include all vehicles registered for the first time in the country during this year.

Vehicles are divided in three major types:

1. Light-duty vehicles (LDVs): Four-wheel motorized road vehicle carrying persons (up to 8 persons) and/or goods, up to 3.5t including vehicle weight. This category includes:

- Light passenger vehicles (cars, SUVs) aiming at person's transportation (ex. Toyota RAV4)
- Light Commercial Vehicles: aiming at goods transportation (ex. Toyota Hilux)

2. Heavy-duty vehicles (HDVs): Vehicle dedicated to passenger or goods transport, with total mass (including vehicle) above 3.5t. This includes:

- Heavy-duty trucks
- Buses

3. Motorcycles and Tricycles (MC): Two-wheeled or three-wheeled motorized road vehicle used for carrying passengers and/ or goods.

According to the GFEI, after collection the national registration data, the data should be cleaned and aggregated, and include at least the following vehicle characteristics:

- Vehicle make (e.g. Toyota)
- Vehicle model (e.g. Corolla)
- Model production year - important for used imports (e.g. 2007)
- Engine displacement (e.g. 1,800 ccm or 1.8 l)
- Engine power (e.g. 80 kW)
- Fuel type (e.g. gasoline, diesel, LPG, CNG, electricity)
- Rated fuel economy (Lge/100km) or specific carbon emissions per km (gCO₂ per km) and the respective test cycle basis (NEDC, CAFE (FTP), JC08)

The methodology provides additional guidelines to support countries facing challenges in retrieving the fuel economy and CO₂ emissions values for some of the vehicles in their fleet. In such cases, the accuracy of the fuel economy baseline is sufficient if fuel economy data can be added to at least 85% of all newly registered vehicles in one year. In the majority of markets, this minimum fuel economy data gap filling rate could be met with approximately 50 vehicle models. Furthermore, having access to additional data (for example transmission type, axle configuration) can help improve the accuracy of the completed fuel economy values.





In ECOWAS countries, data was provided by the national registration or customs services. Since the in-country fleet is a mix of imported new and secondhand vehicles, the studies include both types of imports. One of the key benefits of the regional approach to fuel economy in the ECOWAS region was the use of common indicators and methods across States to make results comparable, facilitate the development of the harmonized framework, and standardize the compliance procedure. In all countries, the national registration services or customs do not keep track of the rated fuel economy (Lge/100km) or specific carbon emissions per km (gCO₂ per km). These data were filled with the help of freely available sources for tested fuel economy of new vehicles provided by the GFEI and its partners. In retrieving these values, an important consideration was given to the vehicle test cycle, a testing regime performed on a vehicle to determine its CO₂ emissions and fuel consumption. Around the world, major markets have independently developed their test procedures to reflect local market characteristics and fulfil local regulatory requirements. Some of the most common procedures are the US combined cycle CAFÉ, the Japanese JC08 and the New European Driving Cycle (NEDC). Global efforts to

harmonize the varieties of test cycles have led to the development of the world-harmonized light-duty vehicle test procedure (WLTP), but many vehicles still sold today have been certified under one of the independent test procedures.

The majority of the ECOWAS LDV fleet is made up of imported new and secondhand vehicles certified under different test cycles depending on the market from which they are imported, with the NEDC being the most occurring procedure. To normalize results, all fuel economy values were converted to NEDC using the new methodology developed by the ICCT.

ECOWAS States have not determined a certification test procedure under which all imported LDVs will need to report CO₂ emissions values. Cross-conversion between test cycles involve some uncertainties, and since ECOWAS region is likely to continue importing new and secondhand vehicles from other markets in the near term, this roadmap includes a timeline for the identification of a unique test procedure using a reference fuel specified by ECOWAS countries and State regulators under which all vehicles, new and secondhand will need to report CO₂ emission values. This will help ensure compliance and prevent loopholes in the policy.

3. Fuel Economy Roadmap Preparation Process



June 2018–December 2018: Development of the first draft of the ECOWAS Regional Fuel Economy Roadmap, review of States' baseline analyses and policy options, consultations with States' stakeholders.

The first draft was presented at the “Technical Experts Meeting to Develop an ECOWAS Sub-Regional Fuel Economy Roadmap”, **19 – 21 December 2018** in Abidjan, Cote d'Ivoire. Comments were received from experts from all ECOWAS Member States and incorporated in the Roadmap.

January 2019–December 2019: The Regional Fuel Economy Roadmap was further presented at GFEI baseline validation meetings in ECOWAS Member States held in 2019. Comments from national stakeholders were received and incorporated.

February 6, 2020: The final review of the Regional Roadmap was conducted by experts from ECOWAS States at the “Experts meeting preceding the meeting of ministers in charge of the Environment, Joint Meeting of ECOWAS Ministers of Hydrocarbons and Environment”. 5-7 February 2020, Ouagadougou, Burkina Faso.

February 7, 2020: Adoption by ECOWAS sector ministers in charge of the Environment. Joint Meeting of ECOWAS Ministers of Hydrocarbons and Environment. 5-7 February 2020, Ouagadougou, Burkina Faso

July 2020: Resolution by ECOWAS Parliament for approval of roadmap by Council of Ministers.

September 2020: Ratification by ECOWAS Council of Statutory Ministers and by Head of States Summit.

2021 onward: Dissemination, domestication and national implementation strategies of the Roadmap.

4. Key Fuel Economy Findings

The fuel economy analyses conducted in ECOWAS States under the support of the GFEI provide the following overarching and State-by-State findings.

Rapid growth of the vehicle fleet:

Annual imports and registrations of LDVs and HDVs have significantly and steadily increased in ECOWAS States. The region depends on the import of vehicles to meet demand as vehicle manufacturing capacity is limited. Vehicles are imported predominantly from the European Union. Other import markets include the United States and Canada, and most vehicles enter the region through the ports of Lome - Togo, Tema - Ghana, and Cotonou - Benin.

The GFEI analyses conducted in ECOWAS Member States reveal that all countries heavily rely on the imports of used vehicles, with the share of secondhand vehicles exceeding 95% of annual imports in some States and many imported vehicles have exceeded their useful lifetime.

Very poor vehicle fuel economy:

Average annual fuel consumption is very high in the region, with fuel consumption above 9 lge/ 100km in a few States. Given the disproportionate contribution of used and polluting vehicles to impacts on climate and health, the transition to fuel-efficient vehicles is particularly urgent in the ECOWAS region. Moreover, as larger vehicle markets around the world tighten their fuel economy and vehicle emissions standards, transition to electric vehicles, or impose strict bans on ICE vehicles, the ECOWAS region could continue to be a market for used and polluting vehicles that do not comply with the policies of the countries from which they are imported.

On the contrary, with sound vehicle policies, ECOWAS States can take advantage of the newest vehicle technologies in place in exporting markets to import clean and fuel-efficient vehicles.



The rapid growth of 2- and 3- wheelers:

An increasing number of people in the region rely on motorcycles and tricycles for the transport of people and goods as an alternative to vehicles, leading to a growing demand for these engines. In some States, the fleet of motorcycles has already exceeded 1 million. These 2- and 3- wheelers are predominantly imported brand-new or at very low ages from China, India and other Asian markets. Yet, these engines are important sources of fuel consumption, CO₂ emissions, air pollution, traffic congestion and road safety concerns.

EVs and electric 2- and 3-wheelers are yet to be adopted:

Although the majority of the imported vehicles and 2- and 3-wheelers originate in the EU, North America, and China which have clean technologies and electric vehicles and motorcycles in place, most ECOWAS Member States do not have incentives available to facilitate the import of electric vehicles. All that is needed is for ECOWAS States to review their regulatory framework to encourage the uptake of electric mobility.

Weak and sparse environmental regulations on the import of vehicles:

The GFEL studies have shown that despite the importance of the import of used vehicles in the region, there is little regulation on the environmental performance of the imported vehicles. Across member States, regulations are sparse and vary, ranging from the most stringent 5-year age limit on imported LDVs in Cote d'Ivoire, to no import restrictions in most States. This disparity makes the harmonized framework developed by ECOWAS even more relevant.

No fiscal incentives:

ECOWAS States have set little fiscal incentives to encourage the imports of clean vehicles. Only a few States have additional fees for vehicles older than 10 years. There are no incentives based on vehicle environmental performance (fuel consumption, CO2 emissions, vehicle emissions standards). The implementation of harmonized fiscal policies that promote clean vehicles will give a strong signal to consumers.

Lack of vehicle labeling schemes:

None of the ECOWAS Member States have labeling schemes in place to help consumers make informed decisions when purchasing a vehicle. Labeling schemes also reinforce the effectiveness of other fuel economy policies such as vehicle CO2 emissions standards and fiscal policies.



9lge/100km

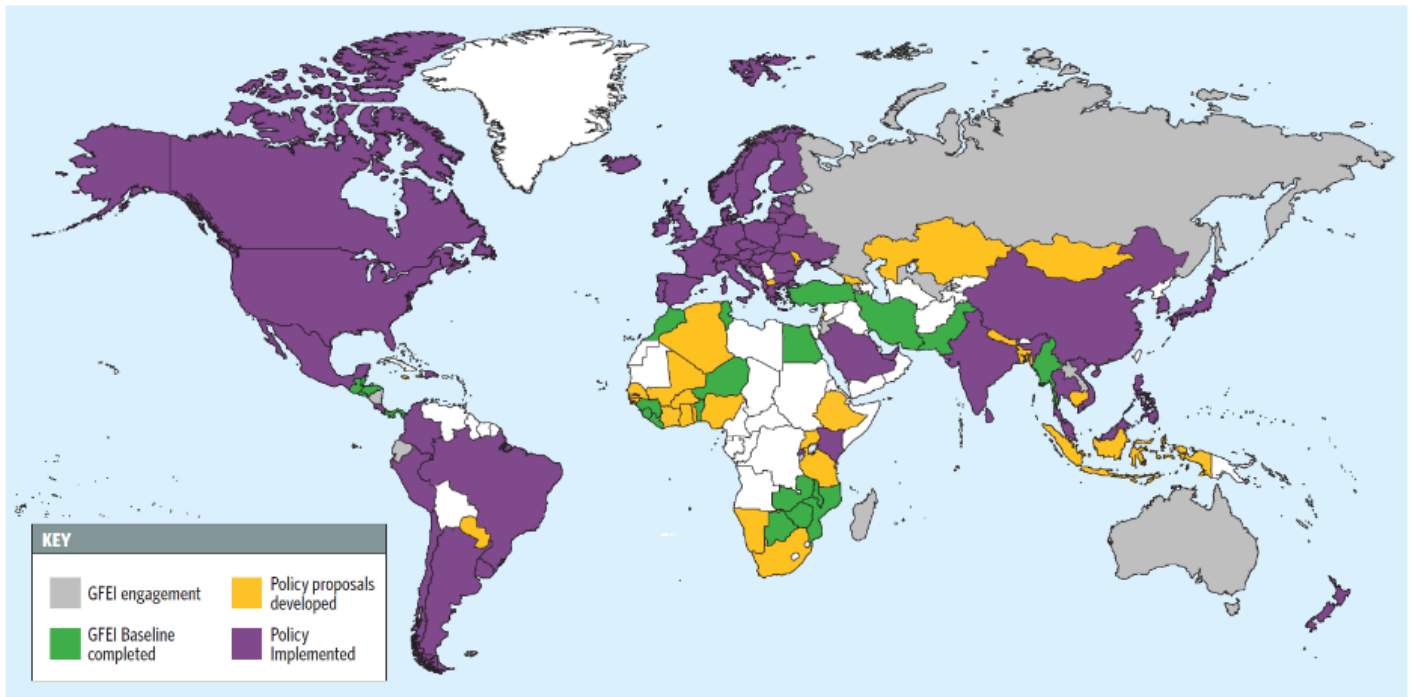
average annual fuel consumption in a few ECOWAS States; which is quite high

These schemes encourage vehicle manufacturers and importers to bring in vehicles with the best fuel economy technology available.

Limited consumer awareness on the environmental performance of vehicles:

Although air pollution and CO2 emissions have become increasing concerns in ECOWAS Member States particularly in cities, consumer programs to raise awareness and encourage the purchase of clean vehicles is non-existent in most States. For effective implementation of fuel economy measures, awareness programs and actions are required at all levels of consumer groups, from the public to fleet owners and government agencies.

Light-duty Vehicle Fuel Economy Policy Progress Worldwide



Vehicle data collection to be improved:

One of the key findings of the GFEI studies is that ECOWAS Member States do not keep track of important environmental attributes of the imported fleet. States need to capture environmental performance data including the emissions certification levels, fuel consumption, CO² emissions, and test cycles of the imported vehicles. Data has become an essential tool to inform policymakers and to monitor policy progress. The sales-weighted average fuel economy across ECOWAS Member States for which data was available is as follows:

Year	Weighted Average
2005	7.46
2008	7.74
2011	8.10
2013	7.69
2014	8.16
2015	7.63
2016	8.00
2017	7.47

Country Profiles



BENIN

LDV Fuel economy values (Lge/100 km NEDC)	2005	2010	2013	2015
	9.69	10.67	10.48	9.92

Imports:

On average 22,000 LDVs, 3,500 HDVs and 21,000 motorcycles (MCs) have been registered annually. In 2015, imports of LDVs exceeded 30,000 vehicles. Gasoline is the most dominant fuel in the import of LDVs, with diesel LDVs accounting for only 8% of total registrations. Average age of imported passenger cars is over 10 years, with an average of 14 years in 2013 and 11 years in 2015. Imported LCVs were about 12 years. In 2015, 94% of imported passenger cars, and 81% of LCVs were used vehicles.

Incentives and measures:

Annual ecotaxes are levied based on vehicle categories (LDVs, HDVs or MCs). These taxes are not based on vehicle environmental performances (CO₂ or pollutants, fuel consumption) and are not sufficient to promote the purchase of cleaner vehicles. The GFEI study was essential to further update the State's NDC.



BURKINA FASO

LDV Fuel economy values (Lge/100 km NEDC)	2005	2008	2011	2013	2015	2017
	8.2	8.26	7.4	7.89	8.05	7.48

Imports:

The annual import of LDVs is growing fast, increasing from 5,000 in 2005 to 23,000 in 2017. LDV import age was approximately 12 years in 2017. Gasoline is the most dominant fuel, with diesel vehicles accounting for 23% of imported LDVs in 2017. Used vehicles dominate imports, accounting for 91% of imported LDVs in 2017. A significant number of motorcycles with more than 150,000 motorcycles registered annually on average and a stock exceeding 1 million MCs.



COTE D'IVOIRE

LDV Fuel economy values (Lge/100 km NEDC)	2013	2014	2015
	8.47	8.46	7.98

Imports:

Annual LDV import growth rate was about 11% in 2013-2014, 17% in 2014-2015 and 12% in 2015-2016. Used vehicles account for approximately 80% of annual registrations. Average import age was about 11 years in 2016. A large share of SUVs makes up the top 10 of imported new vehicles in 2015. Average annual import of motorcycles is relatively low, with less than 10,000 annual registrations on average.

Incentives and measures:

The State has introduced the strongest import restriction in the region with age-based import limits of 5 years for LDVs and 10 years for HDVs.



GAMBIA

LDV Fuel economy values (Lge/100 km NEDC)	2005	2010	2013	2015	2017
	7.73	7.89	7.95	8.39	7.84

Imports:

Annual imports grew from 7,000 in 2005 (LDVs and HDVs) to 23,000 in 2020. Used vehicles account for more 95% of the fleet. Data collection has been very limited, making it crucial to significantly improve the collection and capture of vehicle data under the GFEI format



GHANA

LDV Fuel economy values (Lge/100 km NEDC)	2005	2008	2011	2013	2015
	7.38	7.41	7.26	7.05	6.99

Imports:

Average age of imported LDVs was approximately 5 years in 2016. Used vehicles account for approximately 80% of the fleet. Gasoline vehicles dominate the annual imported fleet, with diesel accounting for 30% of the LDV fleet. Annual imported LDVs grew from 20,000 in 2005 to 63,000 in 2016.

Incentives and measures:

No import restrictions, but the State has additional penalties on imported vehicles older than 10 years.



GUINEA BISSAU

LDV Fuel economy values (Lge/100 km NEDC)	2015	2016	2017	2018	2019	2020
	8.1	8.2	8.3	9.0	8.6	9.0

Imports:

Approximately 2,000 LDVs were imported annually between 2015 and 2020. Contrary to most States in the region, diesel dominates the imports of LDVs in the country, accounting for approximately 70% of annual imports. The imported vehicles are on average 18 years old, with used vehicles making up 95% of all imports. Approximately 500 HDVs are imported annually, with imported HDV on average approximately 23 years old. 97% of HDVs are imported as used vehicles. There is also a very limited number of hybrid vehicles.



LIBERIA

LDV Fuel economy values (Lge/100 km NEDC)	2005	2008	2011	2013	2015
	7.89	8.12	7.96	7.93	7.79

Imports:

90% of imported vehicles are used. The average age of used vehicles is 10 years. LDV registrations grew from 7,000 in 2005 to 33,000 in 2015. Gasoline dominates the fleet, with diesel vehicles accounting for only 30% of the imported fleet on average.



MALI

LDV Fuel economy values (Lge/100 km NEDC)	2005	2006	2007	2008	2009	2010
	7.9	7.9	7.9	8.1	8.4	8.4
2011	2012	2013	2014	2015	2016	2017
8.4	8.4	8.4	8.5	8.5	8.5	8.5

Imports:

Annual LDV imports grew from 7,000 in 2005 to more than 23,000 in 2015. Gasoline vehicles dominate the LDV imports with diesel accounting for 40% of imports in 2017. Average age of imported LDVs is 14 years, with on average 94% of vehicles imported as used annually. Imports of HDVs grew from 3,000 in 2005 to 6,000 in 2017. Import age for LDVs in 2017 was 18 years, with used imported LDVs accounting for 89% of the 2017 imports.

Incentives and measures:

No import restrictions. No consumer awareness programs or labeling schemes are in place to encourage the import of clean vehicles. No fuel economy measures.

Data collection:

Data on vehicle emission certification levels, fuel consumption and CO₂ emissions are not tracked. No record of hybrid or electric vehicles.



NIGER

LDV Fuel economy values (Lge/100 km NEDC)	2005	2008	2011	2013	2015	2017
	10.34	10.15	10.21	9.14	9.28	7.46

Imports:

Annual LDV imports has been relatively stable from 2005 to 2017 with total LDV imports of 20,000 in 2005 and 15,000 in 2017. Gasoline vehicles dominate imports, with diesel imports accounting for 15% of the LDVs on average between 2005 and 2017. Average import age is very high, increasing from 16 years in 2005 to 17 years in 2017, with secondhand vehicles accounting for 97% of the imports. The MC fleet is also important, with a total fleet size of 240,000 MCs in 2017.

Incentives and measures:

No import restrictions, no consumer awareness programs or labeling schemes are in place to encourage the import of clean vehicles. No fuel economy measures.

Data collection:

Data on vehicle emission certification levels, fuel consumption and CO₂ emissions are not tracked. No record of hybrid or electric vehicles.



NIGERIA

LDV Fuel economy values (Lge/100 km NEDC)	2013	2014	2015	2016	2017
	9.73	9.66	9.56	9.49	9.19

Imports:

Annual LDV imports from 2013 to 2017 was on average 127,000. Annual registrations are projected to reach 400,000 by 2035. Used cars represent 94% of imports. Vehicle stock as of 2016 was 12 million cumulative registrations. Gasoline is the most dominant fuel, accounting for about 95% of imports. Gasoline-powered LDVs are predominantly in the range of 2001-2500 cc. A large number (16%) of registered LDVs are older than 15 years old. A few electric vehicles have been registered (a total of 42 between 2013 and 2017). Approximately 4,000 hybrid vehicles have been registered between 2013 and 2017, the equivalent of 800 hybrid vehicles registered per year, representing less than 1% of the annual registered fleet.

Incentives and measures:

No import restrictions, no consumer awareness programs or labeling schemes are in place to encourage the import of clean vehicles. The Nigerian Senate rejected a bill for an Act to phase out gasoline vehicles by 2035 and introduce electric cars. No fuel economy measures.

Data collection:

Data on vehicle emission certification levels, fuel consumption and CO² emissions not tracked.





SENEGAL

LDV Fuel economy values (Lge/100 km NEDC)	2016
	10.48

Imports:

With 25% of the country's population, the Dakar region is a very dense urban area holding 70% of the country's vehicle fleet. Diesel is the primary fuel, making up 58% of the fleet whereas gasoline accounts for 33%. The share of gas and electric vehicles is less than 1%. On average, 20,000 LDVs were imported annually between 2000 and 2016, the majority of which are used vehicles, making up 63% of imports in 2000 and 72% in 2016. The fleet is old, with 45% of the LDVs above 20 years in 2016. In the same year, the average age was 19 years for LDVs and 24 for HDVs. 2016 total fleet size is estimate at 500,000 vehicles, including 34 electric vehicles.

Incentives and measures:

In 2001, the age limit for imported LDVs was 5 years. This restriction was further revised in 2012 to 8 years. No consumer awareness programs or labeling schemes are in place to encourage the import of clean vehicles. No fuel economy measures.

Data collection:

Data on vehicle emission certification levels, fuel consumption and CO² emissions not tracked.



West Africa Fuel Economy Roadmap

SUMMARY OF THE ROADMAP

The Regional Fuel Economy Roadmap creates an opportunity to significantly limit CO₂ emissions from the growing vehicle fleet in the region. It provides a framework through which all Member States and relevant stakeholders will be able to coordinate their actions and combine their efforts to ensure clean and sustainable transportation to populations. The roadmap details the following 10 points:

- Regional fuel economy targets of 5 lge/100km by 2025, and 4.2 lge/100km by 2030 for newly imported or registered light-duty vehicles in the ECOWAS region.
- Enable and accelerate the adoption of electric vehicles and motorcycles.
- Harmonize framework for vehicle registration, reporting and data collection.
- Secure national leadership and strengthen regional cooperation on fuel economy.
- Harmonize vehicle labeling schemes.
- Promote communication, awareness, and information programs.
- Introduce and harmonize vehicle fiscal policies based on vehicle CO₂ emissions and fuel economy performance.
- Harmonize in-use vehicle emissions control programs.
- Implement regional CO₂ emissions or fuel economy standards.
- Promote public transport, non-motorized transport infrastructures and alternative fuels.

The vision:

With 15 Member States and a population of 400 million people, the Economic Community of West African States (ECOWAS) region constitutes a large market. Harmonized clean vehicle policies across the ECOWAS region will deliver more rapid progress than isolated actions taken by individual States.

The Regional Fuel Economy Roadmap will help address significant barriers and contribute to regional and national goals for climate change mitigation, clean air and sustainable development. This approach aligns with the ECOWAS vision 2020 seeking to transform "ECOWAS from a body of States to a Community of People"

1. Regional fuel economy targets

Regional average fuel economy targets of 5 lge/100km by 2025, and 4.2 lge/100km by 2030 for newly imported or registered light-duty vehicles in the ECOWAS region.

1.1 Improve average fuel economy to meet 5 lge/100km on NEDC by 2025 for all newly imported or registered LDVs in ECOWAS Member States.

This target is equivalent to an improvement of 34 percent from the 2015 weighted average of fuel consumption in Member States for which baseline fuel consumption data was available. Governments to provide support such as fiscal incentives to meet this target. In line with the regional Clean Fuels and Vehicles Directives simultaneously approved by ECOWAS Member States, and to enable the rapid uptake of the most recent fuel economy improvement technologies available in markets from which vehicles are import, governments to limit the import age of all used vehicles to 5 years for LDVs, 10 years for HDVs with a transition period of 10 years for all States to domesticate.

1.2 Improve average fuel economy to meet 4.2 lge/100km on NEDC by 2030 for all newly imported LDVs in ECOWAS Member States.

Member States to continue improving fuel economy of imported or newly registered LDVs after 2025 to reach 4.2 lge/100 km by 2030.

2. Electric mobility: roadmap to accelerate the adoption of electric vehicles and motorcycles.

ECOWAS Member States to develop a regional roadmap for transitioning to zero emission vehicles (ZEVs) with a target for ZEVs and electric two- and three- wheelers.

The roadmap will include fiscal and non-fiscal measures to support the introduction of ZEVs and appropriate charging and fueling infrastructure. These measures will be accompanied by policies targeting in-use vehicles, such as mandatory scrapping policies. Member States are encouraged to take steps to reduce the import and use of diesel LDVs.



2.1 **Develop the regulatory framework to support and accelerate the transition to electric vehicles and motorcycles.**

ECOWAS Member States to define the regulatory framework for the implementation of electric mobility.

2.2 **international partnerships for electric mobility.**

ECOWAS Member States are encouraged to join international partnerships that support countries to accelerate the adoption of electric vehicles and motorcycles, including the UNEP Electric mobility programme Member States are encouraged to join the GEF Electric Mobility programme through their GEF STAR allocations.

2.3 **Governments to lead the transition to electric mobility by renewing their own fleets with electric vehicles.**

ECOWAS Member States to develop electric vehicle procurement measures and pilot projects led by governmental agencies for the renewal of their fleet. Public procurement schemes for government or municipal vehicles that favor electric mobility will be an opportunity for governments to lead by example, demonstrate the viability of electric technologies to the public, and increase consumers' confidence.

2.4 **Leverage renewable energy.**

Member States to accelerate the transition to renewable energy to support the uptake of electric vehicles and motorcycles in partnership with the ECOWAS Center for Renewable Energy and Energy Efficiency (ECREEE) which works to facilitate the adoption and implementation of renewable energy and energy efficiency policies in the ECOWAS region.

3. Harmonized framework for vehicle registration, reporting and data collection

The region is facing significant challenges in terms of vehicle data collection, availability, and quality. Robust data collection has been a key component of the in-country fuel economy studies and the regional roadmap.

ECOWAS countries should implement data collection best practices to accurately keep track of the vehicle fleet and to support policymakers with data-driven policy guidance. In this regard, the roadmap includes the development and implementation of a vehicle data entry tool that will capture all the parameters necessary for the GFEI analyses.

ECOWAS Member States to develop and implement a common set of vehicle registration and mandatory reporting guidelines to standardize vehicle tracking and data collection in the region.



3.1 **Mandatory reporting of vehicle CO2 emissions, fuel consumption and proof of documentation by vehicle importers, dealers, or producers in the region.**

ECOWAS Member States to establish and require that any vehicle importers, dealers, or producers in the region are responsible for reporting vehicle CO2 emissions and fuel consumption and demonstrating proof of documentation produced by or drawn from the original vehicle manufacturer.

3.2 **Common set of vehicle registration documentation.**

ECOWAS Member States should adopt common registration documents to strengthen and facilitate the free movement of persons and goods across the region.

3.3 **Common vehicle classification and data collection procedures.**

All ECOWAS Member States should define and utilize a common vehicle data classification, registration and reporting guidelines for tracking vehicles entering and in use in the region. States to collect and make available data for baseline, trend and monitoring of fuel economy measures.

4. Secure national leadership and strengthen regional cooperation on fuel economy

National and regional cooperation is essential to achieving the fuel economy targets. At the national level, each Member State should build institutional capacity, and assess progress. At the regional level, cooperation and sharing of experiences should be strengthened.

4.1 **Establish Lead Institution.**

States to identify the Lead institution for the implementation of clean and efficient vehicle policies. These institutions must rely on a technical coordination committee and could comprise of the following Ministries, Departments and Agencies from Member States: Transport, Energy/ Petroleum, Environment, Trade, Finance, Economy/ Planning etc.

4.2 **Monitoring and Evaluation:**

A steering committee comprising the key institutions in each State should monitor and evaluate the national efforts toward meeting the targets and objectives. ECOWAS to support the region for the monitoring of the regional efforts toward meeting harmonized goals.

4.3 **Enhance stakeholders' engagement.**

States to engage government agencies, civil society, NGOs, research institutions, automotive industry, importers, dealers and all relevant stakeholders through collaboration and involvement in the national and regional policy dialogues. Academic institutions should be actively involved to provide the analysis and research needed to help policymakers make informed fuel economy decisions.

4.4 **Foster regional cooperation.**

ECOWAS Commission to support Member States for regional cooperation through meetings, experience and knowledge sharing, and peer reviews.

5. Harmonized vehicle labeling

Member States must draw up harmonized regulations on fuel economy labeling.

Labeling schemes are implemented as measures for consumer information and aim at making vehicle fuel economy and CO₂ emissions information widely accessible to consumers. Vehicle labeling promotes fuel economy by raising consumer awareness, guiding their choice, and helping them make informed purchase decisions.

Labeling schemes also reinforce the effectiveness of other fuel economy policies such as vehicle CO₂ emissions standards and fiscal policies. These schemes encourage vehicle manufacturers and importers to bring in vehicles with the best fuel economy technology available.

Harmonized vehicle labeling schemes and label design are essential in the implementation of the ECOWAS regional roadmap. A draft of the ECOWAS harmonized vehicle label design has been developed for further approval.

5.1 **Harmonize labeling schemes.**

Member States to align their labeling programs, label design and information, regulatory framework, and compliance and enforcement measures.

6. Communication, awareness, and information

ECOWAS Member States must promote information, communication and awareness on fuel saving measures. Comprehensive information measures are essential to the successful implementation of fuel economy policies.

Consumer information program should be implemented to raise awareness. Information should also be provided to government agencies in terms of capacity building, and to policymakers and governments to help them examine the costs and benefits of improved vehicle fuel economy measures.

6.1

Develop a multi-media communication strategy.

Member States must be engaged in raising awareness and developing communication and sensitization programmes toward consumers and other stakeholders on the benefits of vehicle fuel economy and CO₂ emission reduction from the transport sector.

6.2

Promote research to inform policy.

Member States to support research aimed at informing policymakers on the costs and benefits of fuel economy strategies.

6.3

Budgetary provisions for fuel economy.

Member States should make budgetary provisions to support fuel economy initiatives.

7. Introduction of harmonized vehicle fiscal policies based on vehicle CO₂ emissions and fuel economy performance

ECOWAS Member States must introduce tax policies based on the reduction of CO₂ emissions and improvement of fuel economy from vehicles; CO₂-based or fuel economy-based fiscal policies seek to encourage vehicle buyers to choose clean and fuel-efficient vehicles, and thereby help governments to manage the environmental performance of the fleet.

In most ECOWAS countries, existing fiscal policies on vehicle purchase and use are not based on CO₂ emissions. The introduction or enhancement of CO₂ emission-based fiscal policies is important to achieving the region's targets.

7.1

Introduce CO₂ or fuel economy performance based fiscal policies.

ECOWAS Member States should introduce and enhance fiscal policies based on vehicle CO₂ emissions or fuel economy performance to encourage consumers to purchase clean and efficient vehicles.

These measures should be adjusted to account for the energy density of diesel and gasoline. Member States should raise awareness and build the capacity of the respective government agencies, regularly review the effectiveness of the policies, increase their stringency over time, and close potential loopholes.

7.2 **Sharing of experiences.**

Member States to exchange lessons learnt from the implementation of fiscal policies based on vehicle CO₂ emissions and fuel economy performance. As countries develop and implement these policies, it is important for ECOWAS to organize regional meetings where countries could share experiences, discuss potential roadblocks, and learn from successes. These panels will help ECOWAS work toward the convergence of vehicle fiscal policies.

8. Harmonized in-use vehicle emissions control programs

Progress towards achieving this goal has been achieved through the adoption of the ECOWAS Directives on vehicle emissions standards and fuel specifications. In addition to this Regional Fuel Economy Roadmap, ECOWAS Member States have adopted these two directives mandating Euro 4/IV or more stringent vehicle emissions standards for all imported or newly registered vehicles and a maximum of 50 ppm sulfur content in gasoline and diesel.

The directive on vehicles also includes the harmonization of in-use emission control programs in the region. Most ECOWAS Member States do not have mandatory emissions limits for the on-road vehicles. These in-use vehicle emission limits complement vehicle emission standards. Whereas emission standards target the imported or newly registered vehicles in the region, in-use vehicle emission limits target the on-road fleet.



In ECOWAS countries, these limits are generally based on annual inspection and maintenance requirements. In-use emissions are typically higher than they would be for a new vehicle to account for natural deterioration, vehicle age, fuel quality, maintenance, overloading, etc. Controlling emissions from the existing stock of in-use fleet particularly to identify high-emitting vehicles can accelerate the fleet turnover and drive improvements in air quality and greenhouse emission reductions.

In-use vehicle emissions control programs include inspection and maintenance programs, remote sensing, spot-checking, removing high emitters from the roads, clean fuels programs, scrappage and retrofit programs, On-board diagnosis (OBD) systems, and establishing low-emissions zones, etc. Harmonized in-use emission control programs will facilitate compliance and enforcement in the region.

8.1 **Harmonized emissions limits.**

ECOWAS to define a harmonized minimum threshold for in-use vehicle emissions. These measures should take into account the differences in technologies and ages of in-use vehicles. (Already adopted in the Directives on Vehicle Emissions Standards and Fuel Specifications).

8.2 **Certified inspection and maintenance centers.**

ECOWAS Member States to allocate resources for certified inspection centers, certified maintenance centers to undertake repairs, and certified installers of retrofit systems.

9. Regional CO2 emissions or fuel economy standards

ECOWAS member States must develop regional standards for CO2 emissions or fuel economy with regulations setting targets for fleet average to vehicle manufacturers. CO2 standards refer to regulations that directly limit carbon dioxide emissions from the vehicle fleet, whereas fuel economy standards indirectly limit carbon emissions.

9.1 **Develop a regional LDV CO2 emissions or fuel economy standards.**

ECOWAS and its Member States should work toward developing CO2 emission or fuel economy standards for the region. ECOWAS and its Member States to coordinate the key elements of the regulations including target values and compliance.

10. Public transport, non-motorized transport infrastructures and alternative fuels

Member States must develop alternative fuels, eco-driving, and other sustainable mobility infrastructure, including the improvement of sustainable public transport and non-motorized transport.

10.1 **Alternative fuels.**

Member States to promote alternative fuels, eco-driving and shared mobility programs to support fuel economy initiatives.

10.2 **Public transport.**

ECOWAS Member States to heavily engage in developing sustainable public transportation including clean public transportation modes such as electric buses.

10.3 **Non-motorized transport.**

ECOWAS Member States to develop other sustainable mobility infrastructure including walking and cycling infrastructures.

ELECTRIC MOBILITY - CASE STUDY: CAPE VERDE

Cape Verde is the first African country to commit to a target to electrification of all vehicle fleet by 2050. At the COP 26 other African countries namely Ghana, Kenya, Morocco and Rwanda and Lagos city pledged to “work intensely towards accelerated proliferation and adoption of zero emission vehicles.”

In its NDC and legislation, Cape Verde has committed to the following targets to zero emission vehicles:

- Electrify the vehicles fleet with a priority for public, collective, high-passenger load, duty and commercial vehicles over private, individual, low-passenger load vehicles, so as to make this mobility shift socially inclusive and create public adherence and local jobs;
- By 2050, fully replace all residual thermal vehicles (gasoline/diesel) for Electric Vehicles (EV);
- Implement the NAMA “Promotion of EV in Cabo Verde” and the Electric Mobility Action Plan involving;
- By 2025, establish the procurement rules for the acquisition of 100% EV by institutional entities and have at least 50% of EV in the new acquisition of urban collective;
- Gradually install of a wide-reaching network of recharging stations, with priority to public, collective, grouped charging stations at bus/taxi/company stations benefiting the greatest number of users, complemented by private stations; starting in the main urban centers of Cabo Verde and along strategic road corridors;
- By 2030, the national public recharge infrastructure is fully implemented;
- By 2030, the public administration’s vehicle fleet is fully electrified.



West Africa Fuel Economy Roadmap Action Timeline

Goals		2020-2025	2025-2030	2030 and beyond
1.	Fuel economy targets	Improve average fuel economy to meet 5 lge/100km on NEDC		
			Improve average fuel economy to meet 4.2 lge/100km on NEDC	
2.	Electric mobility	Develop the regulatory framework		
		Build international partnerships		
		Governments to lead the transition to electric mobility		
		Leverage renewable energy		
3.	Harmonized vehicle registration and reporting	Mandatory reporting of vehicle CO ₂ emissions fuel consumption and proof of documentation by vehicle importers, dealers, or producers in the region		
		Common set of vehicle registration documentation		
		Common vehicle classification and data collection procedures		
4.	Secure national leadership and strengthen regional cooperation	Establish Lead Institution		
		Monitoring and Evaluation		
		Enhance stakeholders' engagement		
		Foster regional cooperation		
5.	Harmonized vehicle labeling	Harmonize labeling regulatory framework and design		
6.	Communication, awareness and information	Develop a multi-media communication strategy		
		Promote research to inform policy		
		Budgetary provisions for fuel economy		
7.	Harmonized CO ₂ and fuel economy based fiscal policies	Introduce CO ₂ or fuel economy performance based fiscal policies.		
		Sharing of experiences		
8.	Harmonized in-use vehicle emissions programs	Harmonized emissions limits		
		Certified inspection and maintenance centers		
9.	Regional CO ₂ emissions or fuel economy standards		Develop a regional LDV CO ₂ emissions or fuel economy standards	
10.	Public transport, non-motorized transport and alternative fuels	Promote alternative fuels		
		Develop public transport		
		Promote non-motorized transport		



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