



ADDRESSING THE USED VEHICLES MARKET:

*Potential Strategies for Importing and Exporting
Countries to Improve Safety, Fuel Economy and
Emissions Impacts*

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ABOUT THE PCFV

The Partnership for Clean Fuels and Vehicles (PCFV) is the leading global public-private initiative supporting the reduction of vehicle emissions through the promotion of cleaner fuels and vehicles in developing and transitional countries. It is the only global forum dedicated to cleaner air and lower greenhouse gas emissions from road transport through cleaner fuels and vehicles, ensuring and enabling the transfer of technology and knowledge already successfully applied by industry and governments in both developed and developing countries.

Launched in September 2002 at the World Summit on Sustainable Development in Johannesburg, South Africa, the PCFV has representation from both developed and developing country national governments, non-governmental and international organisations, and the fuel and vehicle industries. These partners are a driving force behind the PCFV's accomplishments and successes. An Advisory Group provides guidance on strategic and financial issues and advice on general management. The PCFV's support to countries is mainly coordinated by a Secretariat based at the United Nations Environment headquarters in Nairobi, Kenya.

The PCFV also occasionally establishes working groups to advise developing and transitional countries on specific issues of concern in their pursuit of cleaner fuel and vehicle programs. This report has been prepared by the Used Vehicles Working Group that was established at the 11th Global Partners Meeting to address the used vehicles market and explore options for action to promote cleaner vehicles policies.

For more information about the PCFV, please visit our website: <http://www.unep.org/transport>

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*A Report of the Used Vehicles Working Group of the Partnership for Clean
Fuels and Vehicles (PCFV)*

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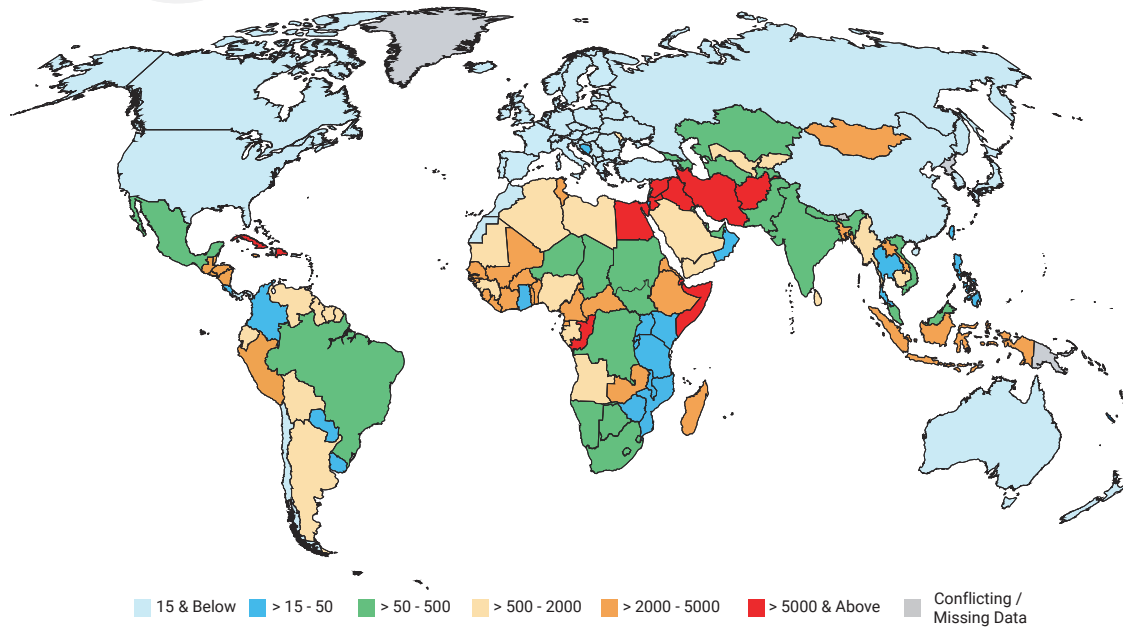
1. OVERVIEW

The Partnership for Clean Fuels and Vehicles¹ has made significant advancements in its cleaner fuels campaign. Mainly attributed to the Partnership's country support, a global elimination of leaded petrol is now within reach. More countries are equally introducing lower sulphur fuels. The availability of cleaner fuels allows countries to adopt cleaner vehicle technologies. A combination of cleaner fuels and more stringent vehicle emission standards will lead to an optimal reduction in harmful air pollutants and improvements in air quality. However, in many developing and transitional countries, this is not the case. Even as the quality of fuel in these countries improves, obsolete and outdated vehicle technologies continue to be imported through the global second-hand vehicles market that is mainly unregulated.

¹ The Partnership for Clean Fuels and Vehicles (PCFV) is the leading global public-private initiative promoting cleaner fuels and vehicles in developing and transition countries. It brings together 73 organizations representing developed and developing countries, the fuel and vehicle industries, civil society, and leading world experts on cleaner fuels and vehicles. For more information see: <https://www.unenvironment.org/explore-topics/transport/what-we-do/partnership-clean-fuels-and-vehicles>



Diesel Fuel Sulphur Levels: Global Status January 2019



* Information is in parts per million (ppm)
For additional details and comments per country, visit www.unep.org/transport/

Figure 1: Global Progress towards Low sulphur fuels

Most developing and transition countries do not have vehicle manufacturing capabilities hence rely on import of their entire vehicle fleet. A large percentage of these vehicles are imported as used or second-hand. The global demand for the export of used vehicles from developed countries to developing and transitional countries has grown significantly. The export of vehicles from developed countries is often spurred by stringent vehicle emission standards (along with mandatory motor vehicle inspections and registration/road tax) imposed by their governments. This often makes replacement of in-use vehicles with a newer fleet more attractive.

At the same time, and due to increasing income, used vehicles are offering consumers in developing and transitional countries convenient mobility at a lower cost. If properly regulated, used vehicles could also offer these countries relatively advanced vehicle emission reduction technologies that are already required in the exporting countries, presenting a win-win



Figure 2: Global Vehicle Sales Growth Rate

situation for both exporting and importing countries. These used vehicles can be much cleaner and more energy efficient than the existing vehicle stock. Vehicles that meet minimum emission standards in exporting markets, when combined with clean fuels and regular maintenance, have the potential to lower the impact of road transport in terms of CO₂ and non-CO₂ emissions in all markets. Regulation therefore is key to controlling the quality of used vehicle imports in line with the importing country's aspirations.

Many developing and transition countries however lack standards to regulate used vehicle imports and where they exist, enforcement is poor. This leads to the use of partial regulations such as age limits which achieve some of the cleaner vehicles objectives ,not all, unless implemented with other strategies. Overall, the more selective an importing country is in terms of used vehicle quality, the higher the level of emission control technologies of the imported fleet.

In real-world situations, however, used vehicle importers in developing countries operate in an environment where price is the main factor of consideration. As most importing countries lack the requisite regulations to control used vehicles imports, the bulk of vehicles imported into these countries are not in the best of condition. Many vehicles imported into these countries are compromised in terms safety/road worthiness, fuel economy and emissions. This situation is aggravated by the

fact that most developing countries have not instituted cleaner fuels and vehicle emission standards, and lack mandatory vehicle inspection and maintenance programs.

There are currently no regional or global approaches that rationalize or govern the flow of used vehicles. Hence, there is no harmonized way to ensure that only quality vehicles are offered into the market. Both exporting and importing markets therefore have a role in the furtherance of the flow of quality used vehicles.

The Partnership for Clean Fuels and Vehicles has adopted a “Systems Approach” in its support to countries. The systems approach matches the fuel quality progression to the maximum feasible vehicle emission standards. There are various benefits to this approach. The main ones are: improved urban air quality through reduced vehicular emissions; potentially lower fuel consumption, improved road safety since these vehicles will be required to meet minimum road worthy specification; and net savings to the countries in terms of reduced imports of spare parts that would have otherwise been required to service an increasingly older fleet. Oil imports could also be potentially reduced.

This report is prepared by a Working Group of the Partnership for Clean Fuels and Vehicles and seeks to provide a menu of potential strategies that importing and exporting countries may use to regulate cleaner and safer used vehicles markets. The report also provides some country examples from both importing and exporting countries on used vehicles flows and various strategies being used by the countries to attract cleaner vehicles. The report concludes with a set of recommendations for importing and exporting countries on regulating used vehicles markets.





2. POTENTIAL STRATEGIES FOR ADDRESSING USED VEHICLES MARKET

2.1 POTENTIAL STRATEGIES FOR EXPORTING COUNTRIES

Most developed countries - where the bulk of used vehicles originate from – do not regulate exports of used vehicles. Below are some strategies that exporting countries could implement to help ensure that quality used vehicles are exported from their country.

2.1.1 Roadworthiness Requirements

Prior to the export of used vehicles, safety considerations should be considered. Exporting countries could ensure that these vehicles comply to minimum safety requirements by using a mix of the following measures:

a. Ensuring zero-star NCAP rated cars are all scrapped and banned from export

The “New Car Assessment Program” (NCAP) <http://www.globalncap.org/> is a global program that democratizes car safety through the combination of stronger consumer information and universal application of minimum international standards for crash protection and avoidance. While the NCAP is a test conducted only on new cars, the data is an indication of the

relative safety level of used cars of the same make, model and model year destined for export as used vehicles. A five-star rated vehicle has the highest level of safety and isn't necessarily the most expensive vehicle. By consumer awareness of the NCAP star rating of vehicles, consumers can make informed safety considerations in vehicle purchases of both new and used vehicles.

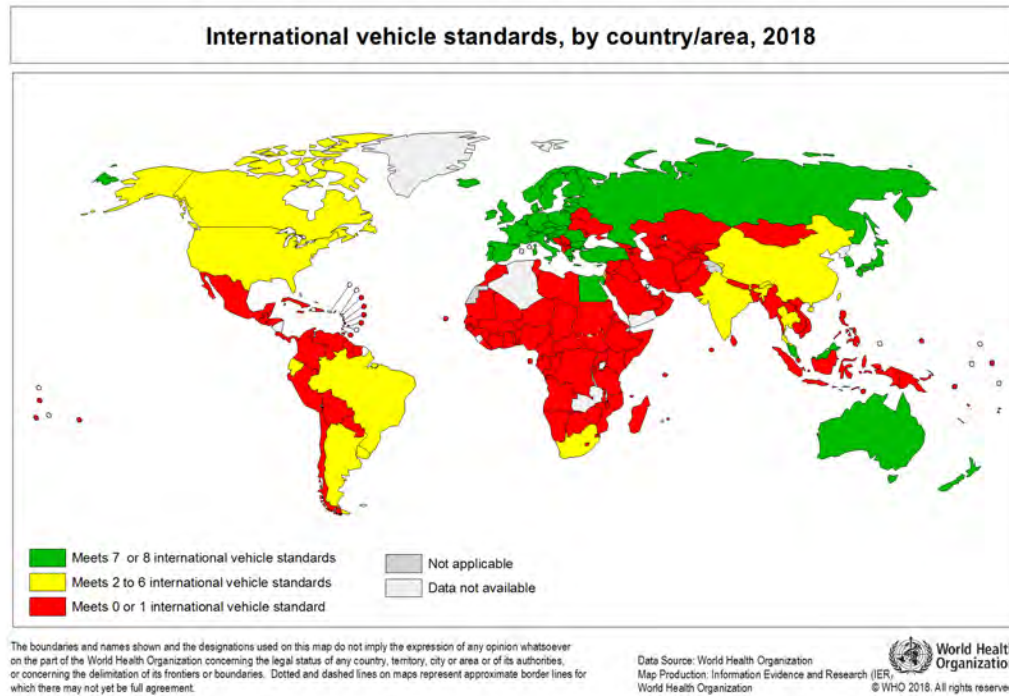


Figure 3: Countries applying priority UN vehicle standards (Source: WHO 2018)

Using this global rating, it is possible to impose bans on exports/imports of new and used “zero star” rated cars. In addition, the inclusion of road safety in the Global Goals and the new casualty reduction targets will strongly aid this campaign.

b. Ensuring repaired vehicles with an accident history of compromised structural integrity are not exported.

Repaired vehicles that were involved in accidents that caused substantial damage may suffer not only structural integrity issues that would compromise energy absorption performance on impact but may also suffer failure of untested safety systems e.g. airbags or electronic stability control systems. Usually, such vehicles would easily find their way into export

markets since there are no requirements that prevent the export. Exporting countries could seal this loophole by requiring that no vehicle that has had an accident that affected its structural make up is exported. This presupposes a data management system where all accident vehicles are recorded and checked out if deregistered.

c. Ensuring key safety aspects of export vehicles are in working order

To help develop and promote use of safer vehicles under the Brasilia Declaration of the 2nd Global High-Level Conference on Road Safety recommends all new motor vehicles meet applicable minimum regulations for occupant and other road users' protection, with seat belts, air bags and active safety systems such as anti-lock braking system (ABS) and electronic stability control (ESC) fitted as standard. This recommendation could be applied to used vehicles destined for export where inspection criteria includes the presence and functionality of these key features and systems. This inspection which is critical especially to assure that brakes, lights and wipers work and that air bags and seat belts are functioning could be a part of the Pre-Verification of Conformity (PVOC) that is a requirement before export in most countries.

d. Ensuring vehicle identifiers have not been tampered with

Vehicle identifiers (Chassis number and engine number) help curb the export of used stolen vehicles. In addition, ensuring that the vehicle identifiers have not been tampered with assures that lifetime and long-term warranty aspects of the vehicle will not be voided. Verification of the identifiers may also be included as part of the Pre-Verification of Conformity (PVOC).

2.1.2 Emissions Compliance

a. Ensure no vehicle below Euro 4/IV /equivalent emissions standard is exported

Euro 4/IV or equivalent emissions standard is a recommended standard where adverse health impacts from vehicle emissions are significantly reduced. The major exporting countries, Japan, the EU and the US have had stringent new vehicle standards – emissions, safety, fuel efficiency - for many years. Therefore, importing vehicles even ten years old can be an improvement over existing vehicles in many countries. But with regards to emissions especially this is only true if the fuel quality in the importing country is of sufficient quality so as not to damage imported vehicles with well-functioning pollution controls. As a first step in improving the quality of imported vehicles, it is necessary to assure that fuel is of sufficient quality to protect the pollution controls on the imported vehicles. It is less beneficial to the environment to impose age restrictions if the imported vehicle is equipped with a functioning Diesel Particulate Filter (DPF), for example, if the sulphur content of the diesel fuel is 2000 parts per million (ppm). However, properly functioning particulate filters have a major public health impact and Euro 4/IV is not stringent enough to get filters. As shown in the Figure 4, the US 2007 heavy truck standards result in significant health benefits; the 2010 standards produce significantly more benefits. Such standards should only be required where

fuel sulphur levels are 50 ppm or less. The US and EU diesel sulphur specifications are 15 ppm and 10 ppm maximum respectively.

For developing countries where the bulk of new vehicle registrations are for used import vehicles, dealing with health impacts from poor vehicle emissions has a significant impact on the socioeconomic welfare of the nations. Exporting countries could thus use Euro 4/IV or better standards as the benchmark to prevent export of dirty technologies.

Phase 1 and 2: HEI 2007 and 2010 Engine ACES Results Compared to earlier Engines (rigorous 16-hour cycle)

2007 Dramatic Reductions
98% reduction in mass
90% - 99% reduction in Ultrafine Particles,
air toxics

2010 Further Reductions
(even compared to 2007)
>90% reduction in NOx
>70% reduction in Particles

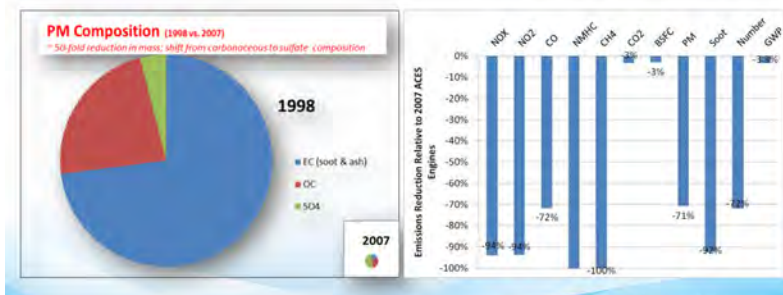


Figure 4: Health benefits from heavy duty standards improvements

b. Provide access to data of vehicles' CO₂ emissions rating

Most used vehicle sales are done through the internet. Providing information on CO₂ emissions rating would aid consumer choice towards cleaner and more fuel economy vehicles. Providing consumers with this information labels would enhance the drive to reduce export of high CO₂ emissions rated used vehicles and complement fiscal policies aimed at reducing high CO₂ emitters. This measure however requires a vigorous consumer awareness campaign in the importing countries coupled with incentives for the choice of cleaner vehicles.

2.1.3 End-of-Life Recycling

In 2004, G8 countries adopted the 3R initiative on reducing barriers to trade in recyclable waste and recycled second-hand goods. Given the amount of recyclable metal resources (Fe, Al, Cu, Pb, and Zn) in second-hand cars (Fuse, Nakajima, & Yagita, 2009) this framework may be a way forward for future governance of used vehicles.

The existing ways of handling end of life for exported used vehicles is delinked from the country of origin. There exists an opportunity where precious metals from exhaust treatment systems can be extracted and re-exported or used in local manufacture of exhaust treatment systems. Exporting countries could provide opportunities of buying back the precious metals and/or the economically viable recyclable reusable components. In addition, processed scrap items e.g. metal billets could be re-exported to these countries.

2.1.4 Vehicle Age Limit and Mileage

Exporting countries could ban export of vehicles that are close to the end of their economic mileage life. These vehicles are ideally those that are approaching engine overhaul mileage. It is worth noting that the engine overhaul has generated a growing market for used engines for swapping in used imported vehicles. It is worth evaluating whether the ban aggravates the problem of used engines.

Globally, countries could evaluate the possibility of a harmonized agreed global maximum age limit for vehicle exports. This should be a fallback position should other technological restriction criteria fail.

2.1.5 Aftermarket Support

Most used vehicles fail in the countries of export due to unreliable maintenance necessitated by failure to get serviceable parts. Exporting countries could provide franchise dealers in import countries with access to digital/on-line vehicle maintenance and parts catalogues of all used vehicle import models that are not supported by the franchise. This would allow for longer usage of used imported vehicles which can be kept in prime condition with reduced safety concerns and exhaust emissions. Parent companies could also encourage franchise dealers to stock fast moving service components of used vehicle imports that are not supported by the franchise. Making these parts easily available, would allow used vehicles to operate optimally.

Automotive companies should extend the responsibility to continue to support long-term / life-time warranties through the franchise dealer of the importing country that were granted upon first sale of the vehicle, such as against body rust which compromises structural integrity and safety.



2.2 STRATEGIES FOR IMPORTING COUNTRIES

Ideally strategies for importing countries are the inverse of those for exporting countries however, for clarity they will be listed below with the same narrative applying for each of the action items.

2.2.1 Roadworthiness Policies

Ideally importing countries should ensure that vehicles introduced to the country fleet are safe. Developing countries could start with a minimum NCAP rating and a possible ban on NCAP Zero rated vehicles. This could be coupled with the introduction of incentives for purchasing five-star NCAP rated cars.

In addition, importing countries could make it mandatory that used vehicles are inspected before export by recognized authorities/institutions/organizations who provide Pre-Verification of Conformity (PVOC) certification. The inspection should ensure that these vehicles meet applicable minimum regulations for occupant and other road users' protection, with seat belts, air bags and active safety systems such as anti-lock braking system (ABS) and electronic stability control (ESC) fitted as standard. Vehicle identifiers (engine and chassis numbers) should also be ascertained as not tampered with and exists on global/national database.

Importing countries should back the Pre-Verification of Conformity (PVOC) process with a basic roadworthiness inspection at point of entry. Most developing countries however do not have sufficient inspection capacity at the port of entry. It is therefore necessary that innovative models are used as the countries improve/increase roadworthiness inspection capability at port of entry.

2.2.2 Emissions Policies

Many developing and transition countries have introduced or are in the process of introducing low sulphur fuels, having phased out leaded petrol. Cleaner fuels allow for the effective functioning of more advanced vehicle emission control technologies. Importing countries now have an opportunity to introduce Euro 4/IV minimum emissions standards. The minimum emission standards lock out old polluting technology from finding its way to the countries. As countries introduce Euro 4/IV minimum



emissions standards, they should also consider adopting the European or other minimum lubricant and engine oil standards that accompanied those emissions policies to ensure that Euro 4/IV vehicles operate as cleanly and efficiently in real-world operating as possible throughout their useful lives. Euro 4/IV minimum emissions standards need to also be backed by a working vehicle inspection and maintenance regime. Emission standards should be progressively tightened as vehicle technology improves. Countries can also introduce fiscal policies based on vehicle CO₂ emissions rating.

Many developing and transition countries may be part of regional economic bodies that have free trade agreements. These agreements allow for free flow of goods/vehicles in the affected countries. It would be beneficial if such countries have sub-regional/regional harmonized fuel and vehicle emission standards that will help keep gross polluters out of the regions/sub regions.

Currently, low and zero-emission vehicles are providing great environmental and health benefits the world over. Zero emissions vehicles which are increasingly battery electric, also reduce national expenditure on transport fuels, which in some countries is the highest import item by value. Public health would significantly improve with the increased uptake of zero emissions vehicles. Developing and transition countries can leverage on used vehicles to introduce incentives for zero emissions vehicles through excise tax exemption, feebate schemes etc. Labelling and public awareness campaigns on zero emissions vehicles could lead to a consumer driven shift towards zero emissions vehicles and complement any policy initiatives adopted in this direction.

2.2.3 End-of-Life Recycling

Importing countries have an opportunity to introduce small-scale end-of-life recycling technology and capability for used vehicles and their components. Current end of life process for vehicles in developing countries is resale of old dilapidated vehicles for use in rural areas. When unusable, these vehicles are stripped down with alternative uses of unprocessed materials found. Processing of scrap material is viewed as uneconomical despite the existence of smelting plants and plastic processing capabilities in some developing countries. Nonetheless, there exists an opportunity of developing end-of-life vehicle recycling sector. Processed metal and plastics have many applications and there are many other productive uses of end-of-life materials in the developing and transition countries. Innovative recycling processes are being



generated and could be deployed in these countries offering productive uses of scrapped vehicle components to enhance vehicle scrappage values. Products from these innovative recycling processes can then be re-exported to countries of vehicle origin to be used in making other vehicles.

Introducing vehicle scrappage policies with incentives is also a good option for importing countries. Though expensive, vehicle scrappage and replacement schemes provide a great opportunity for renewing the vehicle fleet especially in areas where the vehicles are very old. These vehicles scrappage schemes have worked in areas where vehicle renewal is required for public service vehicles e.g. in Egypt where the taxi replacement scheme focused on taxis more than 30 years old and Philippines where jeepneys (informal public transportation) that are 15 years old are in the process of replacement. However, such schemes need a significant amount of public financing.

2.2.4 Vehicle Age Limit and Mileage

Regional economic bodies should promote the harmonization of used vehicle import age policies subject to promoting international best practices and with the aim of achieving at least Euro 4/IV vehicle emissions standards. Regional economic bodies could harmonize used vehicle import age limits to suit their economic development agenda. This should, however, be a fallback position should other technological restriction criteria fail. Imports of vehicles that have exceeded more than one half of their economic mileage life could also be restricted. Where progressive, this should also be a regionally harmonized figure.

2.2.5 Aftermarket Support

For vehicle importing countries, automotive vehicle franchise dealers could provide service support to imported used vehicle owners and/or on parts identification for purchase or import. The dealers also have an opportunity to stock economically viable fast-moving service components of used vehicle imports including higher-performing lubricants that are necessary to ensure that Euro 4/IV vehicles operate as



cleanly and efficiently in real-world operating as possible throughout their useful lives. Where possible the franchise dealers could offer a maintenance package similar to what they offer new car sales. In addition, the dealers could support the manufacturers' long-term / life-time warranties on used vehicle imports that were granted upon first sale of the vehicle. Thus, warranties could be for example against body rust which compromises structural integrity and safety.



3. CASE STUDIES

3.1 MAURITIUS CASE STUDY

3.1.1 Background

In a decade (2006-2016), the vehicle fleet in Mauritius had increased by 59% - from 319,440 to 507,676. During this period, passenger vehicles increased by 120%, buses by 19% and two-wheelers by 44%. Of the newly registered vehicles, 51% were imported as new mainly from European Union and 49% as used cars mainly imported from Japan. Currently, there is no in-country vehicle manufacturing capacity. The country has progressively introduced cleaner fuels. In 2012, low sulphur fuels were mandated (50 ppm) with the intention of moving to ultra-low sulphur fuels soon. The fuels enable the introduction of the latest emission control technology for internal combustion engines.

In addition, because of government policies to promote importation of cleaner and more fuel-efficient vehicles, the country has experienced a significant improvement in its average vehicle fuel economy. For example, in 2005, the country's average vehicle fuel economy level was 7.0 Litres/100 kilometers. This improved to 5.9 L/100 km in 2015. This is further enhanced by the requirement to only allow import of vehicles that are three years and below.

Some of the policy measures introduced by Mauritius to promote importation of cleaner vehicles are detailed below:

3.1.2 Clean Vehicle Fiscal Regime in Mauritius

Mauritius is among the few African countries that have used fiscal measures to influence the quality of the vehicles that are imported to the country. There are various taxation regimes the country has used to promote cleaner vehicles as described below:

3.1.2.1 Registration Duty and Road Tax

Vehicle owners are required to pay a one-off registration duty on purchase of their vehicles and a yearly road tax based on the types of vehicles and the engine displacement (cc or cm³). No distinction is made for persons driving less, compared to those covering high mileages annually. Motorcycles owners are presently exempted from the yearly road tax. The road tax is currently paid to the National Transport Authority.

Owners of hybrid and electric cars benefit from fiscal incentives, namely registration duty and road tax. The rates of registration duty and motor vehicle licence (MVL) fee/road tax for hybrid and electric motor cars are as follows:



| TYPE OF MOTOR CAR | RATES OF REGISTRATION DUTY | RATES OF MVL FEE/ROAD TAX |
|--|--|---|
| Hybrid motor car | 50% of normal rate of conventional vehicles(a), depending on c.c. and age. | 50% of normal rate of conventional vehicles(b), depending on c.c. |
| Electric motor car | MUR 8,100 to MUR 97,500 based on engine power, from 27.5 kW to more than 180 kW. | 50% of normal rate(b). |
| (a) the normal rate of registration duty applicable conventional cars ranges between MUR 3,300 to MUR 195,000. | | |
| (b) the normal rate of road tax applicable conventional cars ranges between MUR 3,500 to MUR 13,000; a company car pays an additional amount of MUR 1,000/2,000. | | |
| Source: Ministry of Finance and Economic Development (2016) | | |

Table 1: Rates of Registration Duty and Road Tax for hybrid and electric motor cars– July 2016

3.1.2.2 Excise Tax

Mauritius Excise Act provides for a taxation system for vehicles to promote the use of more energy efficient vehicles, based on their engine capacity. Since 2011, the excise tax has been used together with the feebate scheme and remains even after the suspension of the feebate scheme. As from July 2016, excise duty on electric cars up to 180 kW has been waived. There is a further reduction by 30% points of the duty charged on hybrid cars depending on their engine capacity.

| TYPE OF MOTOR CAR AND CYLINDER CAPACITY (C.C.) | PREVIOUS RATES | ACTUAL RATES AS FROM 30 JULY 2016 |
|--|----------------|-----------------------------------|
| Conventional motor cars: | | |
| Up to 550 c.c. | 15% | 0% |
| 551 – 1,000 c.c. | 55% | 45% |
| 1,001 - 1,600 c.c. | 55% | 50% |
| 1,601 – 2,000 c.c. | 75% | 75% (no change) |
| Above 2,000 c.c. | 100% | 100% (no change) |
| Hybrid motor cars: | | |
| Up to 1,600 cc | 55% | 25% |
| 1,601 - 2,000 cc | 75% | 45% |
| > 2,000 cc | 100% | 70% |

| | | |
|----------------|-----|-----------------|
| Electric cars: | | |
| Up to 180 kW | 25% | 0% |
| Above 180 kW | 25% | 25% (no change) |

Table 2: Excise Duty on all Imported cars as provided in the Budget 2016/2017

Because of the consolidated interventions by the Mauritian government, the average age of imported vehicles is improving with 51% of the vehicle fleet being imported as new in 2016. In October 2018, the fleet of fuel-efficient vehicles comprised of 9,383 hybrid vehicles and 76 electric vehicles. The combination of policies adopted, including favorable rates in registration duty and road tax on hybrid and electric vehicles has acted as a catalyst in boosting the demand and sales of fuel-efficient vehicles in particular, hybrid vehicles. This is an indication that the existing policy intervention is incentivizing the adoption of cleaner vehicles.

| YEAR | TOTAL NUMBER OF VEHICLES REGISTERED DURING THE YEAR | SHARE OF CARS (ALL TYPES OF CARS) | SHARE OF HYBRID AND ELECTRIC CARS TO TOTAL NUMBER OF VEHICLES | SHARE OF HYBRID AND ELECTRIC CARS TO TOTAL NUMBER OF CARS |
|------------|---|-----------------------------------|---|---|
| 2011 | 20,463 | 46.8% | 0.8% | 1.6% |
| 2012 | 24,654 | 49.6% | 1.6% | 3.2% |
| 2013 | 25,371 | 54.2% | 2.7% | 5.0% |
| 2014 | 25,556 | 55.0% | 1.7% | 3.1% |
| 2015 | 25,149 | 60.3% | 2.4% | 4.0% |
| 2016 | 25,766 | 59.1% | 5.3% | 8.9% |
| 2017 | 27,693 | 60.5% | 9.5% | 15.75% |
| 2018 (Oct) | 23,555 | 60.7% | 12.6 | 20.79% |

Table 3: Share of cleaner vehicles in Mauritius

Mauritius has also taken additional measures to ensure that vehicles imported to the country are clean. The country is now working to reinforce its capacity to monitor both roadside tailpipe vehicular emissions and ambient air quality as well as ensuring that imported vehicles meet at least Euro 4/IV emission standards. There are also plans to introduce vehicle labeling and other incentives to promote import of more fuel-efficient vehicles into the country.

3.1.3 Lessons learnt: Example of Feebate Tax - Carbon Dioxide Levy/Rebate Scheme on Motor Cars

In July 2011, Mauritius introduced the “Carbon Dioxide (CO₂) Levy/Rebate Scheme on motor cars” to reflect the Polluter Pays Principle and to take into account the level of CO₂ emissions. Upon purchase of a car, a buyer had to pay a levy per gramme of CO₂ per kilometre (g/km) if the emission value of his/her car is above a CO₂ set threshold. He/she is granted a rebate if the emission value of his/her car is below the CO₂ set threshold. The excise duty on cars is applied in conjunction with the feebate scheme. When a rebate was granted, this amount was deducted from the excise duty. On the other hand, when a levy was charged, this amount was added to the excise duty. Between 2011 and 2013, the threshold was set at 158 g CO₂/km. The same rebate rates were applied whether the CO₂ emissions measurements were based on the New European Driving cycle, UN/ECE Regulation No. 101 or others. However, as from November 2013, the Excise Act was amended to provide for other standards of measurement used in countries such as Japan, India and Korea. As a result of this change, in 2013, two categories of rates for rebates were introduced, while the rates of levy remained unchanged.

With the CO₂ threshold at 158 g/km in 2013, the total rebate granted by Government was Rs 549 million and sum collected through levy was Rs 93 million, hence a net total of Rs 456 million was granted as rebate. Progressively, car buyers had adapted their preference of vehicles, importing cleaner vehicles, attracting more rebates and thus the government incurred a huge deficit in the revenue. The CO₂ threshold was thus further lowered to 150 g/km. A number of operational and litigation issues have hindered the proper functioning of the CO₂ Levy/Rebate scheme on motor cars, including different standards for the measurement of CO₂ emission and unreliable CO₂ values for the computation of the amount of levy or rebate. This has led to the National Assembly’s resolution to suspend the CO₂ Levy/Rebate Scheme as from July 2016.

| | 2011- 2013 | 2014-2016 |
|----------------------------------|------------|-----------|
| Rebate | 158g/km | 150g/km |
| New Car (Million Rupees) | 117 | 26 |
| Second Hand Car (Million Rupees) | 432 | 115 |
| Total Rebate | 549 | 111 |
| Levy | 158g/km | 150g/km |
| New Car (Million Rupees) | 81 | 115 |
| Second Hand Car (Million Rupees) | 12 | 16 |
| Total Levy | 93 | 131 |
| Net Revenue Effect | (456) | (20) |

Table 4: Government Revenue Effect of the Mauritius Feebate Tax Scheme

3.2 COSTA RICA CASE STUDY

3.2.1 Background

The vehicle market in Costa Rica is valued at an annual average of USD 314 Million (UN Comtrade Database). Most vehicle imports originate from the United States, Thailand, Japan and China. From 2005 the vehicle imports started to shift towards new instead of used vehicles due to fiscal adjustments. In 2015, new light duty vehicle imports reached more than 70%, according to data facilitated by the Customs Agency. Though importation of used vehicles has declined, it isn't negligible.

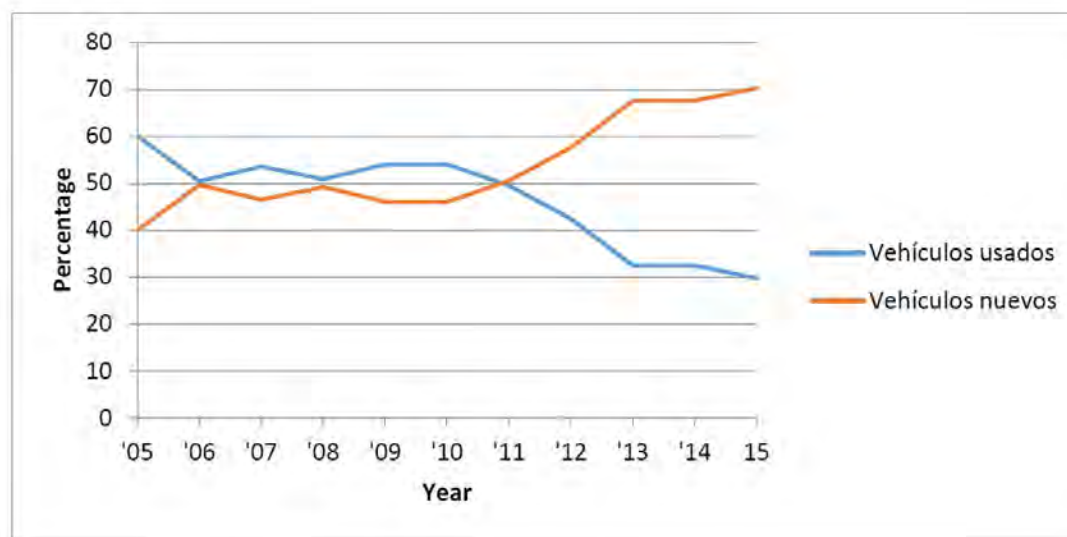


Figure 5: New and Used Vehicle registration trends in Costa Rica 2005-2015 (Source: Costa Rica GFEI Baseline)

On average, at the time of registration, most used vehicle imports have an average age of more than 11 years from the year of manufacture. On the other hand, the new vehicles imported are not necessarily equipped with the best technologies available due to lack of updated regulations. Ironically, the available fuels in the Costa Rica can run the latest internal combustion engine vehicle technology. Costa Rica currently has good fuel quality that would allow the introduction of more efficient technologies that could increase the fuel economy and lower the emissions of pollutants. The country is recorded to have imported fuels with an average of around 23 ppm sulphur for gasoline and 12 ppm sulphur for diesel (ARESEP, 2018 – see: https://aresep.go.cr/images/Informe_Evaluacion_de_la_calidad_de_los_combustibles_en_los_planteles_de_Recope_2017.pdf)

There is no age restriction to the vehicles that are imported into the country and this could be the explanation for the national vehicle fleet age distribution in the country. In 2016 the 39724 MOPT-MINAE-S regulation was adopted that establishes vehicle emission standards and also states that vehicles that do not present a certificate of conformity cannot be over 12 years. www.imprentanacional.go.cr/pub/2016/05/30/ALCA87_30_05_2016.pdf

| VEHICLE AGE | % OF VEHICLE FLEET |
|-------------|--------------------|
| 31-40 years | 3% |
| 21-30 years | 26% |
| 16-20 years | 22% |
| 11-15 years | 21% |
| 6-10 years | 15% |
| <5 years | 12% |

Table 5: Vehicle Age distribution of the Costa Rica Vehicle Fleet (Source: Costa Rica GFEI Baseline, 2016)

3.2.2 Clean Vehicle Fiscal Regime in Costa Rica

Costa Rica imposes several taxes when a vehicle is imported into the country including import duty, consumption tax, sales tax, luxury tax etc. There are also other vehicle management measures the government is using to attract cleaner vehicles as detailed below.

3.2.2.1 Taxes and Incentives

Costa Rica uses a selective import duty taxation scheme that varies with the age of vehicle imported as shown in Table 5. Vehicle Age from date of manufacture

| VEHICLE AGE FROM DATE OF MANUFACTURE | IMPORT DUTY |
|--------------------------------------|-------------|
| Less Than 3 years | 52.29% |
| 4- 5 years | 63.91% |
| 6 years and older | 79.03% |

Table 6: Costa Rica's Selective Vehicle Import duty tiers

3.2.2.2 Incentives for Used Electric Vehicles

In 2018 the Law of Incentives and Promotion of Electric Transport was adopted which provides economic incentives for

zero emissions vehicles. The regulation extends the benefit to used electric vehicles of no more than 5 years old and will only apply to vehicles with a Cost Insurance Freight (CIF) value at customs of US\$30,000 and under. In addition, the used electric vehicles will not be subject to vehicle restriction and may use blue parking spaces within public parking lots, as well as supermarkets, shopping centers and other private parking. The benefit covers automobiles, motorcycles, cargo transport vehicles, minibuses and buses. They will be equipped with a badge issued by the Ministry of Environment and Energy (MINAE). The limit, however, will not apply to public transport vehicles or freight transportation.

| EV'S CIF VALUE (COST OF INSURANCE AND FREIGHT) | EXEMPTION OF SALES TAX | EXEMPTION OF SELECTIVE TAX ON CONSUMPTION | EXEMPTION FROM CUSTOMS DUTY |
|--|------------------------------|---|-----------------------------------|
| The first \$30,000 receive this level after that.... | 100% | 100% | 100% |
| The incentives apply to the next \$30,001 until \$45,000 | 50% | 75% | 100% |
| The next \$45,001 until \$60,000 | 0 | 50% | 100% |
| After \$60,001 the exemptions do not apply | 0 | 0 | 0 |

Table 7: Incentives for Used Electric Vehicles

3.2.2.3 Selective Consumption tax

The Costa Rica Government levies a 35% to 53% consumption tax on vehicles depending on the model, engine size, and car type.

3.2.3 Vehicle Emission Standards

In 2016, Costa Rica approved a regulation that requires that every light duty vehicle imported or manufactured in the country complies with the Euro 3 standard in 2016, Euro 4 standard in 2017 and Euro 6 standard by 2021. Used vehicles imports must comply with an Environment Protection Agency smog test. Catalytic converters are required to be on the vehicle and operational. In addition to this, there is an annual requirement for vehicle inspection. www.imprentanacional.go.cr/pub/2016/05/30/ALCA87_30_05_2016.pdf

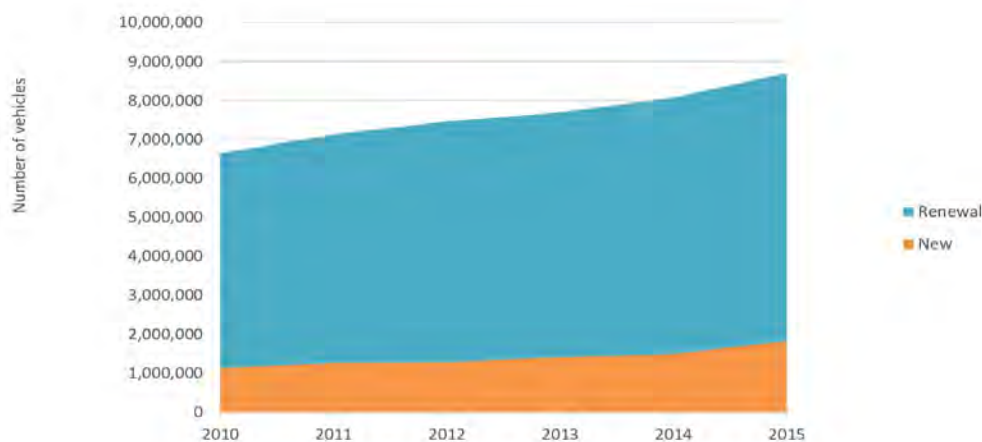
3.2.4 Financing

Financing is also used to incentivize the purchase of newer vehicles. Loans issued for the purchase of new vehicles are granted longer repayment periods like 7 years as compared to shorter repayment periods for used vehicles, which are usually granted 3 years. This could be part of the reason that there is a higher number of new vehicle imports.

3.3 PHILIPPINES CASE STUDY

3.3.1 Background

As of 2015, the motorization level for the Philippines was at 138 vehicles per 1000 people. At the same time, the annual motor vehicle registration grew by 5.6% per year between 2005 and 2015; this resulted in a cumulative increase from 5,059,753 vehicles in 2005 to 8,706,607 in 2015. As shown in figure 6 below, used vehicle comprise a large percentage of the new vehicle registrations.



On average, passenger cars also form the bulk of the light duty vehicle registrations (78%) as compared to the light commercial vehicles (22%). In 2013, vans and pick-ups had the most shares of registrations and influenced the average fuel economy of light commercial vehicles. In the same period the harmonic mean fuel economy of the light

Figure 6: Motor vehicle registration in the Philippines, 2010-2015 Source: LTO, Annual Reports

duty vehicle fleet was 7.8 l/100km which was higher than the global average of 7.1 l/100km.

| VEHICLE TYPE | AVERAGE FUEL ECONOMY IN L/100KM |
|----------------------------|---------------------------------|
| Passenger cars | 7.3 |
| Light Commercial Vehicles | 9.9 |
| Diesel vehicles | 10.3 |
| Gasoline vehicles | 6.3 |
| Hybrid Vehicles | 4.5 |
| Harmonic mean fuel economy | 7.8 |

Table 8: Average Fuel Economy of various vehicle types in Philippines Source: GFEI baseline 2015

The fuel quality in the Philippines comply to Euro-4 equivalent vehicle emission standard (50 ppm sulphur). The government

is implementing the Comprehensive Automotive Resurgence Strategy (CARS) Program to revitalize the country’s automotive industry. The program is aimed at attracting strategic investments in the manufacturing of motor vehicles and parts thereof. This might contribute to a change in the vehicle fleet composition in the coming years.

3.3.2 Vehicle Emissions Standards

Importation of used vehicles is dependent upon compliance with emissions requirements as set out under the Clean Air Act. In 2016, the Philippines implemented Euro 4/IV vehicle emission standards, which now forms the compliance requirement for new vehicle registrations. A certificate of conformity to the standards is provided by the manufacturer. For new light-duty vehicles, no emissions checks are required prior to registration. However, after 3 years from the date of registration, there is an annual inspection requirement for the vehicles.

<https://www.moneymax.ph/blog/lto-car-registration-renewal>

3.3.3 Clean Vehicle Fiscal Regime in Philippines

3.3.3.1 Revised fuel tax

In the past fuel prices were not significantly subsidized by the Pilipino government, due to the ‘Downstream Oil Industry Deregulation Act of 1998’, which liberalized and deregulated the downstream oil industry. However, in 2008 the government provided funding for fuel discounts for tricycle drivers which continued up until 2009 and was aimed at alleviating the impacts of the continuous rise in fuel prices on the livelihoods of drivers (CAI-Asia 2010). As at the beginning of 2018, there is a new provision for the taxation of fuels under the newly-enacted Tax Reform for Acceleration and Inclusion (TRAIN). Under this new tax scheme, a tax has been introduced for diesel and increased for gasoline. These taxes will be increased in the interim until 2020.

| FUEL TYPE | PREVIOUS TAX (PER LITER) | 2018 | 2019 | 2020 |
|-----------|--------------------------|-------|-------|------|
| Diesel | No Tax | P2.50 | P4.50 | P6 |
| Gasoline | P 4.35 | P7 | P9 | P10 |
| LPG | No Tax | P1 | P2 | P3 |

Table 9: New Tax rates on Fuels Source: TRAIN

3.3.3.2 Vehicle Tax System

In 2004, Executive Order No. 397 was signed to promote low-displacement engine and hybrid vehicles by reducing the rates

of import duty on completely-knocked-down parts and components for such vehicles. Executive Order No. 396 was also signed in 2004 which reduced the import duties on natural gas motor vehicles to 0% to promote CNG vehicles in the country. The newly-enacted Tax Reform for Acceleration and Inclusion 2018 (TRAIN) now includes a revised vehicle excise tax that applies a 4-tier tax for vehicles: The tax is punitive to more expensive vehicles. This is with the assumption that more expensive cars are generally larger and therefore more fuel-consuming.

| OLD RATES | | AVG. EFFECTIVE TAX RATE | TRAIN | | AVG. EFFECTIVE TAX RATE |
|--------------------------------|--|-------------------------|--------------------------|-----|-------------------------|
| Up to 600,000 | 2% | 2% | P600,000 and below | 4% | 3% |
| Over 600,000 to 1.1 million | 2% | 5% | P600,000 to P1,000,000 | 10% | 8% |
| Over 1.1 million to 2.1million | 112,00 in excess of 1.1million +40% | 15% | P1,000,000 to P4,000,000 | 20% | 15% |
| Over 2.1 million | 512,000 + 60% in excess of 2.1 million | 22% | P4,000,000 and above | 50% | 30% |

Table 10: Changes in the vehicle Excise Tax in Philippines Source: Department of Finance Philippines

Under this scheme, all pick-up trucks and electric vehicles are exempted from excise taxes. Buyers of hybrid cars will pay half the excise taxes imposed on non-hybrid vehicles as per table 8 above. Buses, trucks, cargo vans, jeepneys/jeepney substitutes, single cab chassis and special use vehicles are not subject to this excise tax.

3.3.4 Fuel Economy Policy

The country has been working on a fuel economy policy and a fuel economy label as a consumer awareness initiative. The current vehicle excise tax policy was part of the efforts of UN Environment and Clean Air Asia to promote more efficient vehicles. There are existing efforts to continue to work with the Department of Finance to move to a fuel economy-based tax. UN Environment and Clean Air Asia are also supporting the Department of Energy in developing a fuel economy label. This is expected to be adopted voluntarily before the end of 2019, and will be mandatory by 2020. The Philippines government continues to pursue initiatives within the context of energy efficiency and conservation to reduce dependence on imported oil.

3.4 UKRAINE CASE STUDY

3.4.1 Background

Ukraine imports the bulk of its new Light Duty Vehicles (LDVs) from Japan, Romania, Hungary and China while the used vehicles are predominantly imported from Germany, USA, France and Japan. The vehicle market is significant, as Ukraine receives a total of 53,905 vehicles on average per year with a total value of €265 million. Between 2013 and 2015, Ukraine was the second largest importer, from European countries outside the EU-28, of new and used vehicles from the European Union. (Eurostat: Foreign Trade Statistics, 2017).

According to data from the Ukraine's 2014 vehicle imports study, 46% of vehicles imported were used. Further, 76% of used vehicle registrations were only 1 year old (GFEI Ukraine 2014). This shows a relatively young national vehicle fleet.

Vehicle age on the date of registration, (years)

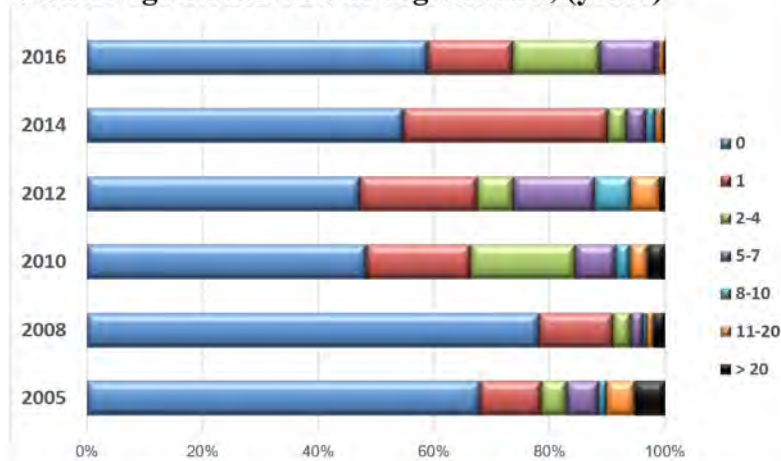


Figure 7: Vehicle Age on First Registration, Ukraine 2005-2016 (GFEI)

Starting in 2014, the demand for vehicles in the low-to-mid luxury range has been largely satisfied by imported vehicles. In 2017, domestic vehicle production was around 11% and aimed at internal demand mainly for low-priced vehicles (for both LDVs and HDVs). However, the Ukrainian automaker “ZAZ” closed its production at the end of 2017 and as of 2018 only “Eurocar” is operational in Ukraine with 6,145 LDV’s (Skoda assembly line) produced in 2017.

There are no customs levied on imports originating from countries which have ratified free-trade agreements with Ukraine (i.e. CIS Countries, Georgia, Macedonia, Montenegro and Canada). Upon ratification of the EU - Ukraine Association Agreement by the Government of Ukraine (effective September 2017), import duties from the EU are scheduled to be lowered. As of 2018 there is an import customs duty of 7.3% for LDV’s from the European Union.

3.4.2 Clean Vehicle Fiscal Regime in Ukraine

Ukraine uses several approaches to incentivize the purchase of clean vehicles.

3.4.2.1 Vehicle Emission Standards

There is no enforced vehicle import age limit in Ukraine. Rather, the country places strict emission standards on the import of used vehicles. As of 1 January 2013, the import of cars rated below Euro 3 was banned. The country has progressively tightened these standards. As of January 2016, only Euro 5 cars are permitted for import. A stricter standard of Euro 6 was planned for January 1, 2018 but was moved to 2020.

3.4.2.2 Custom Tariffs

Import duty for vehicles is levied at between 0% -12% depending on the type and the country of origin of the vehicle. In addition, 20% Value Added Tax is charged on all vehicle imports. Lower excise taxes are levied on vehicles with smaller engine capacity and lower CO₂ emissions. Since August 2016, excise taxes levied according to the engine size of imported vehicles were cut by almost 11 times and differentiated by type of fuel (diesel and petrol). This discounted duty only applies to vehicles manufactured after 2010. This schedule will hold till the end of 2018.

| ENGINE CAPACITY | EXCISE TAX LEVIED |
|------------------|-------------------|
| Gasoline Engines | |
| <1000cc | 0.102 Euro per cc |
| 1000-1500cc | 0.163 Euro per cc |
| 1500-2200cc | 0.267 Euro per cc |
| 2200 -3000cc | 0.276 Euro per cc |
| >3000cc | 2,209 Euro per cc |
| Diesel Engines | |
| <1500cc | 0.103 Euro per cc |
| 1500-2500cc | 0.327 Euro per cc |
| >2500cc | 2.209 Euro per cc |

Table 11: Differentiated Excise Tax on Vehicle Imports in Ukraine

3.4.2.3 Levy Removal for importing cleaner vehicles (hybrid/electric)

In addition to previous regulatory efforts to pave the way for electric mobility, the Ukrainian government – on a pilot basis (only for the year 2018) - abolished VAT and excise taxes for electric vehicles import. In 2017, Ukraine became the fastest growing market for electric vehicles in Europe.



3.5 NEW ZEALAND CASE STUDY

3.5.1 Background

Before 2008, the composition of vehicle imports was 2/3 used vehicles and only 1/3 new vehicles mostly imported from Japan. Today light passenger vehicles have a 50/50 split between vehicles imported new into New Zealand, and vehicles imported used. Vehicle ownership rates started to increase in the second half of 2012 after dropping from 2007 to 2011 and have kept on increasing. They are now at their highest ever level. In 2015, there were 3.9 million vehicles, an increase of 20% over ten years. Passenger cars and SUVs make up 78% of the vehicle fleet.

The average age of the national in-use light duty vehicle fleet is 14.1 years and the truck fleet is 17.7 years. One possible influence of this age is improved mechanical reliability leading to vehicles lasting longer in New Zealand.

The average age of used vehicles imported into New Zealand was increasing until 2008 when New Zealand introduced the 2007 Vehicle Exhaust Emissions Rule in January 2008. This Rule required newly registered vehicles to meet stricter emission standards. This led to a drop in the average age of imported vehicles from 2009. However, since the rule was static, by 2011 the average import age had again increased significantly. This is because the oldest used vehicles that could be imported

in 2008 was typically manufactured in 2001, and it was still possible to import same age vehicles until December 2011. The country therefore reviewed this Vehicle Exhaust Emissions Rule requiring vehicles to be built to 2005 emission standards and taking effect in January 2012. As at 2014, the age band of vehicles allowable to be imported had increased again.

This situation has led to New Zealand adopting several other policies to ensure the vehicle fleet is clean. These approaches are both for imports (new and used) and for in use vehicles.

3.5.2 New Zealand Vehicle Fuel Economy labelling scheme



Figure 8: Sample Fuel Economy Label

The purpose of the scheme is to improve the fuel efficiency of light vehicle models imported into New Zealand by providing consumers with comparative fuel economy information before they make the choice to buy certain vehicles. The scheme which applies to both used and new vehicles came into force in 2008. Vehicles sold by traders are required to have a label displayed in a prominent position on the vehicle. However, sales made by individuals are not required to display a fuel economy label, except electronically in the case of online sales. The government provides a website where the display labels can be downloaded and printed from.

The label is developed from the vehicle manufacturers data at the time of vehicle entry certification. Vehicles sold in New Zealand are tested to either the New European Drive Cycle, (NEDC), typically for new cars, Japanese JC08 (typically new and used cars) or Australian ADR test methods, using a rolling road cycle to derive a fuel economy figure expressed in liters per 100km. It is worth noting that New Zealand developed an algorithm to convert the results of the test cycles for alignment to the NEDC. Results from this test form the basis of a star rating (six stars with half star divisions). While new vehicles are required to state the fuel economy in litres per 100km, used vehicles are only required to state the star rating.

3.5.3 Type Approval

New Zealand requires that all vehicles entering the country go through entry certification. This process involves checking, certification, registration and licensing. For new vehicles, the certification is usually undertaken by the manufacturer's

representative who is authorized by New Zealand Transport Agency (NZTA) to do so. NZTA ensures that all relevant information and documentation is maintained.

For new vehicles, the manufacturer is obliged to ensure that the vehicle complies with the specifications as was envisioned at the time of manufacture. However, for used vehicles, a physical inspection has to be carried out on the vehicle. The inspection process requires documented proof of ownership, evidence that the vehicle meet minimum emission standards, frontal impact standards, light vehicle brakes standards, electronic stability control, overall standards and fuel consumption information. The government of New Zealand has provided an online tool where fuel consumption information for different vehicles is available. The government-approved testing facilities use this online tool to get a consumption certificate. Once inspection is complete, a valid Vehicle Identification Number is assigned and affixed on the vehicle. A warrant of fitness (WoF) is then applied to the vehicle.

For new vehicles and used vehicles less than 2 years old, after an initial inspection, another warrant of fitness inspection is not required until the 3rd anniversary of the vehicle's first registration, and annually thereafter. For used vehicles more than 2 years old a warrant of fitness is required after one year and annually thereafter.

3.5.4 Taxation/ Registration

Motor vehicles are only subject to a goods and services tax of 15% calculated on the cost of vehicle, shipping and insurance charges. Vehicles are however subject to an annual registration fee which includes a variable injury insurance premium based on the safety rating of the vehicle. The better the safety rating the lower the insurance premiums.

3.5.5 Other Clean Vehicle Incentives

To attract the currently budding electric vehicle segment in New Zealand, several policy initiatives have been adopted including:

- Measures to increase the electric vehicle fleet to 2% of the current fleet (72,600) by the end of 2021;
- Exemption of road use charges for electric vehicles until the end of 2021;
- Discounted prices for government and private sector organizations when buying in bulk electric vehicles;
- Information and promotion campaigns; providing \$1 million annually for a nationwide electric vehicle information and promotion campaign over five years;
- Reviewing tax depreciation rates and the method for calculating fringe benefit tax; and
- Reviewing insurance levies for plug-in hybrid electric vehicle.

3.6 UNITED STATES CASE STUDY

3.6.1 Supporting Informed Consumer Decision-Making in Purchasing Used Vehicles

As countries, cities and citizens continue to strive for cleaner air and conservation of natural resources, the quality of vehicles they choose to purchase is increasingly important. While trends in vehicle manufacturing lead to the introduction of more efficient new vehicles to the global fleet, the trade of used vehicles provides an affordable point of entry to car ownership and the economic opportunities it enables. In light of the potential emissions reduction and resource efficiency benefits, countries should support consumers as they seek to purchase cleaner, better quality used vehicles.

Consumers of used vehicles consider a number of factors when deciding which vehicle to purchase. While a vehicle's price and physical condition may be easily apparent, how can consumers assess its quality? Consumers need clear and comprehensive information about the vehicle's operating costs and emissions profile to inform their choices. To address this need, the United States and at least 18 other countries around the world have adopted vehicle fuel economy labeling programs which provide consumers with reliable, standardized information on how they can expect a new or used car to perform in terms of fuel efficiency.

Source: <https://www.globalfuelconomy.org/media/460866/icct-update-report-summary.pdf>

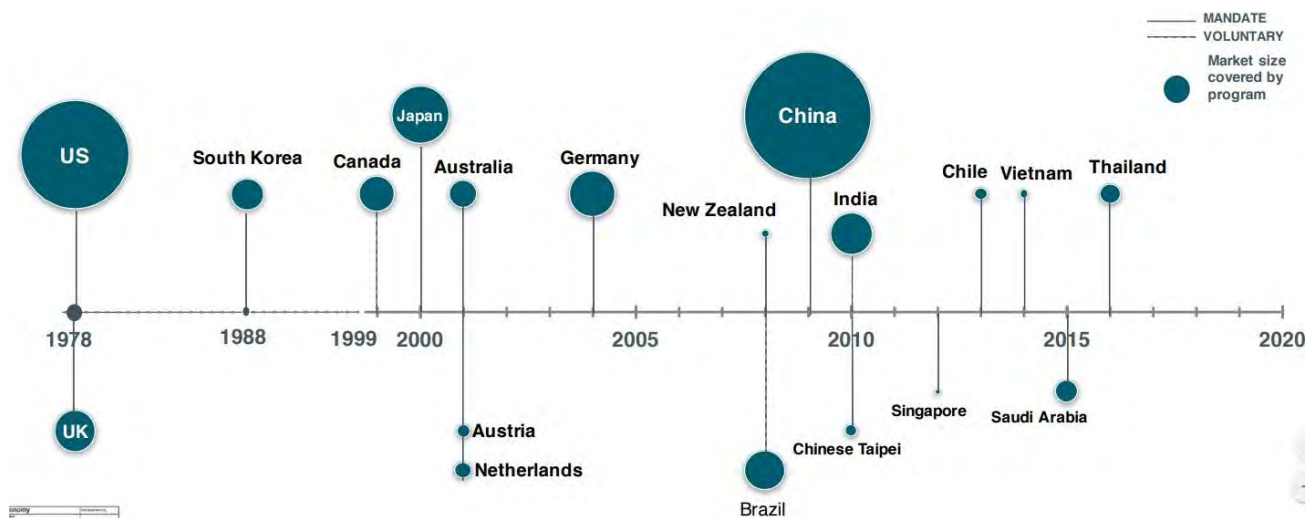


Figure 9: Year of Implementation of Vehicle Fuel Economy Labeling Programs.

In the United States, roughly 40 million used vehicles are sold each year. A significant portion of these vehicles is exported. These transactions are supported by a combination of policies and programs that help consumers make decisions with

information on vehicle safety, emissions, and remaining warranty coverage in hand. Combining safety information on used vehicles with projected data on emissions and fuel economy is an approach used in the United States. As vehicle technology and policies change, offering an online consumer information resource is a way for governments to provide information that is easily updated.

3.6.2 Fuel Economy Labeling

The U.S. Energy Department (DOE) and the U.S. Environmental Protection Agency (EPA) have developed a public website—www.fueleconomy.gov—which offers consumers easily accessible and relevant information, with an emphasis on allowing consumers to compare operating costs and fuel use in light-duty vehicles sold in the United States. This website hosts roughly 26.6 million user sessions per year, placing it within the top 1 percent of US government websites. Since 1999, FuelEconomy.gov is estimated to have helped reduce US petroleum consumption by over one billion gallons by empowering consumers to make smarter and more informed decisions. The combined information offered is organized by car make, model, and year and includes:

- Mileage per gallon (MPG) of gasoline or kilowatt hour of electricity
- Projected annual fuel costs
- Estimated number of barrels of petroleum the vehicle will likely consume annually
- Greenhouse gas emissions
- Projected amount of health-damaging and smog-forming airborne pollutants the vehicle emits
- Safety ratings



The site provides fuel economy data on used cars as well as a Used Car MPG label for used vehicle dealers and offers a printable fuel economy label for optional, voluntary use by used-vehicle sellers. Labels for light-duty vehicles dating to 1984 are available.

Though fuel, emissions and safety testing data reflect the performance of a new car, consumers can use this information to compare vehicles and obtain an evidence-based estimate of the vehicle's efficiency. According to the US EPA, a properly-maintained vehicle's fuel economy changes very little over a typical 15-year life

and the original EPA fuel economy estimate remains the best indicator of a used vehicle's average gas mileage. In addition, following consumer trends towards tailored information and user-generated content, the site offers a tool called MyMPG in which users calculate, track, and view their real-world MPG so consumers can get real-world data reported by their peers.

3.6.3 Green Vehicles Guide

For those interested in how they can contribute to cleaner air, EPA developed the Green Vehicle Guide to help consumers find information on vehicles that are more efficient and less polluting, as well as how to operate vehicles more efficiently. Fuel-saving tips, green vehicle infographics, and much more are included in this online guide.

3.6.4 Vehicle Safety information

The U.S. government also offers easy access to safety information on vehicles. The National Highway Traffic Safety Administration of the U.S. Department of Transportation offers free online information on vehicle safety recalls and a safety rating that users can search for information by a vehicle's year, make, and model, and vehicle identification number. Consumers of used cars have access to additional data on the specific vehicle they would like to purchase through commercial services that compile and offer public records, such as type of use, damage, theft history, odometer fraud, and product recall. These records may be purchased for individual vehicles, or in bulk for a group of vehicles, serving the needs of used vehicle sellers or importers.





4. RECOMMENDATIONS

Recognizing that motorization levels in developing and transition countries are not high but annual vehicle sales are fast increasing, countries can encourage the sales of higher quality used vehicles to achieve cleaner mobility and improved urban air quality. Both used vehicles exporting and importing countries have a role in the furtherance of the flow of quality used vehicles and should consider ways to ensure these fleets are safe and contribute to the mitigation of adverse, health, economic and climate impacts.

To address these issues, the PCFV working group on used vehicles recommends the following:

- A global voluntary agreement on cleaner and safer used vehicles be pursued with the aim of holding both exporting and importing countries accountable for the quality of used vehicles. Such an agreement could include a provision for countries to share data on the condition of used vehicles imported or exported from their countries.
- Work with regional economic bodies on potential harmonization of used vehicle management policies and encourage

free-trade agreements to meeting international environmental best practices and standards.

- Importing countries should link their vehicle import policies to the most stringent level possible based on the current or soon to be applied local fuel quality. The reason is that the additional cost of a modern vehicle supplied with low quality fuel (e.g., if a diesel car with a Diesel Particulate Filter is supplied 2000 ppm sulphur fuel) is lost as the emissions control systems on the vehicle will be impaired.
 - Improving fuel quality at the same time as introducing vehicle emissions limits on imported vehicles (especially regarding sulphur levels) must be a high priority. The target should be a maximum of 50 ppm and below sulphur in both gasoline and diesel fuel, and a minimum of Euro 4/IV or equivalent vehicle emissions standard.
- Importing countries should be encouraged to set minimum lubricants specifications that are consistent with the imported age of vehicles.
- Importing countries should establish mandatory inspection and maintenance (I&M) programs for in-use vehicles. Controls on inspection and maintenance of both vehicles after import and the existing vehicle fleet are vital to producing the emission performance improvements delivered by supplying higher quality fuel.
- Seek agreement with auto manufacturing companies and their franchise dealers on offering after-market support for used vehicles in importing countries.
- Seek the establishment of end of life recycling programs in conjunction with auto-manufacturers who can re-import components or precious metals recovered from end of life vehicles.
- Countries take advantage of used vehicles to import low and zero emission (electric, hybrid and plug in hybrid) vehicles with a consideration of issues relating to end-of-life and recycling of batteries.
- Importing countries should be encouraged to review their used vehicle import policies and fiscal measures to assure that only clean and safe used vehicles are imported by for example providing tax breaks/incentives for cleaner vehicle imports and scrappage of the oldest vehicles in the fleet.
- Exporting countries should be encouraged to require vehicle inspection at the port of exit to verify conformity with safety and its stated tailpipe emissions performance standards. Many vehicles should be equipped with onboard diagnostic systems which can easily be interrogated to assure that the emissions control components are working properly. In addition, simple I&M type tests can indicate if the emissions controls are working.
- Developing and transition countries should be encouraged to require vehicle inspection at the port of entry to verify conformity to minimum safety and tailpipe emissions. Where such inspection capacity is lacking in the recipient country, provisions should be made to require such verification before export or provide other interim measures.
- End of life regulations should be developed and enforced in both exporting and importing countries.



Partnership for Clean Fuels and Vehicles
Economy Division
United Nations Environment Programme
P.O Box 30552 Nairobi, KENYA
+254 (20) 7624184