

# Promoting Cleaner & More Fuel Efficient Vehicle in Africa

Jane Akumu

UN Environment



# UN Environment Transport Programs



Low sulphur fuels



Vehicle emission standards (Euro 4/IV)



Soot free buses (Euro IV/V)



Fuel economy vehicles



Electric motorcycles



NMT policies and infrastructure

# CO2 Emissions from Transport

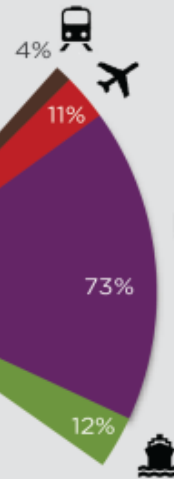
## THE TRANSPORTATION SECTOR

A major contributor to global energy-related CO<sub>2</sub> emissions

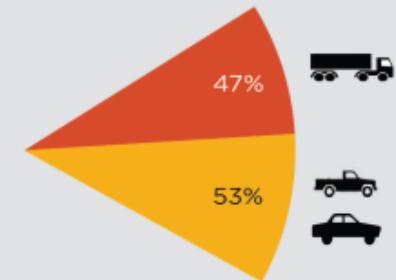
GLOBAL ENERGY-RELATED  
EMISSIONS  
≈ 30 Gt CO<sub>2</sub>



TRANSPORT EMISSIONS  
≈ 7 Gt CO<sub>2</sub>



ROAD TRANSPORT  
EMISSIONS  
≈ 5 Gt CO<sub>2</sub>



## LEGEND

RAIL

AIR

ROAD

SEA

HEAVY-DUTY  
VEHICLES

LIGHT-DUTY  
VEHICLES

Sources:

ICCT (2014). Global Transportation Roadmap Model. Version 2.0. More information available at <http://www.theicct.org/global-transportation-roadmap-model>.

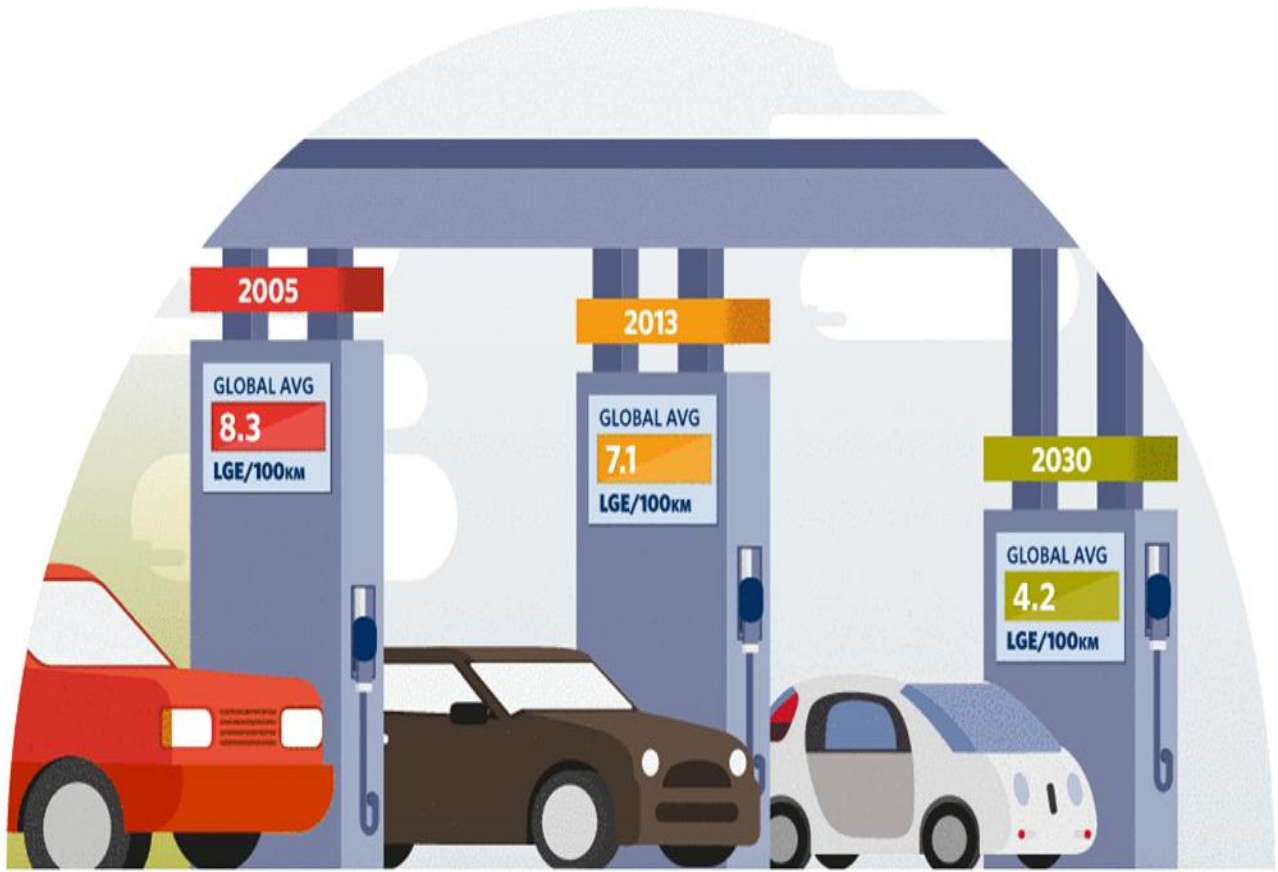
IEA (2012). CO<sub>2</sub> Emissions from Fuel Combustion: Highlights. 2012 edition. Retrieved from <https://www.iea.org/co2highlights/co2highlights.pdf>.



**THE GLOBAL GOALS:  
FUEL ECONOMY**

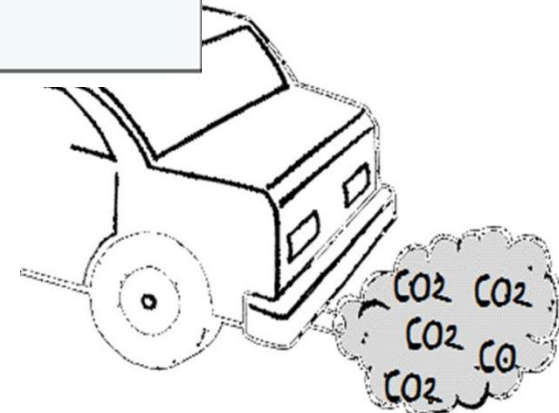
**DOUBLE  
AVERAGE  
FUEL  
ECONOMY**

**OF NEW CARS BY 2030  
AND ALL CARS BY 2050**



# GFEI has set graduated global fuel economy improvement targets

	2020	2030	2050
<b>New Cars</b>	<b>30%</b> reduction* in L/100km compared to 2005  Engines, drive- trains, weight, aerodynamics.	<b>50%</b> average improvement globally  Hybridisation of most models.	<b>50% +</b> globally  Significant contributions from Plug-in vehicles
<b>Total fleet</b>	<b>20%</b> reduction  With lag time for stock turnover; includes eco-driving, maintenance	<b>35%</b> reduction	<b>50by50</b>



# GFEI benefits towards national fuel and transport targets

- Reduce oil dependence (diversify fuels)
- Improve balance of payments
- Reduce pollutant emissions
- Reduce greenhouse gases
- Promote domestic economies/jobs
- Long term strategy that will involve multiple policy interventions



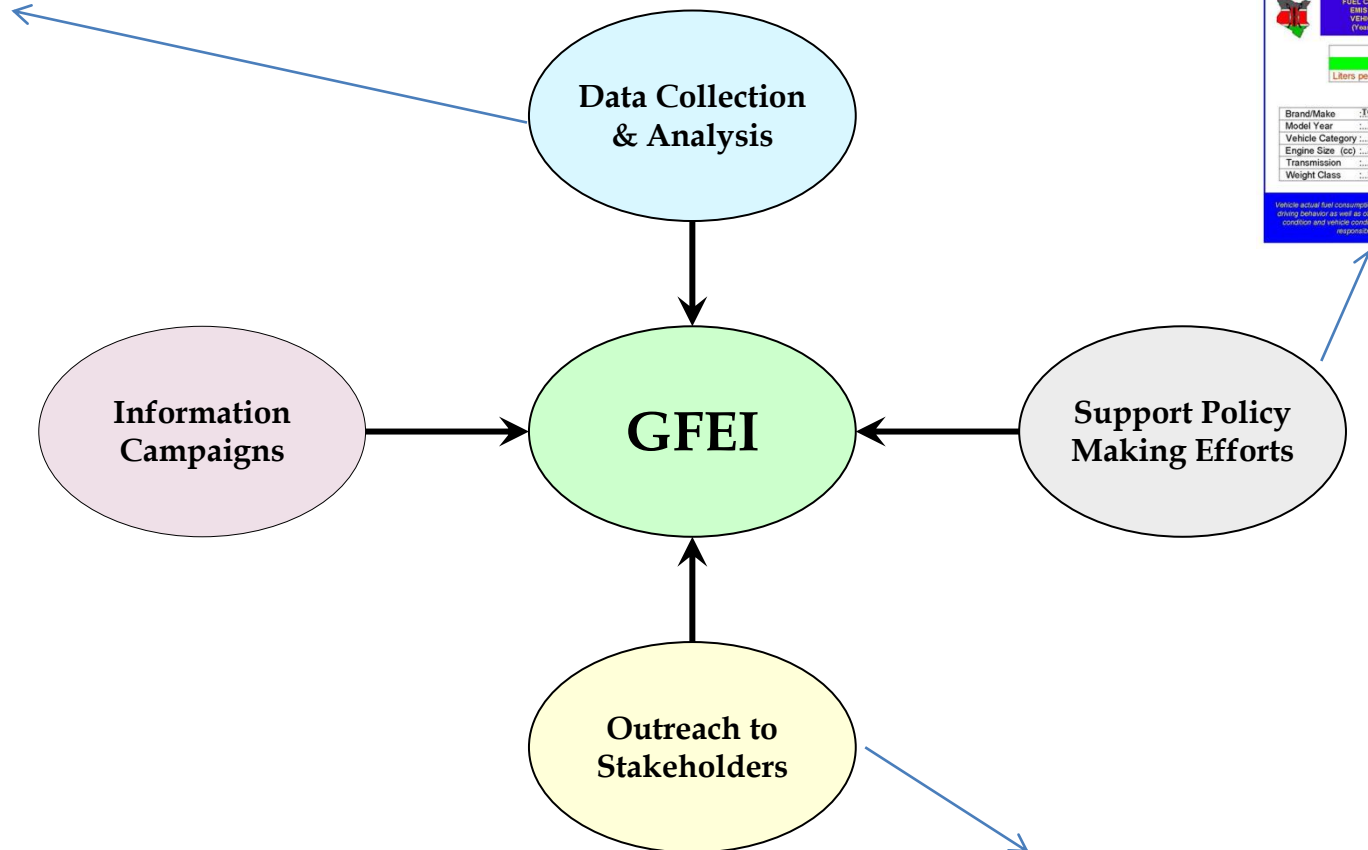
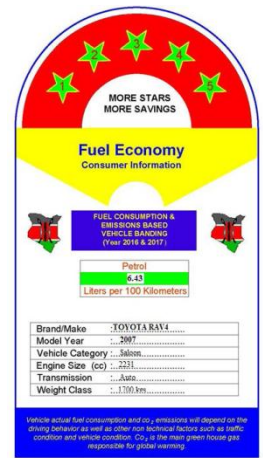
## Partners



## Donors



# GFEI Activities



Vehicle Type
Model
Manufacturer
Body type
Simplified Body Type
Segment
Axle configuration
Driven wheels
Engine cylinders
Engine ccm
CC Category
Engine kW
KW class
Engine horse power
Engine valves
Fuel type
Model year
Number of gears
Transmission type
Turbo
Gross vehicle weight
Height
Length
Number of seats

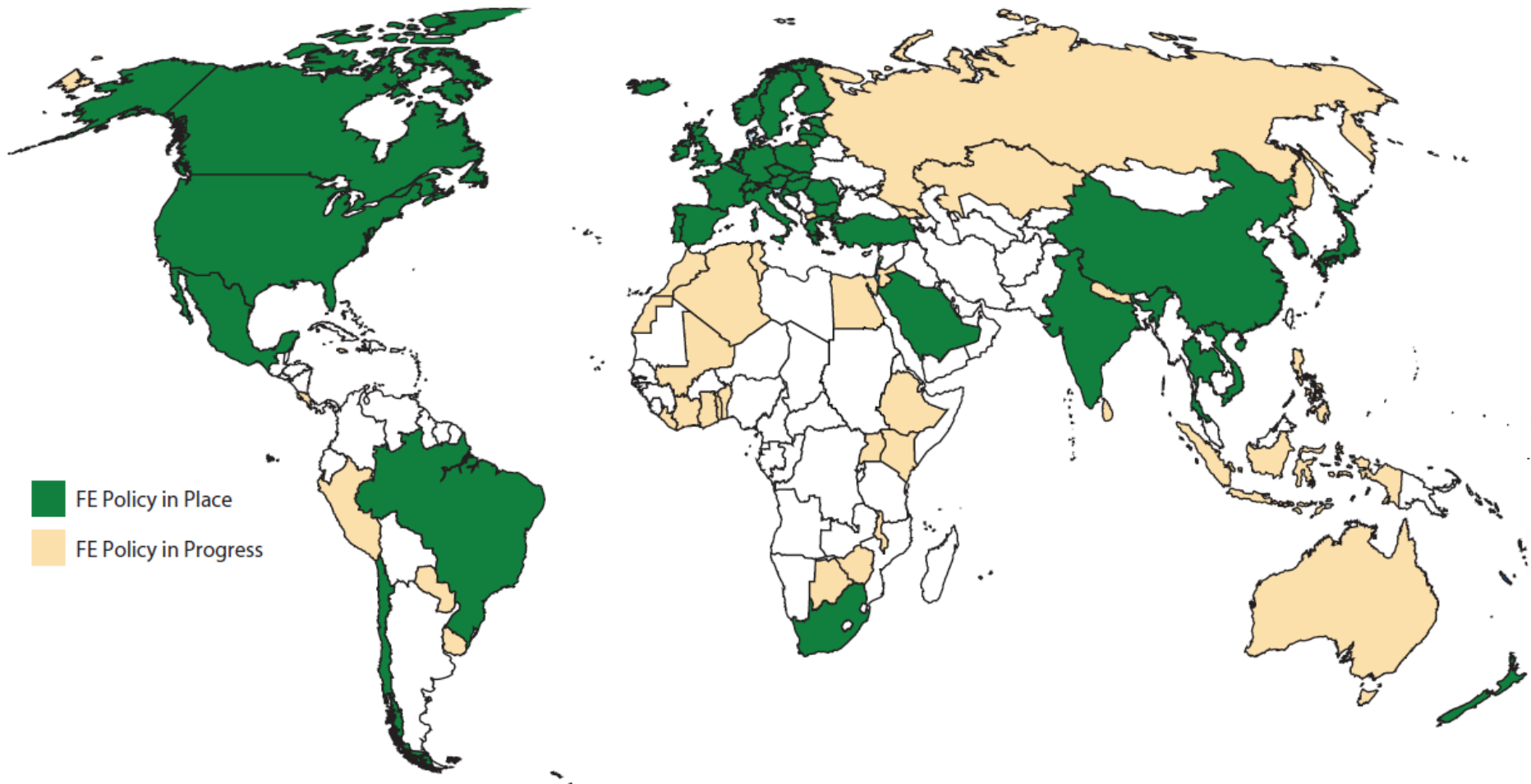


# GFEI Country Engagement

countries with ongoing projects	new countries 2016/2017	Countries expressed interest
1Chile	28Malaysia	63Panama
2Ethiopia	29Bangladesh	64Iran
3Indonesia	30Kazakhstan	65Angola
4Kenya	31Mali	66Bhutan
5Georgia	32Nigeria	67Burkina Faso
6Ivory Coast	33Togo	68Burundi
7Mauritius	34Tanzania	69Cambodia
8Jamaica	35Rwanda	70Cameroon
9Montenegro	36Bolivia	71Cape Verde
10Macedonia	37Argentina	72D.R. Congo
11Costa Rica	38Ecuador	73Eritrea
12Vietnam	39Ukraine	74Fiji
13Morocco	40Jordan	75Guinea
14Bahrain	41Colombia	76Iran
15Tunisia	42Djibouti	77Kyrgyzstan
16Thailand	43Dominican Republic	78Laos
17Peru	44Guatemala	79Lesotho
18Russia	45Moldova	80Marshall Islands
19Benin	46Pakistan	81Mongolia
20Algeria	47Barbados	82Namibia
21Uruguay	50St. Lucia	83Niger
22Nepal	51Lebanon	84Papua New Guinea
23Paraguay	52Zambia	85Senegal
24Sri Lanka	53Ghana	86Sierra Leone
25Philippines	54Malawi	87Solomon Islands
26Uganda	55Zimbabwe	88South Africa
27Egypt	56Honduras	89Tajikistan
	57Nicaragua	90Turkmenistan
	58El Salvador	91Turkey
	59Botswana	92Armenia
	60Mozambique	93Azerbaijan
	61Myanmar	94Serbia
	62Liberia	95Samoa
		96Gambia
		97Uzbekistan
		98Bosnia-Herzegovina
		99Albania

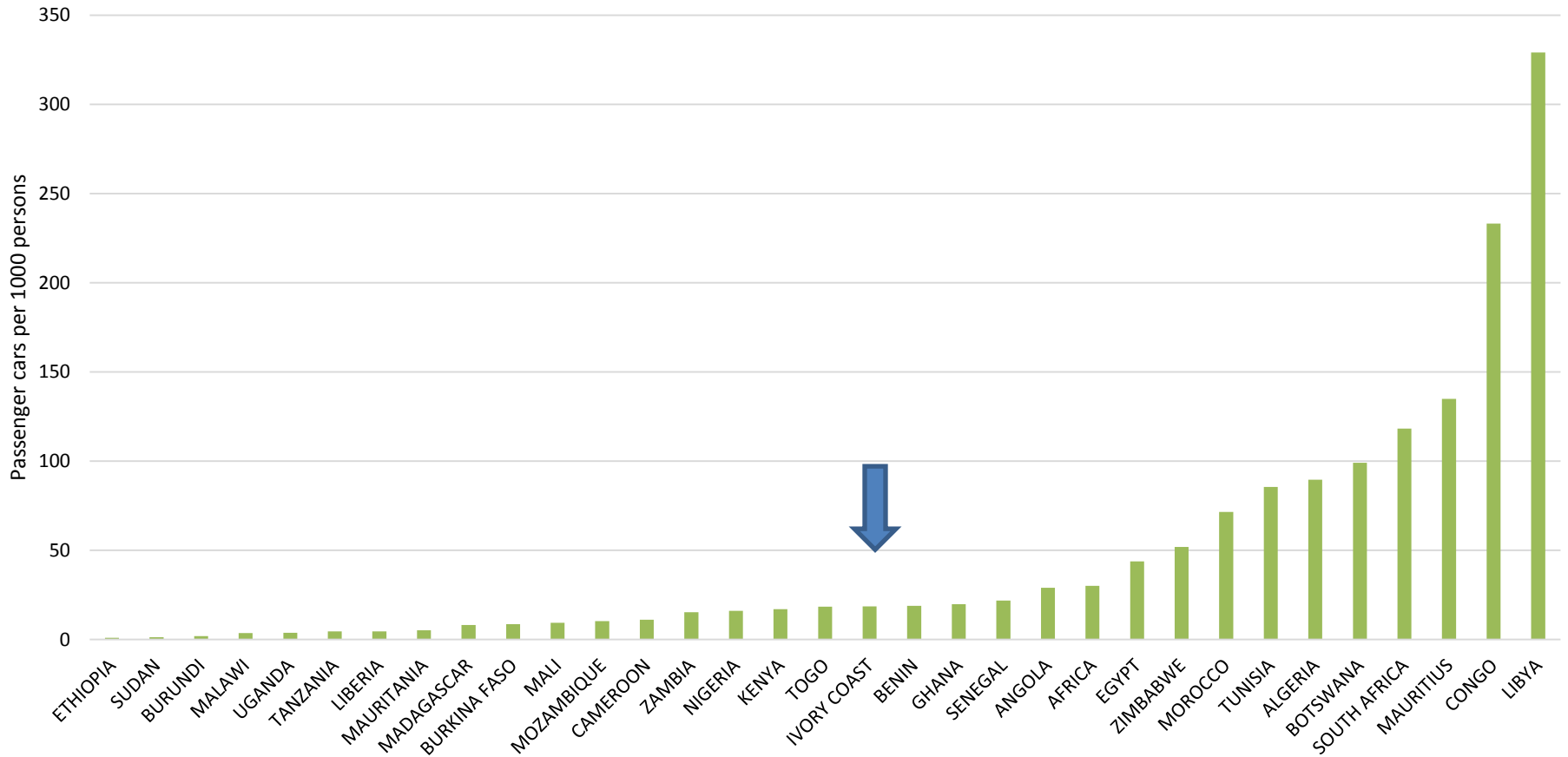


# Global Progress on Fuel Economy Policy (2017)



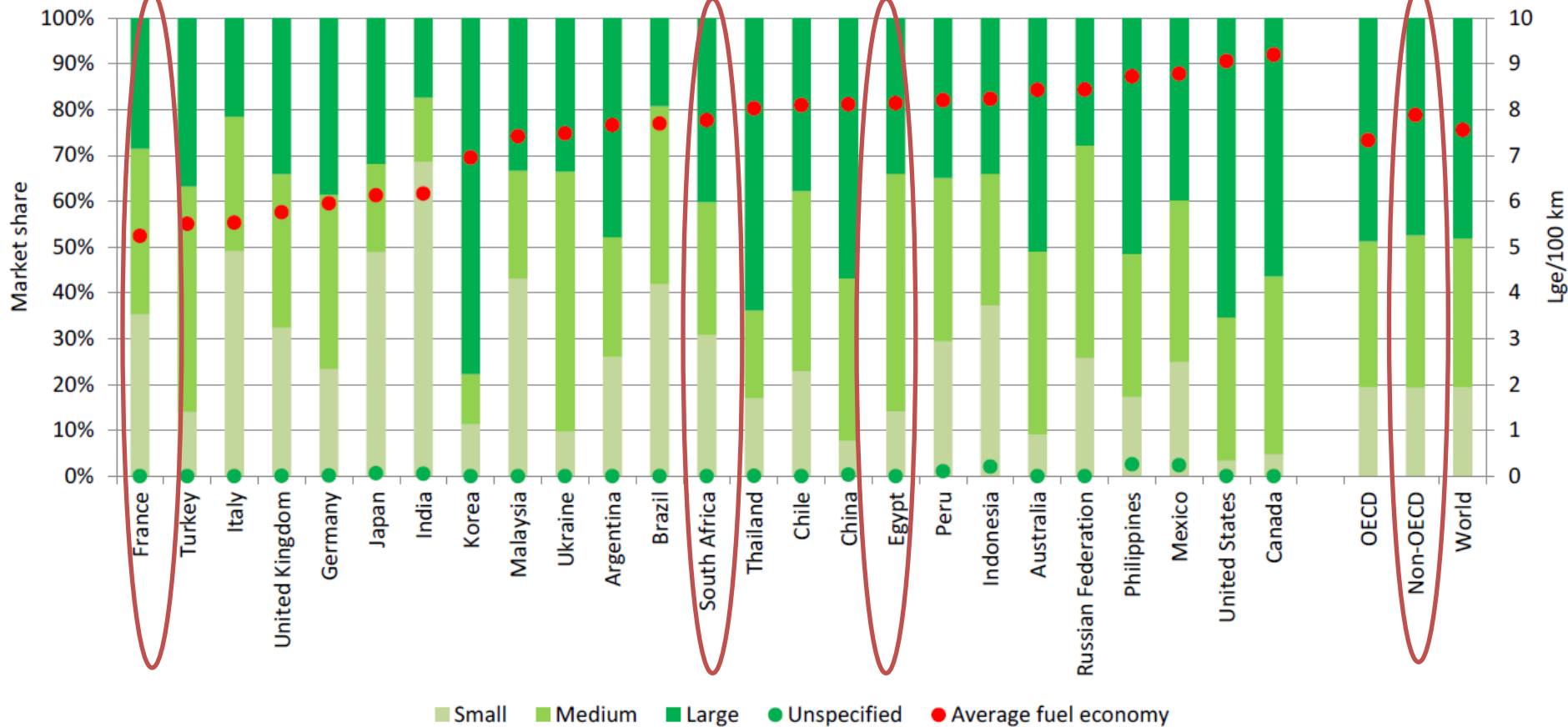
■ FE Policy in Place  
■ FE Policy in Progress

# Motorization in Africa



# Average fuel economy in new cars in Non OECD countries is relatively high

New cars by size by country in 2015



# Average Fuel Economy

Global	2005	2008	2011	2013
<b>Average (l/100km)</b>	8.07	7.67	7.2	7.1
<b>OECD Average</b>	8.1	7.6	7.0	6.9
<b>Non-OECD Average</b>	7.5	7.6	7.5	7.2

Mauritius	2005	2013	2014
<b>Average (l/100km)</b>	7.0	6.6	5.8

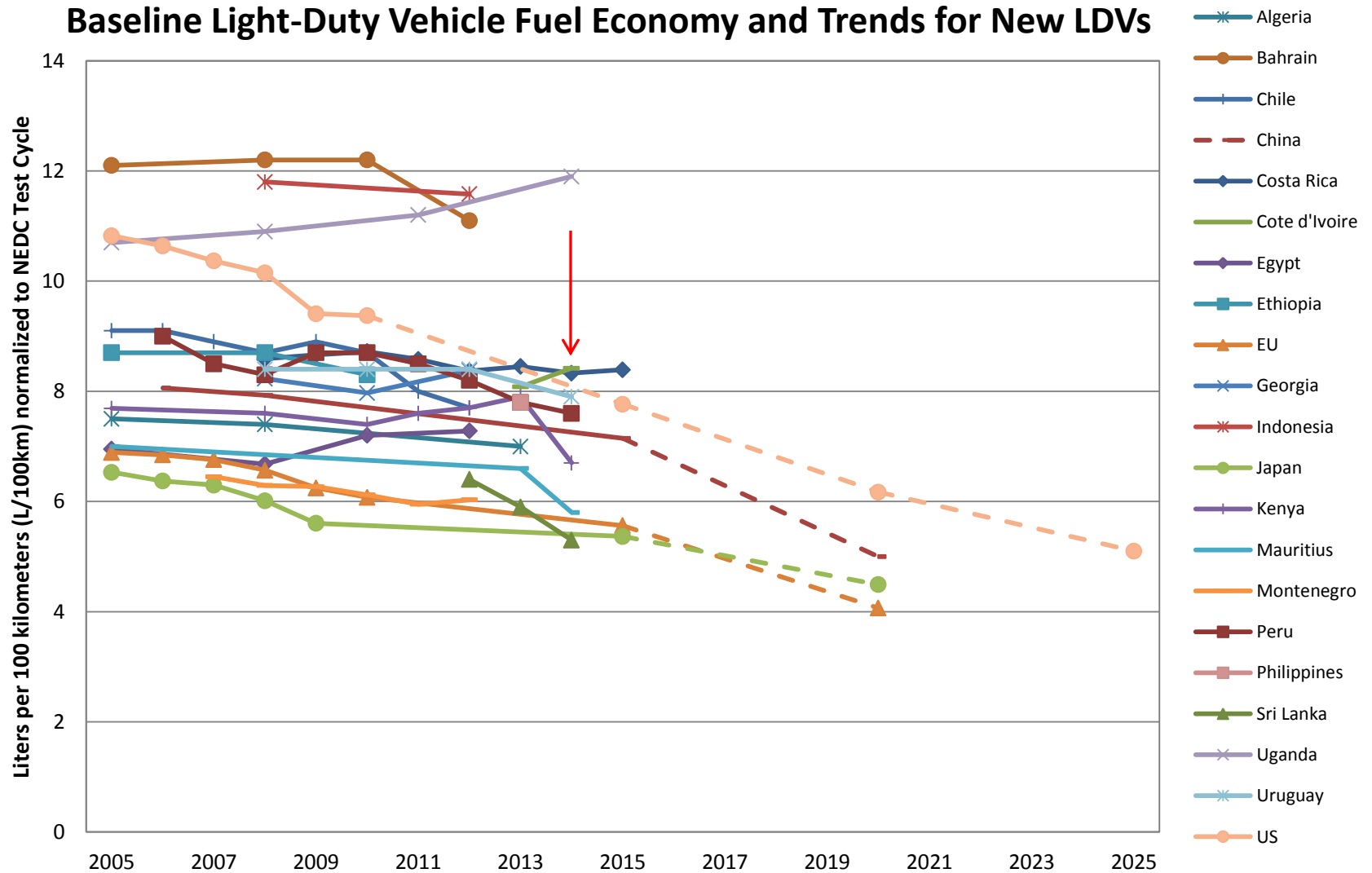
Algeria	2005	2008	2013
<b>Average (l/100km)</b>	7.5	7.4	7.0

Uganda	2005	2008	2011	2014
<b>Average (l/100km)</b>	10.94	11.14	11.34	12.15

Kenya	2010	2011	2012
<b>Average (l/100km)</b>	7.4	7.6	7.7

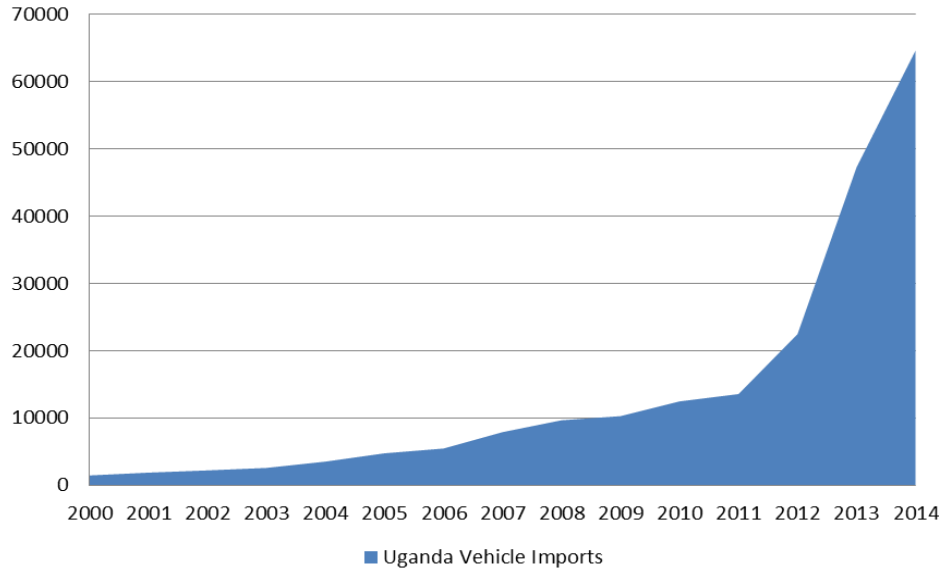
Ethiopia	2005	2010
<b>Average (l/100km)</b>	8.4	7.9

# Fuel economy policies can work substantially



Source: UNEP, 2017 (unpublished).

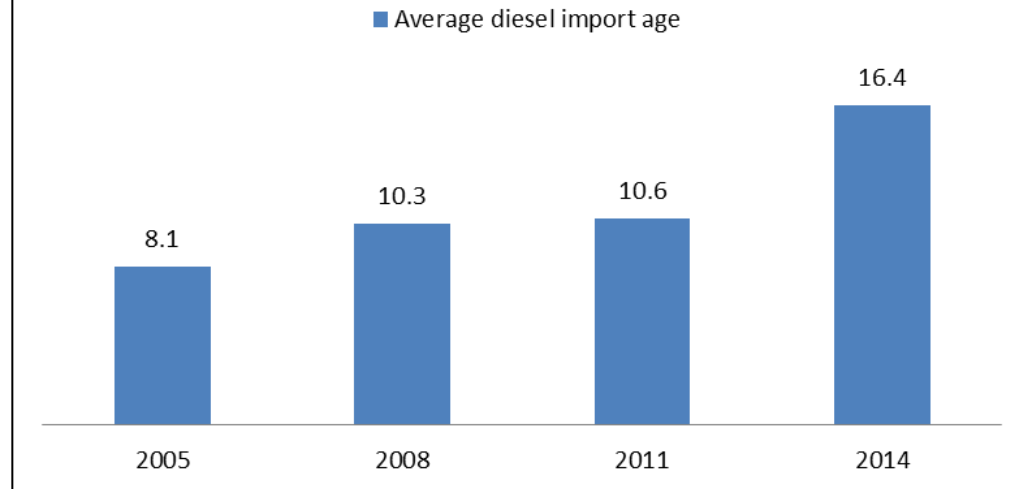
# Uganda Vehicle Imports



*Example of Uganda*

Uganda	2005	2008	2011	2014
Average (l/100km)	10.94	11.14	11.34	12.15

# Average diesel import age



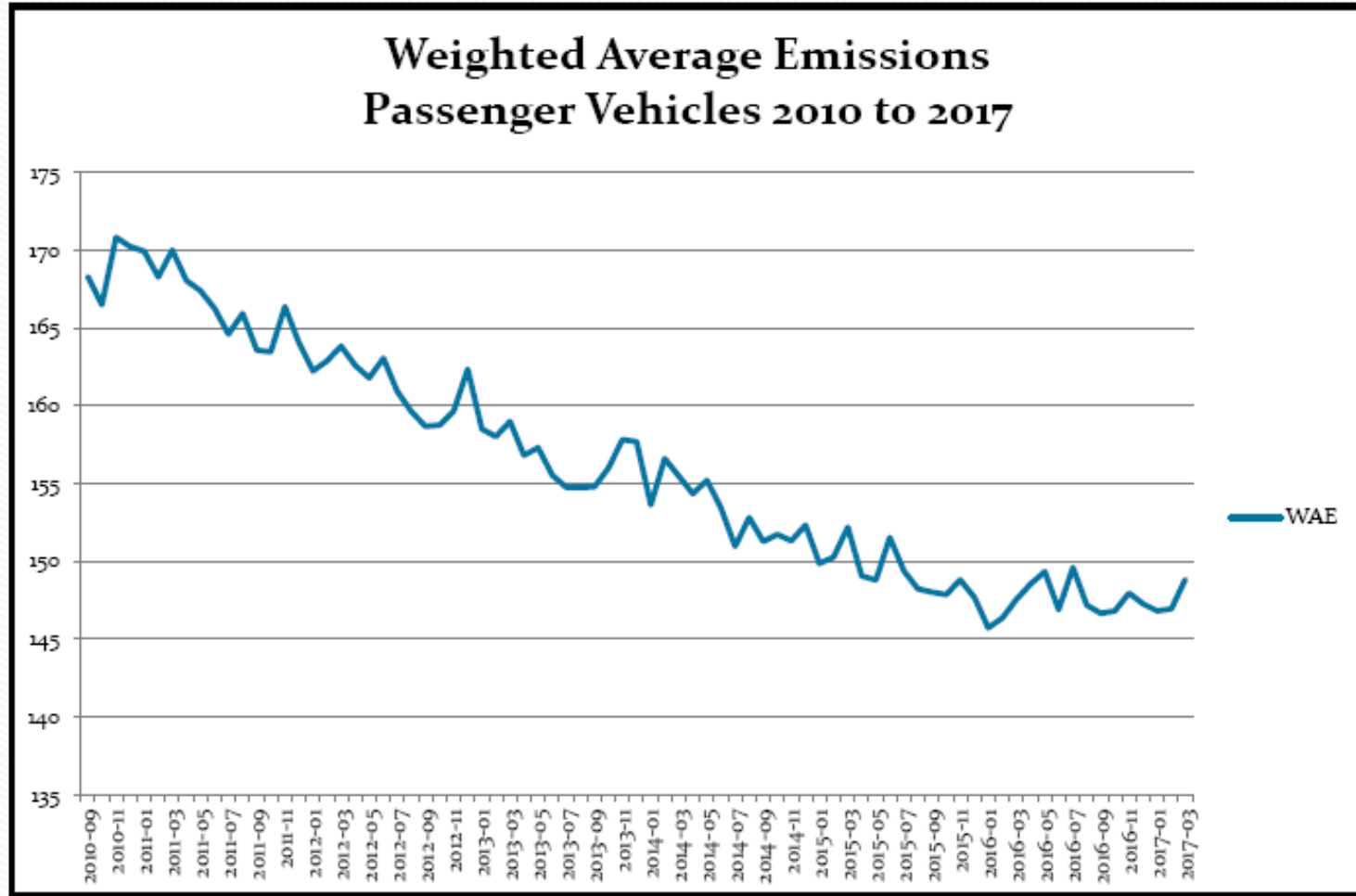
# Mauritius

- Adopted a feebate scheme in 2011 at 158 CO<sub>2</sub>g/km
- 2013 amended to 150 CO<sub>2</sub>g/km
- 50 % excise duty waived on electric and hybrid cars and registration fee
- 2009 to 2014, hybrid increased from 43 to 1824 and electric cars from 0 to 8
- 2016 replace by a taxation system with additional incentives to electric vehicles

Mauritius	2005	2013	2014
<b>Average (l/100km)</b>	7.0	6.6	5.8

Type	Current	New
<b>Conventional</b>		
Up to 550 cc	15%	0
551-1000 cc	55%	45%
1001-1600 cc	55%	50%
1601-2000 cc	75%	No change
Above 2,000 cc	100%	No change
<b>Hybrid</b>		
Up to 1600 cc	55%	25%
1601-2000 cc	75%	45%
Above 2000 cc	100%	70%
<b>Electric cars</b>		
Up to 180 Kw	25%	0
Above 180 Kw	25%	No change

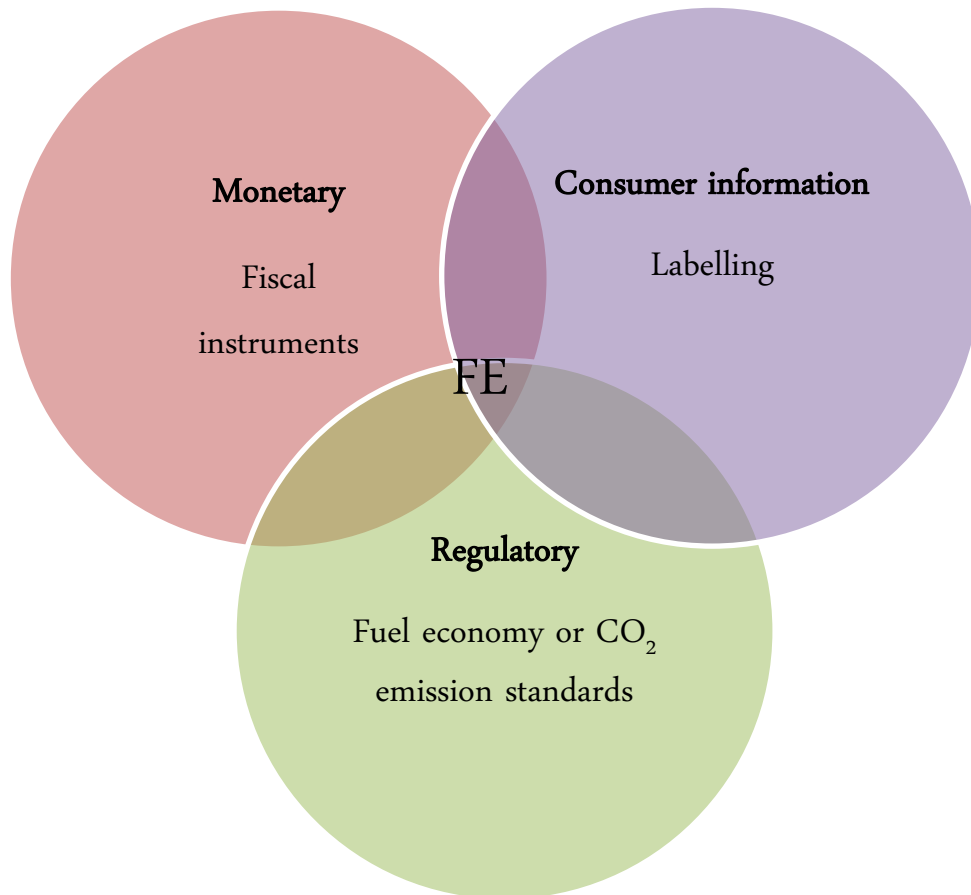
# South Africa: Passenger car CO<sub>2</sub> emission data and trend





# Fuel economy policies & instruments

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Target group:  
Consumer

Manufacturer

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# European Union

- 12% of total CO2 emissions from transport
- mandatory emission reduction targets for new cars
- average for all new cars is 130 grams of CO2 per kilometre (g/km) by 2015 and 95g/km by 2021
- fuel consumption, the 2015 target was
  - 5.6 l/100 km of petrol
  - 4.9 l/100 km of diesel
- The 2021 target is
  - 4.1 l/100 km of petrol
  - 3.6 l/100 km of diesel



# China's Example

- China introduced Fuel Economy Standards for LDV in September 2004: phase 1 from July 2005 and 2 phase from Jan 2008
- 3rd most stringent in the world, behind the EU and Japan
- requires display fuel economy labels from 2009
- banned the import of used vehicles for uses other than personal, diesel vehicles (except Jeeps) and two-stroke engine cars
- penalize large-engine cars and encourages the purchase of fuel efficient cars
- China is the only country having mandatory FE standards for two wheelers in place (implemented 2009)

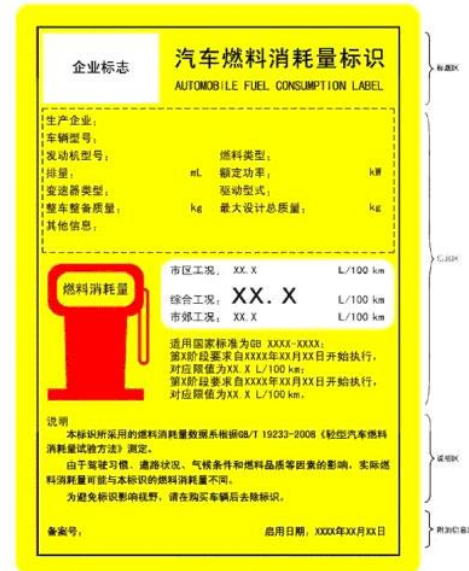
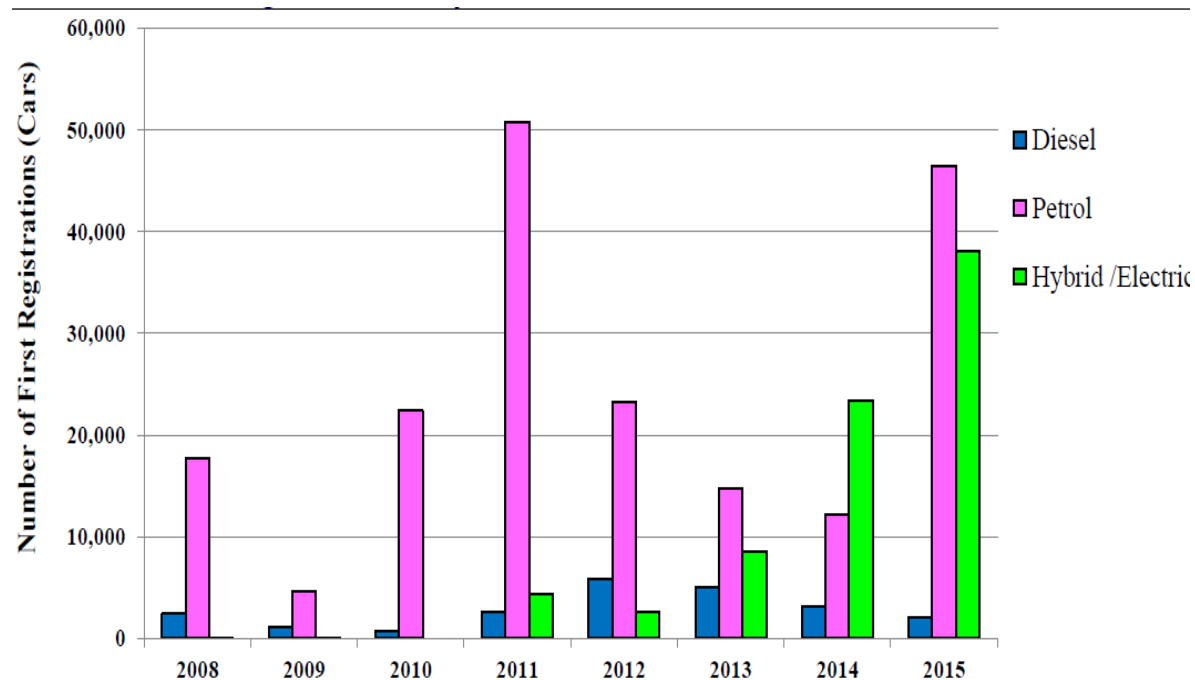


图 A.1 标识各功能区分布示意图

# Hybrid and Electric cars in Sri Lanka

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- Hybrid and electric cars in 2014 was 56% of the total number of cars
- Hybrid-petrol, petrol and diesel vehicles attract 58%, 253% and 345%, respectively, in excise tax
- Fully electric vehicles are levied at 25%



# Labeling and CO<sub>2</sub>-based Tax in Thailand

- Vehicle excise tax rates in Thailand combines CO<sub>2</sub> ratings and engine capacity
- Mandatory eco-sticker

Types of Vehicles	Fuel type / Tax rates			
	CO <sub>2</sub> / engine capacity	E10/ E20	E85/ NGV	Hybrid
Passenger vehicles – cars and vans with less than 10 seats	≤ 100 g/km	30	25	10
	101-150 g/km	30	25	20
	151-200 g/km	35	30	25
	>200 g/km	40	35	30
	>3,000 cc	50	50	50
~~~~~				
Electric vehicle/ fuel cell	≤ 3,000 cc (180 Kw)		10	
	> 3,000 cc (180 Kw)			50



# Conclusion

- High vehicle growth rate to continue in the region – over 10% growth rate
- Need for fuel economy policies
- Substantial reduction in fuel consumption and CO2 emissions to be realized – supporting national objectives and the Paris Agreement
- Improvement in air quality expected through adoption of more advanced vehicles and technologies
- Fuel economy improvements need to be part of a broader transport strategy including:
  - vehicle imports
  - vehicle maintenance
  - eco driving
  - traffic flow/congestion
  - mass transit



## **Air Quality and Mobility Unit**

Economy Division

United Nations Environment

P.O. Box 30552

00100 Nairobi

Kenya

E-mail : [Jane.Akumu@unenvironment.org](mailto:Jane.Akumu@unenvironment.org)

Websites:

<http://unep.org/transport/>

[www.globalfueleconomy.org](http://www.globalfueleconomy.org)

