Promoting Cleaner and Efficient Vehicles

Jane Akumu
Transport Unit, UN Environment

What is fuel economy?

- Vehicles use energy, and fuel economy measures energy per unit of vehicle travel. It is the RATE of energy use.
  - Litres per 100km (Europe)
  - Km per litre (Japan)
  - Miles per gallon (United States)

- Fuel economy, fuel efficiency, fuel intensity are all fairly interchangeable terms. But fuel economy always refers to fuel use relative to distance travelled.

- Also measured in CO2 emissions=CO2 g/km

THE GFEI FUEL ECONOMY TARGETS

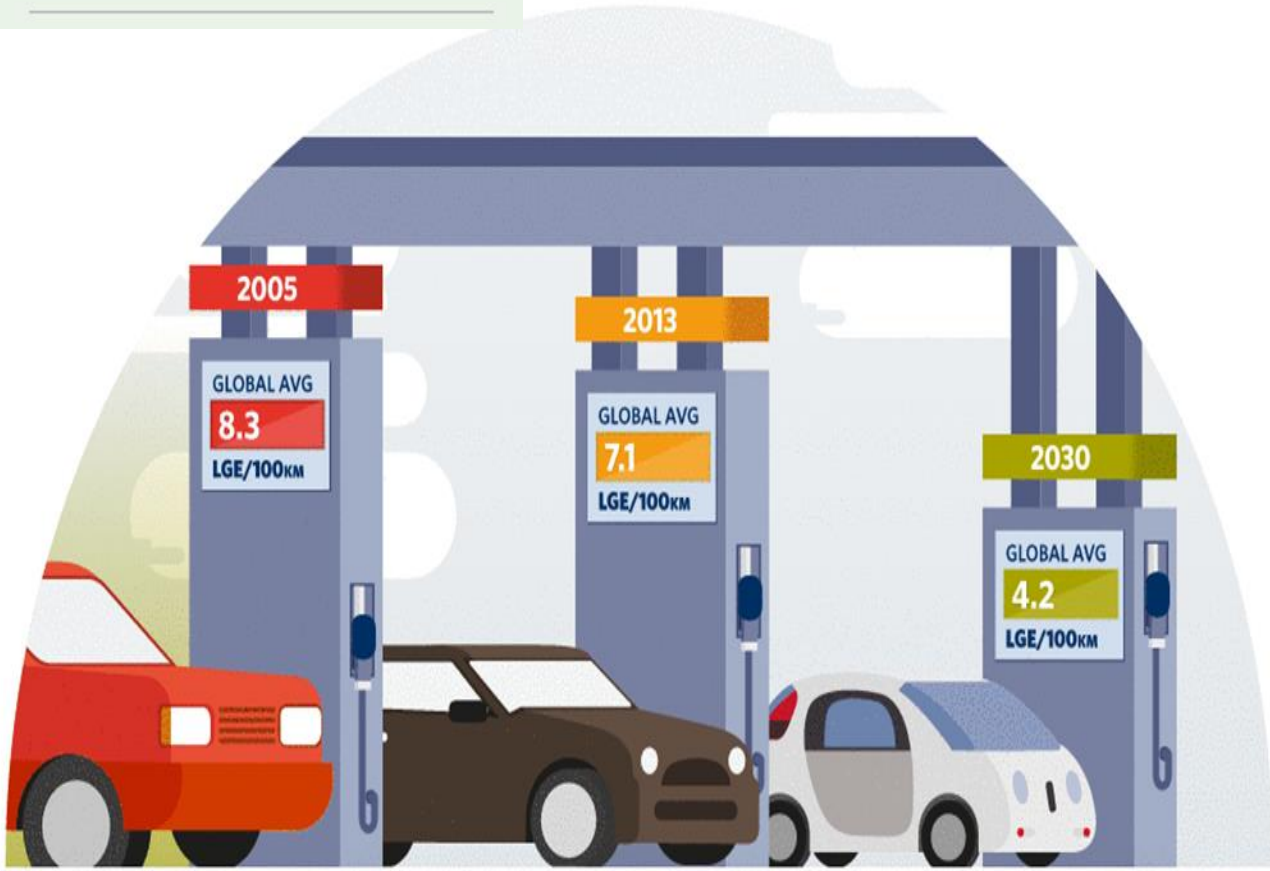
From 2005 baseline:

- **30%** reduction in L/100km by 2020 in all new cars in OECD countries
- **50%** by 2030 in all new cars globally
- **50%** by 2050 in all cars globally

THE GLOBAL GOALS:
FUEL ECONOMY

DOUBLE AVERAGE FUEL ECONOMY

OF NEW CARS BY 2030
AND ALL CARS BY 2050



GFEI Benefits

- Reduced urban air pollution
- Fuel savings: estimated at over USD 300 billion in 2025 and 600 billion in 2050
- CO2 reduction: estimated at over 1 gigatonne a year by 2025 and over 2 gigatonnes by 2050

Partners:

FIA Foundation for the Automobile and Society

UNEP

UCDAVIS INSTITUTE OF TRANSPORTATION STUDIES

iea International Energy Agency

icct THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

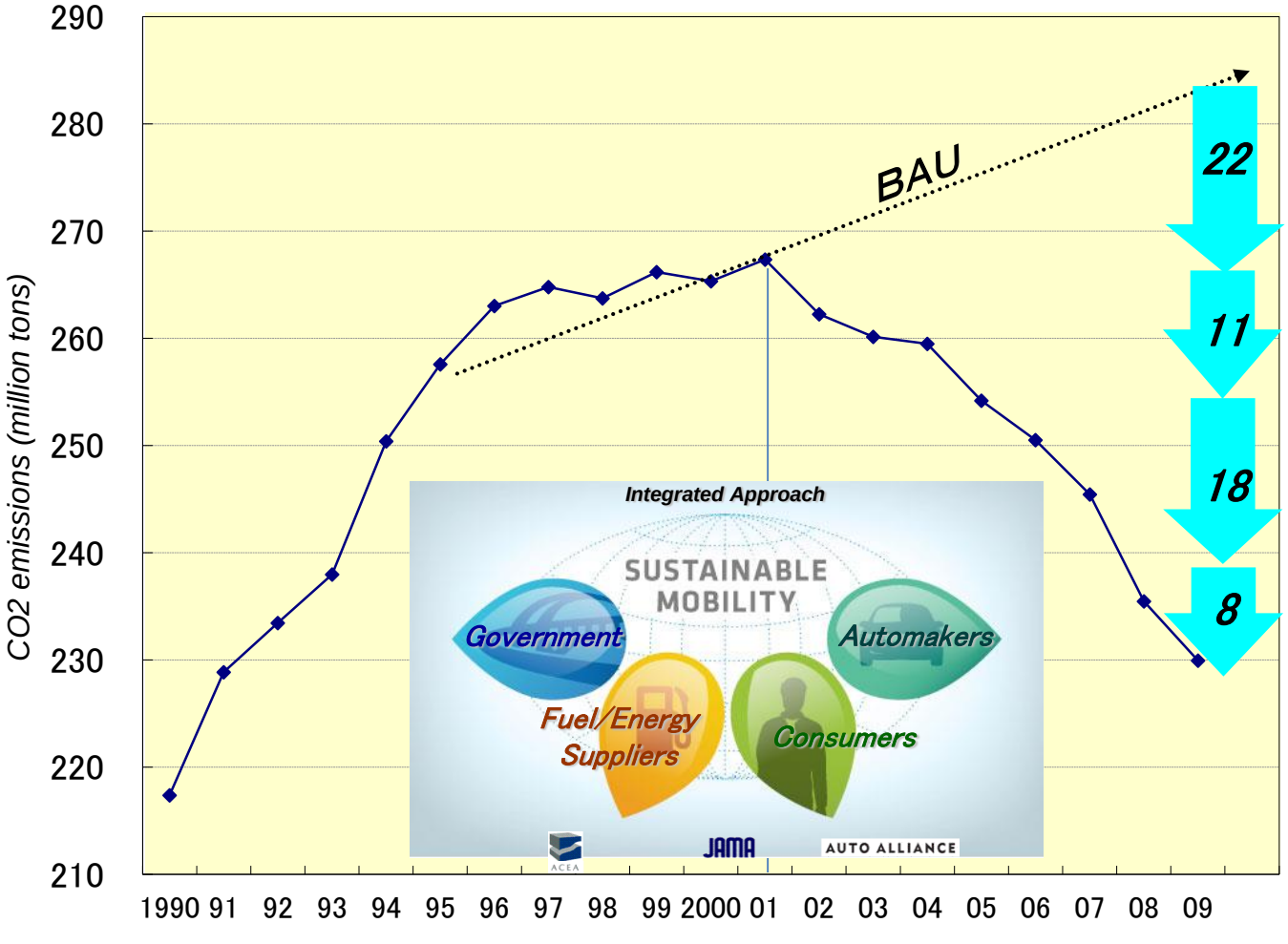
International Transport Forum

Donors:

FIA Foundation for the Automobile and Society

gef

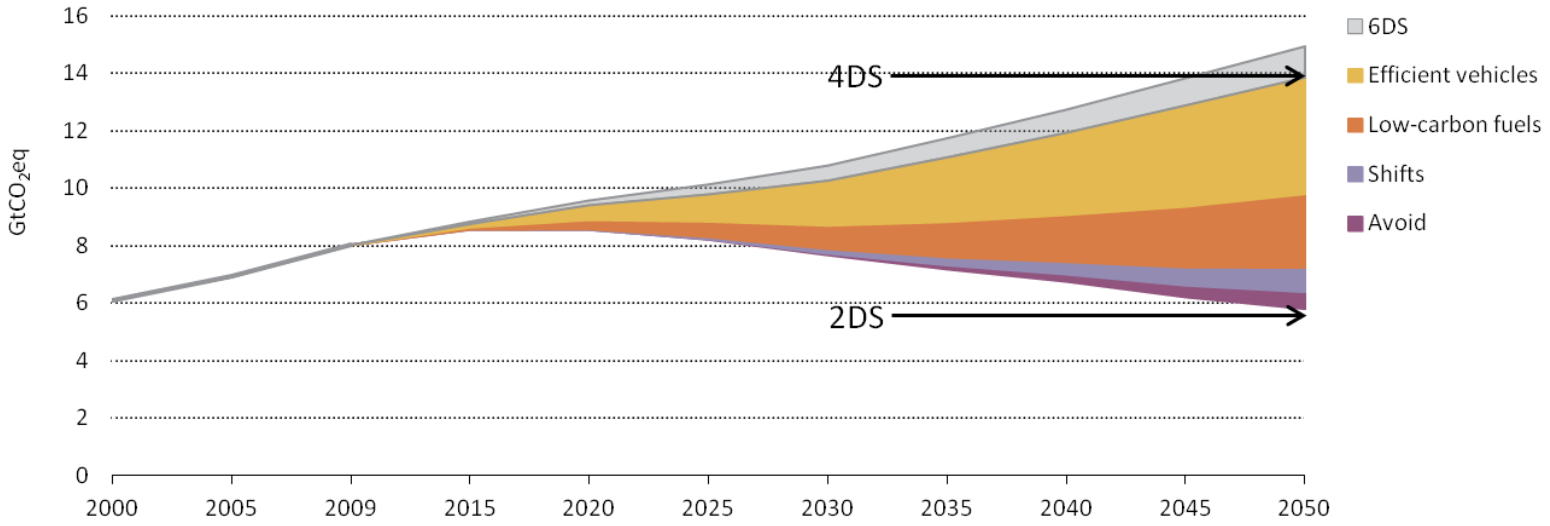
◆ CO2 Emission Reduction in Japanese Transportation Sector



- Fuel Economy
- Traffic Flow
- Eco-Driving
- Alternative Fuels
- Travel Distance (modal shifts, etc)
- Others

source : JAMA

Carbon Reduction Potential Transport



- ***Potential for transport to reduce 4 GT/yr in 2030 and 8 GT/yr in 2050 (IEA MOMO model 2015)***
- ***Comprehensive approach needed:***
  - ***Avoid transport, for example through better city planning***
  - ***Shift to efficient transport modes, like public transport***
  - ***Improve through cleaner vehicles***
- ***Biggest potential with improving vehicle efficiency***

GFEI Country Engagement 2016

countries with ongoing projects	new countries 2016	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

GFEI at the global stage

2009

GFEI Launched

2011

Sustainable Energy for All – EE as one key focus

2013

Doubling Energy Efficiency in the Transport Sector in the SDGs

2014

UN Sec General's Climate Summit - GFEI was launched as one of the accelerators

2014

G20 Energy Efficiency Action Plan includes Fuel Efficiency particularly HDVs

COP 2015

Objective of the GFEI: Doubling the efficiency of the global fleet by 2050

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

		2005	2008	2011	2013	2030
OECD average	average fuel economy (Lge/100km)	8.6	7.9	7.3	6.9	
	annual improvement rate (% per year)	-2.7%	-2.6%	-2.6%		
		-2.6%				
Non-OECD average	average fuel economy (Lge/100km)	7.3	7.4	7.3	7.2	
	annual improvement rate (% per year)	0.5%	-0.4%	-0.9%		
		-0.2%				
Global average	average fuel economy (Lge/100km)	8.3	7.7	7.3	7.1	
	annual improvement rate (% per year)	-2.3%	-1.9%	-1.8%		
		-2.0%				
GFEI target	average fuel economy (Lge/100km)	**8.3**				**4.2**
	required annual improvement rate (% per year) 2005 base year	**-2.7%**				
	required annual improvement rate (% per year) 2014 base year	**-3.1%**				

OECD: rates close to target

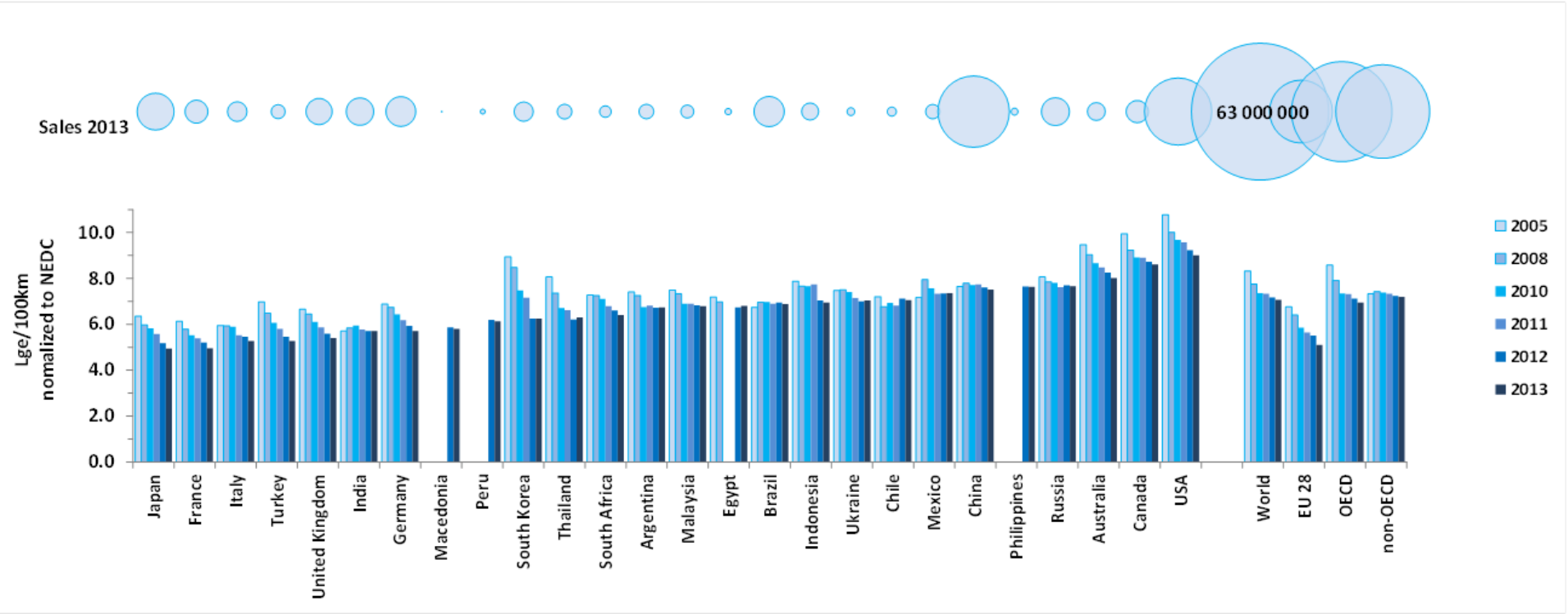
Non-OECD: little improvement

Global: Right trend at slow pace

2030: Improve global FE by 50%

Regional fuel economy trends

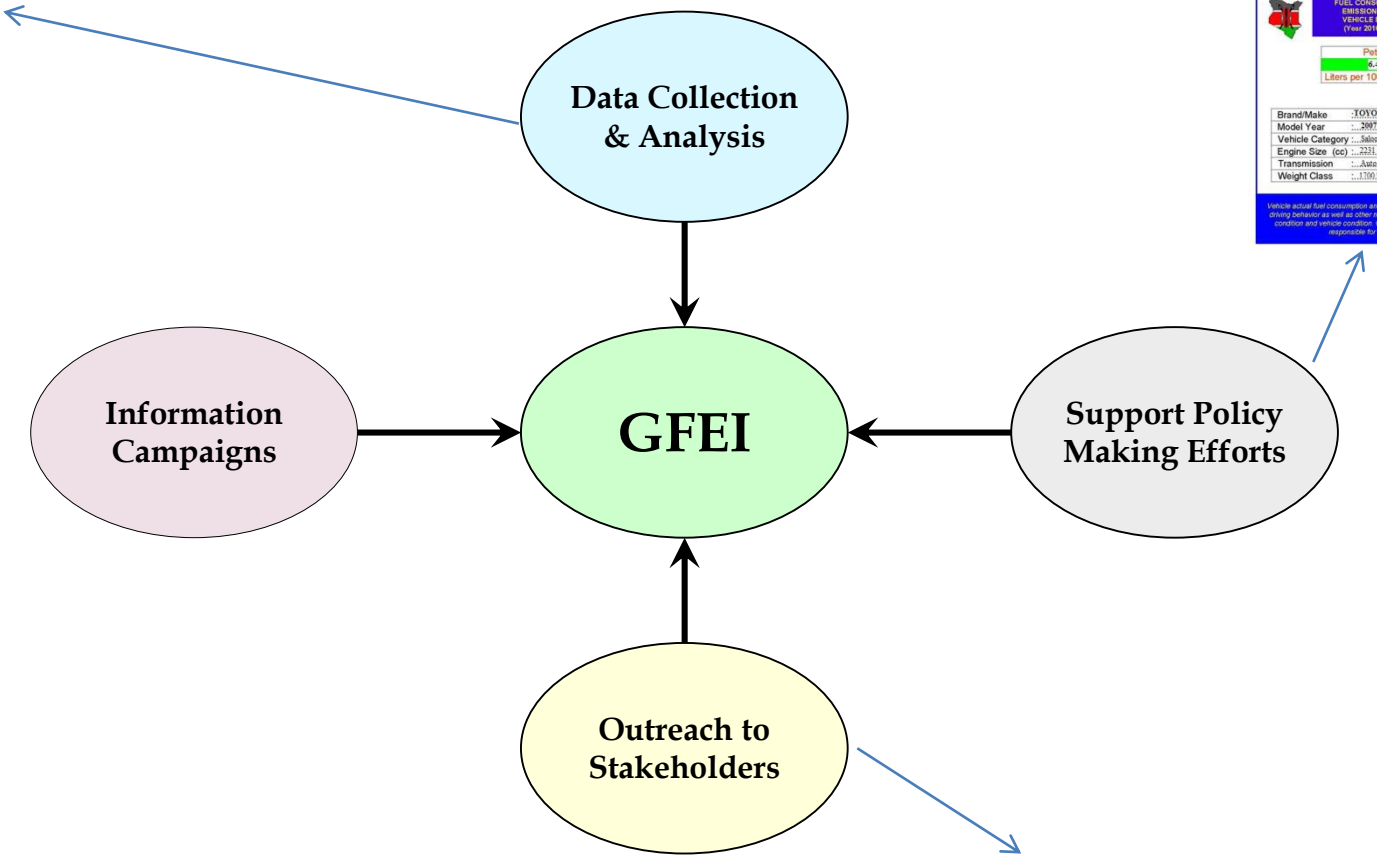
- Countries with FE policies in place show encouraging improvement rates
- Size shift vs. technology evolution moderates non-OECD improvement



Source: IEA 2014

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



Importance of GFEI for Africa

- The project provides a good understanding of vehicles imported into the country e.g. models, sizes, technologies
- This will allow policymakers to choose the right combination of policy instruments to meet
  - national emission targets
  - energy security, and
  - efficiency goals

Fuel Economy Levels

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

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

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

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

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

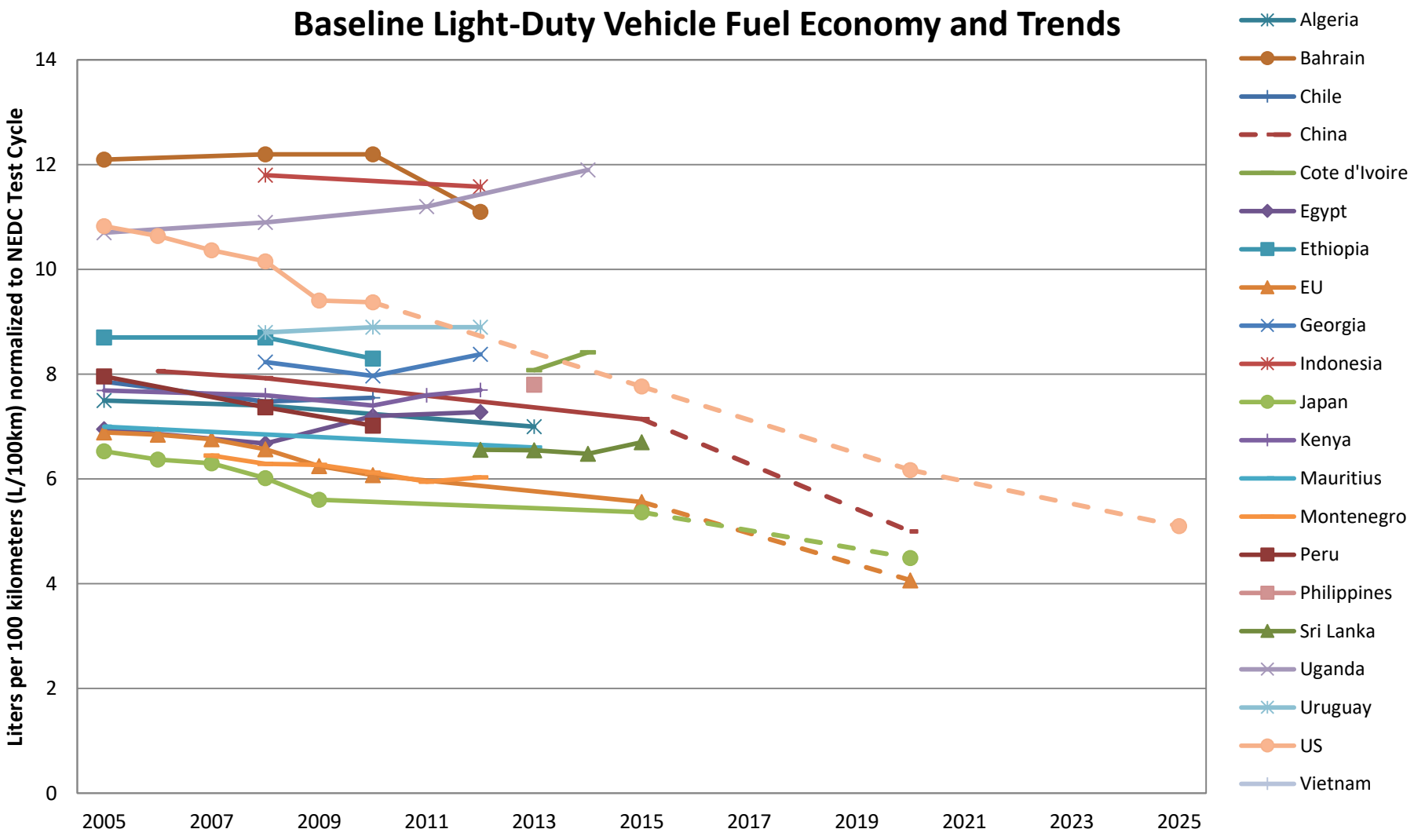
Algeria	2005	2008	2013
Average (l/100km)	7.5	7.4	7.0

Kenya Fuel Economy Levels

Year	Average fuel consumption metric combined (L/100km)	Average CO_2 emission (g/km)
2010	7.4	178.2
2011	7.6	182.0
2012	7.7	185.4
Grand Average	7.5	181.7

Year of vehicle registration	Fuel Type		
	Diesel	Petrol	Grand Average
2010	8.0	7.2	7.4
2011	7.9	7.5	7.6
2012	8.0	7.6	7.7
Grand Average	8.0	7.4	7.5

GFEI baseline setting – little progress in fuel economy improvement in countries without policies

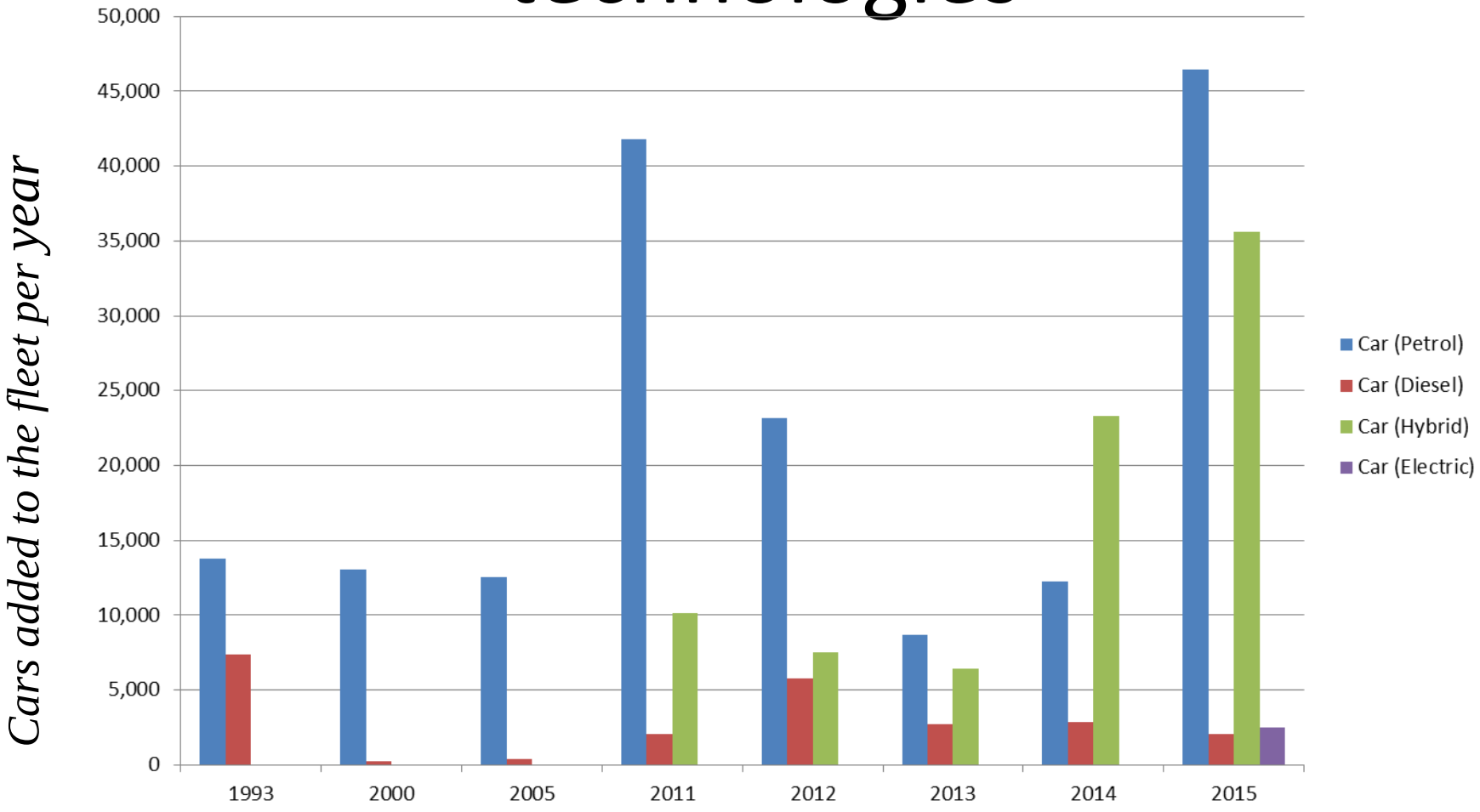


Policy Options

VEHICLE FUEL EFFICIENCY STANDARDS	• Introduce and regularly strengthen mandatory standards • Establish and harmonize testing procedures for fuel efficiency measurement.
FISCAL MEASURES	• Fuel taxes and vehicle taxes to encourage the purchase of more fuel-efficient vehicles. • Infrastructure support and incentive schemes for very fuel-efficient vehicles.
MARKET-BASED APPROACHES	• Voluntary programs such as U.S. SmartWay and other green freight programs
INFORMATION MEASURES	• Vehicle fuel economy labels • Improving vehicle operational efficiency through eco-driving and other measures.

source : ICCT

Sri Lanka: Demand response for technologies



Chile

- Adopted a mandatory fuel economy labelling scheme from February 2013 becoming the first Latin American country to adopt such a scheme

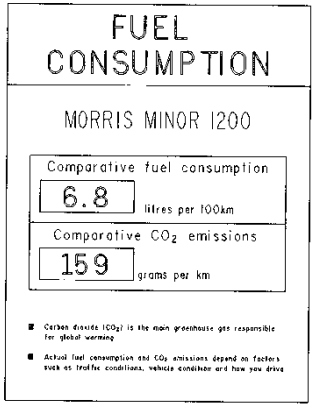
- In September 2014 adopted a taxation scheme that puts a tax on less efficient and polluting vehicles, based on CO2 and NOx ratings
- In 2015 was adopting a scheme to provide subsidies for cleaner and more efficient taxis based on the fuel economy labeling scheme, with the aim to replace the 60,000 taxi fleet over the next 8 years

Mauritius

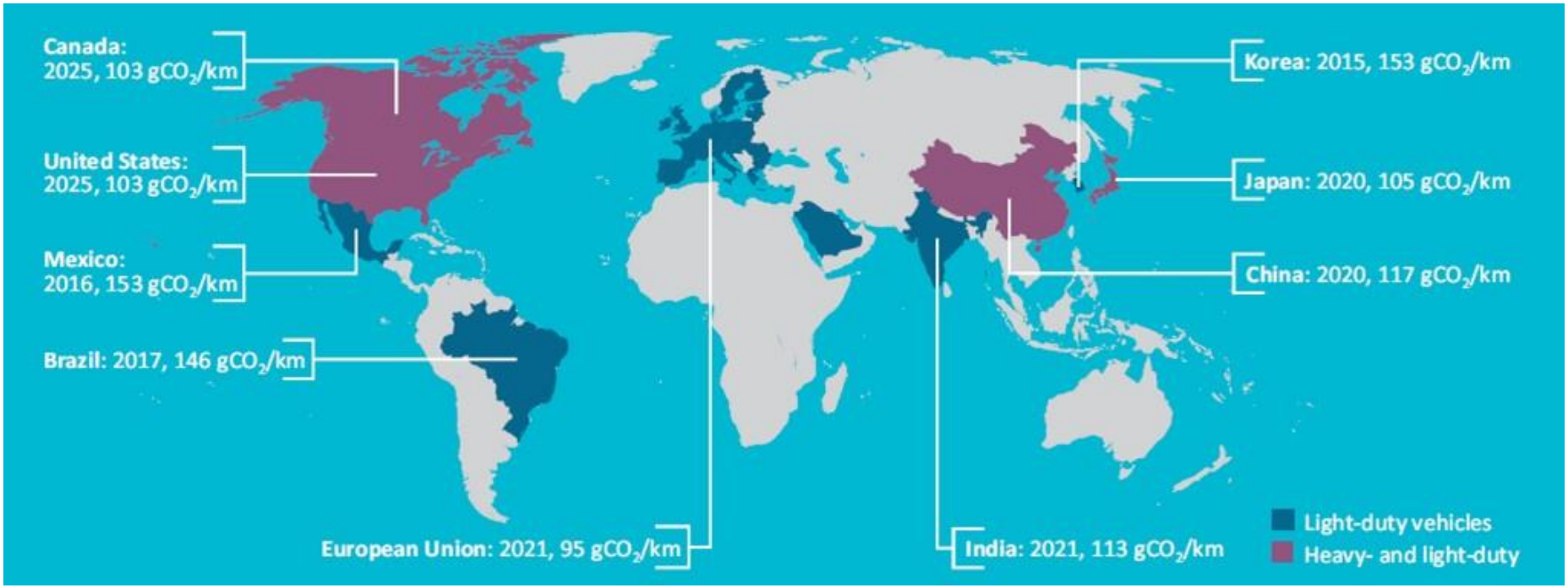
- Vehicle CO2 tax introduced 2011
- Adopted a feebate scheme in 2011 that puts a fee/rebate on cars above/below 158 CO2g/km
- 2013 amended to 150 CO2g/km
- Scheme resulted to an improvement of fuel economy from 7l/100km in 2005 to 5.8l/100km in 2014
- 50 % excise duty waived on electric and hybrid cars and Registration fee also reduced by 50%
- From 2009 to 2014, the number of hybrid and electric cars has increased from 43 to 1824 and from 0 to 8 respectively
- 2016 feebate abolished and moved to taxation system with additional incentives to electric vehicles

South Africa

- CO2 Taxation implemented March 2011
- The rate of emissions tax on passenger vehicles is R75 per gram CO2 emissions in excess of 120 g/km based on test reports
- The rate of emissions tax on double cabs is R100 per gram CO2 emissions in excess of 175 g/km based on test reports
- Tax on passenger vehicles amended this year to R100
- Vehicle labeling mandatory

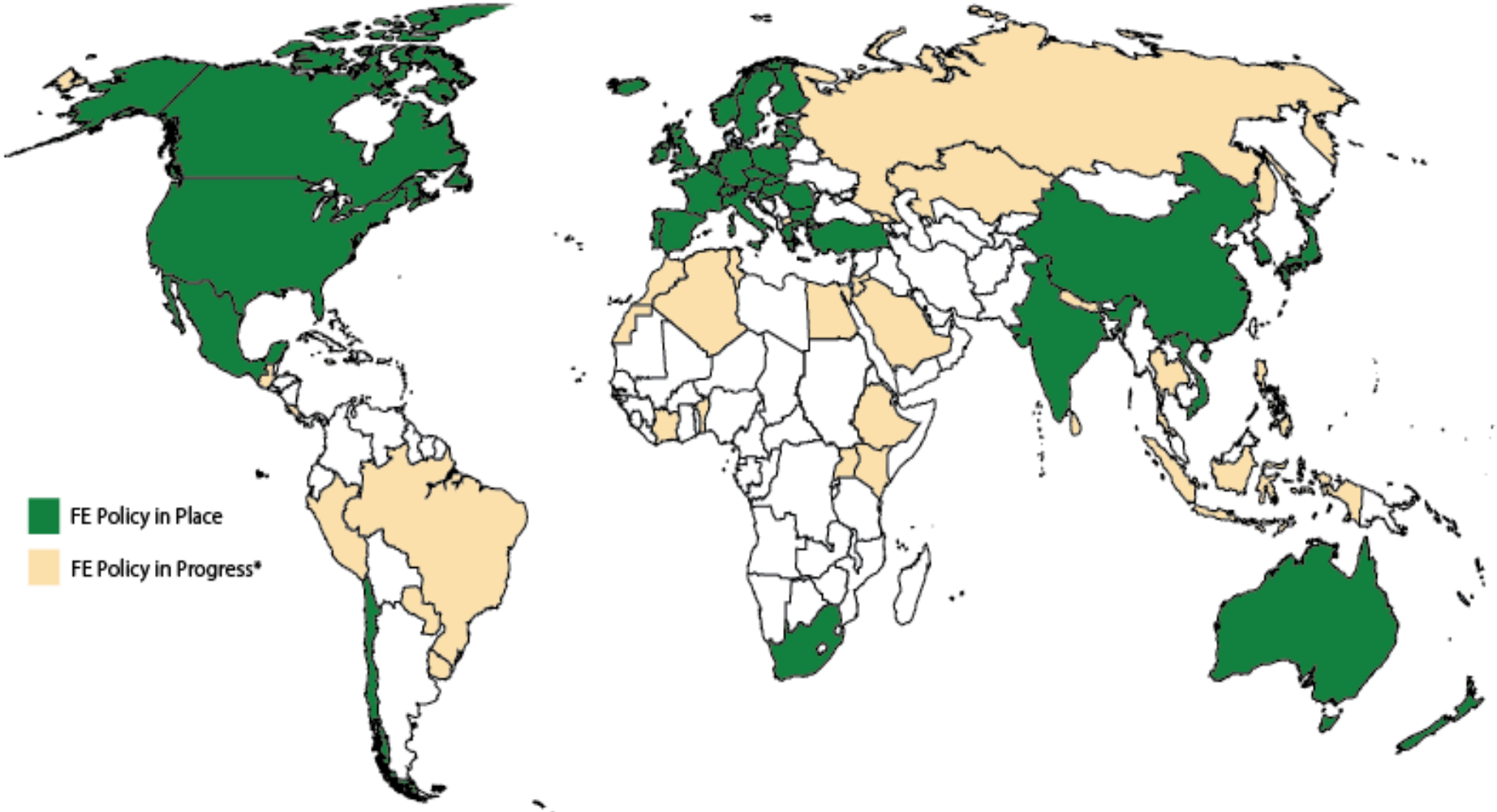


Countries are at various points in developing fuel economy policies



Note: light vehicle fuel economy values normalized or NEDC test cycle
Source: IEA ETP 2015 and ICCT

Global Progress on Fuel Economy Policy (2016)



* GFEI is involved in supporting all these countries except in Brasil
January 2016 - For more information visit www.globalfueleconomy.org

Global Fuel Economy Initiative (GFEI)

Next steps

Introduction

Instruments

Case Studies

Resources

Global View

Instruments

- ***Regulatory***
  - ***Standards***
- ***Economic***
  - ***Feebate***
  - ***Registration Tax***
- ***Information***
  - ***Labeling***

Regulatory policies
+ National Standards
• Import Restrictions
• Technology Mandates
Economic instruments
Traffic control measures
Information
Technology

Case Studies

- ***Europe***
- ***North America***
- ***Africa***
- ***Latin America***
- ***Asia***
- ***Middle East***

Case Studies
+ Europe
+ North America
+ Africa
• South Africa
• Kenya
• Mauritius
+ Latin America
+ Middle East West Asia
+ Asia Pacific

Resources

- ***Baseline***
- ***Finance***
- ***FE Resources***

Global View

http://www.unep.org/transport/gfei/autotool/

Transport Unit
Economy Division
United Nations Environment
Nairobi, Kenya

E-mail : Jane.Akumu@unep.org
www.unep.org/transport/gfei