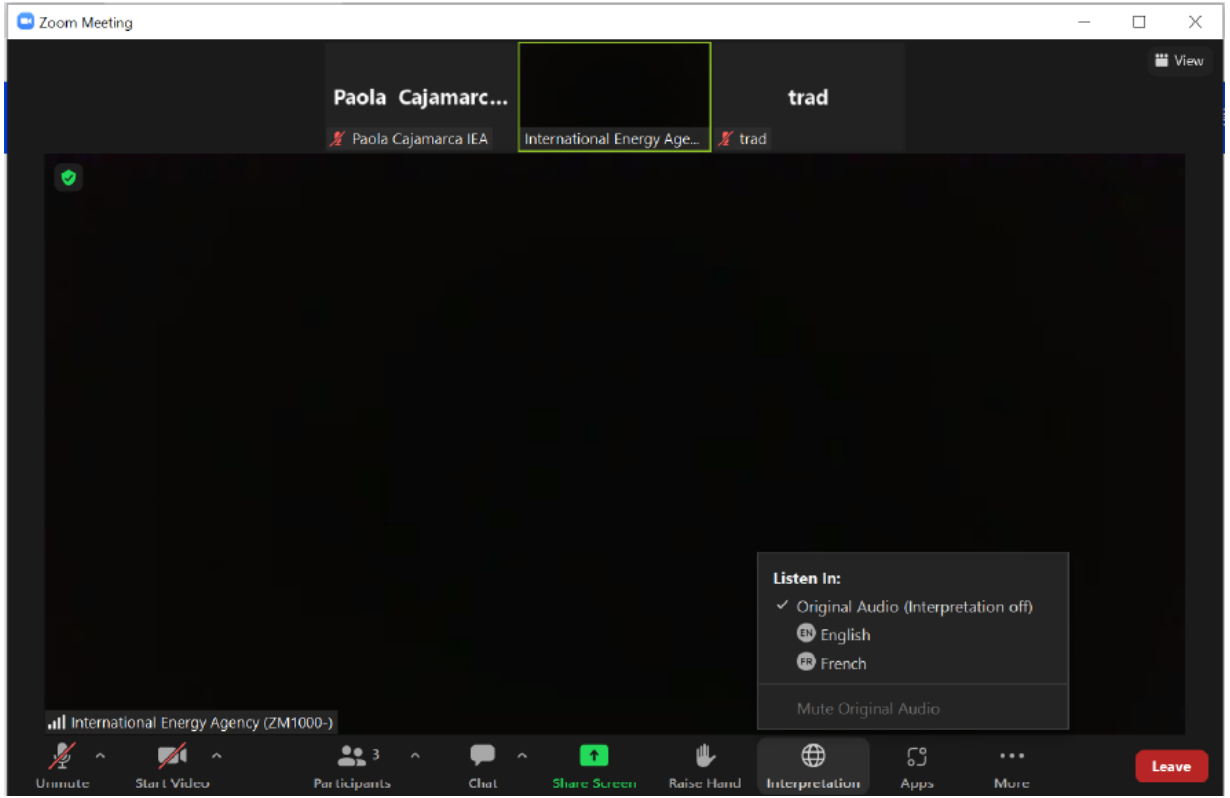
IEA's Regional Training on Energy Efficiency Policy Packages for Sub Saharan Africa

Day 5: Transport

International Energy Agency

Housekeeping rules

- This event is both in French and English and translation is available.
- Please keep your microphone **on mute**, and leave your camera on, if possible.
- Do not hesitate to ask questions through the chat and we will try to address them if time allows.
- In case of technical issues please contact us through the chat or send us an email at: energy.efficiency@iea.org
- We will be engaging through menti polls and encourage everyone to participate.



Regional Training on Energy Efficiency Policy Packages for Sub Saharan Africa

21-25 November 2022

Day 5 – Transport

Melanie Slade

Senior Programme Manager
Energy Efficiency Division IEA

Day 3: Transport. Speakers

Dr Alison Pridmore
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International Energy Agency

Rob de Jong
Head of Sustainable Mobility
United Nations Environment Programme

Doris Edem Agbevivi
Drive Electric Programme
Ghana

Programme for today

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

Training Day 5:

Opening presentation

International best-practice and regional insights

Country focus: Ghana

PANEL DISCUSSION



Summary of week

MENTI # 1

In one or two words describe what is the first thing that comes to your mind when you think about transport energy efficiency?

MENTI # 2

What would be the key benefit in your country of improving transport energy efficiency?

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Alison Pridmore

Energy Policy Analyst
International Energy Agency

International Energy Agency

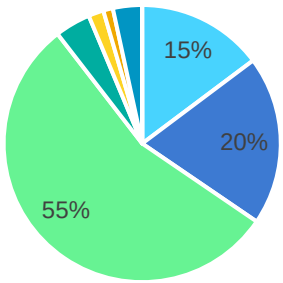
Introduction to Vehicle Energy Efficiency Policy Package in Sub Saharan Africa

Dr Alison Pridmore

25 November 2022.

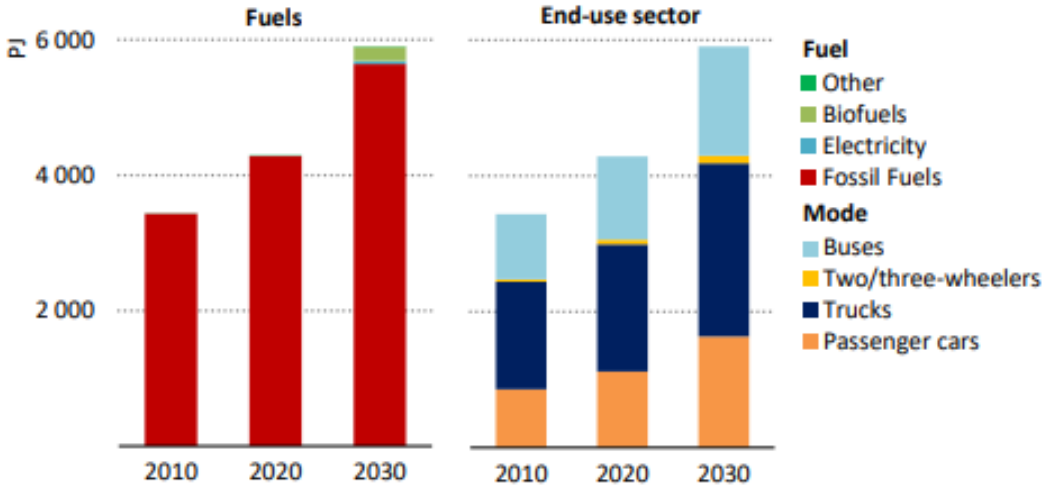
Importance of transport energy use

Transport's share of final energy consumption, Africa 2020



- Industry
- Transport
- Residential
- Commercial and public services
- Agriculture / forestry
- Non-specified

Road transport energy demand by fuel and mode in the Sustainable Africa Scenario

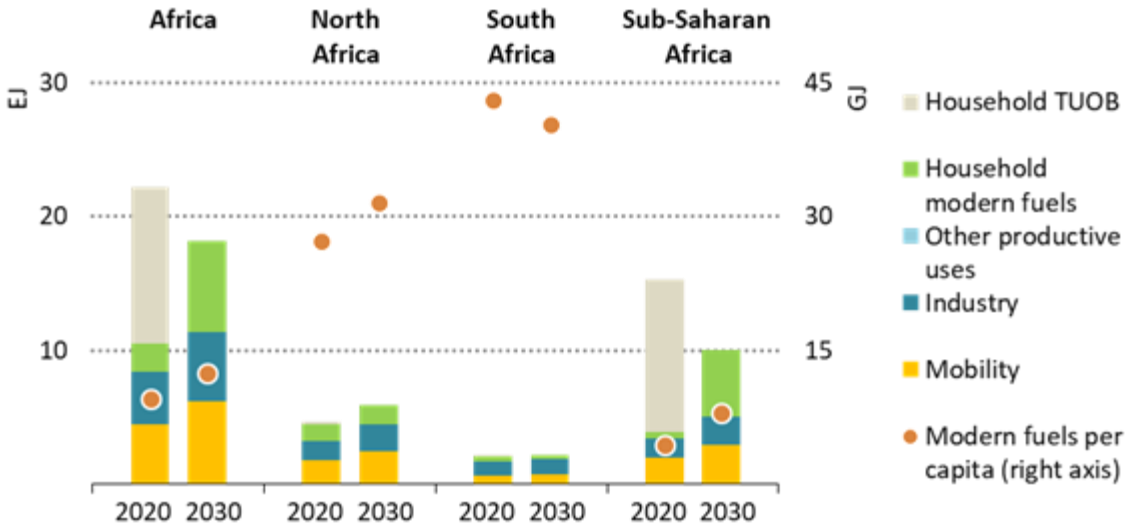


Source IEA, 2022 Africa Energy Outlook

Rapid expansion of the fleet – especially cars and trucks – drives up transport energy demand by 40%

Energy use by region

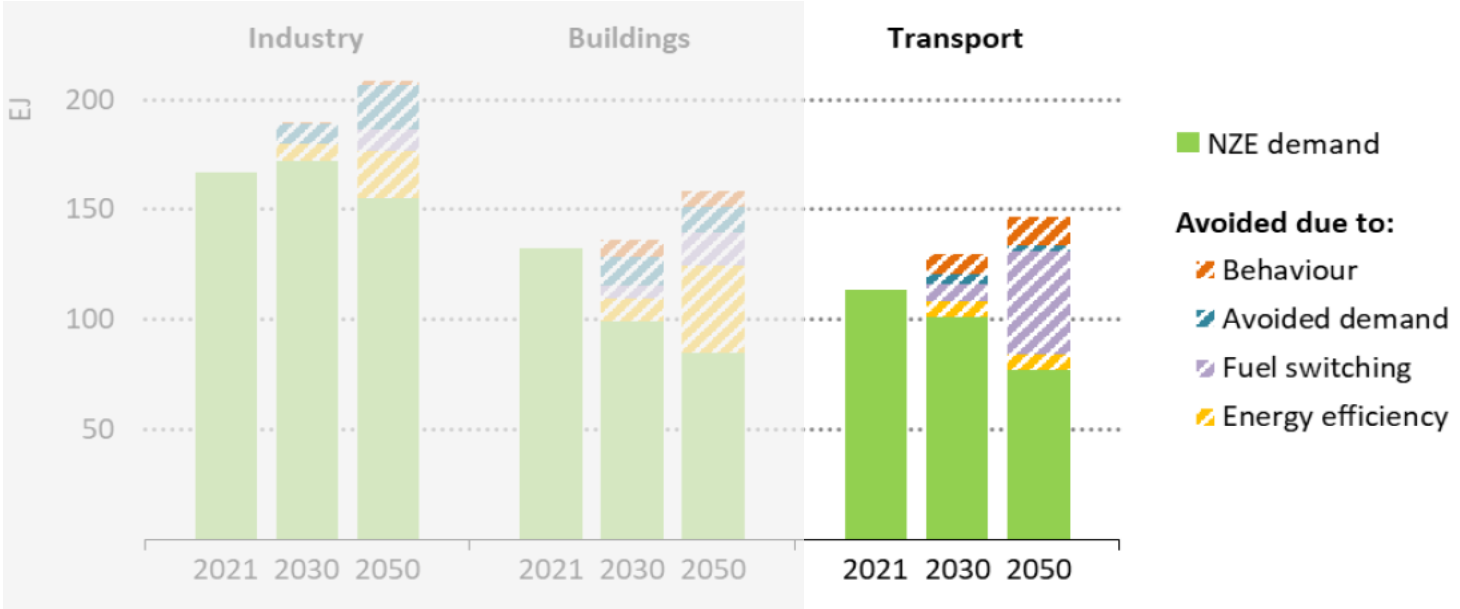
Total Final Energy Consumption by Sector and Modern Fuel Use per Capita by Region in the Sustainable Africa Scenario



Source IEA, 2022 Africa Energy Outlook

Mobility energy use is increasing across regions

Total final consumption in the STEPS and demand avoided by measure in the NZE Scenario



Globally energy efficiency and fuel switching provide over half of energy savings in the transport sector by 2030

What benefits do a mixture of policies bring?

UNEP case study analysis indicates in Kenya the average efficiency of vehicles is **up to 25% better** compared to other relevant countries

Globally, road freight efficiency can be **doubled** with a combined policy approach. Fuel economy standards plus logistical (information) approaches

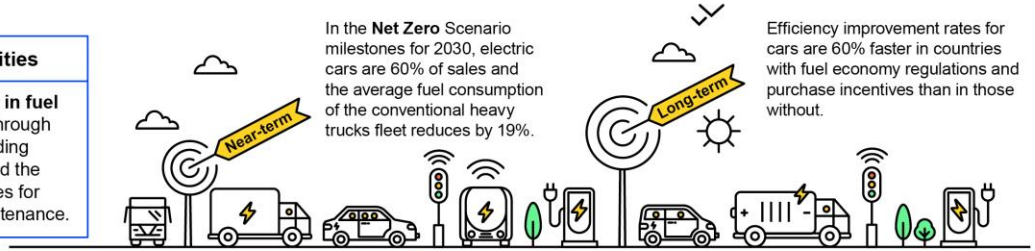
Countries with regulations and/or efficiency-based purchase incentives in place improved **on average 60% faster** than countries without such policies

In Norway **nearly 80%** of vehicle sales are electric reflecting the use of broad range of incentives alongside regulatory and information approaches.

Vehicle Energy Efficiency Policy Package

Immediate opportunities

Significant reductions in fuel demand are available through immediate actions including lowering speed limits and the adoption of best practices for driving and vehicle maintenance.



In the **Net Zero** Scenario milestones for 2030, electric cars are 60% of sales and the average fuel consumption of the conventional heavy trucks fleet reduces by 19%.

Efficiency improvement rates for cars are 60% faster in countries with fuel economy regulations and purchase incentives than in those without.

REGULATION

- **Vehicle fuel economy standards** result in greatly reduced fuel use provided they are kept up to date, well monitored and properly enforced.
- **Regulatory and market signals**, such as through stringent standards and target setting, help bring electric vehicles to the market, by providing an impetus to manufacturers to develop these technologies.
- **Regulation** can also help ensure the required infrastructure, such as standardised charging, is in place.

INFORMATION

- **Information campaigns** on carsharing practices and more fuel-efficient driving help people take informed action relating to energy and cost savings. Campaigns are more effective when based on behavioural insights and targeted strategies.
- **Labels inform consumers**, identifying the most efficient vehicles allowing people to choose vehicles that cost less to run.

INCENTIVES

- **Incentives** can make vehicle costs cheaper at point of purchase, for example through grants or lower registration fees. They can also reduce on-going costs, through for example free parking and exemptions from congestion tolls.
- **Government grants** for strategic charging infrastructure, for example charging stations in homes and workplaces or fast charging along expressways, encourage the adoption of electric vehicles reflecting that purchase decisions are influenced by the availability of infrastructure.
- **Incentives** facilitate the early adoption of electric vehicles and can be phased out as uptake grows.
- **Vehicle taxation and duties**, can be structured to incentivise the purchase of more efficient vehicles.

Regulation

- **Vehicles** 
  - Fuel economy standards. Regulate the fuel economy of new vehicles and help facilitate the development of advanced technologies. Most appropriate in countries with large markets and vehicle manufacturing.
  - Import restrictions. Restricts imports of used and/or new vehicles. Can be an effective way of improving the average fuel economy. Examples include:
    - Ban on used vehicles
    - Age limit based restrictions
  - Electric vehicle target setting including zero emission vehicle mandates and targets for EV adoption.

- **Infrastructure** 
  - Electric vehicle charging,
  - Vehicle testing

Used vehicle standards for imports in selected African countries

	Vehicle type	Diesel sulphur levels (ppm)	Age limit restrictions (years)	Emissions standards
ECOWAS	All vehicles	50 ppm by 2025	10 (5 recommended for LDVs)	Euro 4
Algeria	LDVs	500-2 000	3	
Chad	LDVs	50-500	3	
Gabon	LDVs	500-2 000	3	
Mauritius	LDVs	15-50	3	
Morocco	LDVs	< 15	5	Euro 4
Libya	LDVs	500-2 000	5	
Tunisia	LDVs	500-2 000	5	
Angola	LDVs	500-2 000	6	
Kenya	LDVs	15-50	8	
Uganda	LDVs	15-50	15	
Rwanda	LDVs	15-50		Euro 4
Botswana	LDVs	50-500		Euro 3
Ethiopia	LDVs	50-500		Euro 2
Egypt, Seychelles, South Africa, Sudan	All vehicles	n.a.	Ban on used vehicle imports	n.a.

IEA, 2022 based on UNEP, 2020

Potential fuel economy improvement of imported used cars and related oil savings by type of measure in sub-Saharan Africa by 2030

Source IEA, 2022 Africa Energy Outlook

In 2020, the 15 member states of the Economic Commission of West African States (ECOWAS) adopted the first regionally harmonised vehicle regulation for both new and used vehicles in Africa. This Directive requires that vehicles that are imported, will need to comply to a minimum of EURO 4/IV equivalent vehicle emissions standards from January 2021. An age limit of 5 years on light duty vehicles and 10 years on heavy duty vehicles is also required and the countries have a period of 10 years to implement the age restrictions

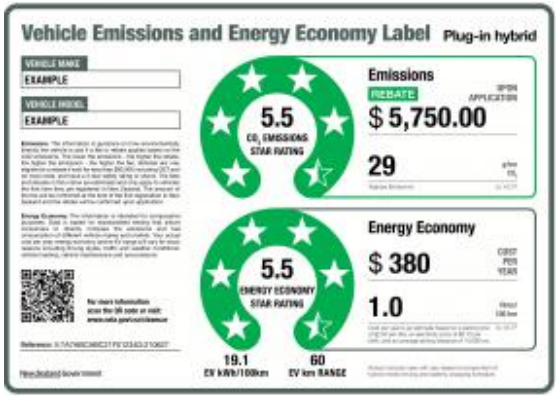
- **Data collection**
  - Baseline setting
  - Monitoring and verification

- **Awareness**
  - Labelling. Energy efficiency labels help inform consumers to identify the most efficient vehicles allowing people to choose vehicles which cost less to run.
  - Fuel efficient driving and car sharing can be encouraged through information campaigns.

- **Role of digitilisation**
  - Access to electric mobility can be enhanced through digitilisation including apps
  - Digitilisation can play a key role in information sharing to improve fleet operations.

- **Awareness**

  New Zealand has vehicle labelling for new and used cars, which uses a star based system. Reflecting the countries adoption of a feebate scheme, information on the rebates is now included.



- **Role of digitilisation**

  Information technology has been key to helping Brazil to better manage trucking logistics and its interaction with ports and ships. This includes the centralisation and digitalisation of information provided by truckers before they start a trip.

Vehicles

- **Impact on upfront vehicle costs**:
  - Age based taxes
  - Purchase subsidies, help reduce the upfront price
  - Feebate schemes. A fee (or tax) on inefficient technology combined with a rebate (or subsidy) on a more efficient vehicle.
  - Vehicle taxation with lower rates for more efficient vehicles.

- **Reduce on-going costs**
  - Free parking for electric vehicles
  - Exemption from congestion charging / tolls

Infrastructure

- Grants and subsidies for EV charging infrastructure

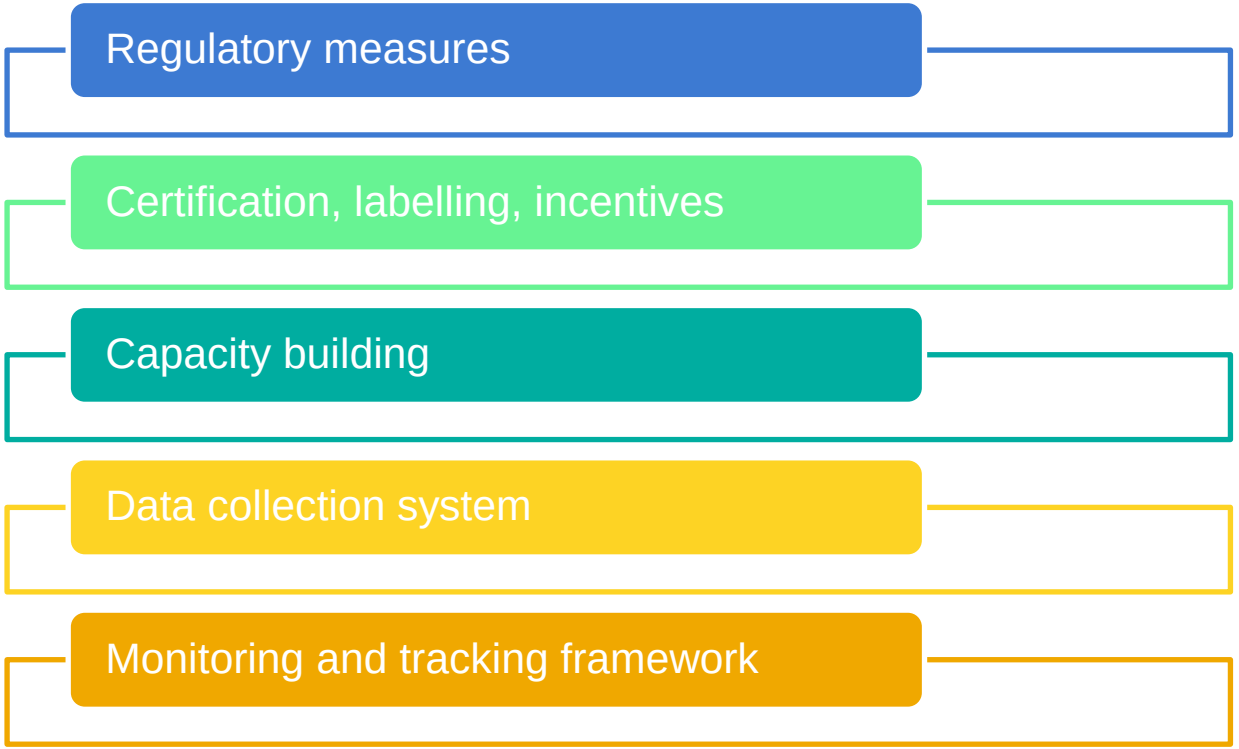
Norway

- **Reduce upfront costs**
  - No purchase/import tax on EVs (1990-)
  - Exemption from 25% VAT on purchase (2001-)

- **Reduce in use costs**
  - No annual road tax (1996-2021). Reduced tax from 2021. Full tax from 2022.
  - No charges on toll roads (1997- 2017). Maximum 50% of the total amount of toll roads (2018-)
  - No charges on ferries (2009- 2017). Maximum 50% of the total amount of ferry fares for electric vehicles (2018-)
  - Free municipal parking (1999- 2017)

Incentives have been reduced and phased out as uptake has grown

Recommendations for policy package development



Energy Efficiency in transport resources

Global EV Policy Explorer

Key policies and measures that support the deployment of electric and zero-emission vehicles

https://www.iea.org/data-and-statistics/data-tools/global-ev-policy-explorer

Last updated 18 Nov 2022

MENTI #3

What are the key policy measures that your country currently uses for transport energy efficiency? (up to three choices)

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Day 5 – Vehicle Efficiency

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Rob de Jong

United Nations Environment Programme

MENTI #4

What could help facilitate in taking transport energy efficiency policies forward in your country?

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Day 5 – Vehicle Efficiency

Doris Edem Agbevivi

Drive Electric Initiative, Ghana

MENTI #5

What do you think should be key future policies measures to take forward transport energy efficiency in your country?

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Panel Discussion

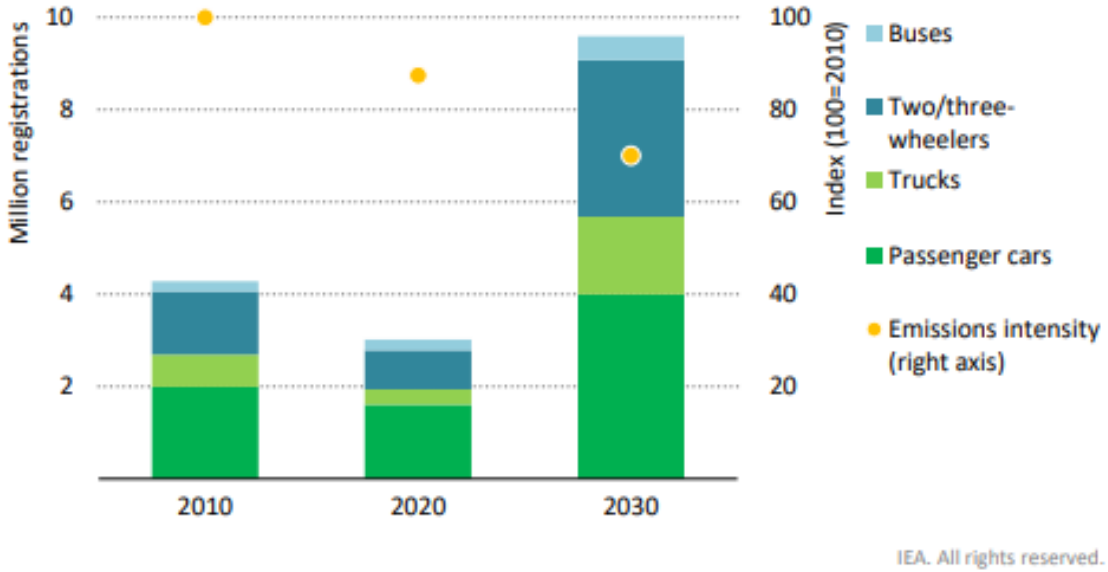
How can policy instruments be implemented to move towards a policy package approach?

What regional and international learnings are there in terms of timescales and approaches?

How do incentives and information help complement each other and regulation? How does this translate to more robust outcomes?

Africa savings potential due to fuel economy gains

New Road Vehicle Registrations and CO_2 Emissions Intensity by Type in the Sustainable Africa Scenario



Sales more than triple between 2020 and 2030 with vehicle emission intensity improving by one-fifth thanks to fuel economy gains across all vehicles

UN environment programme

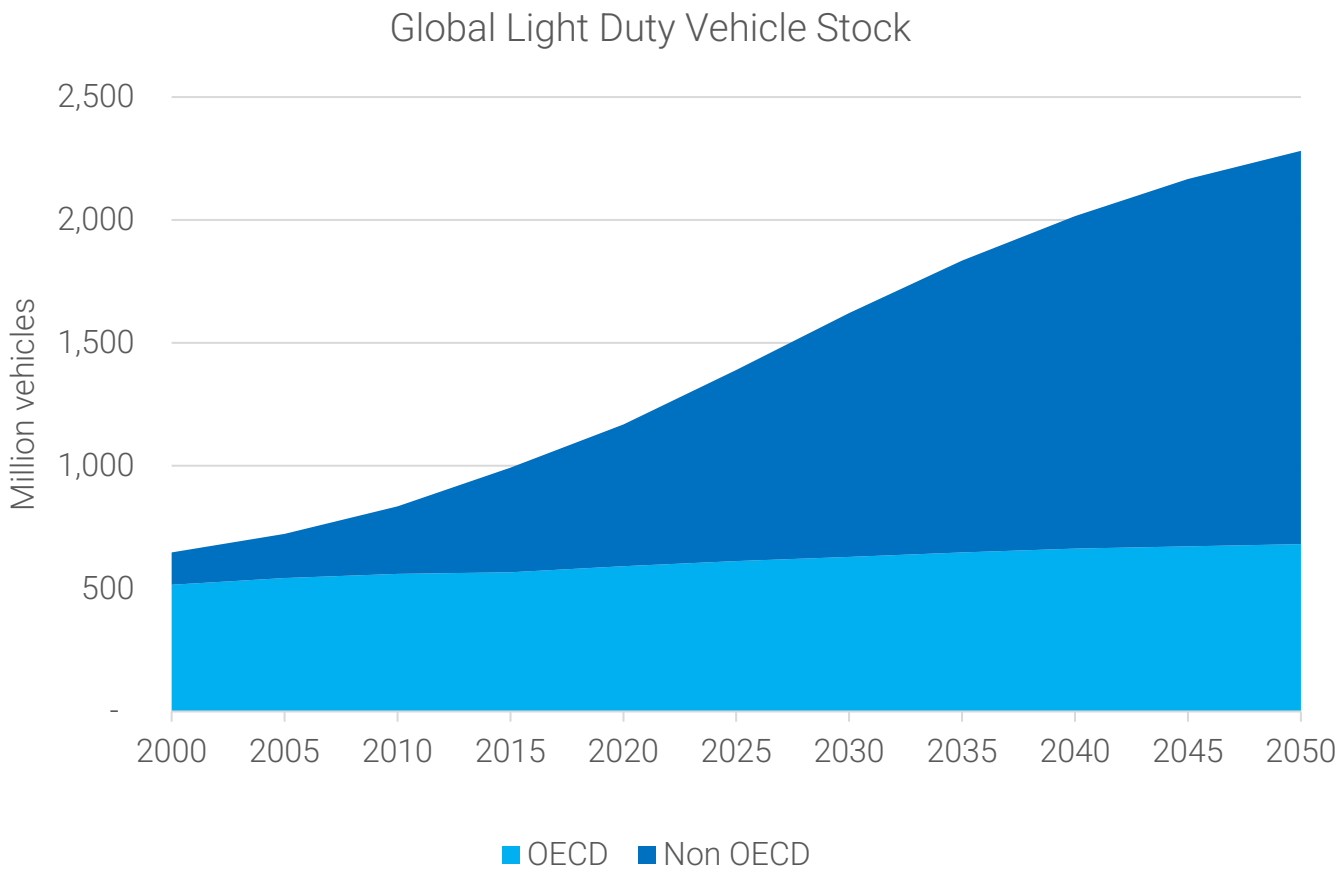
Promoting Better Fuel Efficiency in Sub Saharan Africa

- International Learnings -

Rob de Jong

Head, Sustainable Mobility Unit

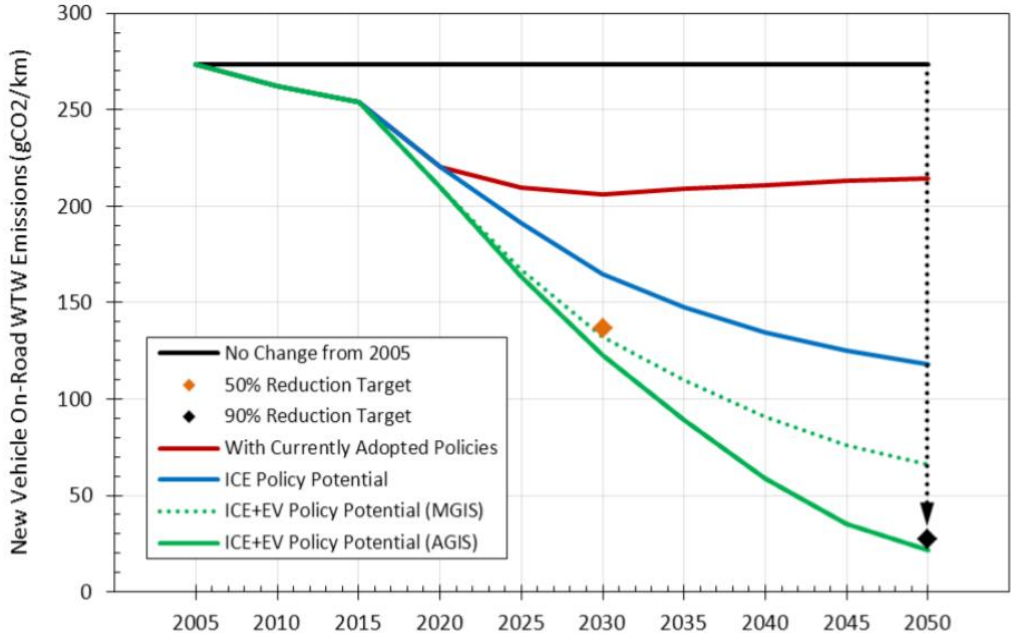
Estimated growth of the Global Fleet



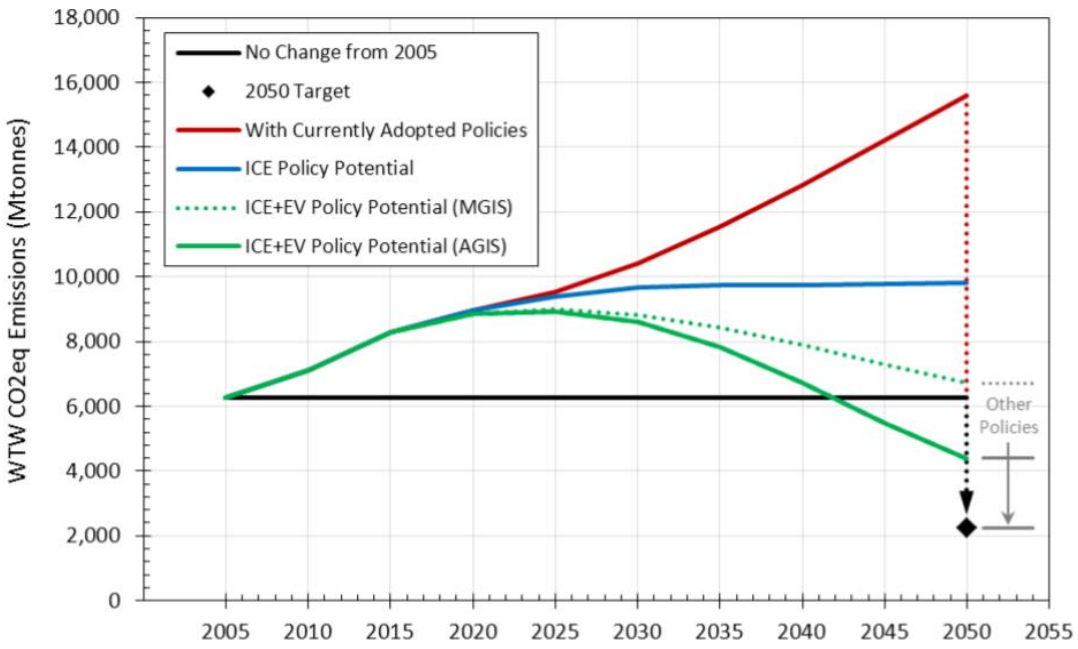
Data: IEA, 2019

Estimated Fleet Emissions Growth

On-Road WTW CO2 Emissions for new LDVs



Change in Global Fleetwide Emissions



GFEI Working Paper 20 "PROSPECTS FOR FUEL EFFICIENCY, ELECTRIFICATION AND FLEET DECARBONISATION "(2019)https://www.globalfueleconomy.org/media/708302/gfei-working-paper-20.pdf

- Compared to 2005, transport emissions are set to more than double with current policies
- To reach the 90% decarbonization target all options – avoid, shift, improve – and all countries need to be included

Two track approach

- Switch to zero emissions electric mobility in coming decade(s)
- While in mean time keep improving ICEs

- (Avoid and Shift interventions)

GFEI Partners and Donors

FIA FOUNDATION

icct THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

UN environment

International Transport Forum

UCDAVIS

iea International Energy Agency

GLOBAL FUEL ECONOMY INITIATIVE

CEDARE

CLEAN AIR ASIA

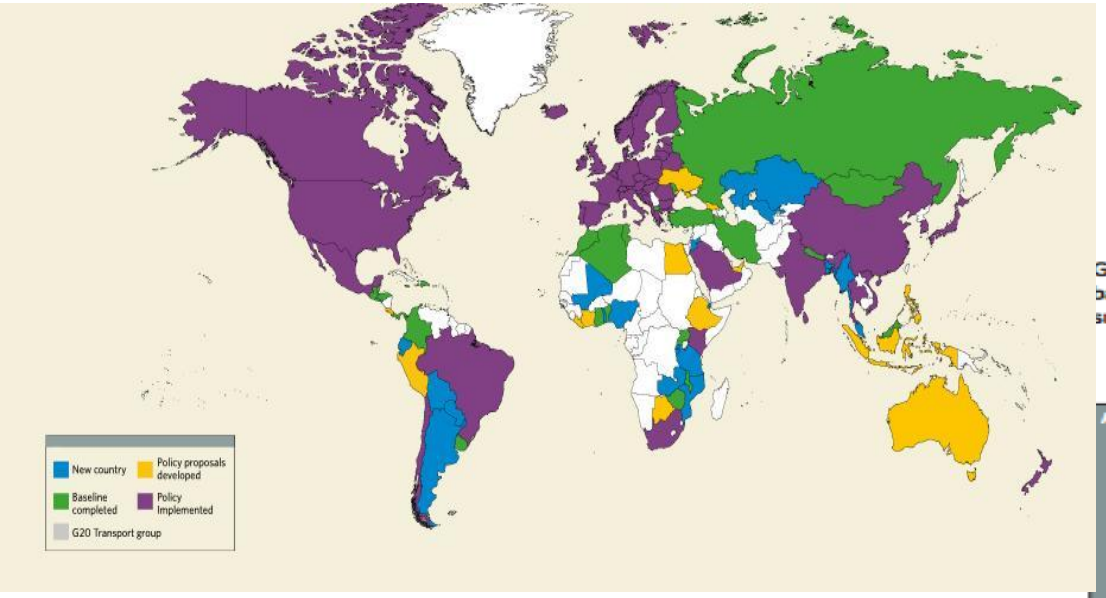
Centro Mario Molina Chile

Regional Environment Center

CEGESTI

gef

Global policy implementation progress



+70 Countries

GFEI works with countries to develop a baseline analysis of vehicle trends and support policy proposals.

AFRICA	Algeria		■			
	Benin		■			
	Botswana	■	■	■		
	Egypt		■	■		
	Ethiopia		■	■		
	Ghana	■	■	■		
	Ivory Coast		■	■		
	Kenya		■	■		■
	Liberia	■	■	■		
	Malawi	■	■			
	Mali	■				
	Mauritius		■	■		■
	Morocco		■			
	Mozambique	■				
	Nigeria	■				
	Rwanda	■				
	Senegal	■				
	South Africa	■	■	■		■
	Tanzania	■				
	Togo	■				
	Tunisia		■			
	Uganda		■			
	Zambia	■				
	Zimbabwe	■	■			
ASIA PACIFIC	Australia			■		
	Bangladesh	■				
	China			■		■
	Fiji	■				
	India			■		■
	Indonesia		■	■		
	Malaysia	■				
	Myanmar	■				
	Nepal	■	■			
	Philippines		■	■		
	Sri Lanka		■	■		■
	Thailand		■	■		■
	Vietnam		■	■		■
EASTERN EUROPE AND THE CAUCUSES	Georgia		■	■		
	Macedonia		■			
	Moldova	■	■			
	Montenegro		■	■		■
	Russia		■			
	Ukraine		■	■		
MIDDLE EAST AND WEST ASIA	Bahrain		■			
	Iran	■	■			
	Jordan	■				
	Kazakhstan	■	■			
	Lebanon		■			
	Mongolia	■	■			
	Saudi Arabia					■
	Turkey		■			
	UAE		■	■		■

KEY

■ New country ■ Policy proposals developed

■ Baseline completed ■ Policy Implemented

G20 Transport group Participants: Australia, Brazil, Canada, China, the European Union, Germany, India, Italy, Japan, Mexico, Russia, United Kingdom and the United States.

NORTH AMERICA	United States					■
	Canada					■
	Mexico					■
LATIN AMERICA AND CARIBBEAN	Argentina	■				
	Belize	■	■			
	Brazil	■				■
	Chile		■	■		■
	Colombia	■	■			
	Costa Rica		■	■		
	Dominican Republic	■	■			
	El Salvador	■	■			
	Guatemala	■	■			
	Honduras	■	■			
	Jamaica		■			
	Panama	■	■			
	Paraguay	■				
	Peru		■	■		
	Uruguay		■			

GFEI country projects process

	GFEI progress	*Project development*	*Project signed*	*Project start meeting*	*Baseline developed*	*National workshop/ s*	*Policy assessment (e.g. FEPiT)*	*Policy developed*	*Policy submitted for decision*	*Policy adopted*
Phase I – Pilot Countries (+ Tool development)										
1	Chile									

Two major products:

- Baseline
- Adopted policies

Country Projects - progress

	GFEI progress	Project development	Project signed	Project start meeting	Baseline developed	National workshop/ s	Policy assessment (e.g. FEPiT)	Policy developed	Policy submitted for decision	Policy adopted
Phase I – Pilot Countries (+ Tool development)										
1	Chile	→	→	→	→	→	→	→	→	→
2	Ethiopia	→	→	→	→	→	→	→	→	
3	Indonesia	→	→	→	→	→	→	→	→	
4	Kenya	→	→	→	→	→	→	→	→	→
Phase II - Countries – Regional Leaders										
5	Mauritius	→	→	→	→	→	→	→	→	→
6	Vietnam	→	→	→	→	→	→	→	→	→
7	Thailand	→	→	→	→	→	→	→	→	→
8	Georgia	→	→	→	→	→	→	→	→	
9	Ivory Coast	→	→	→	→	→	→	→	→	
10	Costa Rica	→	→	→	→	→	→	→	→	
11	Peru	→	→	→	→	→	→	→	→	
12	Algeria	→	→	→	→	→	→			
13	Montenegro	→	→	→	→	→	→	→	→	→
14	Russia	→	→	→	→					
15	Jamaica	→	→	→	→	→	→			
16	Macedonia	→	→	→	→	→	→			
17	Morocco	→	→	→	→					
18	Bahrain	→	→	→	→					

	GFEI progress	*Project development*	*Project signed*	*Project start meeting*	*Baseline developed*	*National workshop/ s*	*Policy assessment (e.g. FEPiT)*	*Policy developed*	*Policy submitted for decision*	*Policy adopted*
19	Tunisia									
20	Benin									
Phase III – Global Roll Out										
21	Uruguay									
22	Nepal									
23	Philippines									
24	Paraguay									
25	Sri Lanka									
26	Uganda									
27	Ukraine									
28	Malaysia									
29	Bangladesh									
30	Kazakhstan									
31	Mali									
32	Nigeria									
33	Togo									
34	Tanzania									
35	Rwanda									
36	Argentina									
37	Jordan									
38	Belize									
39	Brazil									

	GFEI progress	*Project development*	*Project signed*	*Project start meeting*	*Baseline developed*	*National workshop/ s*	*Policy assessment (e.g. FEPiT)*	*Policy developed*	*Policy submitted for decision*	*Policy adopted*
40	Colombia									
41	Panama									
42	Djibouti									
43	Dominican Republic									
44	Guatemala									
45	Moldova									
46	Iran									
47	Barbados									
48	St. Lucia									
49	Zambia									
50	Ghana									
51	Malawi									
52	Zimbabwe									
53	Honduras									
54	Nicaragua									
55	El Salvador									
56	Botswana									
57	Mozambique									

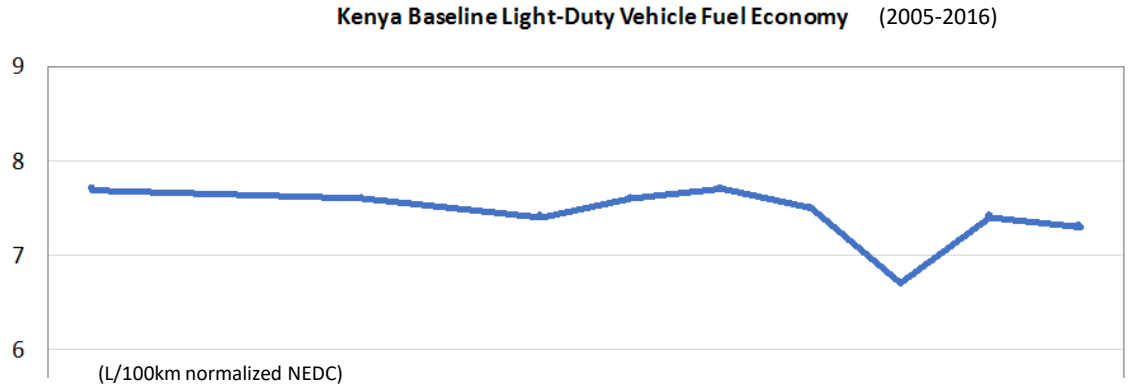
Fuel Economy Policy Options

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

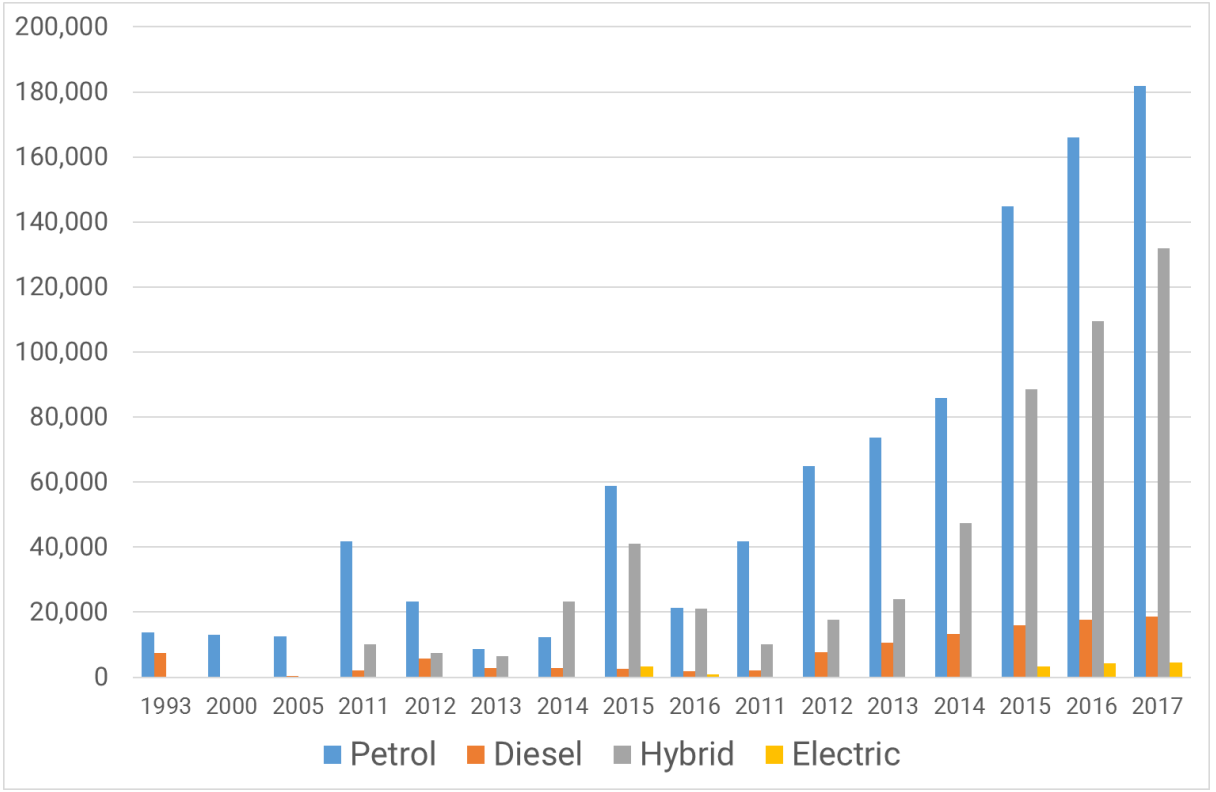
Kenya

- New fuel economy policy adopted by Government
- Adopted a progressive taxation system based on engine capacity
- Adopted used vehicles policies (age-based taxation & age limits)
- EVs 10% tax reduction



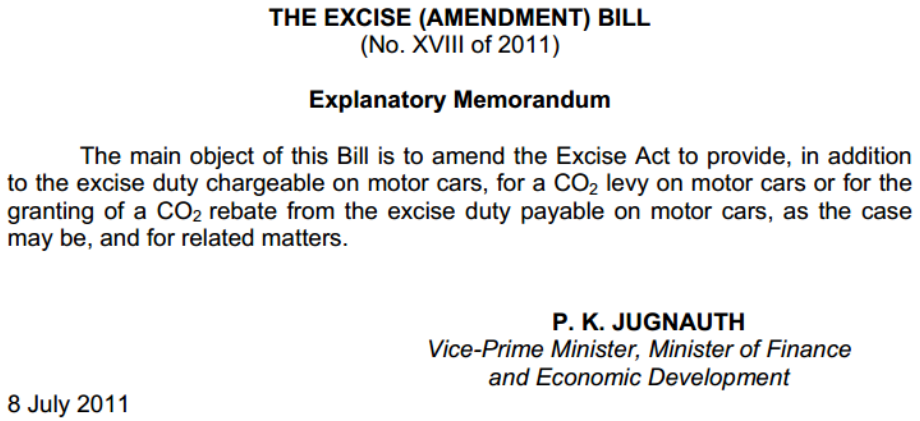
Sri Lanka

- Baseline development (2014)
- Review of existing policies
- Inclusion of fuel economy policies in national strategies and plans
- Revision of vehicle taxation scheme
- Massive uptake of HEV, now shifting to EVs



Mauritius

- Feebate scheme in 2011 = fee on cars above 158 CO2g/km starting from 55$ per g/km to 137$ per g/km for cars over 290 CO2 g/km and a rebate starting from 27$ per g/km for cars with CO2 ratings from 91 to 158 CO2g/km and 82$ for cars from 90 CO2g/km and below
- Adjusted twice, result from 7l/100km in 2005 to 5.8l/100km in 2014 and rapid increase of new hybrid vehicles
- Feebate to successful , replaced with taxation policy + labeling



THE EXCISE (AMENDMENT) BILL
(No. XVIII of 2011)

Explanatory Memorandum

The main object of this Bill is to amend the Excise Act to provide, in addition to the excise duty chargeable on motor cars, for a CO_2 levy on motor cars or for the granting of a CO_2 rebate from the excise duty payable on motor cars, as the case may be, and for related matters.

P. K. JUGNAUTH
Vice-Prime Minister, Minister of Finance and Economic Development

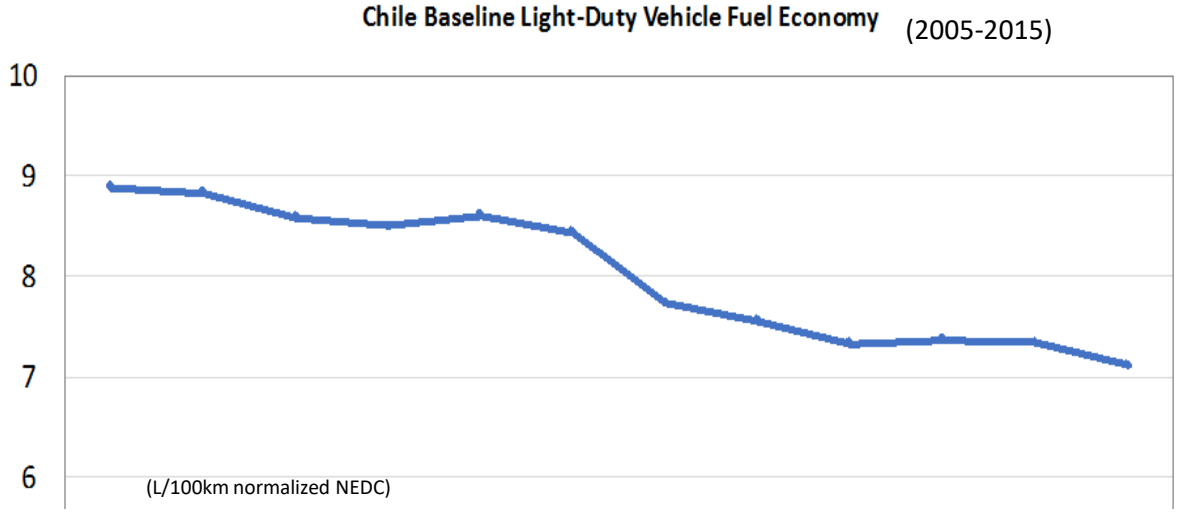
8 July 2011

Chile

Adopted a mandatory fuel economy labelling scheme (Feb 13, first Latin American country)

In September 2014 adopted a taxation scheme based on CO_2 and NOx ratings

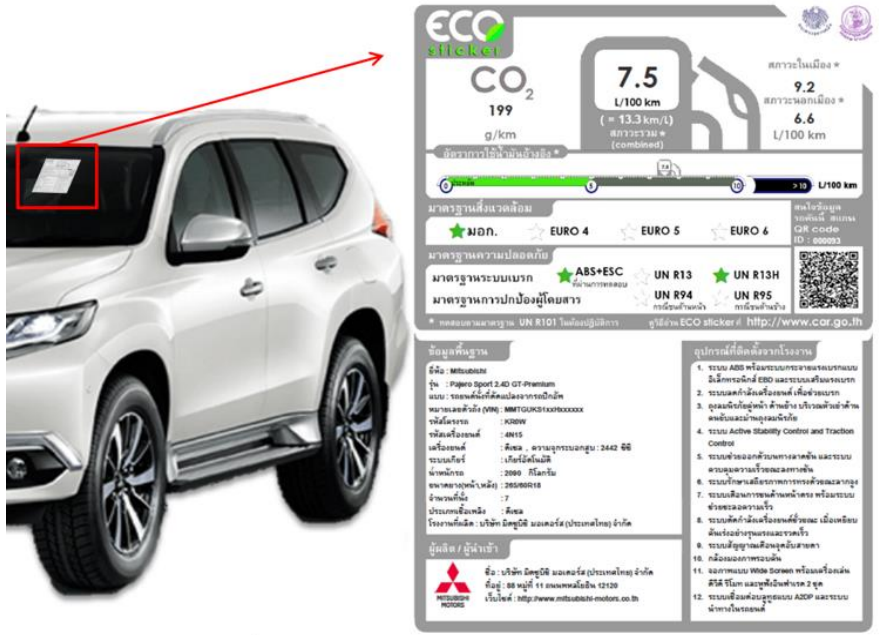
In 2015 is adopting a scheme to provide subsidies for cleaner and more efficient taxis based on the fuel economy labeling scheme, with the aim to replace the 60,000 taxi fleet over the next 8 years



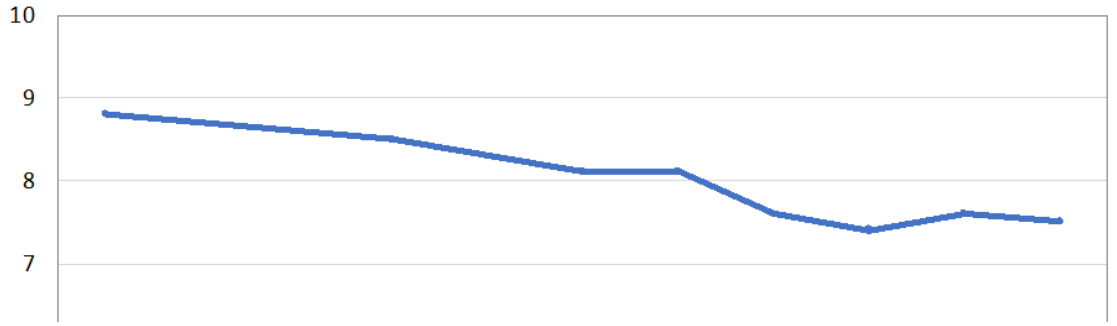
Thailand

- Baseline development (2012)
- Establishment of national multi-stakeholder process
- Review of current policies
- Fuel economy targets in national plans
- Introduction eco-sticker
- Revisions taxation structure (CO2)
- After years of deterioration FE is now improving

Eco Sticker



Thailand Baseline Light-Duty Vehicle Fuel Economy (2005-2015)



(L/100km normalized NEDC)

Philippines Case

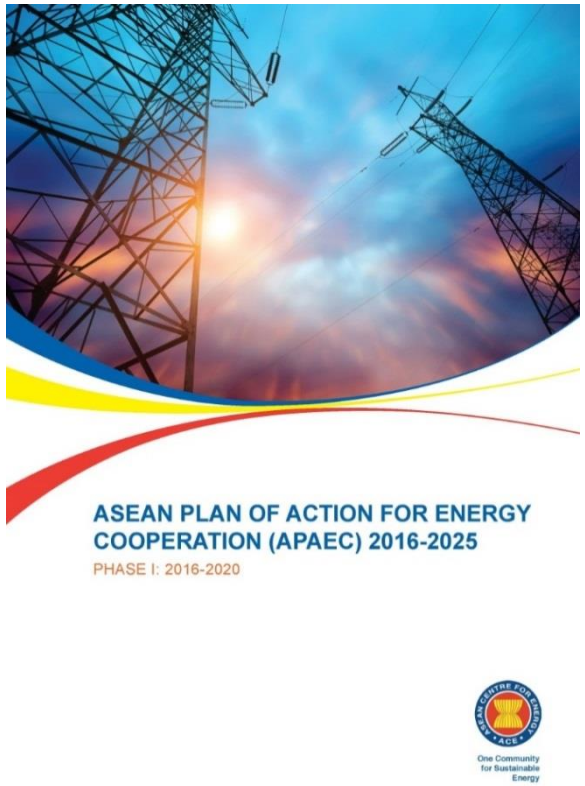
What they did

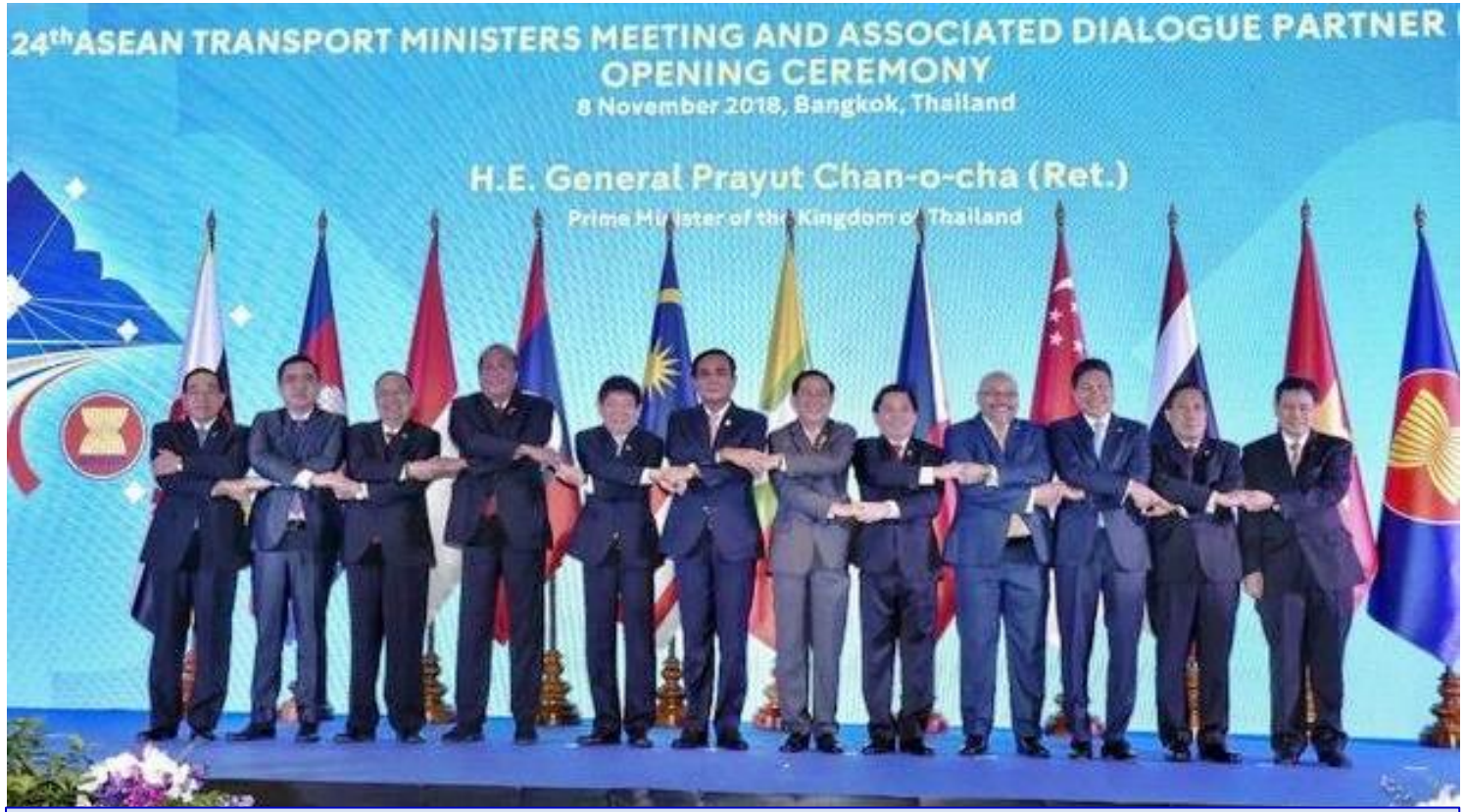
- Active participation in GFEI trainings and meetings
- Baseline (2014)
- Review of current policies
- Inclusion of fuel economy policies in national strategies and plans
- Revision of vehicle taxation scheme
- Development of fuel economy label

Impact

- Vehicle excise tax reform results in annual fuel economy improvement rate of about 3.2% between 2013 and 2020
- The fuel economy improvement results in significant reductions in fuel use and emissions within the LDV segment, especially over the longer 10-year time-frame until the year 2027
- Fuel use could be reduced by 7% in 2020 and by 17% in 2027 compared to the benchmark scenario
- By 2020 1.5 MtCO2 emissions of could be saved annually, growing to 6.2 MtCO2 by 2027

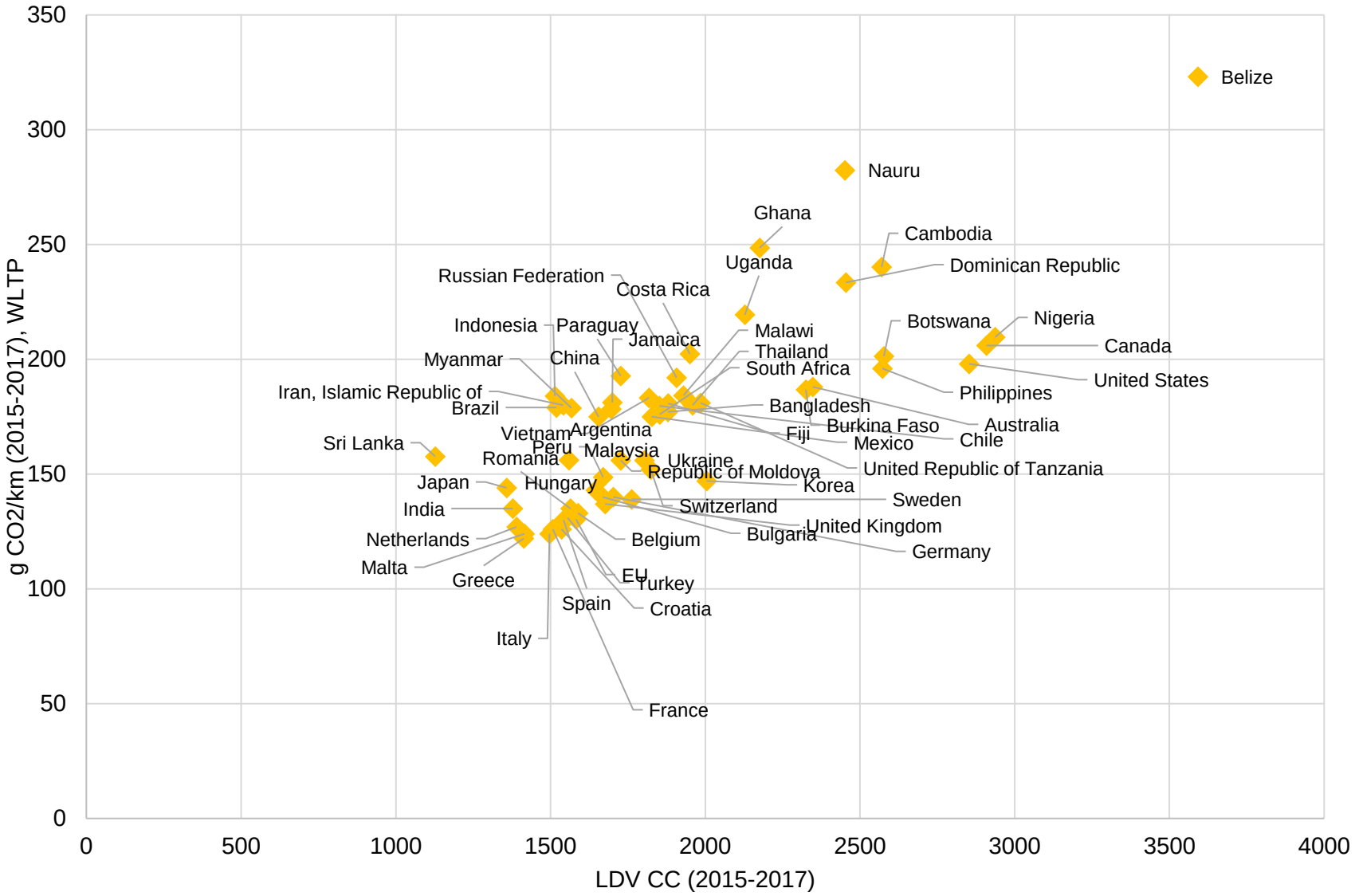
Adoption of the ASEAN Fuel Economy Roadmap





The 24th ASEAN Transport Ministers Meeting on 8-9 Nov 2018 has adopted the ASEAN Fuel Economy Roadmap for Transport Sector 2018-2025: With Focus on Light Duty Vehicles

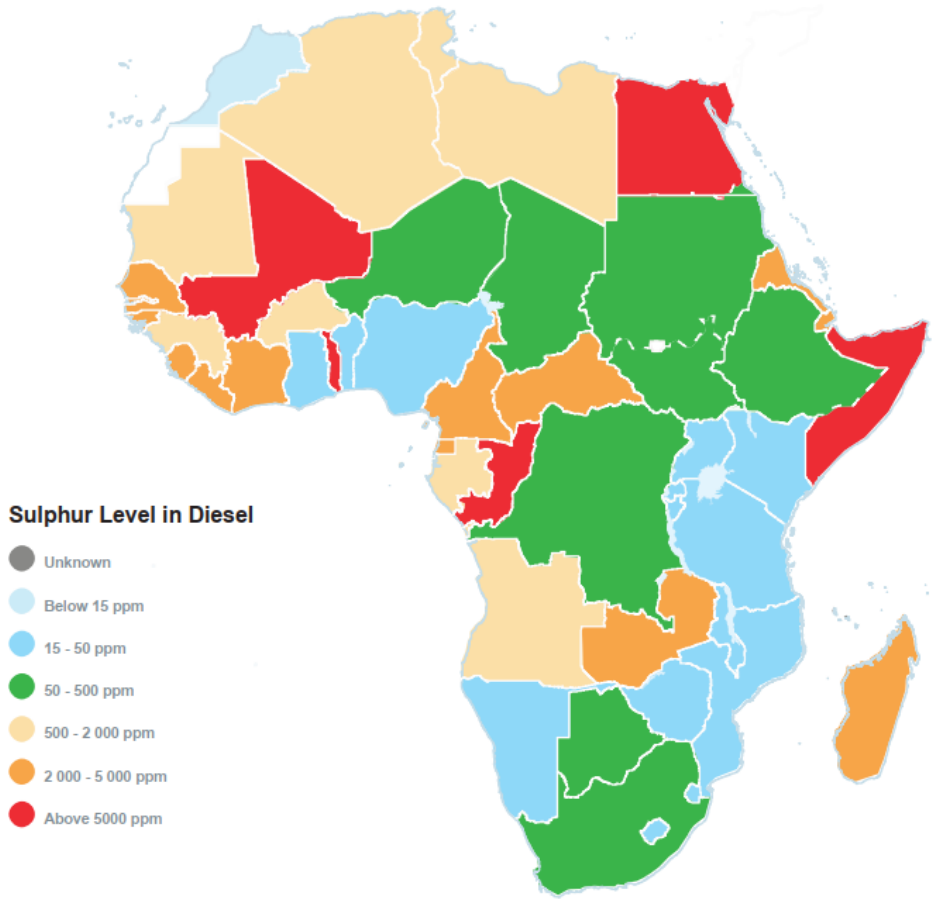
We can generate country profiles from the excel database



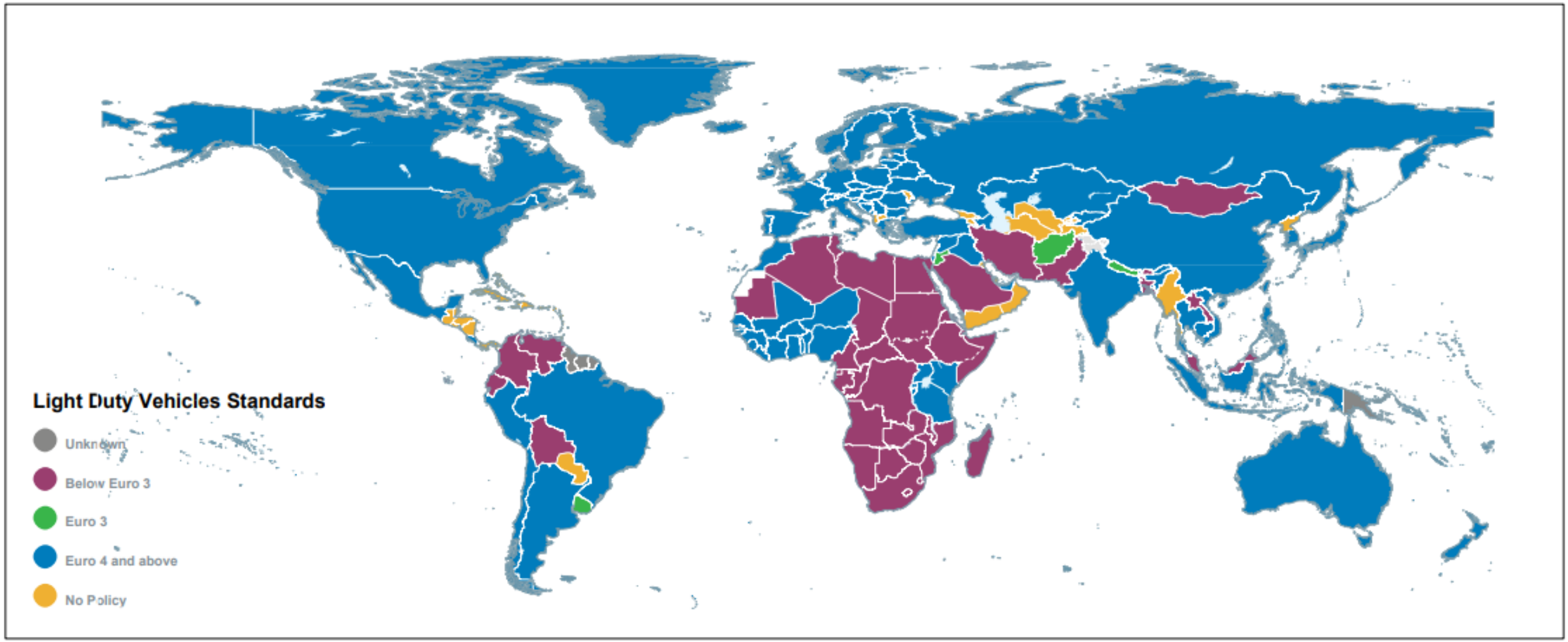
We can generate country comparison charts including IEA GFEI information

Challenges Africa

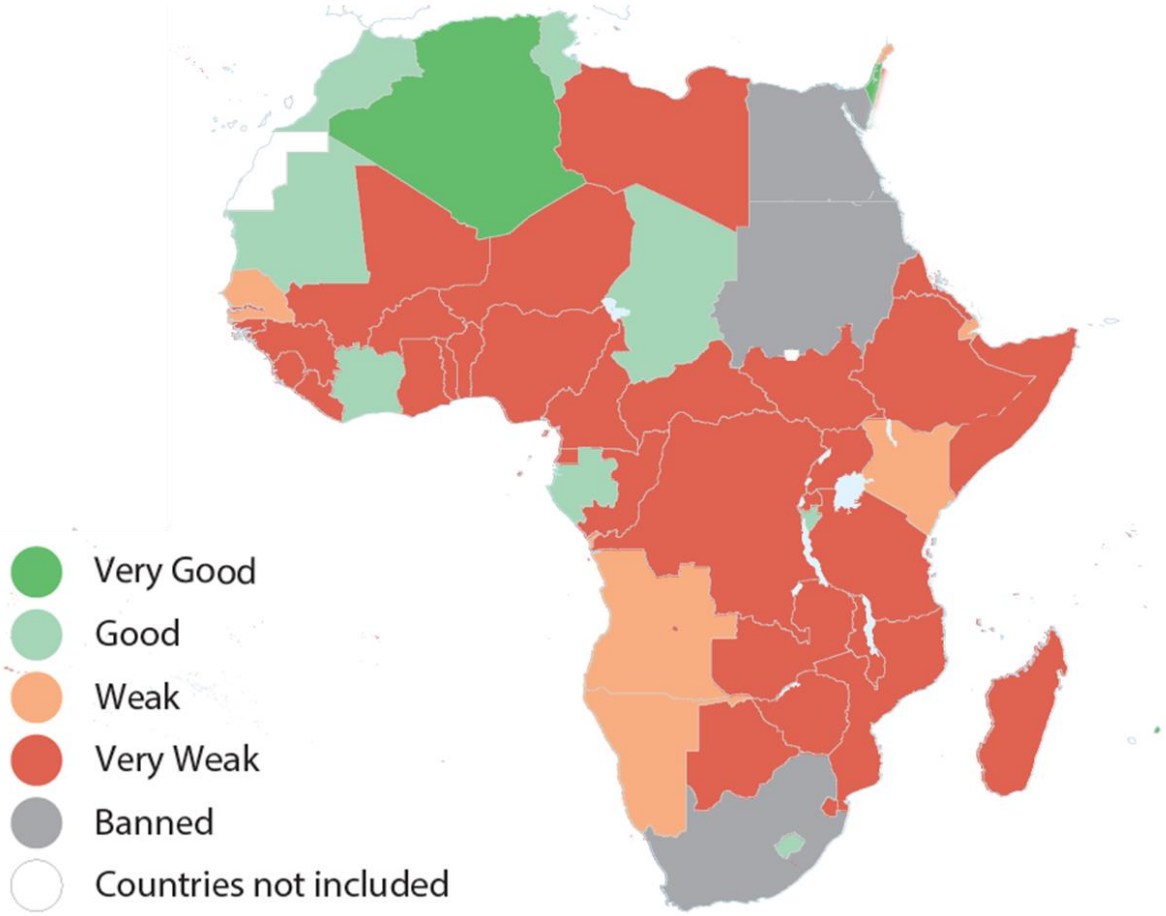
Africa - Diesel Sulphur Levels 2021



Global Light Duty Vehicle Emissions Standards (June 2022)



Africa weak LDV used vehicles regulatory frameworks



Regulatory Environment Ranking (UNEP)	Countries	Region
Very Good	Algeria, Mauritius	2
Good	Chad, Côte d'Ivoire, Gabon, Lesotho, Mauritania, Morocco, Rwanda, Tunisia	8
Weak	Angola, Djibouti, Kenya, Namibia, Senegal	5
Very Weak	Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Comoros, Congo, Democratic Republic of Congo, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Sao Tome &Principe, Sierra Leone, South Sudan, Somalia, Tanzania, Togo, Uganda, Zambia, Zimbabwe	35
Banned	Egypt, South Africa, Seychelles, Sudan	4

UN environment programme

Key Findings

- Improving FE through national processes takes time
- Developing baselines are key for countries
- Fuel economy policies work
- Implementing fuel economy can substantially reduce CO_2 emissions – supporting the Paris Climate Agreement
- With co-benefits; air quality; fossil fuel consumption reduction; national expenditures on fossil fuels imports
- Strong vehicle taxations systems are effective in encouraging more efficient vehicles
- Fuel-efficiency based taxation works well when this is linked to awareness (fuel economy labeling)
- FE to go hand in hand with electrification programs (+others like used vehicles)

Thank You

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