Promoting Cleaner, More Efficient Transport in Africa

Jane Akumu, UNEP

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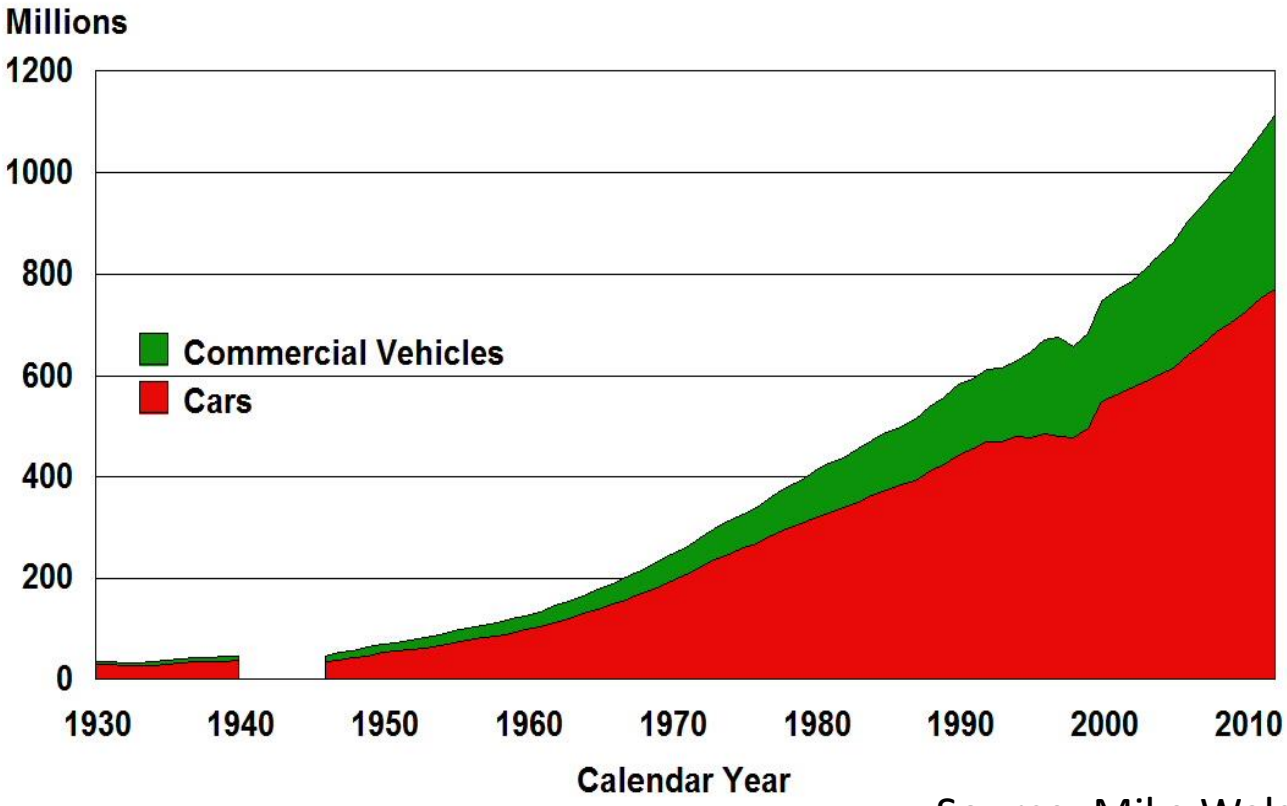
World Population of Cars, Trucks and Buses



Source: Mike Walsh

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Explosive growth

- Land freight up to 125% growth in OECD and 430% non-OECD countries between 2010 and 2050

High impacts

- 35% of transport fuel
- Logistics 5.5% of global CO_2 emissions
- Diesel emissions cause cancer
- Trucks major contributor to BC emissions

Inefficient

- Logistics costs <10% of GDP in US/EU;15-25% in Asia and Latin America
- Up to 40% of trucks in developing countries are empty
- >90% of trucks companies in China are driver-owners

Smart Freight Centre, State of Play: Green Freight in Asia, 2014

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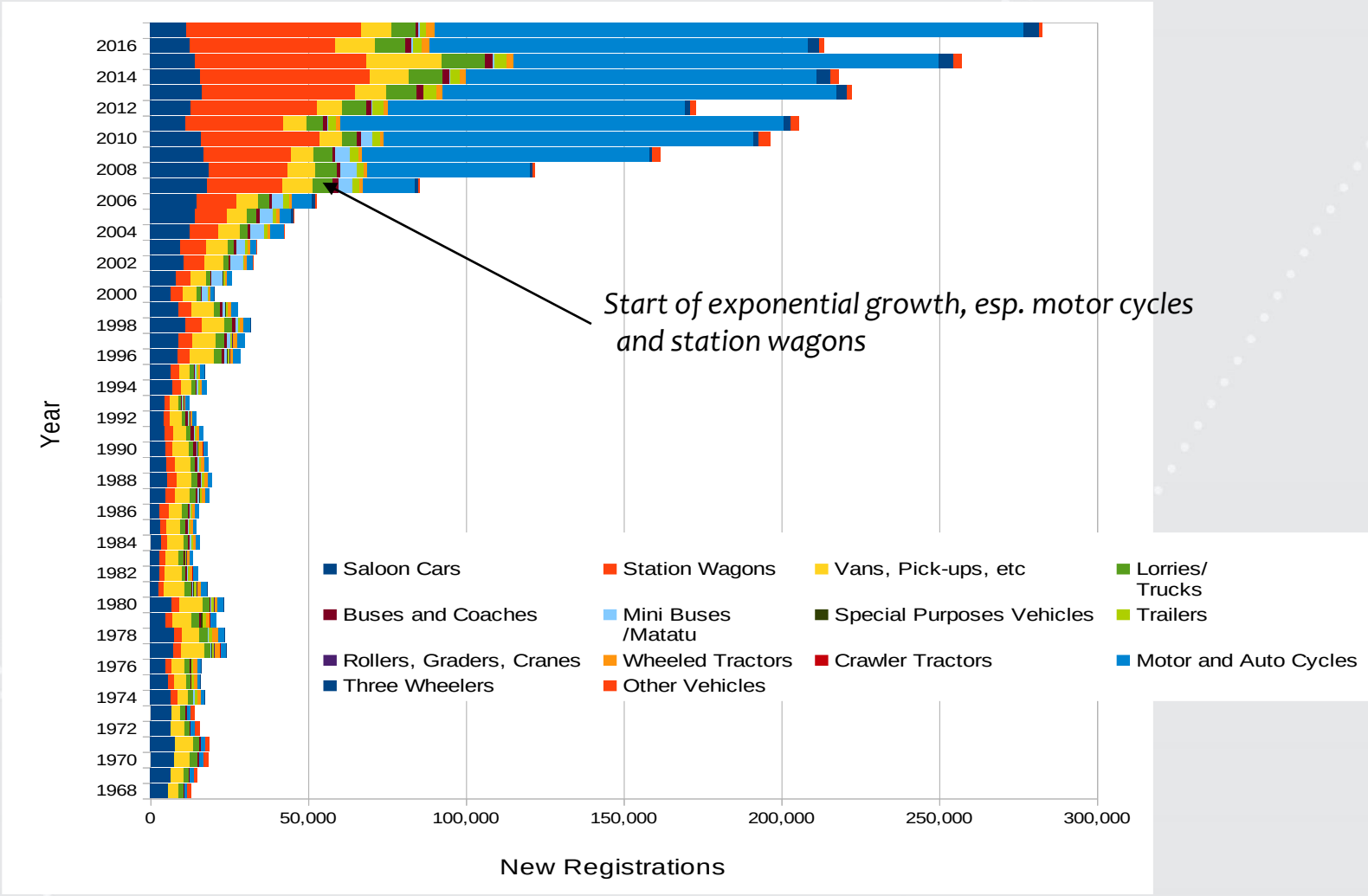
New Vehicle Registrations in Kenya 1968-2017



Source: KNBS Annual Surveys 1970,..,2018

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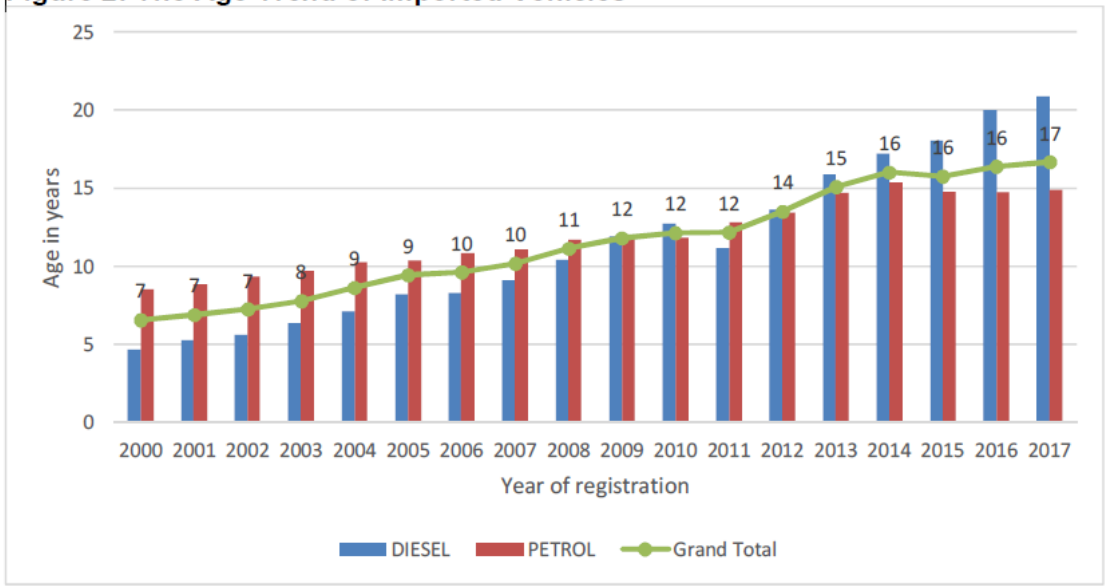
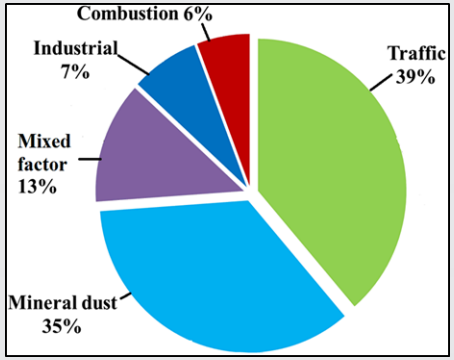
Newly imported vehicles in Uganda

Figure 2: The Age Trend of Imported Vehicles



Main Sources of PM in Nairobi



Source: S. M. Gaita et al.: Source apportionment and seasonal variation of PM2.5 in Nairobi

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Impact of Transport on Health

- → Small particulates (PM10 or PM2.5) estimated to cause over 3.7 million premature deaths per year worldwide;
- → In 2012, diesel PM was officially classified as carcinogenic (WHO);
- → The smaller part of PM is black carbon (BC), now believed the second most important climate pollutant;
- → Vehicular emissions, esp diesel vehicles, are responsible for 50-80% of the PM/ BC pollution in cities
- → **Exposure highest 300 - 500 meters from roadway**

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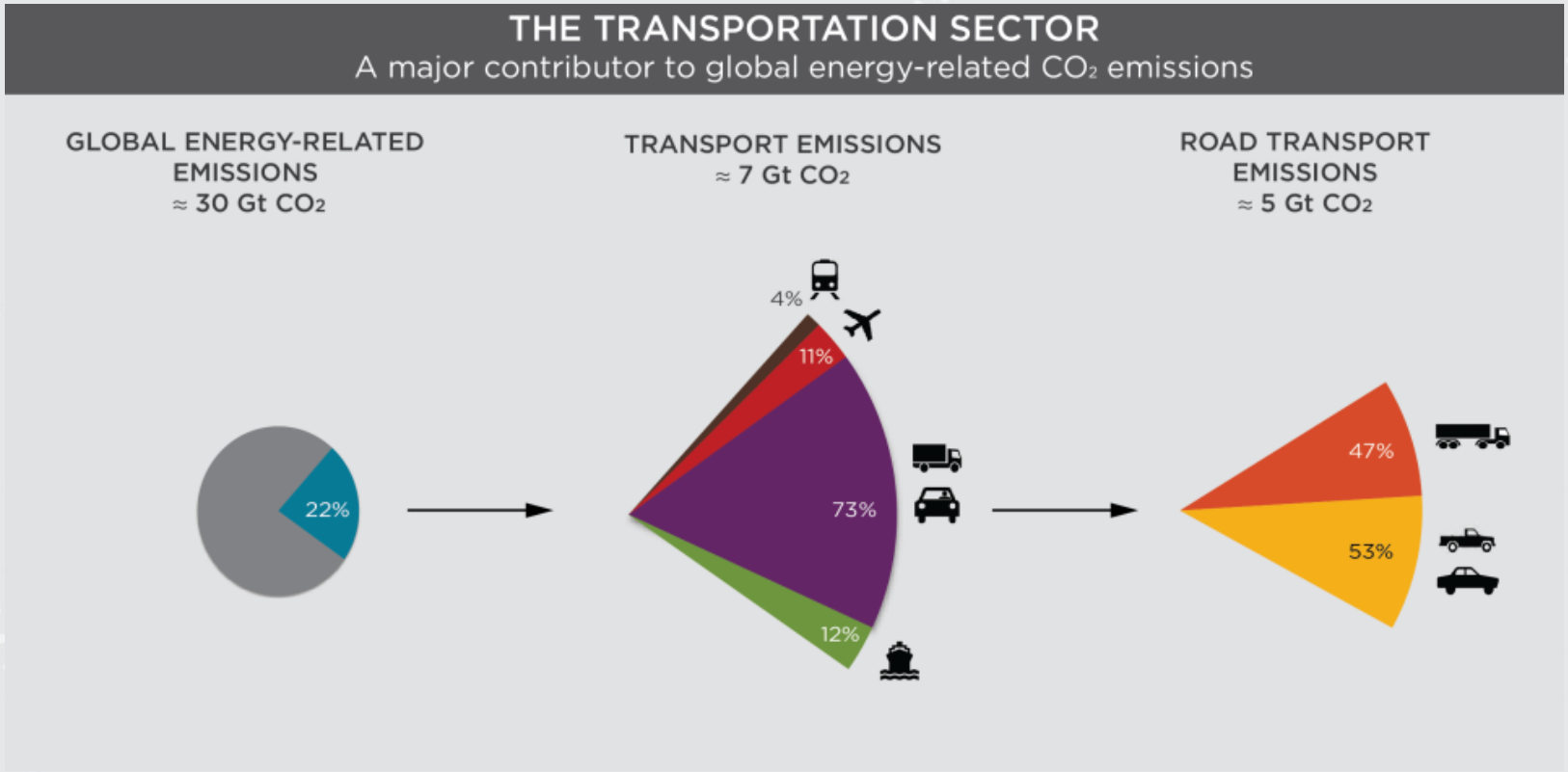
CO_2 Emissions from Transport



Sources:
ICCT (2014). Global Transportation Roadmap Model. Version 2.0. More information available at http://www.theicct.org/global-transportation-roadmap-model.
IEA (2012). CO2 Emissions from Fuel Combustion: Highlights. 2012 edition. Retrieved from https://www.iea.org/co2highlights/co2highlights.pdf.

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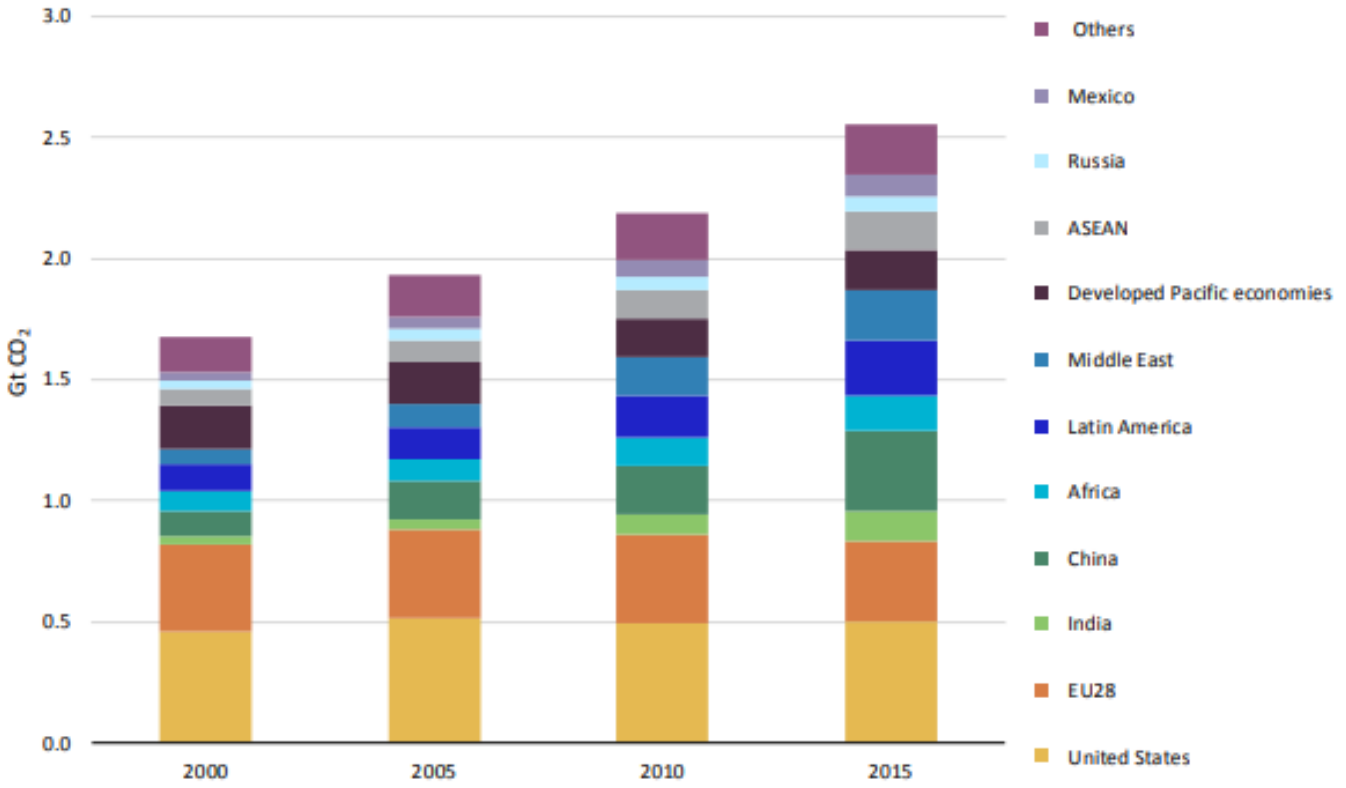
Africa's CO_2 Emissions

Figure 3 • Tailpipe CO_2 emissions from road freight transport by region, 2000-15



Note : EU28 = European Union. Developed Pacific economies = Australia, Japan, Korea and New Zealand.

Source: IEA (2017a), Mobility Model, June 2017 version, database and simulation model, www.iea.org/etp/etpmodel/transport/.

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Reducing emission and improving efficiency

- Cleaner fuels – low Sulphur fuels
- Stricter vehicle emission standards – Euro IV and above
- Incentives/policies to promote fuel efficiency
- Voluntary awards
- Eco driving
- Green freight strategies

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1. Adoption of cleaner fuels

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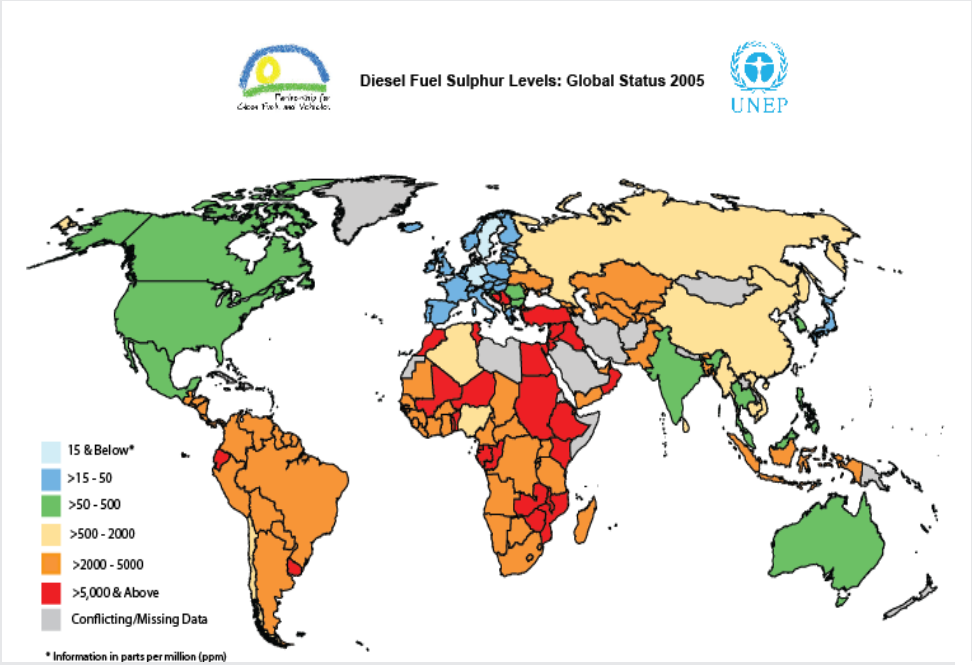
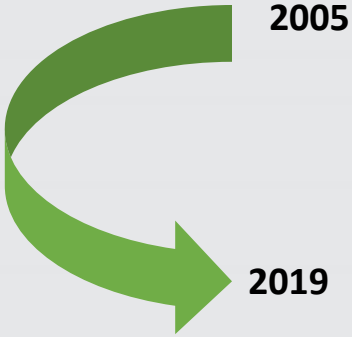
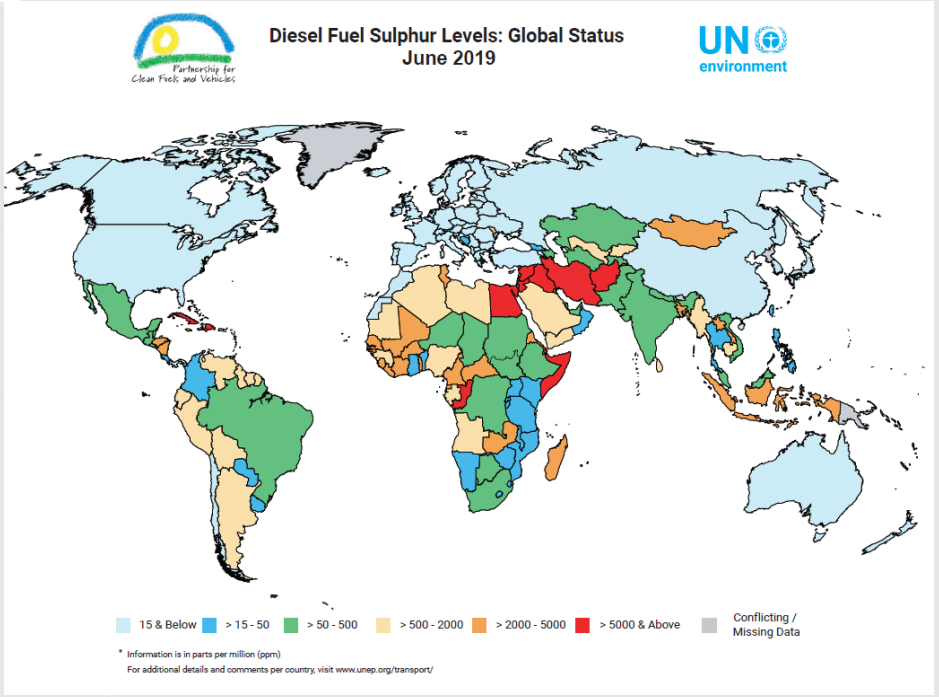
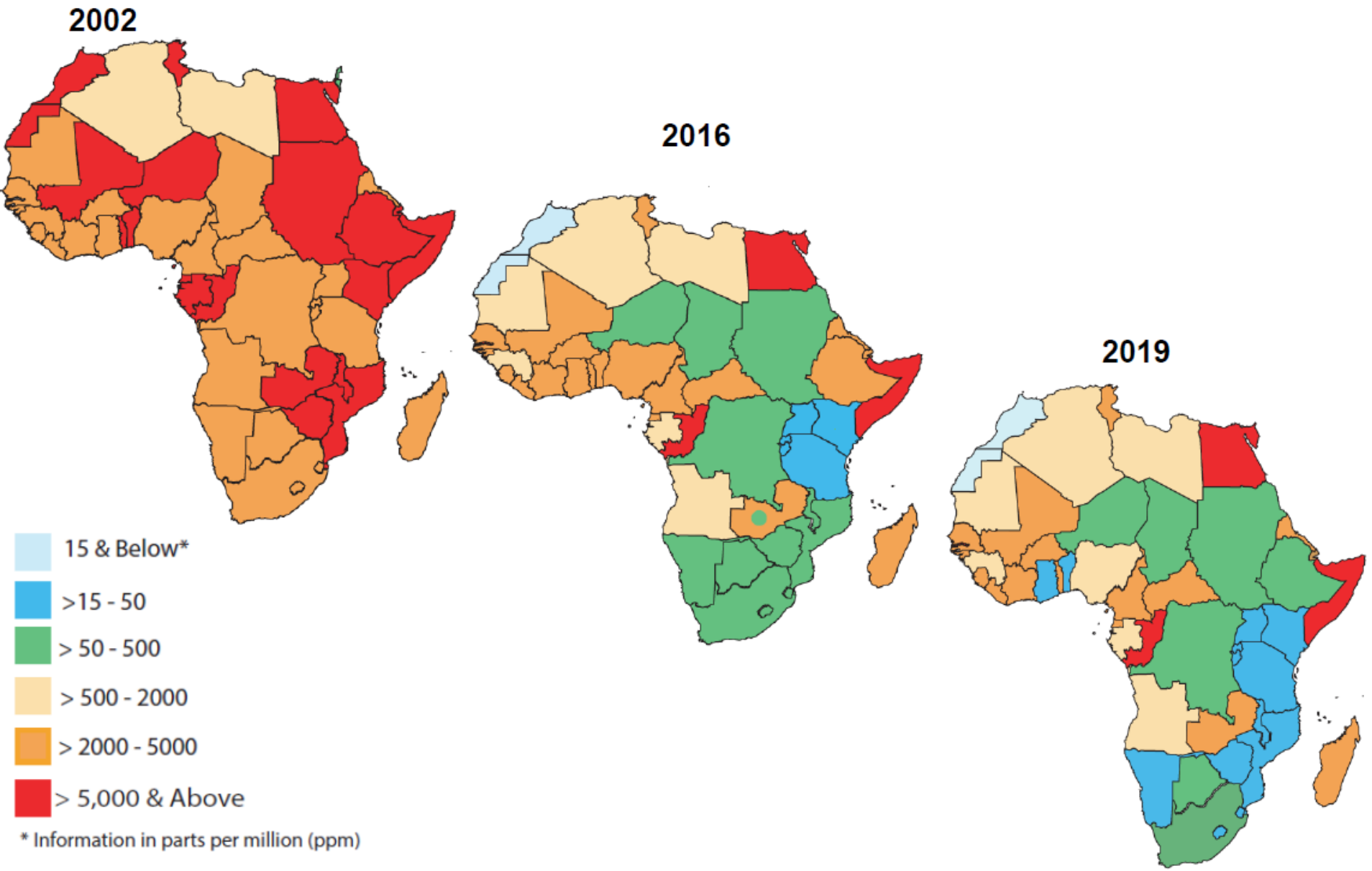


Progress towards low Sulphur diesel

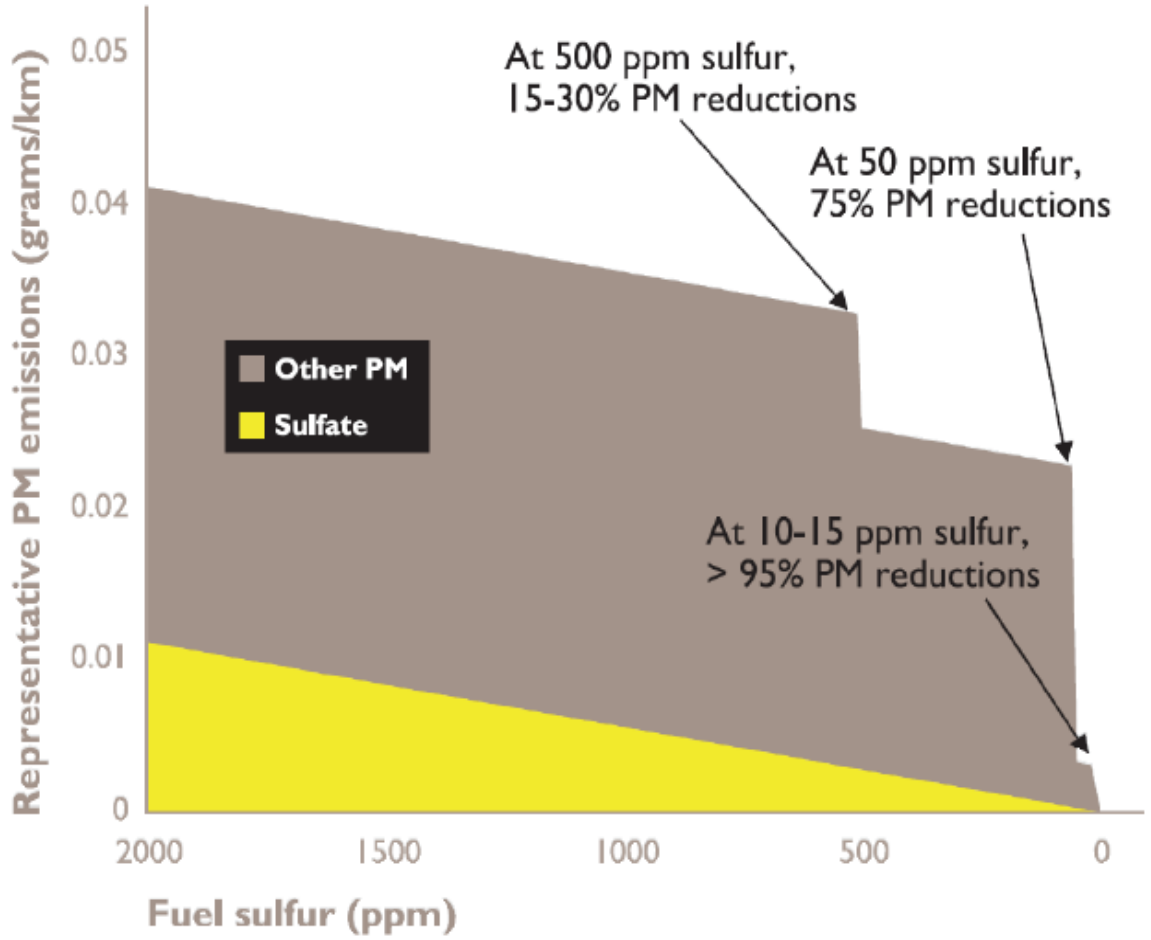




Progress in Lowering Sulphur in Diesel in Africa



Lower sulphur fuels reduce vehicle emissions



Sulphur levels proportional to PM and SO2 emissions in all cars - new and old cars

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2. Stricter vehicle emission standards

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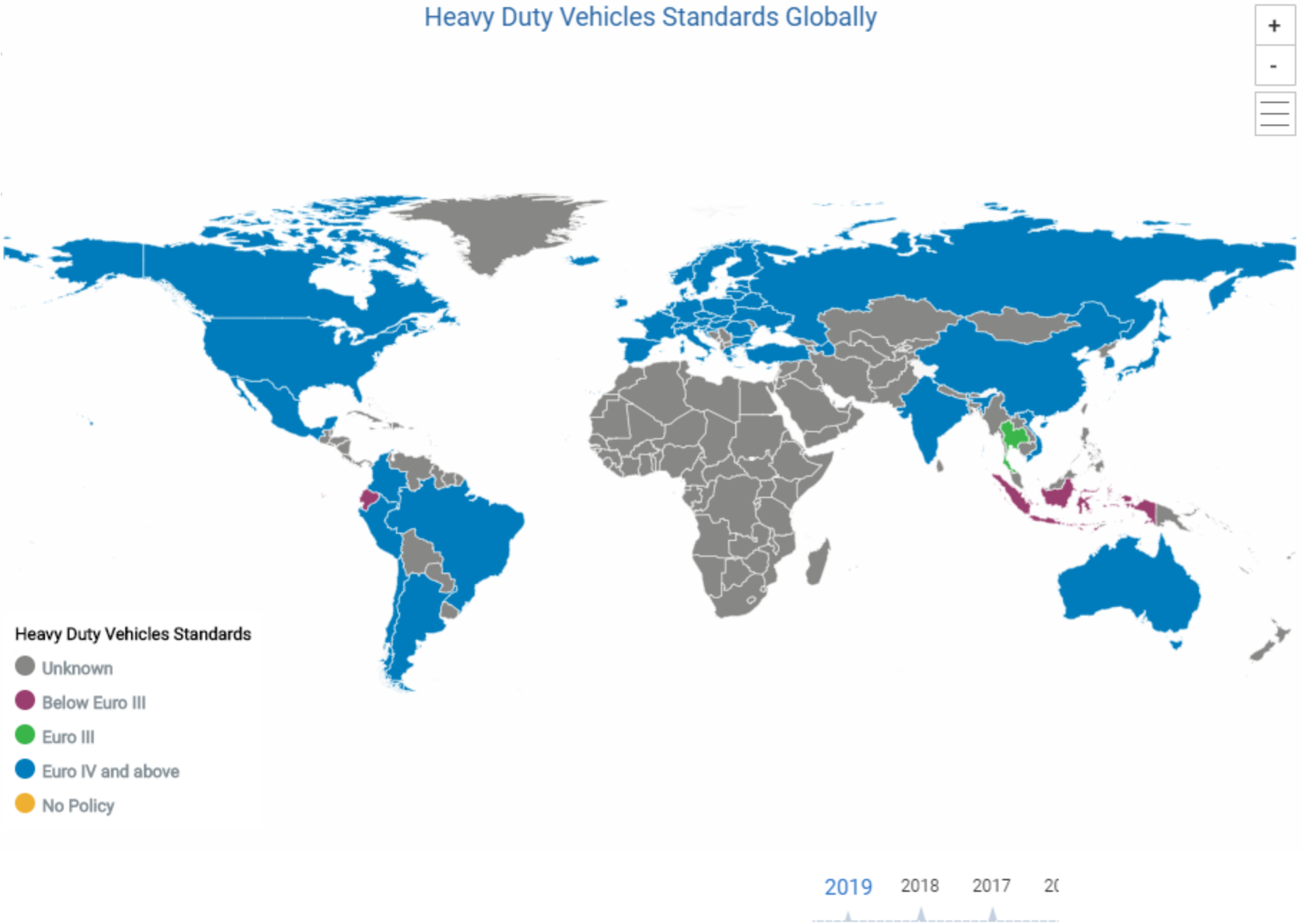
Heavy Duty Vehicles Standards Globally



Regulatory Environment Towards Importing Quality Used LDVs

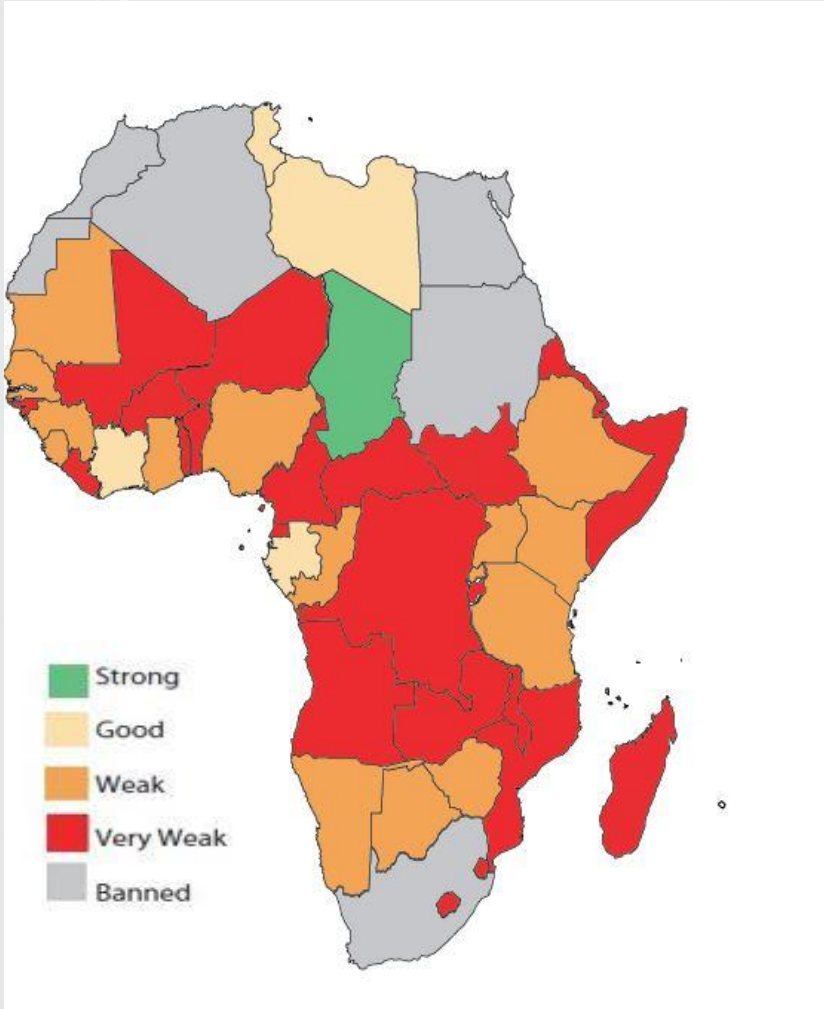
Strong: 3 countries have a Euro 5 or above emission standard and/ or ban used vehicles over 3 years and/or have strong tax, fee bate schemes

Good: 5 countries have a Euro 4 emission standard and/or ban used vehicles over 5 years and/or have a good taxation scheme in place

Weak: 17 countries have a Euro 3 or below emission standard and/ or ban used vehicles over 8 years old and/or have a weak taxation scheme in place

Very Weak: 25 countries allow vehicles over 9 and have no emission regulations in place as well as having ineffective/ or no taxation schemes

Banned: 5 countries impose a total ban on used vehicles



Snapshot of average age of vehicle imports	
Country	LDV age
Burundi	8 years (2017)
Kenya	6.5 years (2016)
Liberia	10 years (2017)
Madagascar	15 years (2017)
Mauritius	1 year (2017)
Sierra Leone	15 years (2017)
Uganda	15.6 years (2017)
Zambia	13 years (2014)
Zimbabwe	13.3 years (2016)

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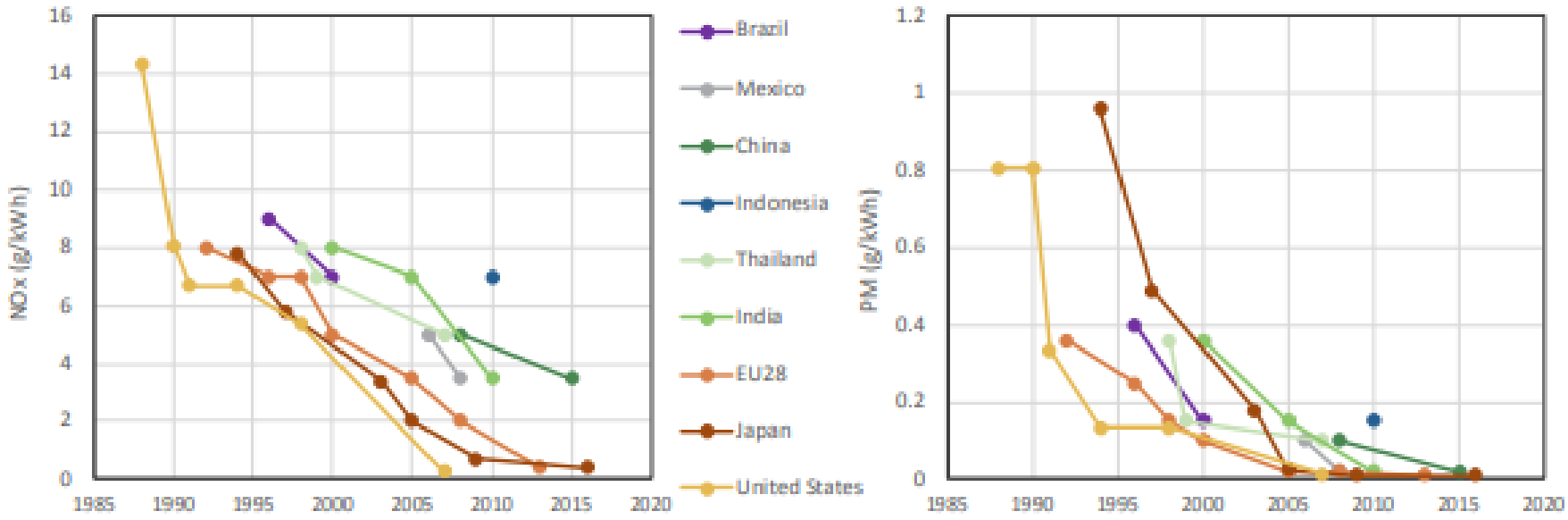
Results from tougher emission standards

Figure 4 • Tightening of selected emission standards on trucks, by country



Note: Other countries with pollutant emission standards for trucks in the range of those shown here include Argentina, Australia, Chile and Korea.

Source: ICCT and DieselNet (2016).

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DIESEL VEHICLE EMISSION TESTING (Cape Town)

failure rate

17% - 2000

7.2% - 2003

1.8% - 2005

1.07% - 2006

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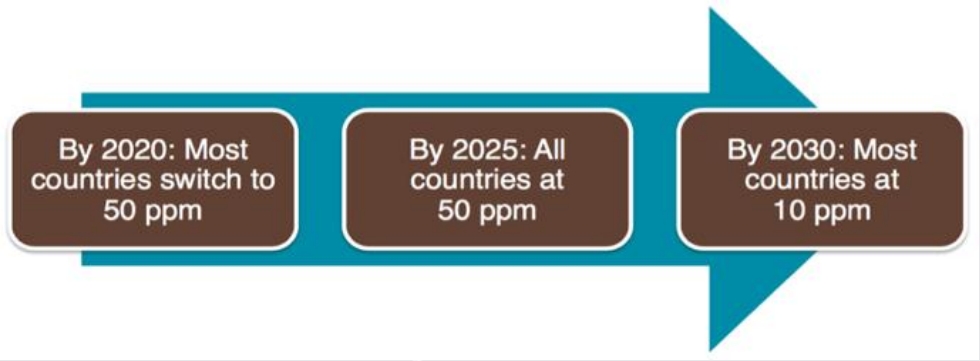
CCAC Global Strategy for Cleaner Fuels and Vehicles

1st global plan to reduce PM and BC emissions from vehicles by >90% by 2030

Expected results:

- ↓ annual PM2.5 & BC from on-road vehicles by >85%
- 100,000/yr fewer premature deaths in 2020, & 470,000/year fewer in 2050
- ↓ cumulative BC emissions by 7.1M tons by 2050.



By end 2020, CCAC support in 35 countries

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3. Incentivizing fuel efficient vehicles

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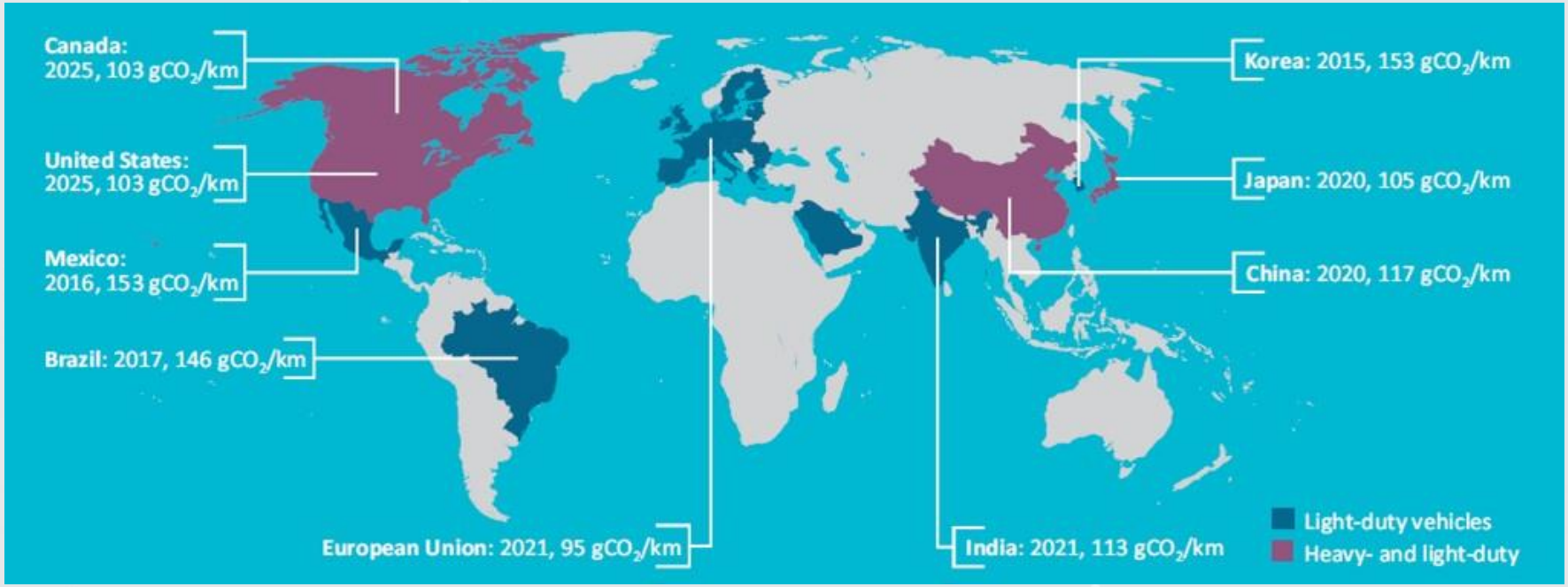
Countries are at various points in developing fuel economy policies



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

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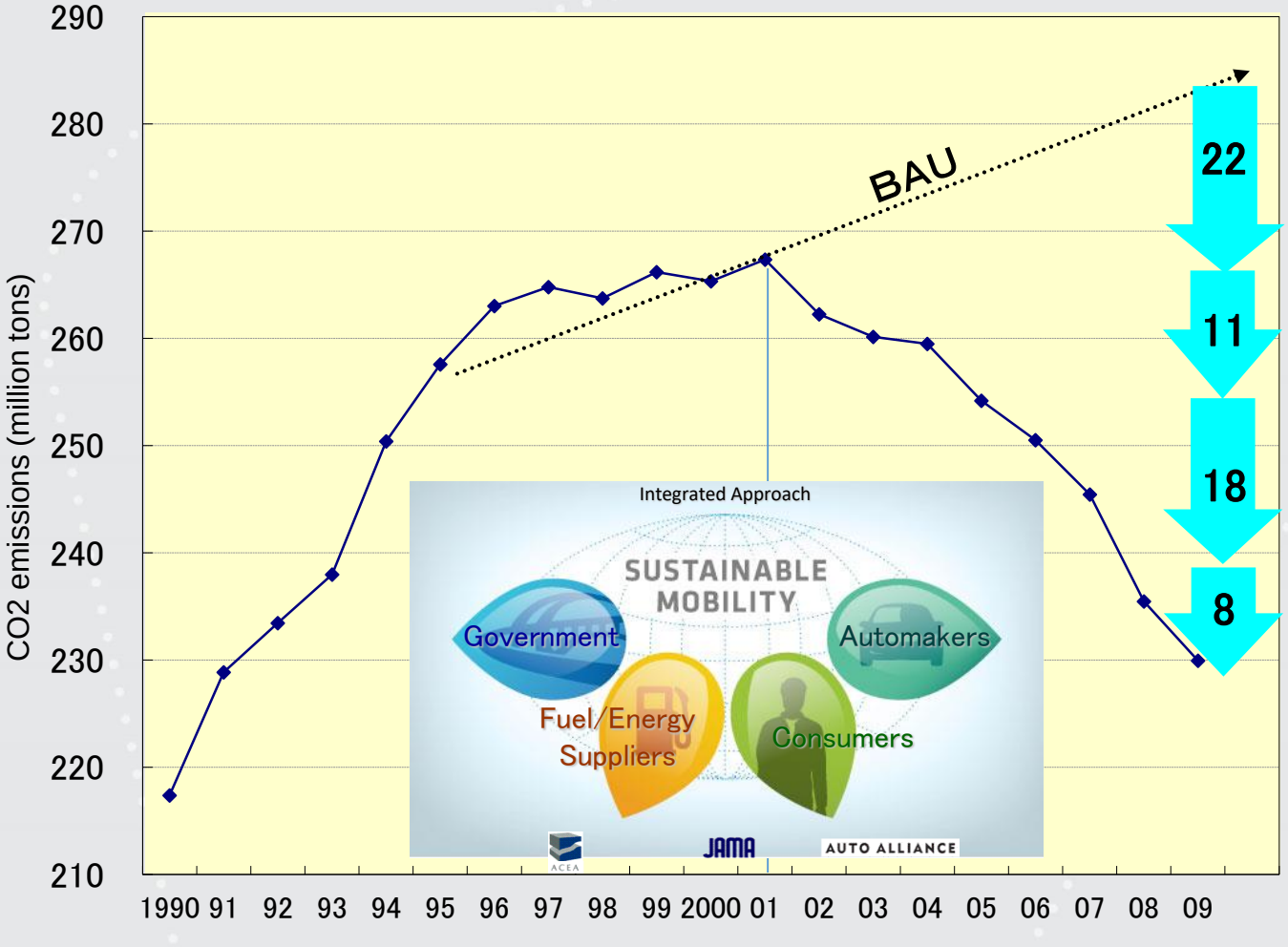
◆ CO2 Emission Reduction in Japanese Transportation Sector



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

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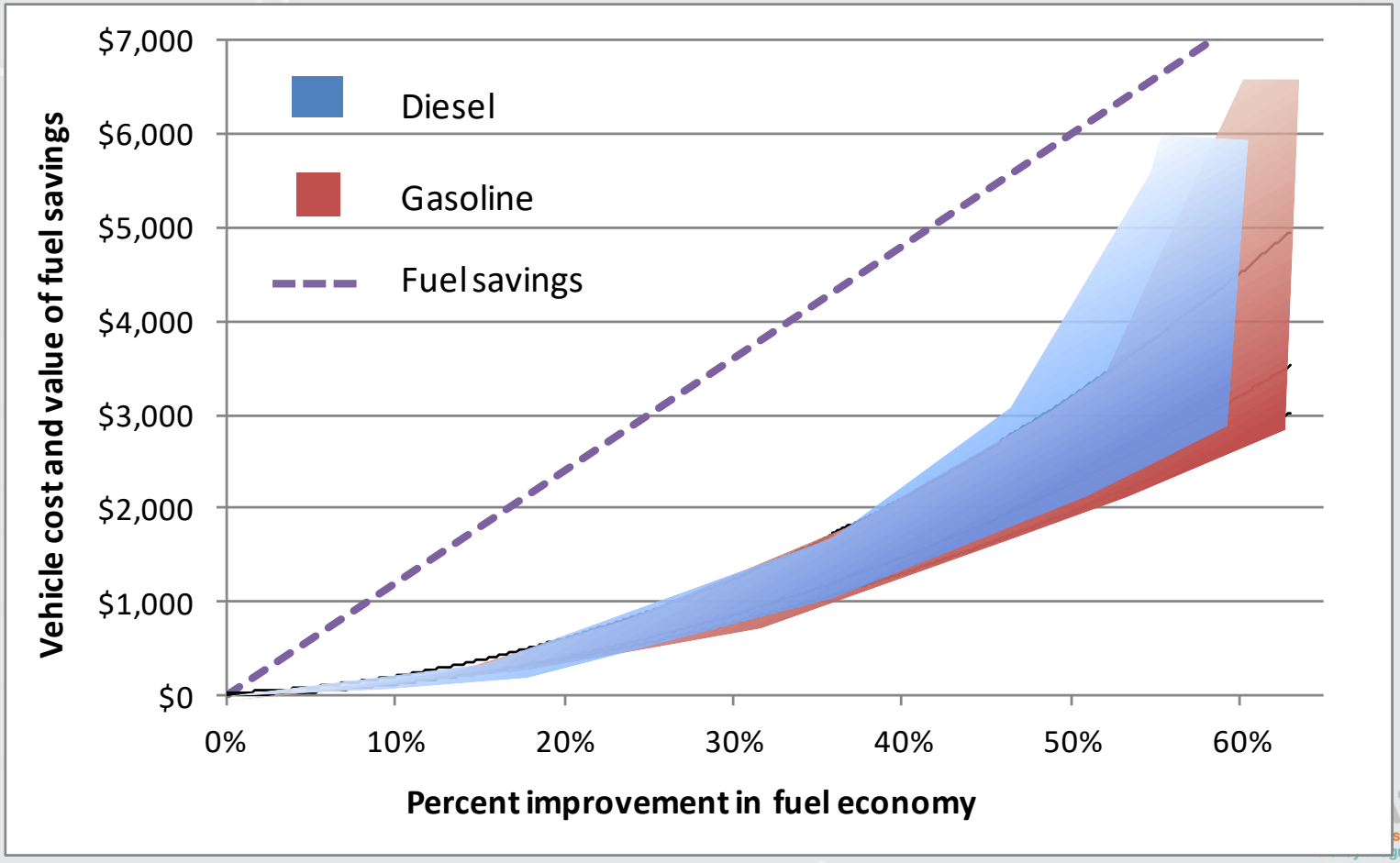
source : JAMA

Fuel Economy Improvements are Cost-effective

Fuel savings more than pays for fuel economy improvements in light-duty vehicles



Source: IEA Fuel Economy Roadmap, July 2012

Fuel Economy Levels

Market	Cycle	Payload (kg)	Baseline fuel consumption (L/100km)
Brazil	US Phase 2 cycles	3,230	23.7
China	WHVC-China	3,045	21.2
Europe	VECTO Urban/Regional	2,750	23.0
India	ARB Transient	4,000	24.9
US	US Phase 2 cycles	2,836	27.6

Uganda

Weight Category	Diesel				Petrol			
	2005	2008	2011	2014	2005	2008	2011	2014
Light Duty	11.6	11.7	11.9	13.4	10.6	10.8	11.1	11.8
Heavy Duty	24.2	24.9	27.7	29.3	22.2	21.4	21.5	22.9
Total average	**15.3**	**15.5**	**16.5**	**18.4**	**10.7**	**10.9**	**11.2**	**11.9**

Source: Computations based on combined dataset (URA e-tax dataset and MoW&T dataset)

Mauritius

Year	Fuel Economy[12] for LDVs		Fuel Economy for HDVs[13]	
	Average Fuel Consumption (l/100km)	Average CO_2 Emissions (g/km)	Average Fuel Consumption (l/100km)	Average CO_2 Emissions (g/km)
2005	7.0	186	N/A*	N/A
2013	6.6	169	N/A	N/A
2014	5.8	145	19.5	542
2015	5.9	146	17.8	497

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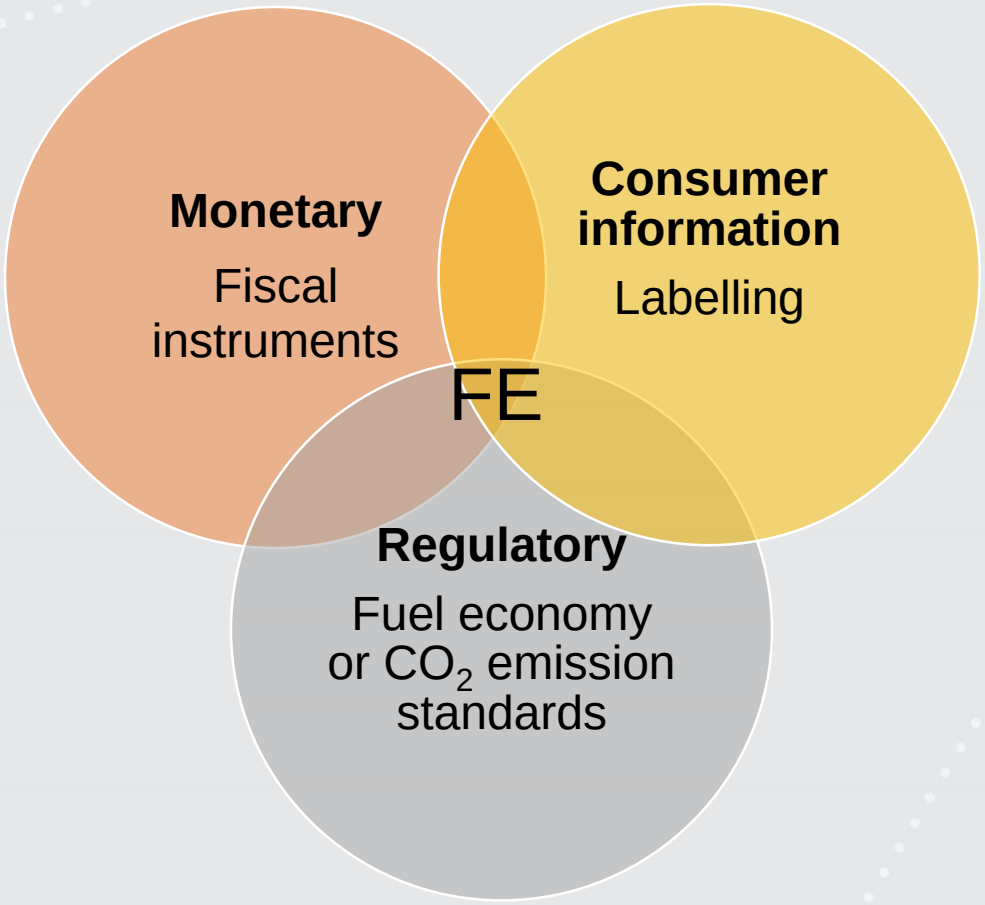
Fuel economy policies & instruments



Target group:

Consumer

Manufacturer

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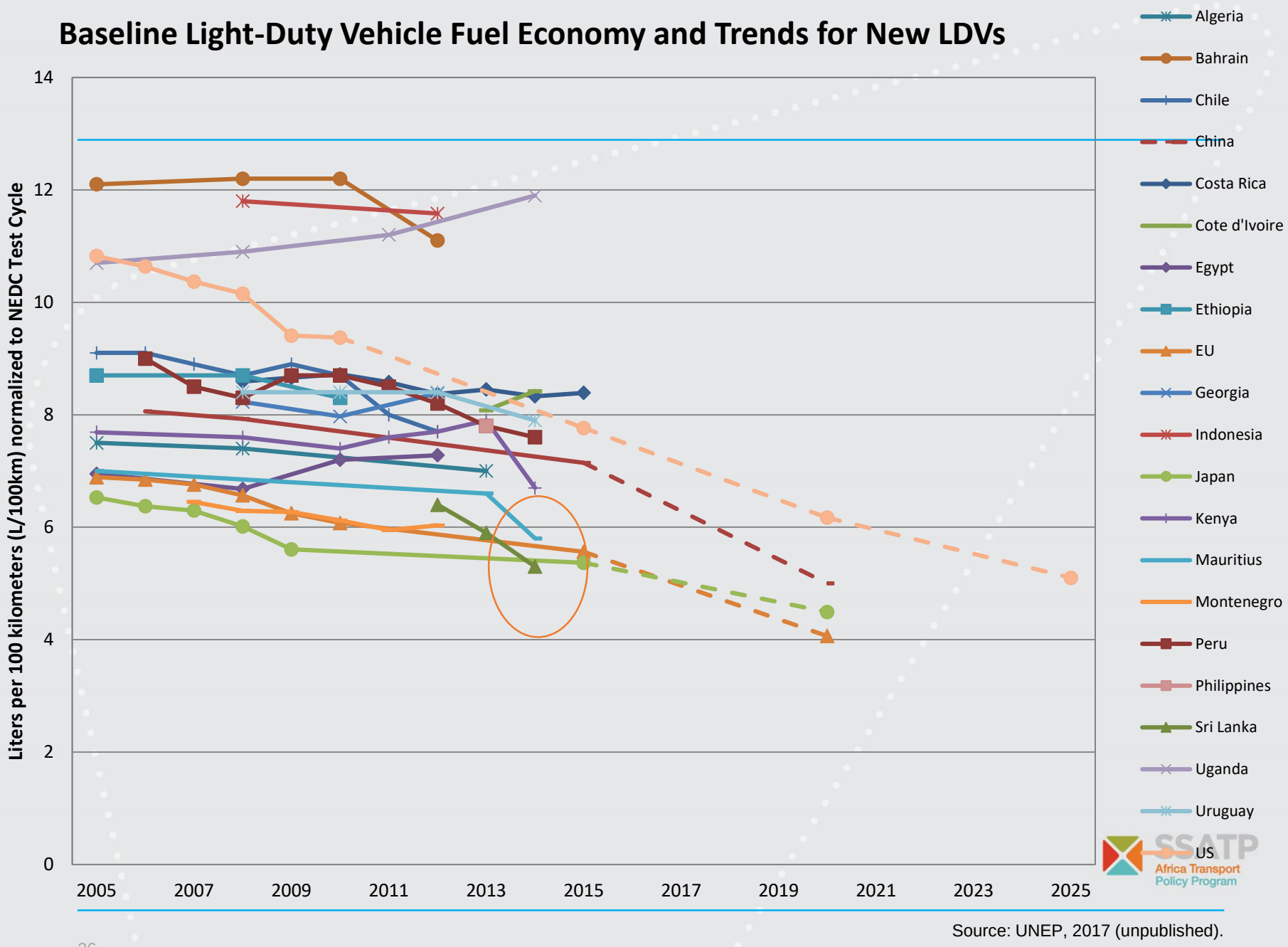
Baseline Light-Duty Vehicle Fuel Economy and Trends for New LDVs



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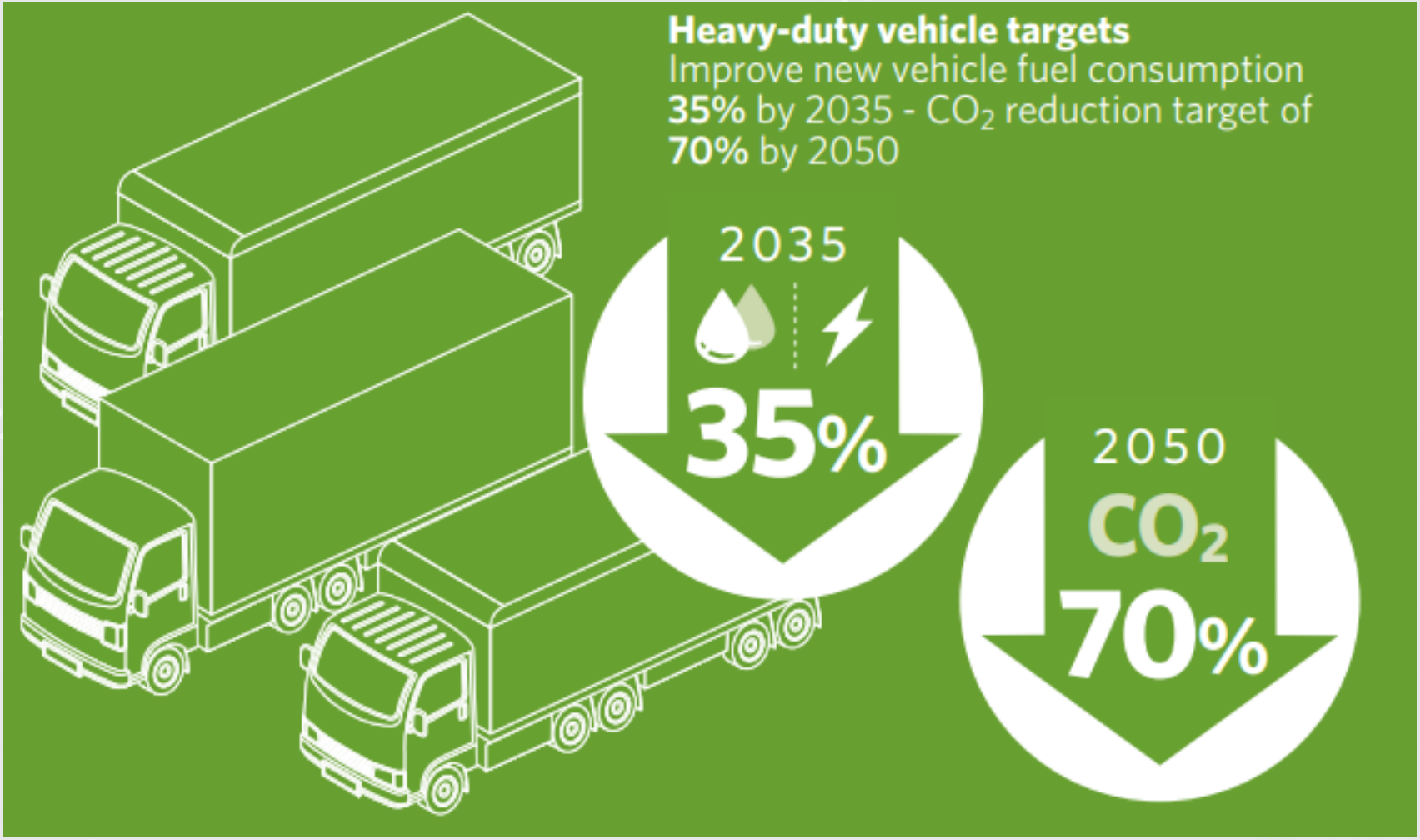
Source: UNEP, 2017 (unpublished).

GLOBAL FUEL ECONOMY INITIATIVE

FOR ZERO CARBON VEHICLES BY 2050



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The SmartWay Model

- Public-private partnership with freight sector
- Market based, voluntary, no fee
- Standard carbon/emissions accounting system
  - Standardized tools and metrics for collecting & reporting data
  - Developed with extensive stakeholder input and peer reviewed
- Goal: Reduce emissions of GHGs and other pollutants
- How: Accelerate adoption of advanced technologies and operational practices in the freight supply chain
- Measured by saving:
  - gallons of fuel, barrels of oil, $
  - CO_2, NOx and PM emissions

4. Green freight strategies

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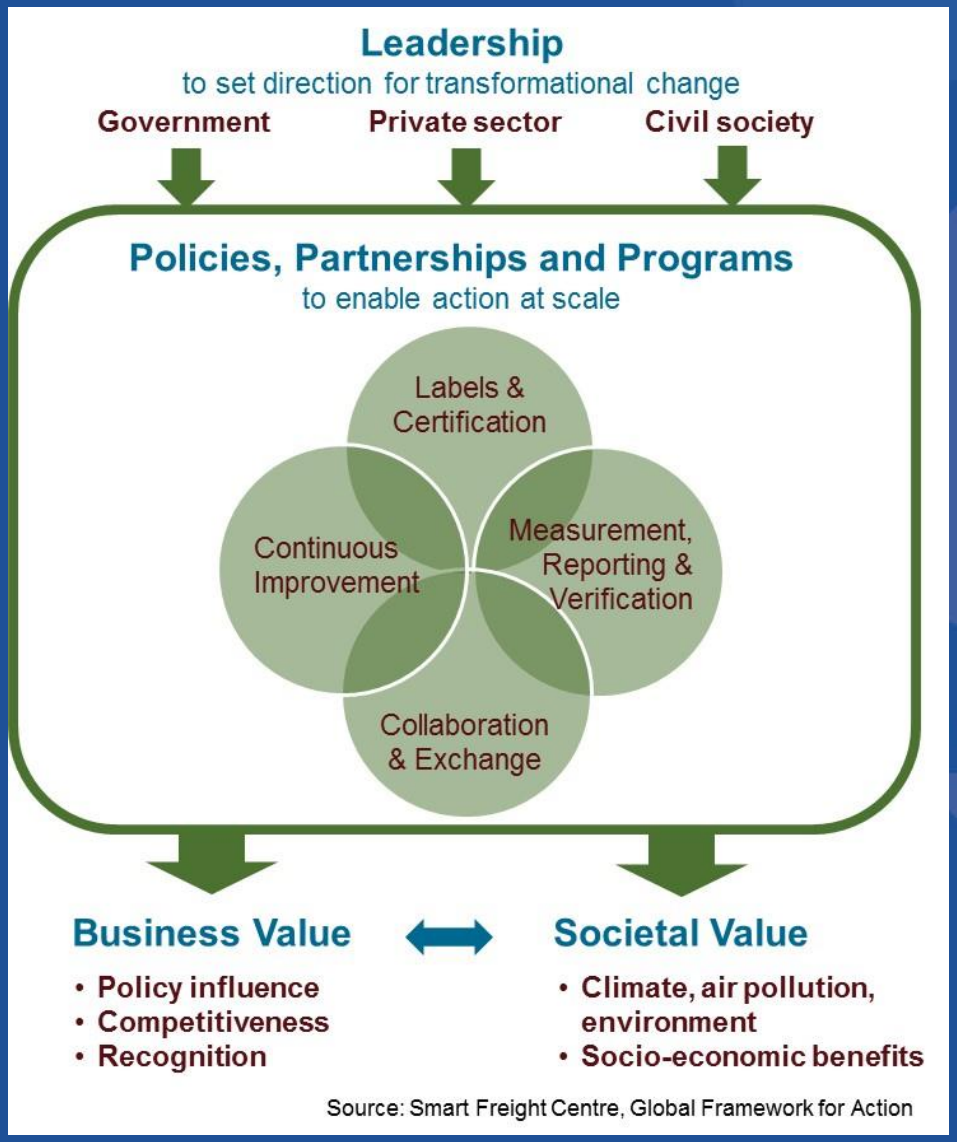
What are Green Freight Programs?



- Market-based public-private partnerships designed to help industry move goods in cleaner, more efficient ways
- Enable industry leadership and action at scale through 4 broad approaches
- Deliver business and societal value (win-win)
- Programs can be modal, national or local

Green Freight Programs and Initiatives

Norther Corridor Targets

- Below are set short term targets for the period 2016 baseline to 2021:
- Improved fuel economy litres per ton-km for trucks by at least 5% by 2021.
- Reduction in Particulate Matter (PM), black carbon emissions and Oxides of Nitrogen (NOX) grams per ton-km by atleast10% by 2021.
- Reduction of CO2 emission intensity grams per ton-km by 10% by 2021.
- Reduction of road accidents by 10% per million truck-kilometer.

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Northern Corridor Identified Action

- Vehicle loading, inspection and maintenance
- Improvement of Infrastructure
- Eco-Driver Training
- Advocacy , Sensitization and Partnerships
- Recognition Scheme
- Fuels Standards
- Vehicle Technology
- Financing

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Next steps

Low Sulphur Diesel
Regional support for East, West and Southern Africa

HDV Emissions Standards
Develop harmonized Standards
Mandatory Inspection and Maintenance

Green freight strategies
Supporting the Northern Corridor towards a green freight strategy

Fuel Economy improvements/CO2 reduction
Import of fuel efficient vehicles including electric mobility, through baseline data and policies, eco-driving, infrastructure improvements

Reduce road accidents along the freight corridors; *support non-motorized policies and investment for walking and cycling*

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UN Environment Transport Programs

Share the Road (StR)

Global Fuel Economy Initiative (GFEI)

Electric Mobility

Partnership for Clean Fuels and Vehicles (PCFV)

Climate and Clean Air Coalition (CCAC) incl Ports

Thank you

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