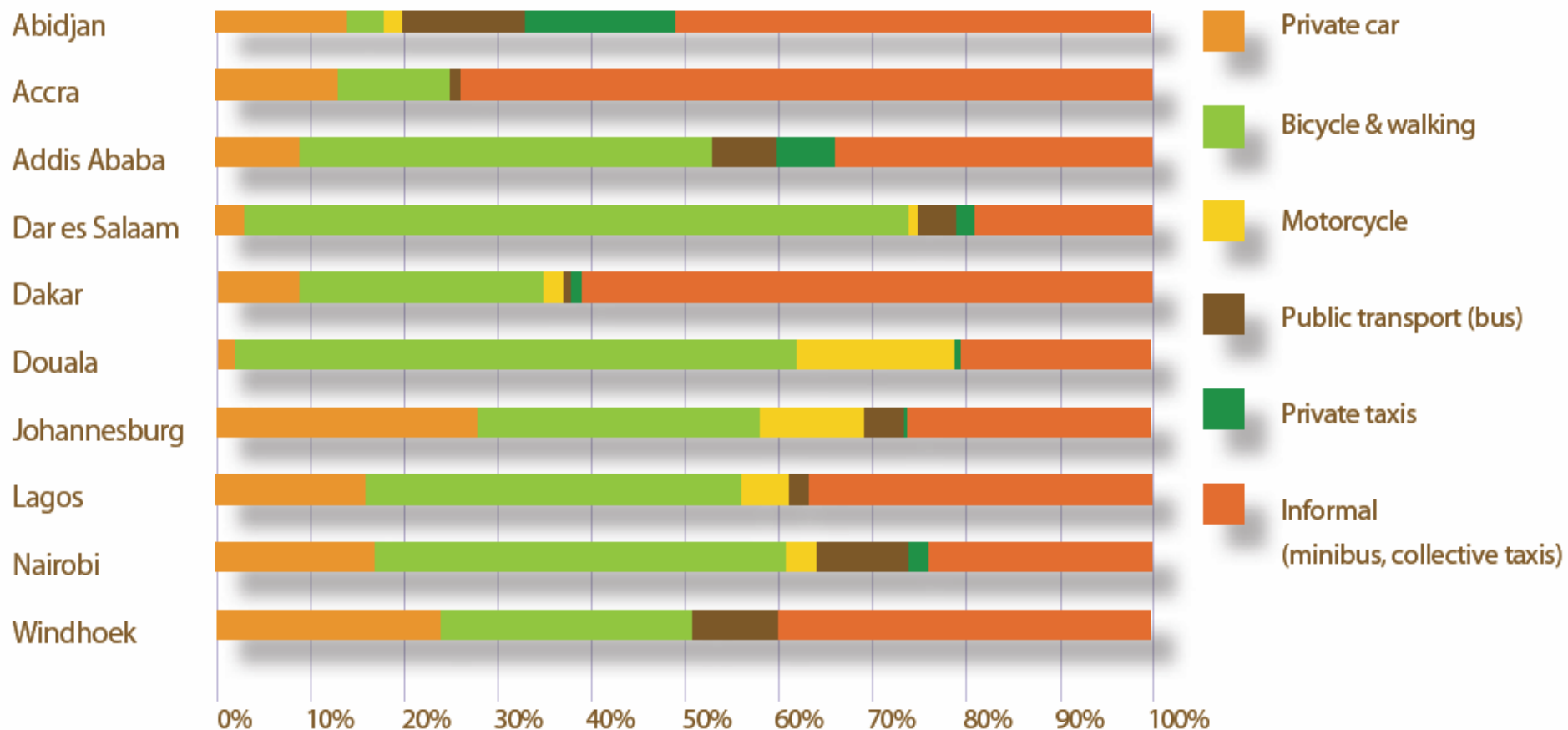


A close-up photograph of a vehicle's exhaust system. A dark, cylindrical exhaust pipe is shown emitting a thick plume of white smoke that drifts towards the left. The pipe is covered in a layer of brown dust or dirt. In the foreground, a portion of a black tire with a tread pattern is visible. The background is a bright, hazy sky with soft, white clouds. The overall scene suggests a dusty or arid environment.

# Reducing Vehicle Emissions in Africa

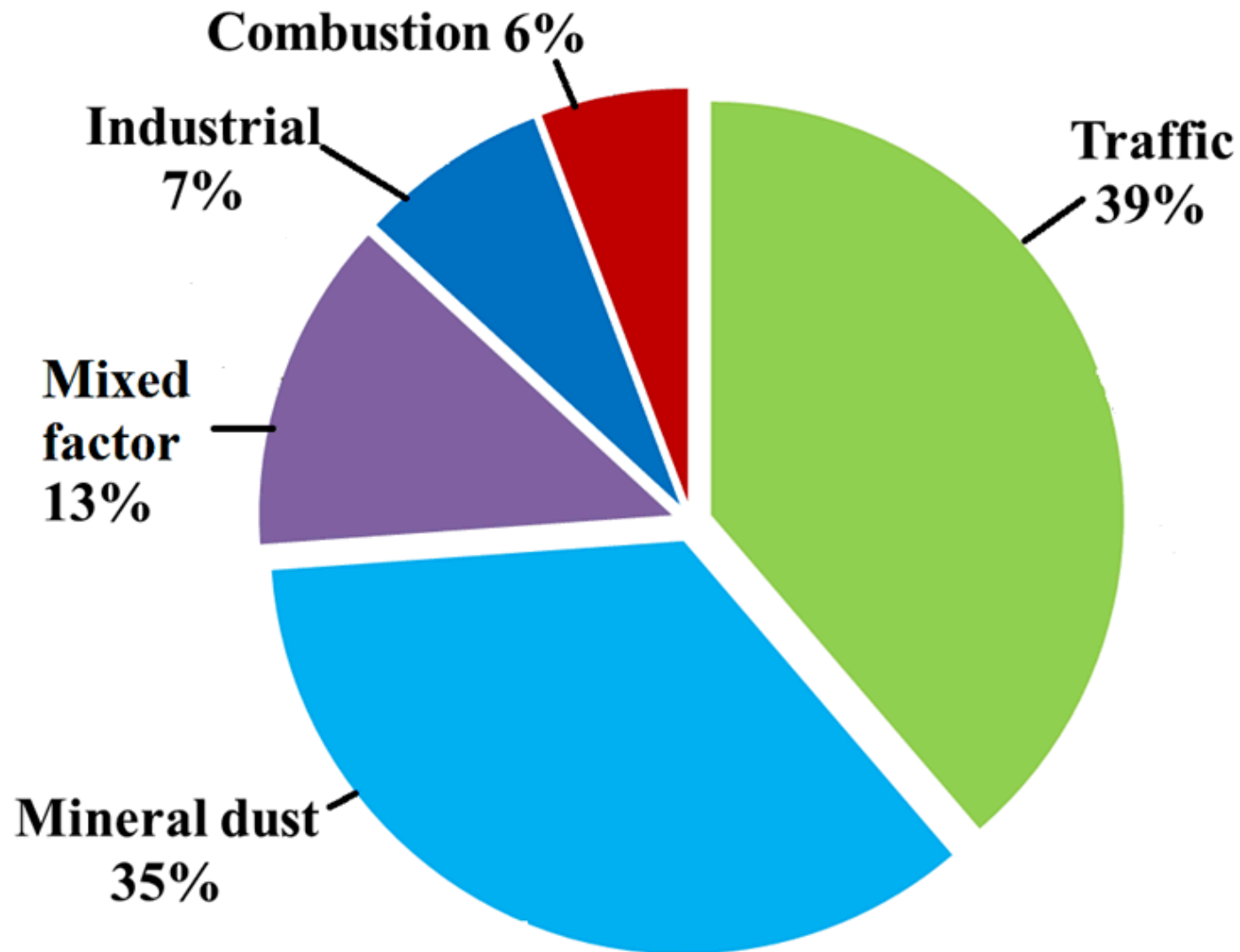
Jane Akumu - UNEP

## Transport modal share of the cities



Source: UATP (2010) Major Trends and Case Studies

# Main Sources of PM in Nairobi



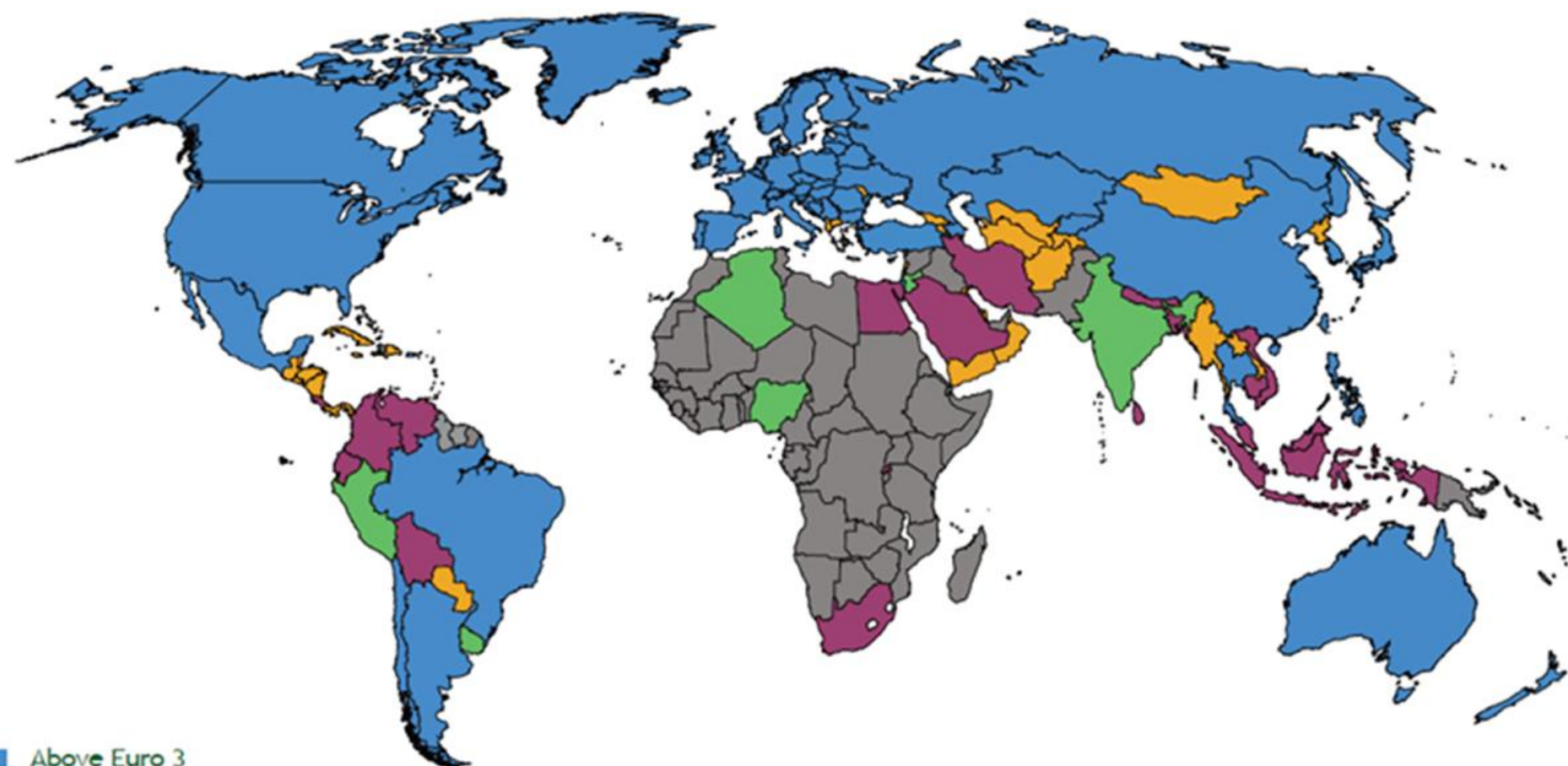
Source: S. M. Gaita et al.: Source apportionment and seasonal variation of PM<sub>2.5</sub> in Nairobi

# Used Vehicles Question

- 42,510,000 vehicle in use in Africa ( OICA 2014)
- Used vehicle market has been estimated at about \$60-70 billion in sales worldwide
- The bulk of vehicle imports in most countries in Africa are used cars
- It is estimated that used cars account for between 80 and 90% of all vehicle sales in Kenya ( KNBS 2015)
- Nigeria used vehicle imports account for 80% of all vehicle sales( 2010)

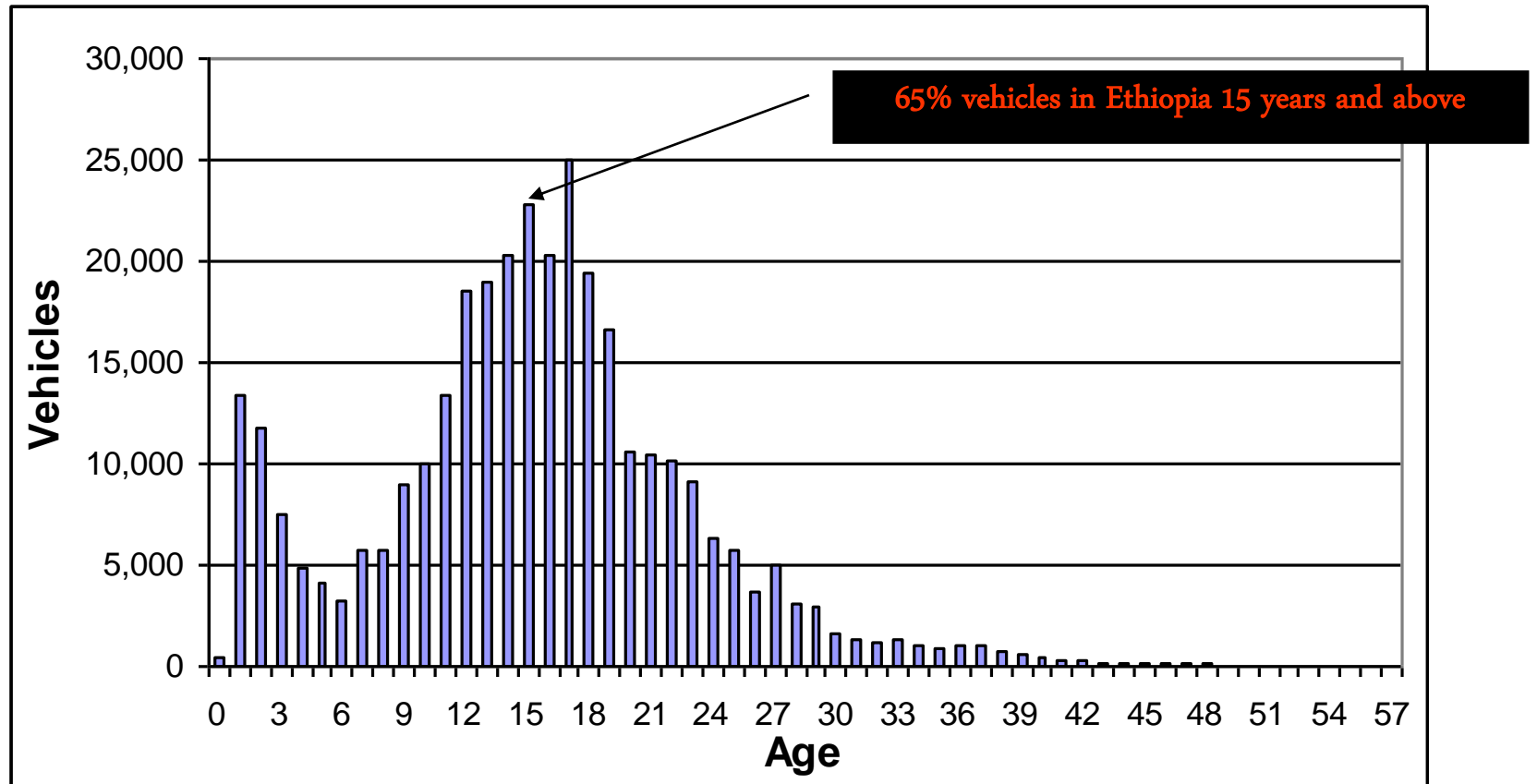
# Vehicle Emissions Standards

June 2016



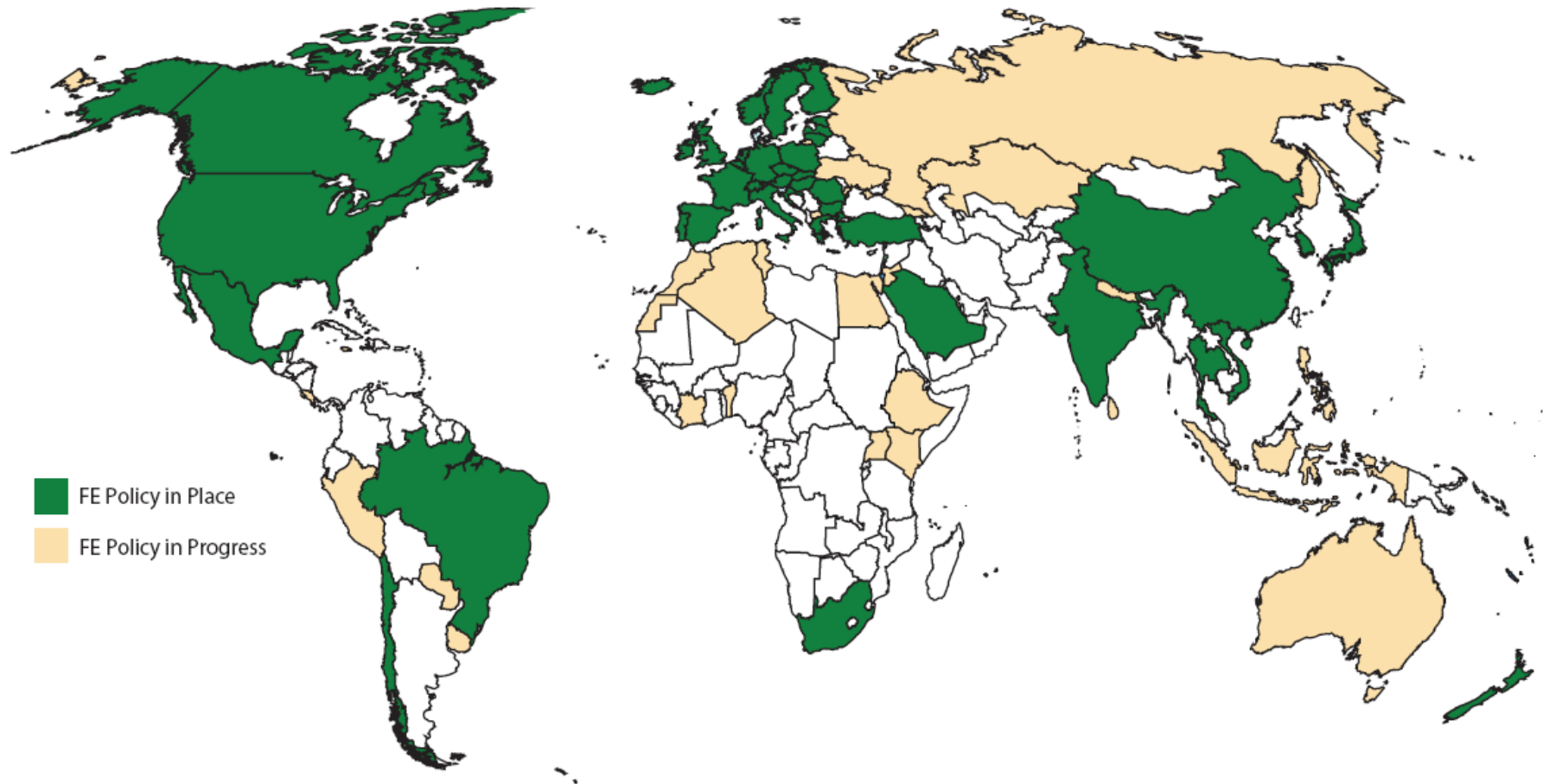
- Above Euro 3
- Euro 3
- Below Euro 3
- No Policy
- Unknown

# Vehicle Age: Tanzania Example



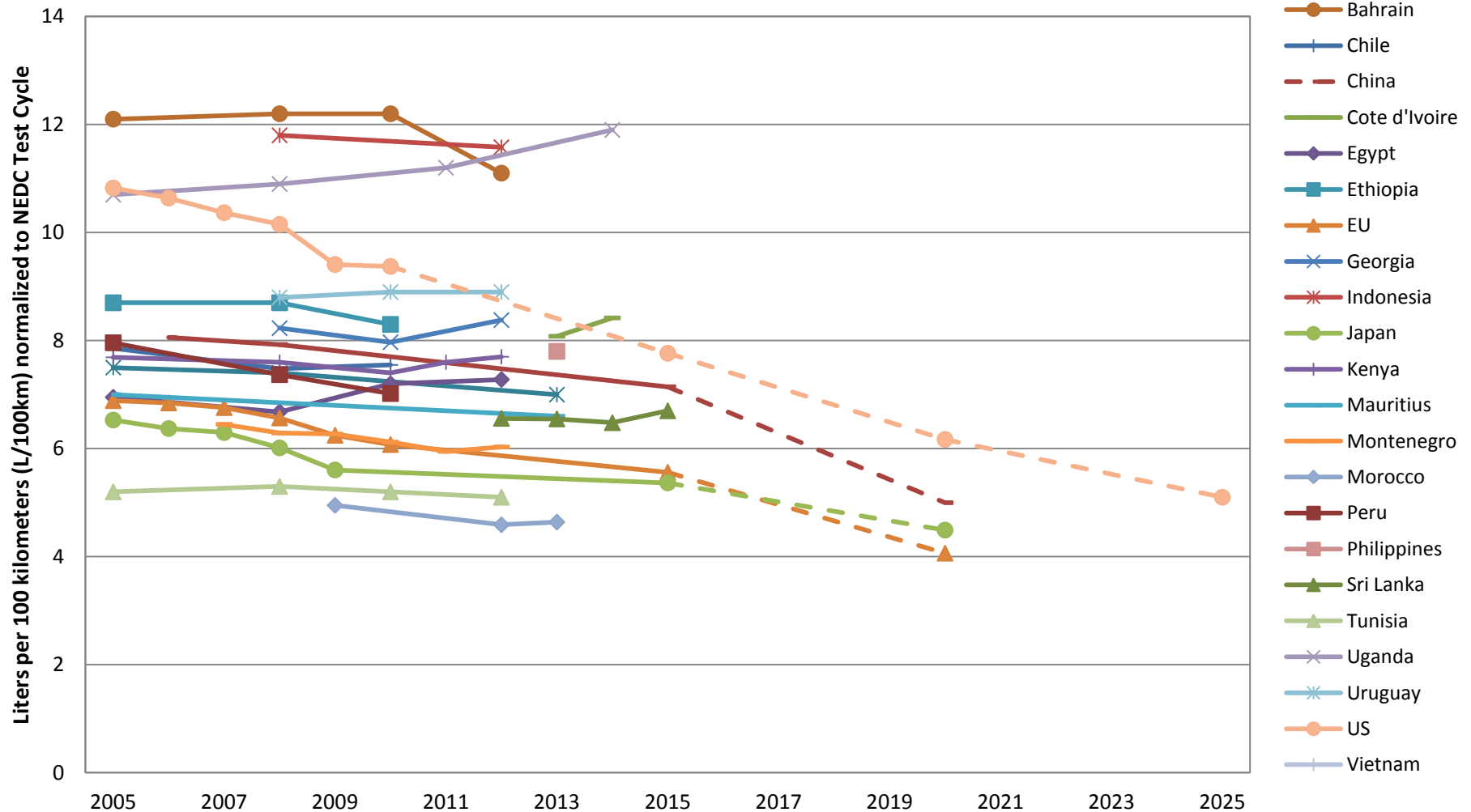


## Global Progress on Fuel Economy Policy (2016)



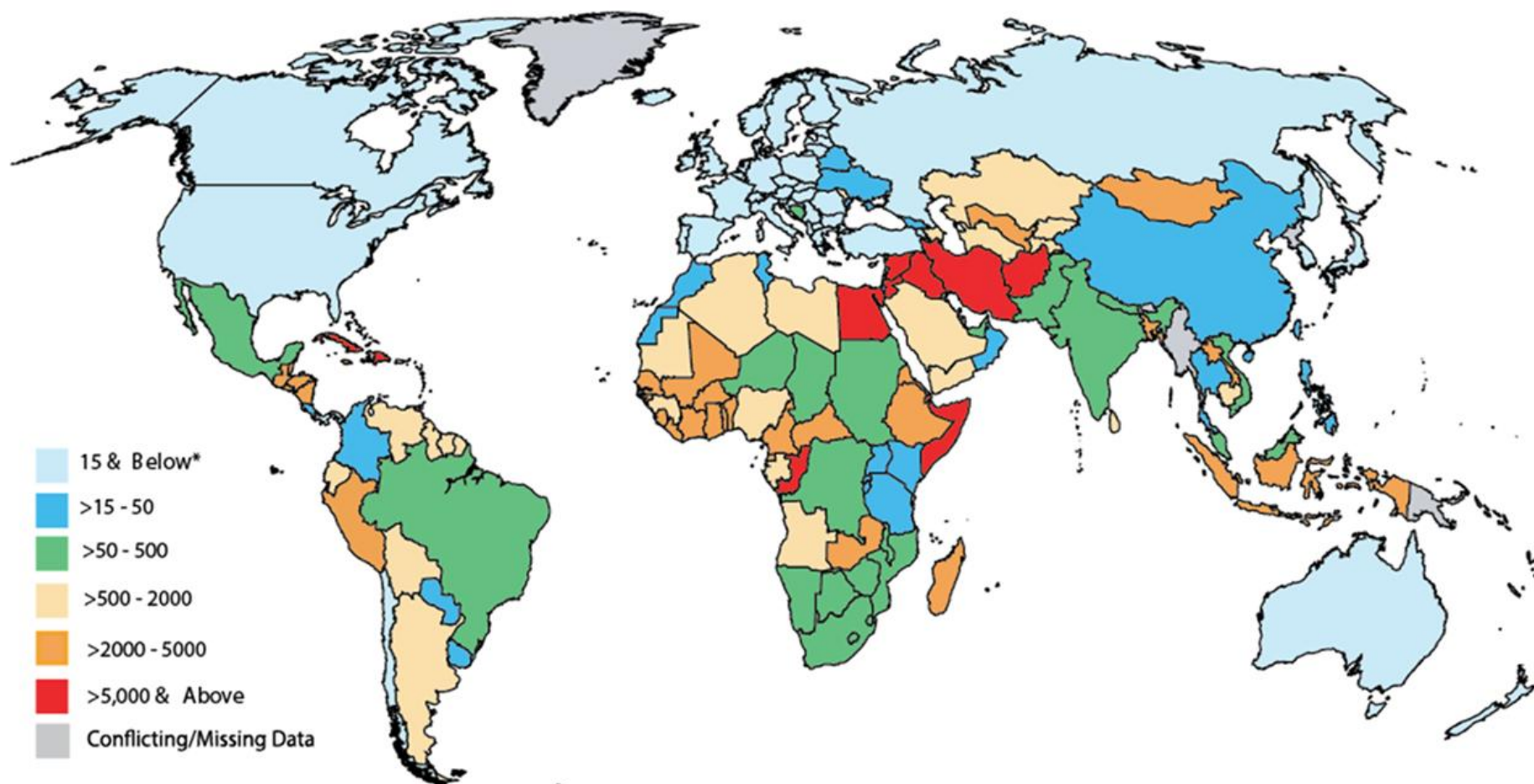
**GFEI baseline setting – little progress in fuel economy improvement in countries without policies**

## Baseline Light-Duty Vehicle Fuel Economy and Trends





## Diesel Fuel Sulphur Levels: Global Status June 2016



\* Information in parts per million (ppm)

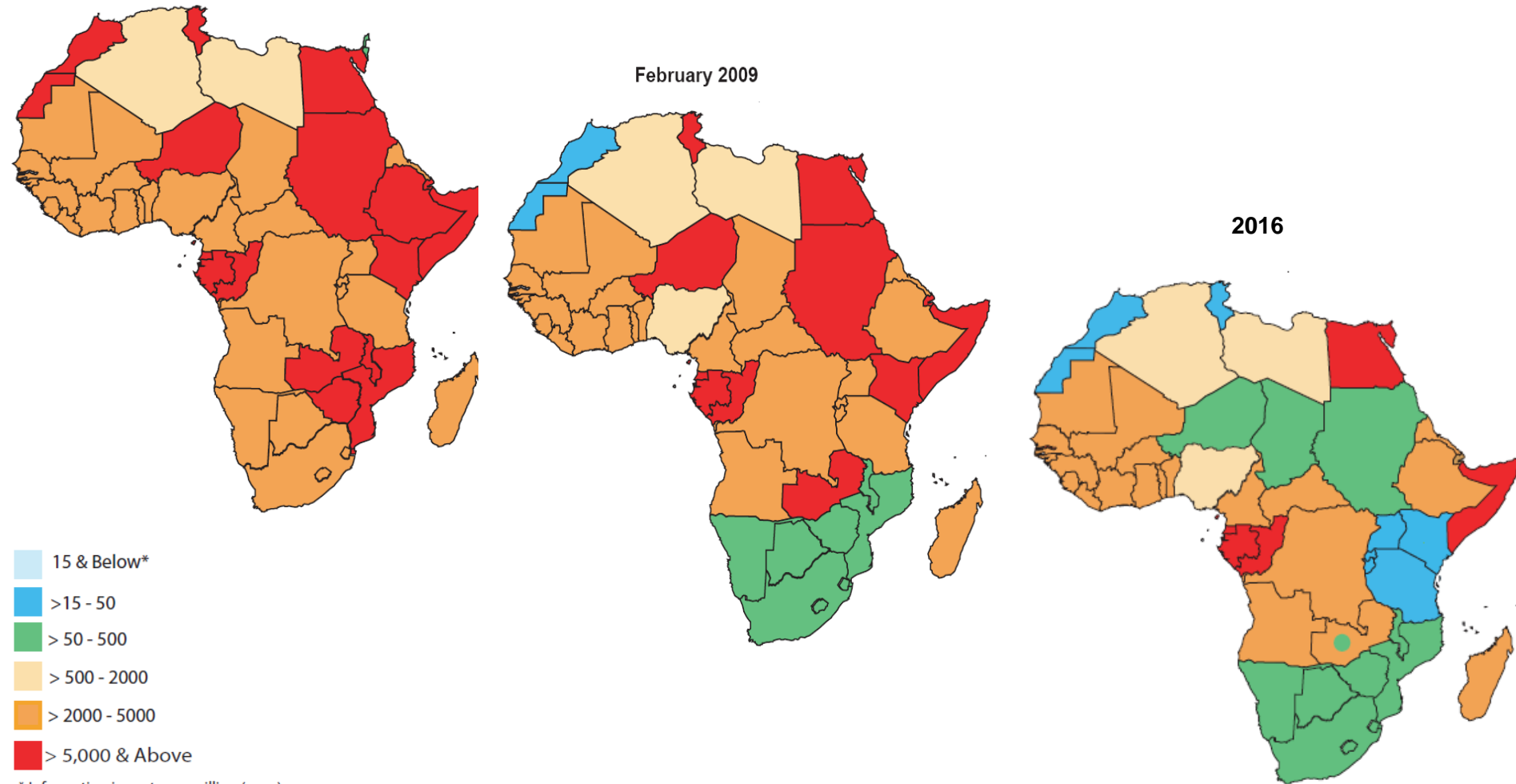
For additional details and comments per country, visit [www.unep.org/transport/pcfvl/](http://www.unep.org/transport/pcfvl/)

# Progress in Lowering Sulphur in Diesel in Africa

2002

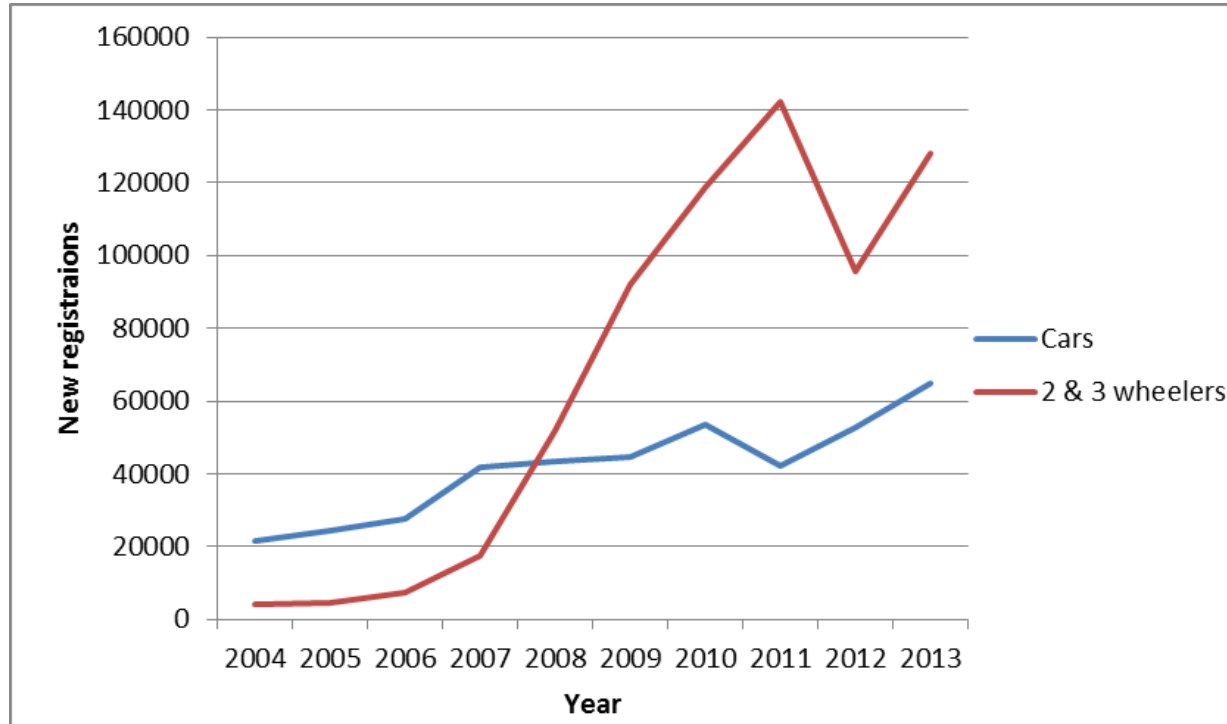
February 2009

2016



\* Information in parts per million (ppm)

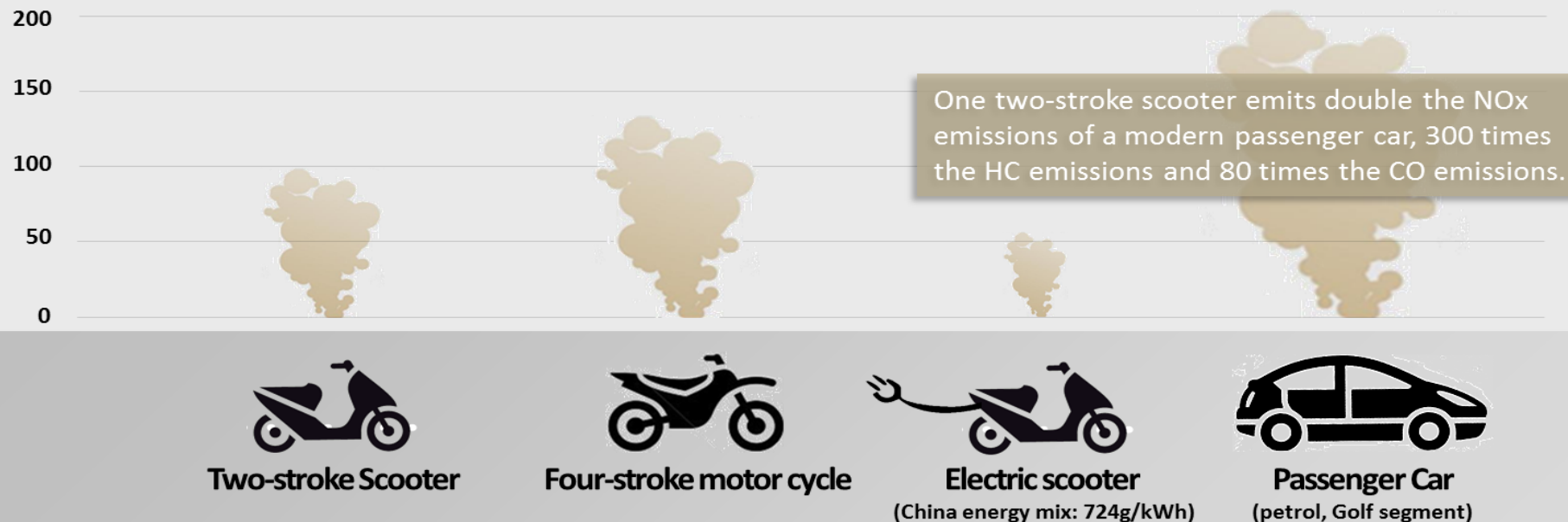
# Motorcycle challenge



New registrations of motorcycles vis-à-vis vehicles in Kenya



## Two-wheelers Emissions Comparison – Total Emissions [g CO<sub>2</sub> –equivalents / km]



## Particle Emissions [g PM/ km]



Graphics based on data from: Swiss EMPA, Materials Science & Technology "Umweltnutzen von E-Scootern"; TÜV NORD CERT, Bericht-Nr.: 8000410537-1 "Umweltprädikat Golf Modelljahr 2012"; ADB 2009 "Electric Bikes in the People's Republic of China Impact on the Environment and Prospects for Growth"

# Approaches to Reduce Vehicle Emissions

- Cleaner Fuels: low sulphur fuels
- Vehicle Import Restrictions:
  - Total ban on used vehicle imports
  - Import Age based restrictions
  - Higher taxation regimes for older used vehicles
  - Vehicle emission restrictions
- Mandatory Inspection and vehicle testing
- Cleaner public transport
- Cleaner vehicle technologies, electric motorcycles, hybrid etc



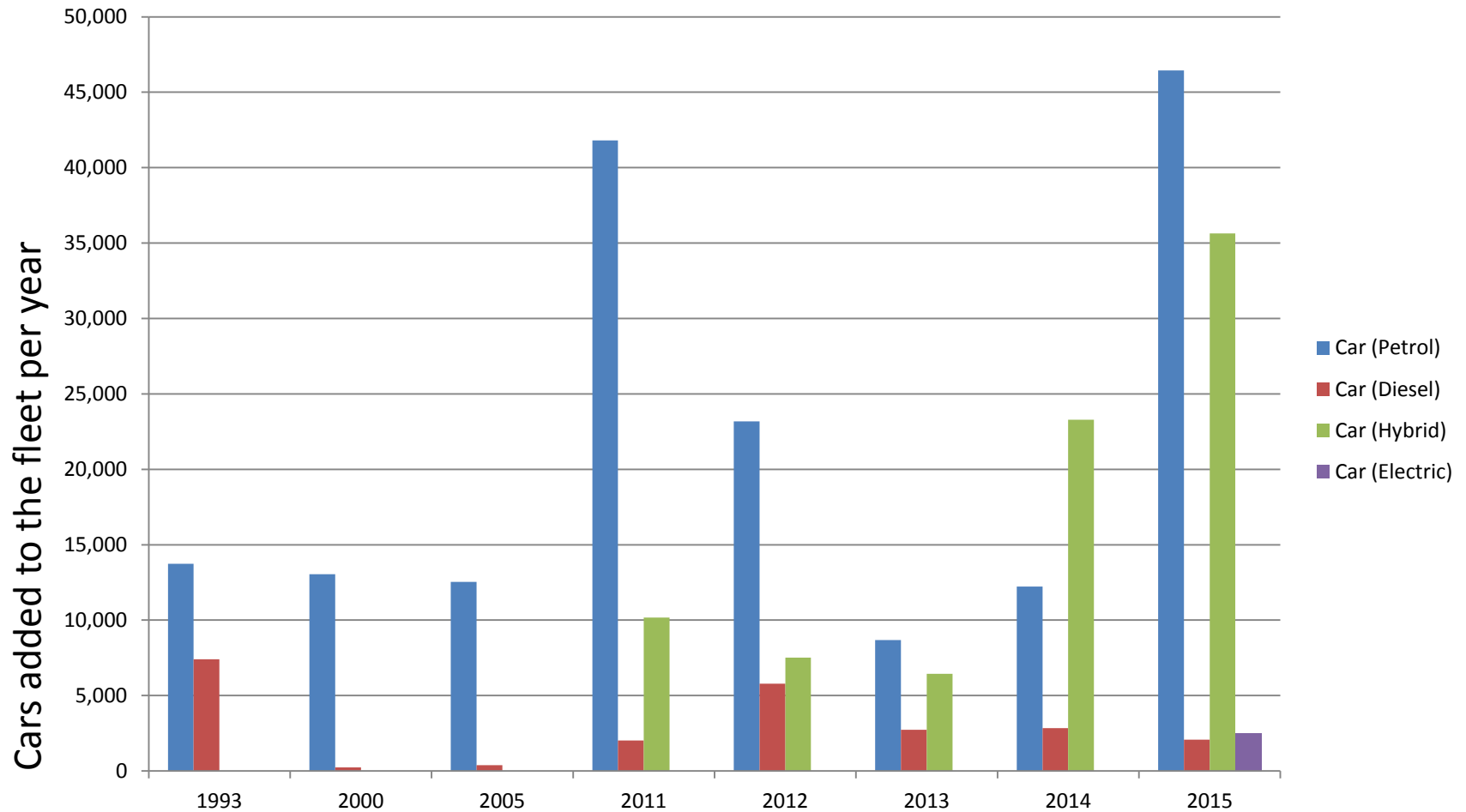


# Fiscal Levies on Motor Vehicles – 2015 January

# Sri Lanka

	Present							Cumulative	
	CD	PAL	Excise	VAT	NBT	Cess	Total	Excise	Total
<b>Petrol Car</b>									
<b>Golf Cars</b>	25%	5%	45%	12%	2%	0%	124%	100%	115%
<b>Less than 1,000 CC</b>	25%	5%	92%	12%	2%	0%	202%	150%	173%
<b>1,000 - 1,599 cc</b>	25%	5%	92%	12%	2%	0%	202%	150%	173%
<b>1,600 cc - 1,999 cc</b>	25%	5%	92%	12%	2%	0%	202%	150%	173%
<b>2,000 cc - 2,999cc</b>	25%	5%	122%	12%	2%	0%	251%	200%	230%
<b>Exceeding 3,000 cc</b>	25%	5%	137%	12%	2%	0%	276%	220%	253%
<b>Diesel - Car</b>									
<b>Less than 1,600 CC</b>	25%	5%	122%	12%	2%	0%	251%	200%	230%
<b>1,600 CC - 2,000 CC</b>	25%	5%	137%	12%	2%	0%	276%	220%	253%
<b>2,000 CC - 2,500 CC</b>	25%	5%	152%	12%	2%	0%	301%	240%	276%
<b>Exceeding 2,500 CC</b>	25%	5%	183%	12%	2%	0%	352%	300%	345%
<b>Hybrid Petrol Car</b>									
<b>Less than 1,000 CC</b>	15%	5%	14%	12%	2%	0%	60%	50%	58%
<b>1,000 - 1,599 CC</b>	15%	5%	14%	12%	2%	0%	59.75%	50%	57.50%
<b>1,600 cc - 1,999 cc</b>	15%	5%	14%	12%	2%	0%	60%	50%	58%
<b>2,000 cc - 2,999cc</b>	15%	5%	40%	12%	2%	0%	100%	85%	98%
<b>Exceeding 3,000 cc</b>	15%	5%	57%	12%	2%	0%	126%	100%	115%
<b>Hybrid Diesel Car</b>									
<b>Less than 1,600 CC</b>	15%	5%	21%	12%	2%	0%	71%	60%	69%
<b>1,600 CC - 2,000 CC</b>	15%	5%	21%	12%	2%	0%	71%	60%	69%
<b>2,000 CC - 2,500 CC</b>	15%	5%	40%	12%	2%	0%	100%	85%	98%
<b>Exceeding 2,500 CC</b>	15%	5%	57%	12%	2%	0%	126%	100%	115%
<b>Electric Car</b>									
<b>Car - Electric</b>	15%	5%	0%	12%	2%	0%	34%	2.5%	25%

# Results of tax incentives in Sri Lanka





# Vehicle inspection and Emissions Testing in Addis Ababa



**Need to establish a desired performance standard to carry out inspection and testing**

## **Transport Unit**

Division of Technology, Industry and Economics  
United Nations Environment Programme (UNEP)

P.O. Box 30552

00100 Nairobi

Kenya

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

Website: [www.unep.org/transport](http://www.unep.org/transport)

