

Global Trends in Sulphur Reduction

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11 May 2017, Blantyre, Malawi

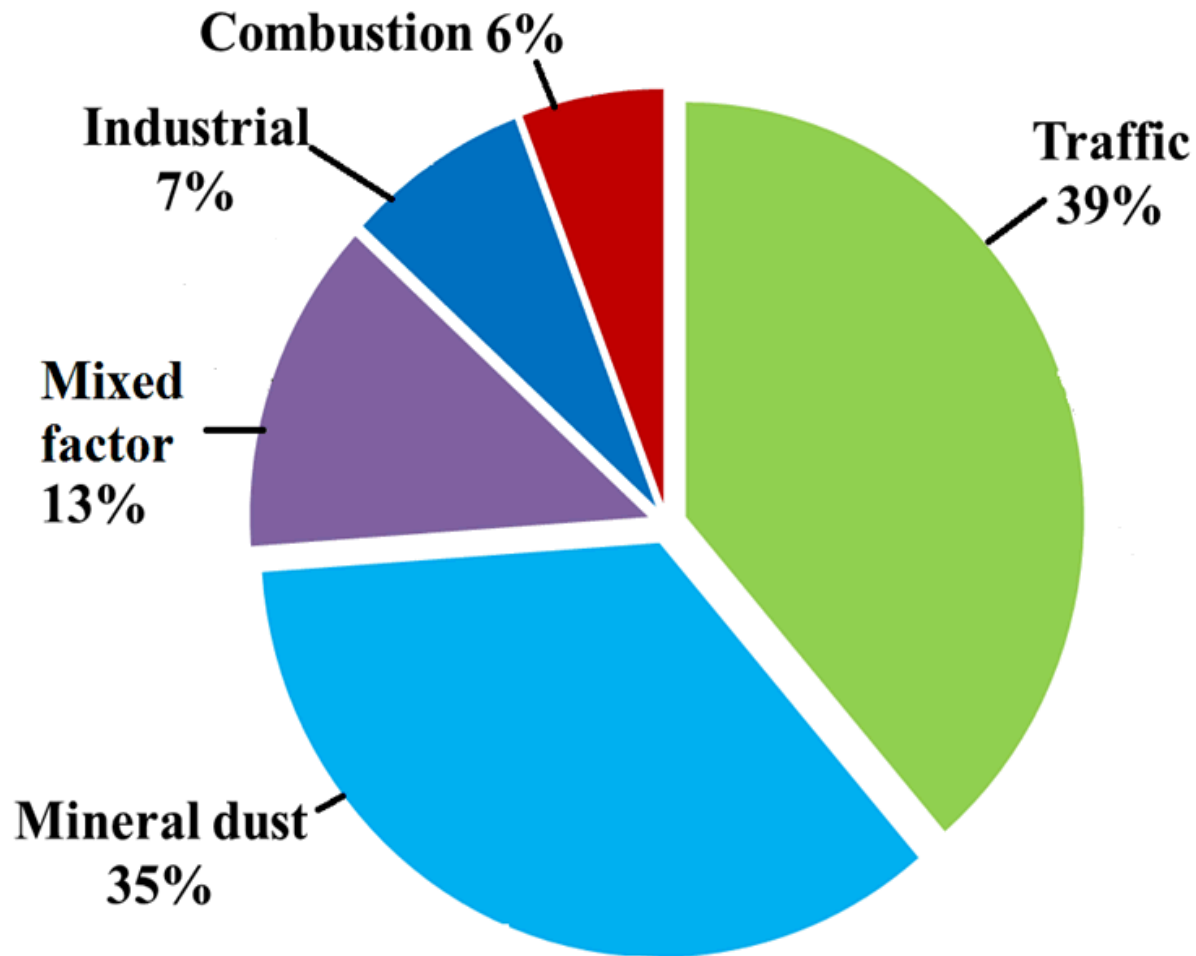




Local solutions exist

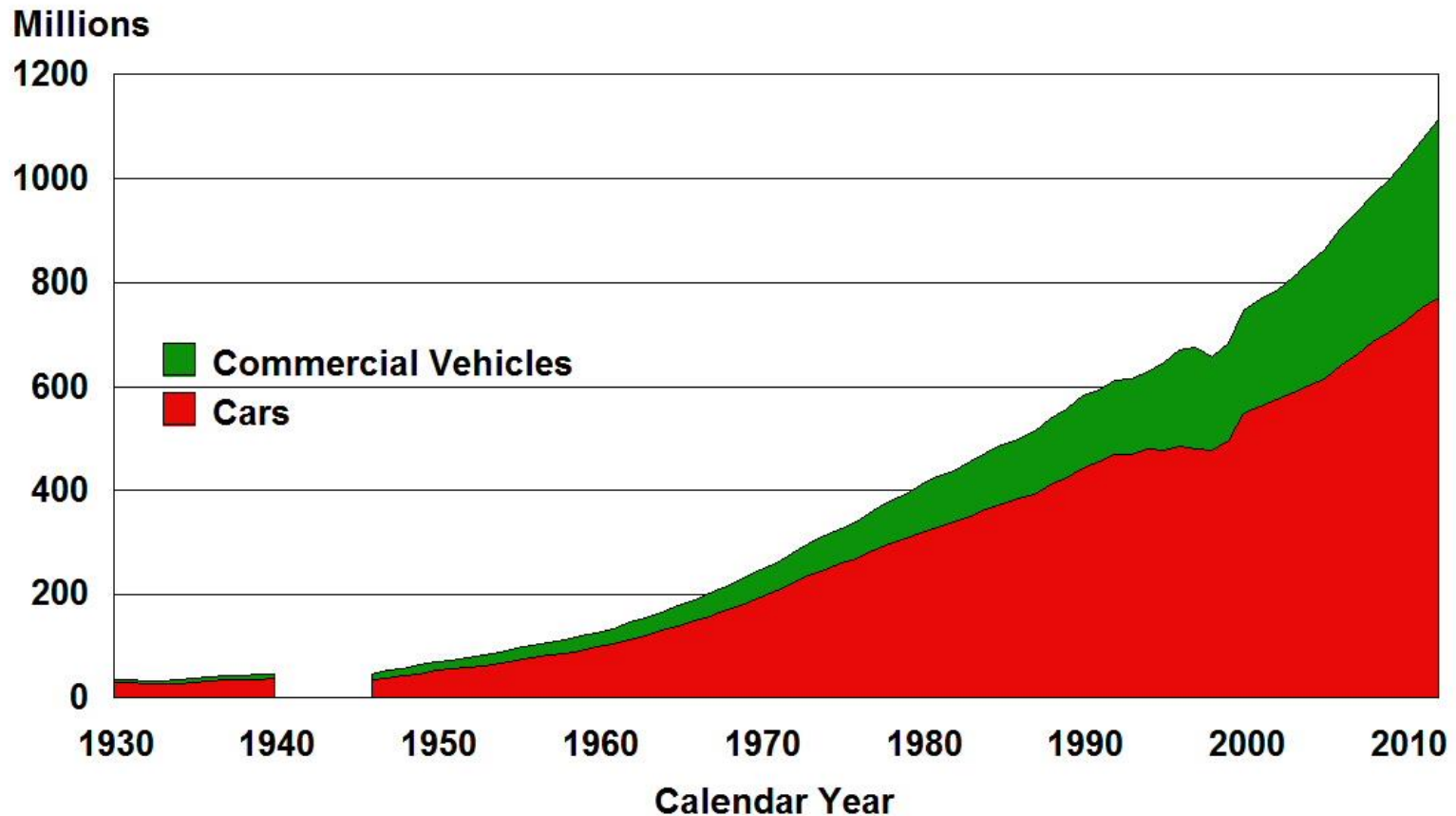


Main Sources of PM in Nairobi

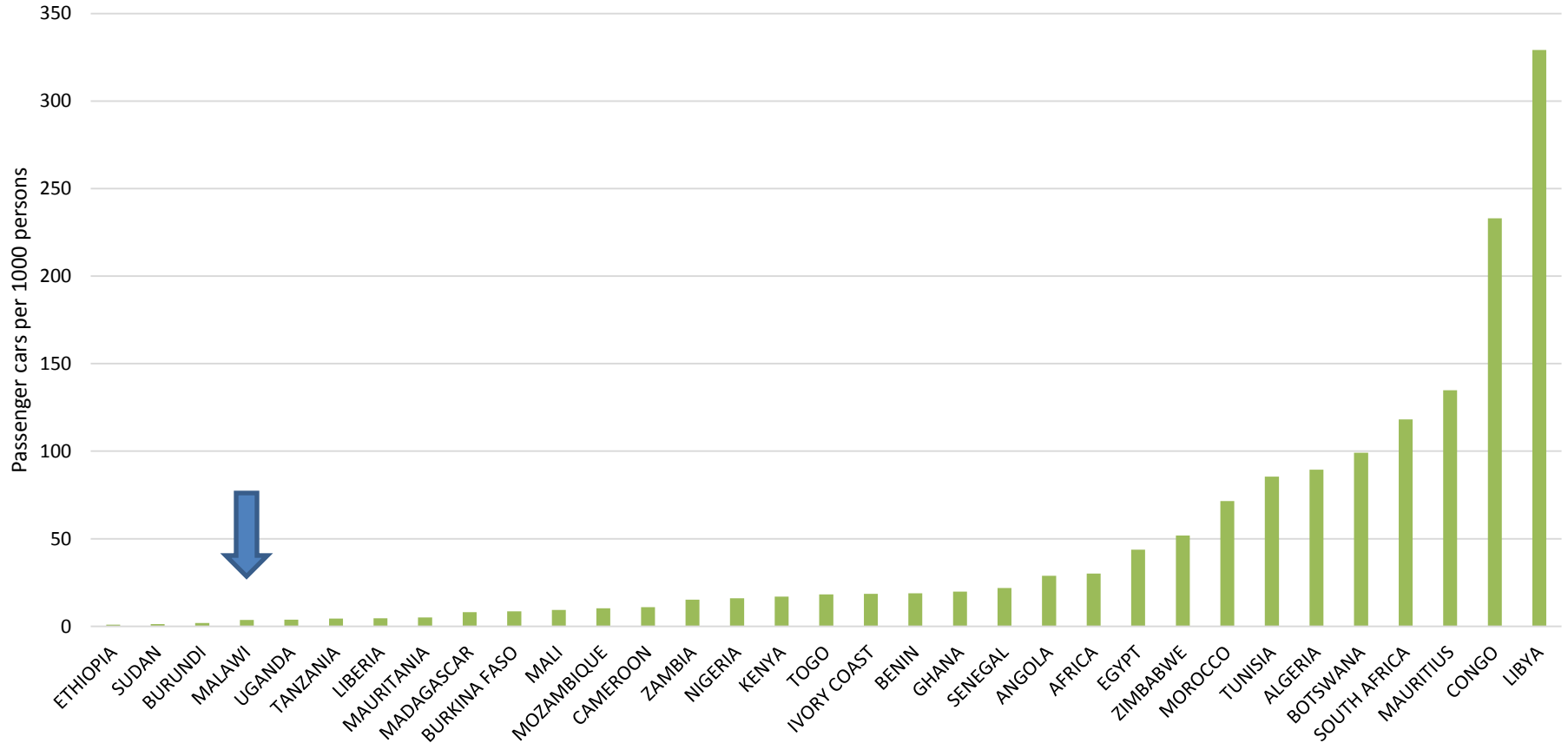


Source: S. M. Gaita et al.: Source apportionment and seasonal variation of PM_{2.5} in Nairobi

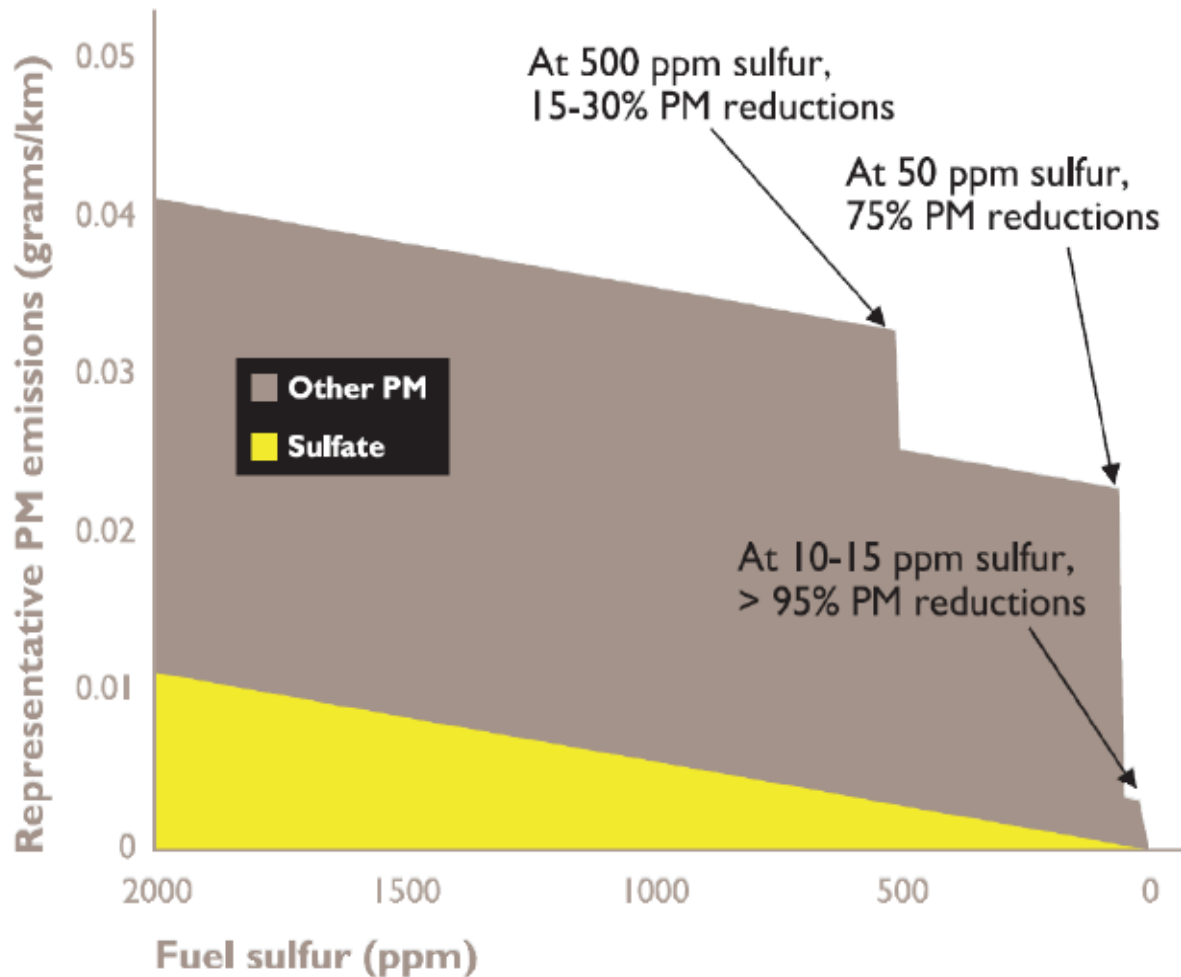
World Population of Cars, Trucks and Buses



Motorization in Africa

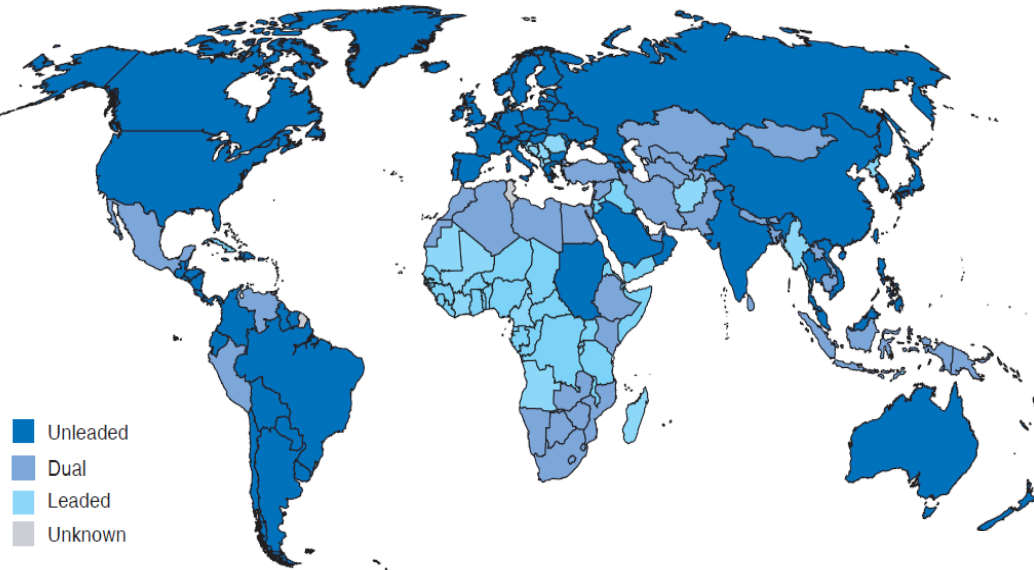


Lowering sulphur reduces vehicle emissions



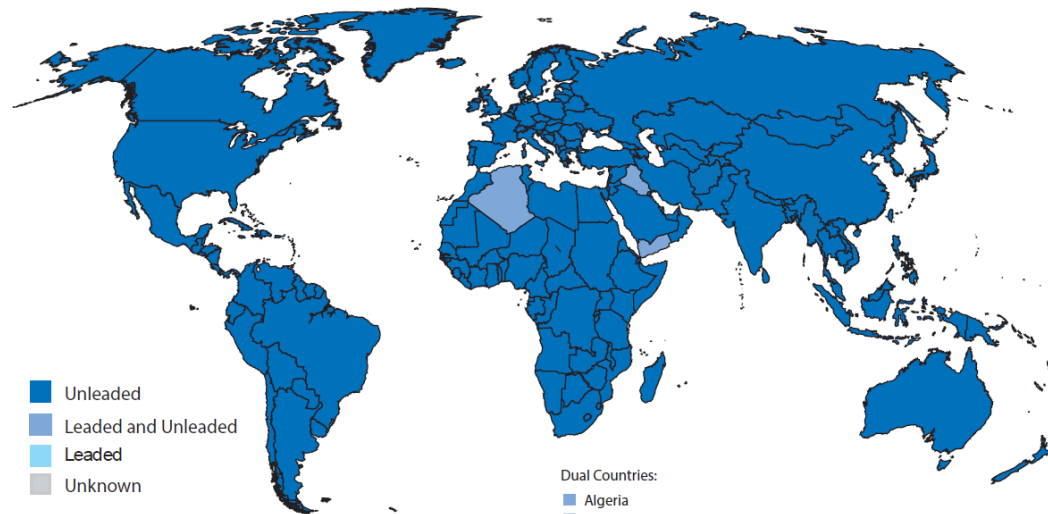
Sulphur levels proportional to PM and SO₂ emissions in all cars - new and old cars

Leaded Countries 2002 and 2016



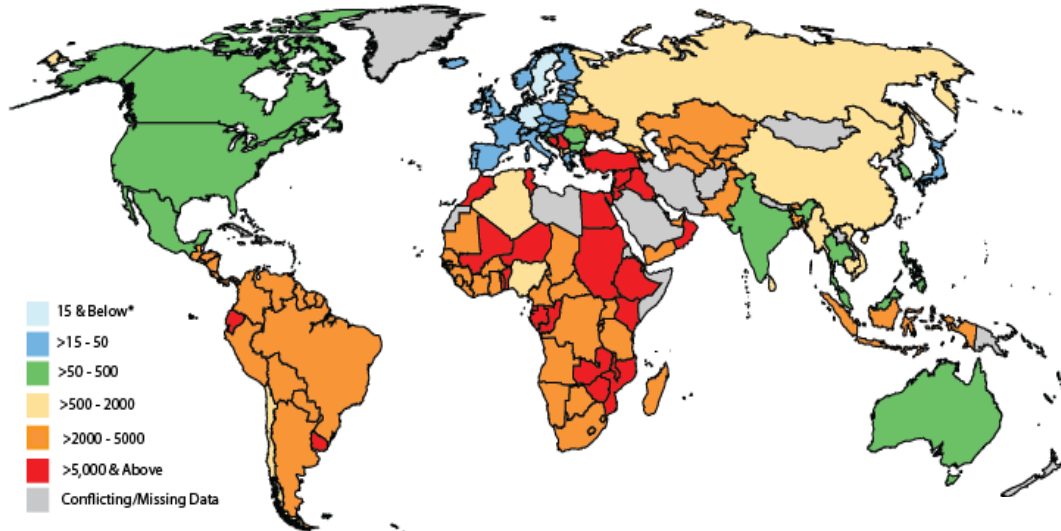
Status as of End 2002

Over 80 countries
supported to eliminate
leaded petrol



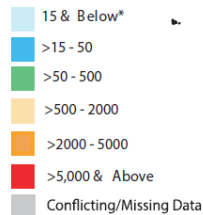
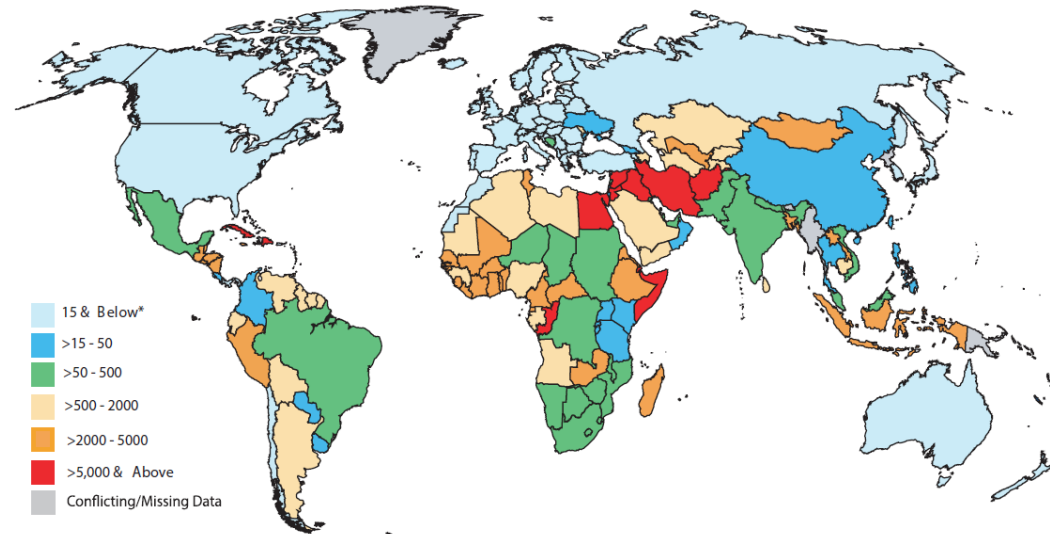
- Unleaded
- Leaded and Unleaded
- Leaded
- Unknown

- Dual Countries:
- Algeria
 - Yemen
 - Iraq



* Information in parts per million (ppm)

Diesel Sulphur 2005 and 2016



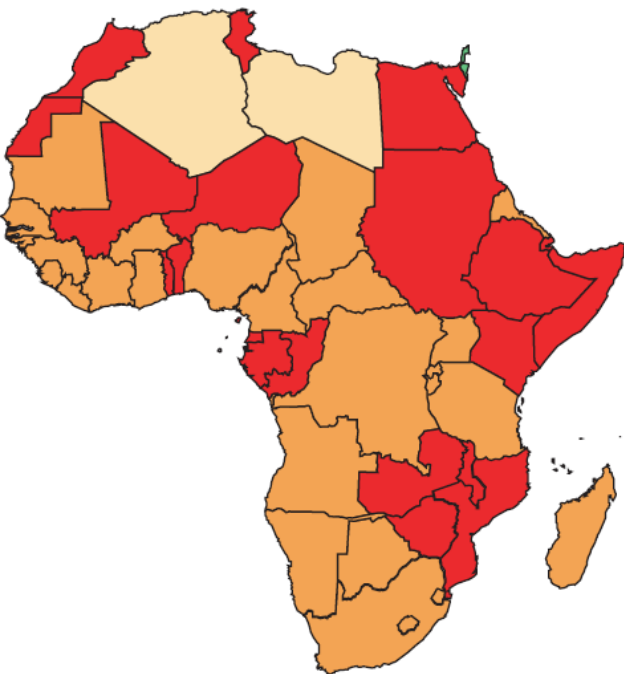
* Information in parts per million (ppm)

For additional details and comments per country, visit www.unep.org/transpo rt/pcf/v/

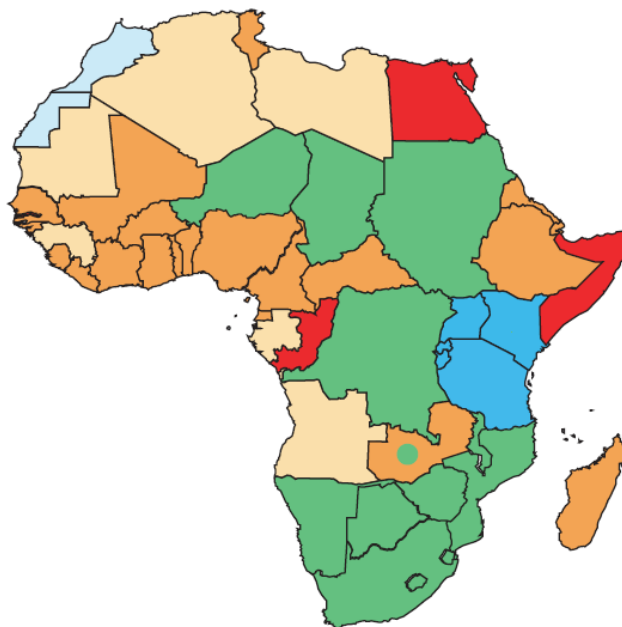
- 13 countries at 50 ppm & below
- More countries have lowered sulphur levels
- More cities at 50 ppm

Progress in Lowering Sulphur in Diesel in Africa

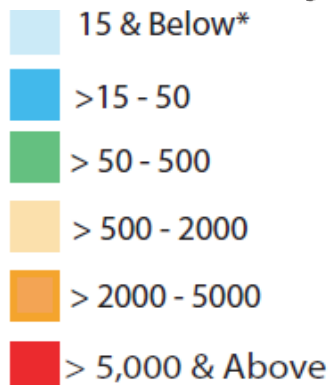
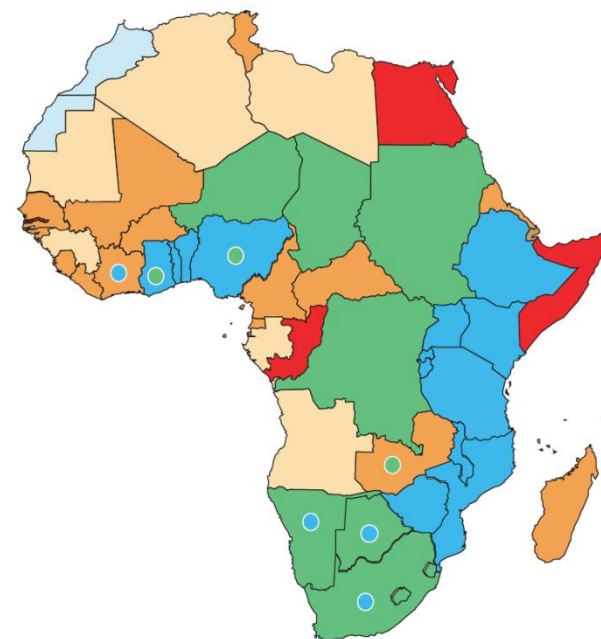
2002



2016



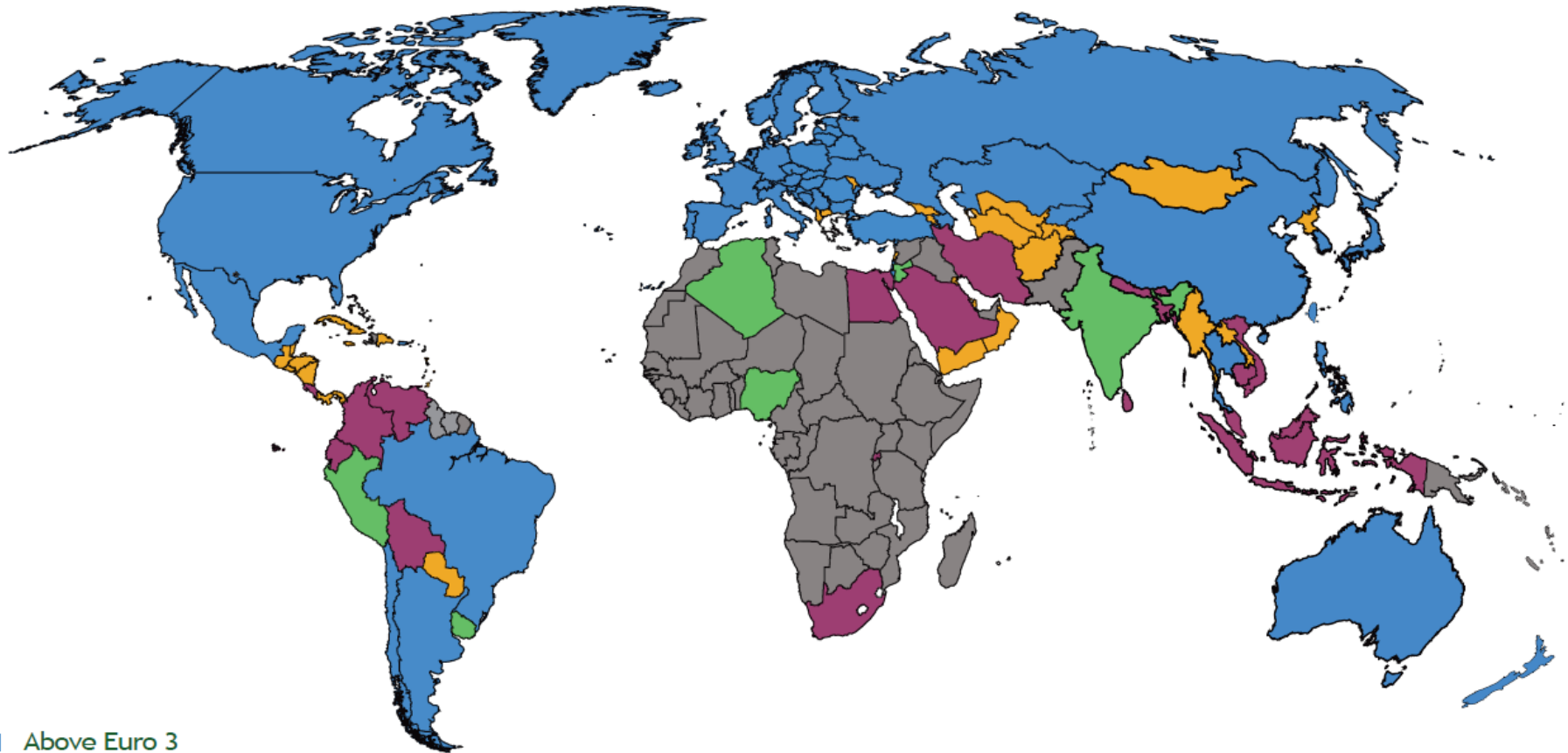
Planned 2017



* Information in parts per million (ppm)

Vehicle Emissions Standards

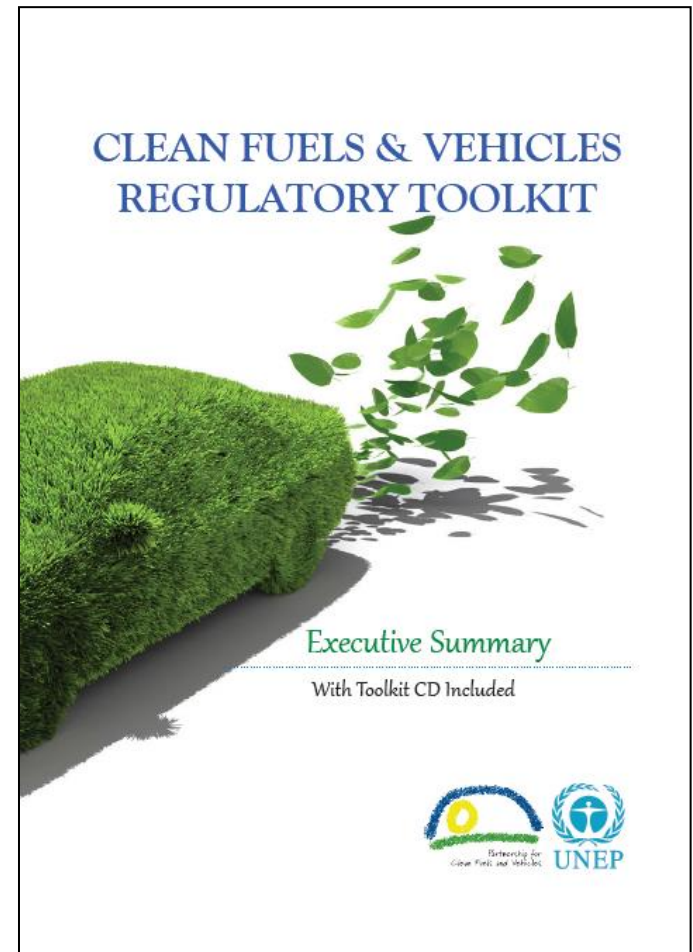
December 2016



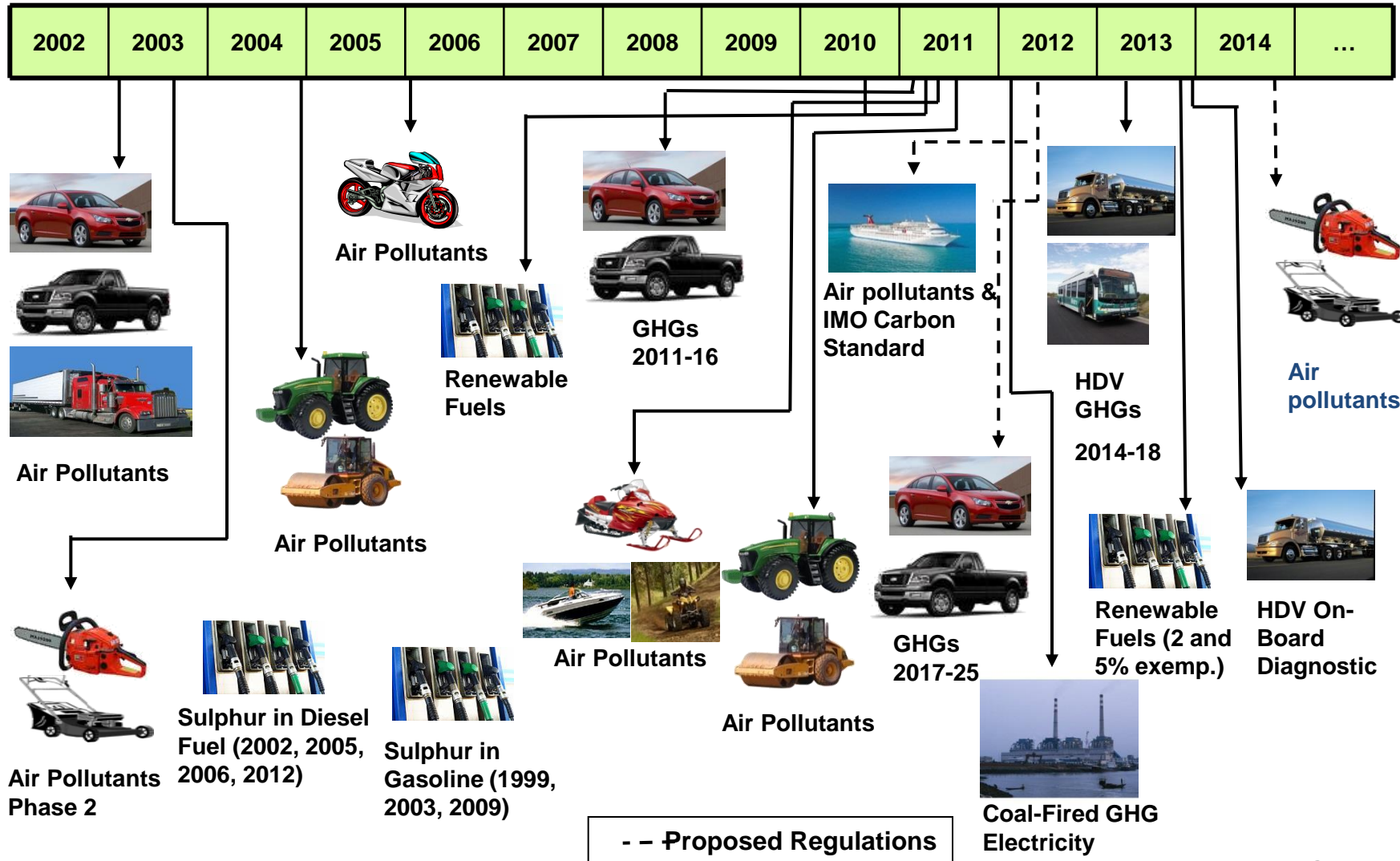
- Above Euro 3
- Euro 3
- Below Euro 3
- No Policy
- Unkown

Clean Fuels & Vehicles Regulatory Toolkit

- Systems approach links fuel quality to vehicles emission standards for max emission reduction benefits
- Fuels and vehicles not matching thus potential emissions reductions not achieved
- Continued support to countries to develop long term roadmaps to reduce vehicle emissions
- Support for I & M programs



Canadian Vehicles and Fuel Quality Regulations



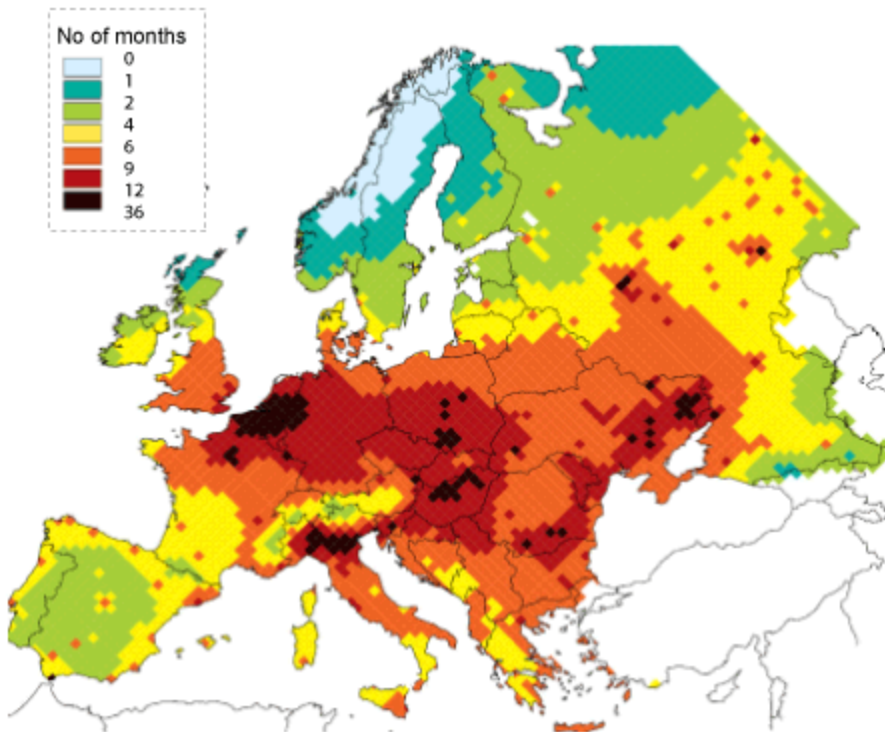
Summary of Euro Stages and Fuel Quality Standards in Europe - Timelines⁶⁷

Vehicle Emissions Standards			Fuel Quality	
Year	Light Duty	Heavy Duty	Year	Main Change in Properties
1980-90	Pre-Euro 1		1976-80	Sulfur and lead gradually reduced
1988		Euro 0	1989	Benzene (5%) and octane start to be regulated
1992		Euro I		
1993	Euro 1		1994	Further Sulfur reduction
1995		Euro II	1996	
1996	Euro 2			
2000	Euro 3	Euro III	2000	Directive 98/70/EC No Lead in gasoline Sulfur in gasoline 150 ppm, in diesel 350 ppm Aromatics, Octane, oxygen, olefins, benzene limits
2005	Euro 4	Euro IV	2005	Sulfur in gasoline and diesel 50 ppm (availability of 10 ppm must be ensured) Aromatics lowered
2008		Euro V		
2009	Euro 5		2009	10 ppm gasoline and diesel
2011			2011	E10 introduced
2013		Euro VI		
2014	Euro 6			

Source: Derived from IFQC

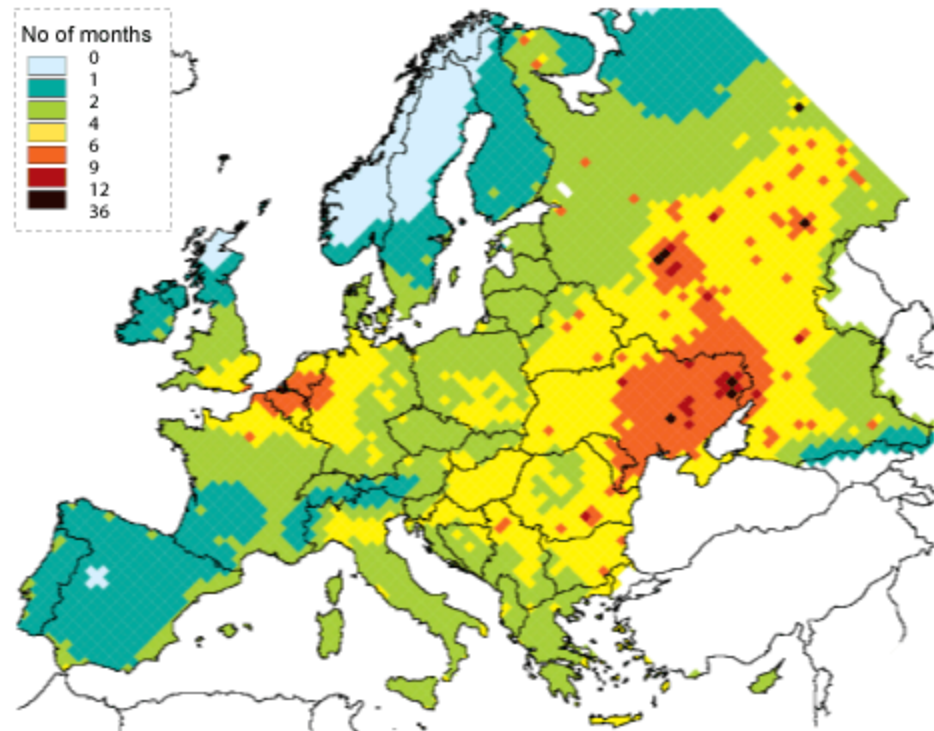
Progress in PM reductions in Europe 2000 - 2020

→ Reduction in life expectancy due to exposure to PM 2,5
Year 2000



SOURCE: Clean Air for Europe Programme / www.environment.no

→ Reduction in life expectancy due to exposure to PM 2,5
Year 2020



SOURCE: Clean Air for Europe Programme / www.environment.no

Paris drives old cars off its streets

Life | Fri Jul 1, 2016 8:33am

Paris banned old, exhaust-belching cars from its streets on Friday in a war on air pollution that environmentalists hope will also drive dirty vehicles from the centers of other European cities.

Air pollution, in large part caused by fine particulate fuel emissions, kills 48,000 people each year in France, some 400,000 in Europe and around 3.7 million worldwide, data published by France's public health agency this month showed.

Any car registered before Jan. 1, 1997, will be barred from the city's streets from Monday to Friday, from 8 a.m. to 8 p.m.

Some owners protested by parking their vehicles near the National Assembly and Champs Elysees avenue to denounce a ban they say will hurt poor people most and slash the resale value of their vehicles...

Paris Mayor Anne Hidalgo says the ban could be extended in 2020 to all combustion-engine cars more than nine years old.

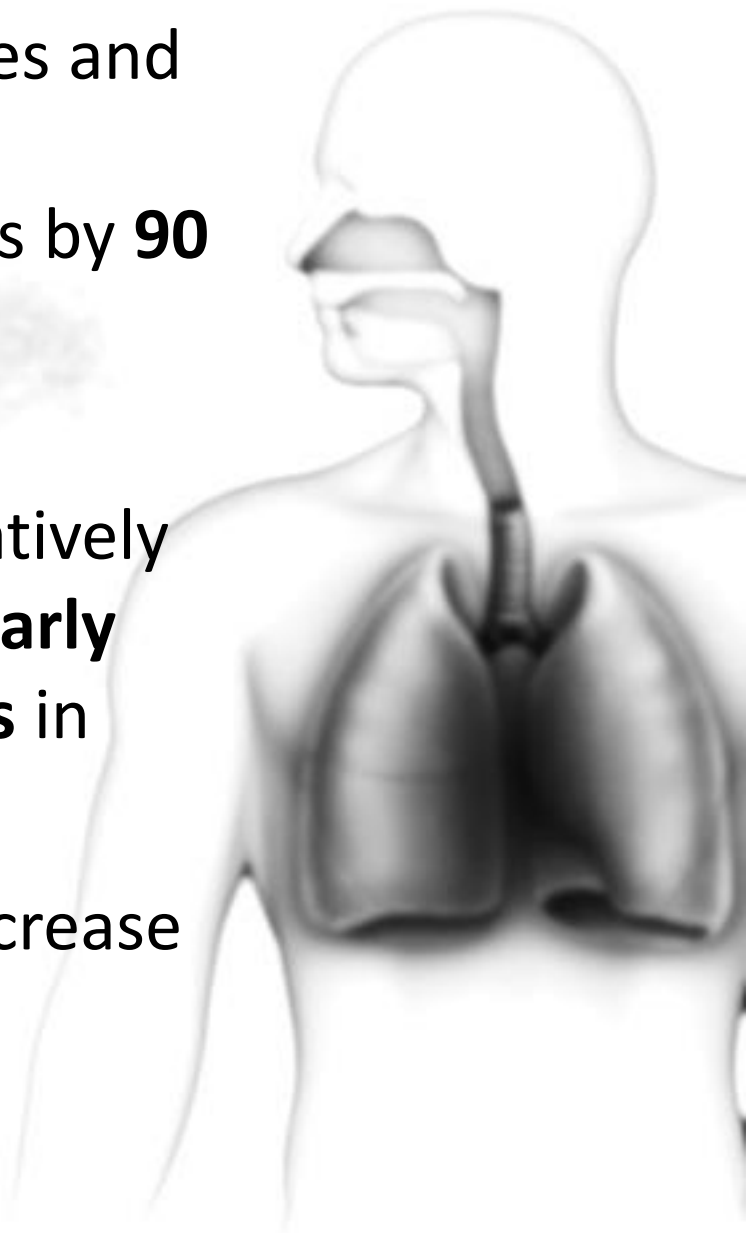
Norway is planning to ban petrol- and diesel-fueled cars from 2025 and several cities in Europe are testing various anti-pollution or anti-congestion measures based on tolls for city center access or temporary and selective car bans during surges in pollution levels.



A global transition to Euro 6/VI vehicles and 10 ppm fuels by 2030 would:

- reduce global vehicle PM emissions by **90 percent** and **total adverse health outcomes by 75 percent** (from 2000 levels)
- save 25 million years of life cumulatively (4.4 million in Africa) and **reduce early deaths by more than 210,000 lives** in cities
- *despite* a projected 150 percent increase in vehicle activity.

ICCT 2013: <http://www.theicct.org/global-health-roadmap>



Next steps to sustainable transport

Vehicle emission standards (Euro 4) with matching fuel quality



Clean soot free buses esp for BRT (Euro IV and above)

Fuel economy vehicles (fiscal policies and consumer awareness)



NMT policies and infrastructure



UN Environment Transport Programmes



Share the Road (StR)



Global Fuel Economy Initiative (GFEI)



Electric Mobility



Partnership for Clean Fuels and Vehicles (PCFV)



Climate and Clean Air Coalition (CCAC)

Heavy Duty Diesel Initiative
Oil and Gas Methane Partnership



Thank you



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www.unep.org/transport
www.unep.org/ccac