Global Progress to Low Emission Vehicles

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29 January 2019
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
Why cleaner fuels and vehicles

→ An estimated 7 million people died in 2016 from air pollution;
→ Small particulates (PM10 or PM2.5) estimated to cause over 4.2 million premature deaths each 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;
→ Diesel vehicles responsible for significant PM pollution in cities
DISEASES DUE TO:

- $O_3$
- PM2.5 AIR POLLUTION

- Chronic obstructive pulmonary disease (COPD)
- Childhood pneumonia
- Ischaemic heart disease
- Stroke
- Asthma
- Breathing problems
- Airway inflammation
- Chronic respiratory illness
- Reduced lung function
- Low birth weight

APPROXIMATE SHARE OF PREMATURE DEATH FROM AIR POLLUTION (YEAR 2012)

- America: 3%
- Europe: 6%
- Eastern Mediterranean: 8%
- South East Asia: 35%
- Western Pacific: 41%
Main Sources of PM in Nairobi

- Traffic: 39%
- Mineral dust: 35%
- Mixed factor: 13%
- Industrial: 7%
- Combustion: 6%

Source: S. M. Gaita et al.: Source apportionment and seasonal variation of PM2.5 in Nairobi
World Population of Cars, Trucks and Buses

Calendar Year

Source: Mike Walsh
Motorization in Africa

Passenger cars per 1000 persons

[Graph showing the motorization levels of different African countries]
Newly imported vehicles in Uganda
Systems Approach to Clean Fuels and Vehicles

- Systems approach links fuel quality to vehicles emission standards for max emission reduction benefits

- Countries need to develop long term roadmaps to reduce vehicle emissions, that include Inspection & Maintenance / testing programs
Lower sulphur fuels reduce vehicle emissions

Sulphur levels proportional to PM and SO2 emissions in all cars - new and old cars
<table>
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<tr>
<th>Year</th>
<th>Light Duty</th>
<th>Heavy Duty</th>
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<th>Main Change in Properties</th>
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<td>1980-90</td>
<td>Pre-Euro 1</td>
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<td>Sulfur and lead gradually reduced</td>
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<td>1988</td>
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<td>Aromatics, Octane, oxygen, olefins, benzene limits</td>
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<td>2005</td>
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Source: Derived from IFQC
Progress in PM reductions in Europe 2000 - 2020
Development of New Vehicle Emission Standards

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2000: CHINA 1 Standard being Implemented
2017: CHINA 5 Standard being implemented for gasoline vehicles from Jan 1st and for diesel vehicles from July 1st

1. Unit emission of new vehicle has significantly reduced by over 90%.
2. Emission control technologies have been developing rapidly, which took Europe more than 20 years to achieve the same levels.
Air Pollution still a challenge

- **Paris** drives old cars off its streets as air pollution, in large part caused by fine particulate fuel emissions, kills 48,000 people each year in France.

- **23,500 Britons** die prematurely from inhaling NOx emissions such as nitrogen dioxide (NO2) particles, emitted by diesel engines. Another 29,000 die from inhaling sooty particulate matter.

- **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.

- **Delhi** is expected to have the world's highest number of premature deaths due to air pollution by 2025 with nearly 32,000 fatalities.

- **China**: Limits have been placed on car use on high alert days.
Progress towards Low Sulphur Diesel
Progress in Lowering Sulphur in Diesel in Africa

February 2009

2018
Vehicle Emissions Standards

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

www.unep.org/Transport
Electric Mobility
Next Steps to Low Emission Transport

- Low sulphur fuels
- Vehicle standards (Euro 4/IV)
- Clean buses (Euro IV)
- Fuel economy vehicles
- Electric Motorcycles
- NMT policies and infrastructure
Thank you

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