Global Vehicle Emissions Inventories

Michael P. Walsh
Reconciling the Diesel Engine With the Environment: A Comprehensive Approach

Common Aspects--
- Systems approach—fuel change enables clean technologies
- Large environmental benefits
- Responsive to needs of States to meet air quality goals
- Collaborative process

Highway
- Tier 2 Light-duty (1999)

Nonroad

Locomotive/Marine
- Tier 4 diesel (2004)
Trends in Passenger Car Exhaust Emissions Standards

NOx Emissions Standards
Grams/Kilometer

USA
EU
China
Beijing
Vehicle age distribution in Tanzania.
Source: Tanzania Revenue Authority
Black Carbon Emissions By Road Vehicle Type

Base Case

Million Metric Tons


MC  HDT  MDGT  MDT  LDDV  LDGV
Targets of Opportunity

- China 2015 Euro 6 & Euro VI
- India 2015 Euro 6 & Euro VI
- Brazil 2015 Euro 6 & Euro VI
- Africa 2015 Euro 4 & Euro IV, MC Euro 3
- Middle East 2015 Euro 4 & Euro IV, MC Euro 3
- Latin America 2015 MC Euro 3
Global Trends in On Road Vehicle Black Carbon Emissions
Normalized to 2000
Black Carbon Emissions By Road Vehicle Type
Tight Standards Case

Million Metric Tons


- MC
- HDT
- MDGT
- MDT
- LDDV
- LDGV
Road Vehicle Emissions By Country

Black Carbon

Tight Standards Case

Million Metric Tons

OECD North Am
OECD Europe
OECD Pacific
FSU
East Europe
China
Other Asia
India
Middle East
Latin America
Africa
Global Trends in On Road Vehicle Emissions
Normalized to 2000

Graph showing trends in on-road vehicle emissions normalized to the year 2000. The emissions are represented by different lines and markers for THC, CH4, NOx, PM, CO, and N2O, with the years from 2000 to 2050 on the x-axis and normalized emissions on the y-axis.
Road Vehicle Emissions By Country

Nitrogen Oxides

Base Case

Million Metric Tons

0 10 20 30 40 50

OECD North Am
OECD Europe
OECD Pacific
FSU
East Europe
China
Other Asia
India
Middle East
Latin America
Africa
Road Vehicle Emissions By Country
Nitrous Oxide
Base Case
Road Vehicle Emissions By Country

Methane

Base Case

Million Metric Tons

OECD North Am
OECD Europe
OECD Pacific
FSU
East Europe
China
Other Asia
India
Middle East
Latin America
Africa