Achieving SDGs and Climate Goals Through Cleaner Fuels and Vehicles and Improved Fuel Economy

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Clean Air Asia

National Workshop on Developing Clean and Efficient Vehicle Policy for Bangladesh

The Westin Dhaka
Dhaka, Bangladesh
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Clean Air Asia is an international NGO that was established as the premier air quality network for Asia by the Asian Development Bank, World Bank and USAID in 2001, and operates since 2007 as an independent non-profit organization.

Clean Air Asia works towards achieving better air quality and livable cities by translating knowledge to policies and actions to reduce air pollution and greenhouse gas emissions from transport, energy, other sectors.
Clean Air Asia works on the issues that matter the most for better air quality.

- Air Quality and Climate Change
  - Transboundary Haze
  - Stationary sources
  - Indoor air pollution
  - Mobile Sources

- Sustainable Transport
- Mobile Sources
- Low Emission Urban Development
- Green Freight and Logistics
- Clean Fuels and Vehicles

- City Certification
What we do!

We reduce air pollution and greenhouse gas emissions by

- Building capacity
- Disseminating data and knowledge
- Informing stakeholders about air pollution, its links to climate change and sustainability
- Advocating for the development and implementation of effective and appropriate policies and practices

- Headquartered in the Philippines
- Offices in China & India
- Country networks in Indonesia, Nepal, Philippines, Sri Lanka, Vietnam and Malaysia
CO\textsubscript{2} emissions from transport

THE TRANSPORTATION SECTOR
A major contributor to global energy-related CO\textsubscript{2} emissions

GLOBAL ENERGY-RELATED EMISSIONS
\approx 30 \text{ Gt CO}\textsubscript{2}

TRANSPORT EMISSIONS
\approx 7 \text{ Gt CO}\textsubscript{2}

ROAD TRANSPORT EMISSIONS
\approx 5 \text{ Gt CO}\textsubscript{2}

Sources:
Energy consumption in transport

World transport energy use by mode, 1971-2014

Road transport modes account for most energy consumption. The share of road in total transport final oil use has grown from 30% in 1971 to 50% in 2014.

Sources: IEA World Energy Balances, 2015 and ETP 2017

From presentation of IEA, on “Transport Energy Analysis and Modelling” at Energy Efficiency Training Week 2017 Asia-Pacific (Singapore)
Transport and climate change

Climate change mitigation by sector

- Transport needs to contribute 18% to global carbon emission reductions to reach a 2DS
- Most of the vehicle fleet growth will take place in non-OECD countries
- Climate targets cannot be reached without contribution from developing & transitional countries

See IEA website https://webstore.iea.org/ for updates on ETP publication
Motor vehicles ~1 billion today…
over 2.5 billion by 2050

• 90%+ of growth in developing, emerging economies
• Opportunity for energy efficiency, green economy innovation

Source: IEA
Transport and air pollution

Transport accounts for:

- More than half of global NO\textsubscript{x} emissions
- More than a quarter of all CO emissions
- Almost a quarter of volatile organic compounds emissions
- Substantial shares of SO\textsubscript{2} and PM emissions

Fig. 4: Selected primary air pollutants and their sources, 2015

Global Fuel Economy Initiative

DOUBLE AVERAGE FUEL ECONOMY

OF NEW CARS BY 2030
AND ALL CARS BY 2050

Strong fuel economy improvements could yield a 50% reduction in fuel use per km for new cars by 2030.
GFEI at the global stage

2009
GFEI Launched

2011
UN Sec General’s Climate Summit - GFEI was launched as one of the accelerators

Sustainable Energy for All – EE as one key focus

2013
Doubling Energy Efficiency in the Transport Sector in the SDGs

2014
G20 Energy Efficiency Action Plan includes Fuel Efficiency particularly HDVs

2015, 2016, 2017
COP

2018
High-Level Political Forum on SDGs

GFEI at the global stage
Global Fuel Economy Initiative (GFEI)
Doubling the efficiency of the global car fleet by 2050
High average fuel economy in most developing countries and no policies.
## Doubling the efficiency of global car fleet by 2050

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<td>annual improvement rate (% per year)</td>
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### Required Improvements
- **GFEI target**
  - 2005 base year: -2.8%
  - 2015 base year: -3.7%

### Observations
- Slowing improvement in OECD countries
- Increasing improvement in non-OECD but not enough
- Still far from meeting the GFEI target

Source: IEA/GFEI, 2017
Baseline development

- Developing policy options towards energy efficiency improvements in the road transport sector requires a thorough understanding of the vehicle fleet going into the country, or the said baseline development, for target-setting and policy development.

- This would refer to data on newly registered vehicles that cover both brand-new vehicles and newly registered imported used vehicles for a certain baseline year.
What is fuel economy?
Fuel economy, fuel efficiency, fuel intensity are all fairly interchangeable terms, but fuel economy always refers to fuel use relative to distance travelled.

Vehicles use energy, and fuel economy measures energy per unit of vehicle travel.
- liters per 100 km (Europe)
- miles per gallon (USA)
- km per liter (Japan)

Fuel economy baseline development
- The fuel economy baseline is the weighted average fuel economy of all vehicles registered for the first time in a given year in a country
- The weighted average fuel economy is calculated using model-specific fuel economy values and the number of registered vehicles as weight
# Fuel economy policy options

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<th>Category</th>
<th>Measures</th>
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| Vehicle fuel efficiency standards | • Introduce and regularly strengthen mandatory standards  
• Establish and harmonize testing procedures for fuel efficiency measurement. |
| Fiscal measures              | • Fuel taxes and vehicle taxes to encourage the purchase of more fuel-efficient vehicles.  
• Infrastructure support and incentive schemes for very fuel-efficient vehicles. |
| Market-based approaches      | • Voluntary programs such as U.S. SmartWay and other green freight programs                                                             |
| Information measures        | • Vehicle fuel economy labels  
• Improving vehicle operational efficiency through eco-driving and other measures.                                                      |

Source: ICCT
To meet $\leq 2^\circ \text{C}$ scenario, 20% of all road vehicles must be electric-powered by 2030 (IEA).

Projections indicate that a MAJOR disruption is needed to increase electric mobility uptake.
EVs have been analyzed and compared against different types of fuels using the WTW approach. **WTW analysis** often separated into two stages:

- **Well to Tank (WTT)** – upstream phase from production (e.g. extraction of energy feedstock)
- **Tank to Wheel (TTW)** – operational phase of vehicle

EVs are often regarded as having zero tailpipe emissions, but wider impacts need to be considered (e.g. grid electricity emissions).

**Policy considerations: Greening the upstream**

E-mobility is not just about vehicles, it is a system. EV benefits could be more fully realized when energy supply itself (where power is generated from) mainly comprises renewables.
Electrification – what modes?

- Electrification will be crucial not only in passenger LDVs but also in:
  - Public transport (e.g. 100% electric bus fleets in Shenzhen, China)
  - Municipal cars
  - Two- and three-wheelers / tuk-tuks
  - Freight delivery vehicles in urban areas

- Fleet procurement: Partnerships between public authorities willing to mobilise deployment of clean vehicle fleets to minimise costs of public procurement, e.g.
  - 4 cities in USA (Los Angeles, Seattle, San Francisco, Portland) started a partnership to mass-purchase EVs for their public vehicle fleets.
  - The vehicles include not only regular passenger cars but also public bus fleets, police cruisers, street sweepers and trash haulers.

● Implementing fuel economy can substantially reduce CO2 emissions – supporting the Paris Agreement and also reduces energy demand and fossil fuel consumption, improve energy security, reduce national expenditures on fossil fuels, and reduce vulnerability to oil shocks.

● Important to understand the problem – establish baseline data / information to plan better and to monitor impacts like emission reduction, and to demonstrate a strong business case and determine appropriate interventions (e.g. technologies) for climate financing.

● Need for institutional framework to support integrated policies on transport.

● Have mechanisms to review policies, collect data, and impacts on the fleet to be able to adjust policies.

● Importance of multi-stakeholder collaboration.
Thank you!

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