



Testing the Energy Efficiency of HDV, tyres and Vehicle Cooling Systems

Takao Onoda
International Energy Agency
Takao.onoda@iea.org

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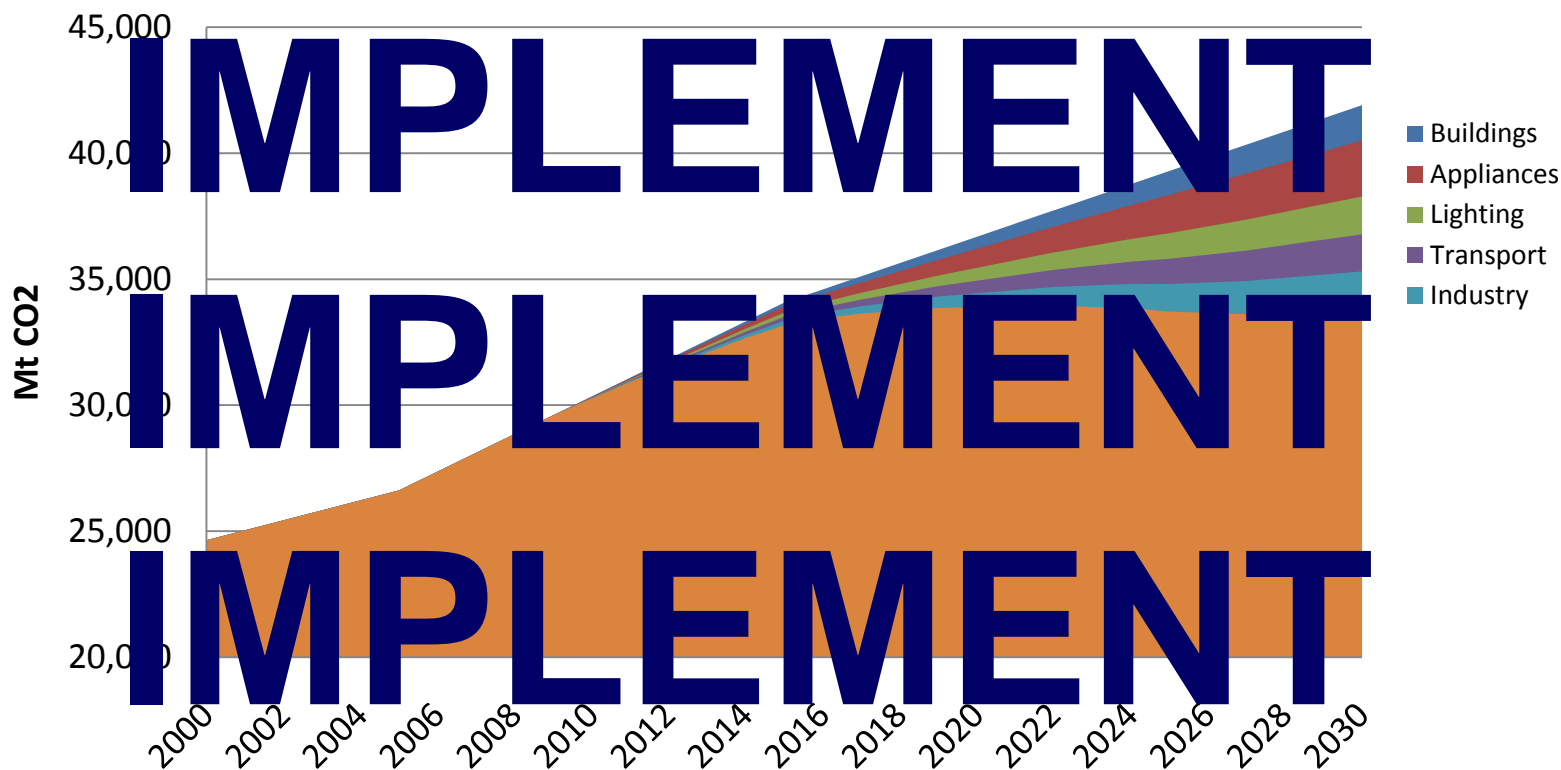


Content of the Presentation

- IEA policy recommendations
- HDV
- Tyres
- Other items



IEA 25 energy efficiency policy recommendations across 7 priority areas



Global implementation of recommendations could save around 8.2 GtCO₂/yr by 2030; this is equivalent to 20% of the WEO's global reference scenario energy related CO₂ emissions in 2030



IEA policy recommendations in Transport Sector

- **LDVs Fuel Efficiency Standards**
Introduction of mandatory standards
- **HDVs Fuel Efficiency Standards**
Introduction of mandatory standards
- **Non-engine components: Fuel-efficient Tyres**
Establishment of new international measurement procedure
TPMS
- **Eco-driving**
In-car feedback equipments



HDV - Background information

- Heavy-duty vehicles are responsible for 30% of world-wide fuel use
- Conventional wisdom
Commercial operators are more conscious of fuel costs than private drivers, obviating the need for policy intervention.



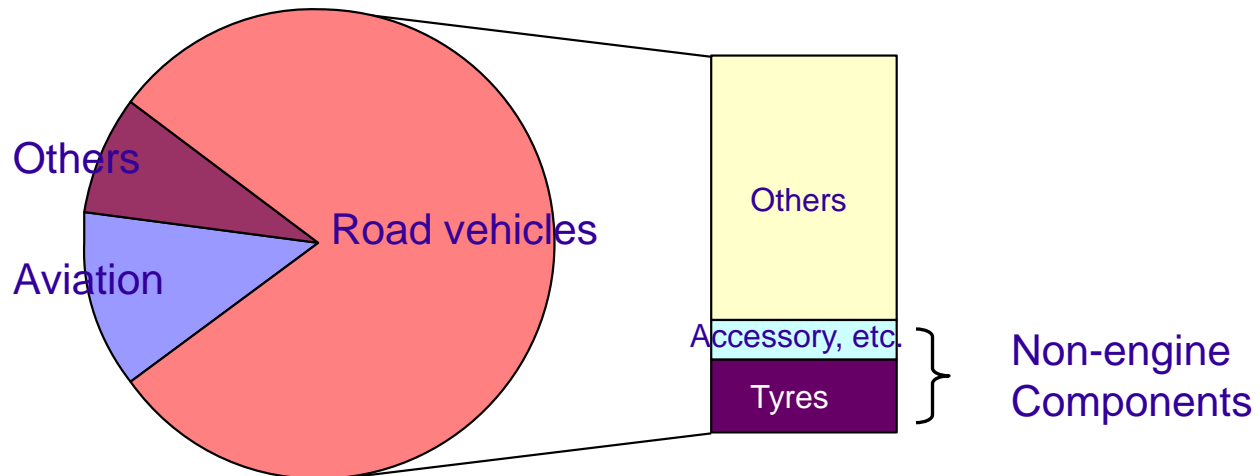
Test procedure for HDVs

- Japan developed a test procedure with computer simulation and introduced mandatory standards in 2006
- The IEA held a workshop in June 2007
- Participants' views
 - Potential HDV fuel efficiency improvements were not necessarily being delivered as quickly or as broadly as the conventional wisdom would suggest.
- Among challenges identified
 - Improved testing cycles
- UNECE/WP29 is finalizing Worldwide harmonized Heavy Duty Certification procedure

Non-Engine Components

- Why are they important?

- Non-engine components affect a substantial portion of fuel consumed by the motor vehicle



- Generally not covered by fuel efficiency test



Tyre Rolling Resistance

- Figure indicating the amount of energy dissipated when a tyre is deformed due to rubber hysteretic losses behavior
- Tyre Rolling Resistance (RR) varies widely
- 10% change in RR yields a 1 to 2 percent change in vehicle fuel economy
- 25% decrease in tyre inflation pressure increases RR by 10%



Activities in international Fora

● ISO

- ◆ Development of an ISO regarding a reference tyre rolling resistance measurement methods is its final stage (FDIS to be available this month)
- ◆ The ISO, although not fixed yet, has already been mentioned in the European Commission's proposed regulation on tyres

● World Forum for Harmonization of Vehicle Regulations (WP29)

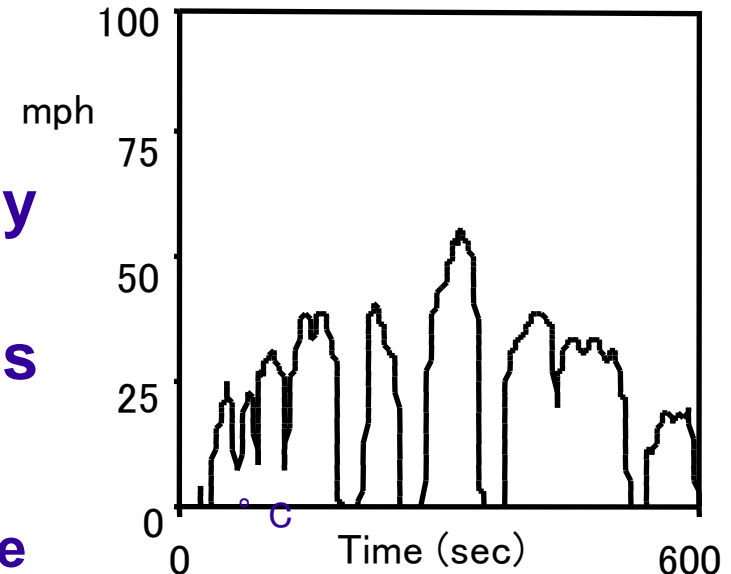
- ◆ Mandatory fitting of TPMS under discussion



Other items

● Vehicle cooling system

- ◆ Vehicle cooling system accounts for substantial portion of fuel consumed by vehicle accessory.
- ◆ Cooling Evaluation Methods
 - USEPA introduced a test procedure (SC3) which evaluates air conditioning use
 - ISO14505 to evaluate thermal environments in vehicles is under development
- ◆ An evaluation methods can be discussed in UNECE/WP29



SC3 mode

Ambient Conditions:

35 ± 2.8

Solar Heat Load Intensity:

850 W/m²

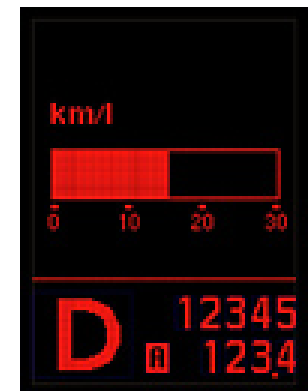
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Other items 2

● Eco-driving

- ◆ Eco-driving has the potential to reduce fuel consumption by around 10%.
- ◆ The positive effect of Eco-driving can be realized continuously with the following measure:
 - In-car feedback equipments to help drivers to maintain eco-driving behavior for long term.
- ◆ Standards or regulations for this kind of equipment can be discussed in ISO or UNECE/WP29



Fuel consumption Indicator

Conclusion



- IEA policy recommendations should be implemented worldwide and related standardization and policy alignment would play crucial role
- UNECE/WP29 is finalizing Worldwide harmonized Heavy Duty Certification procedure and TPMS requirements
- ISO is finalizing an International Standard for tyre rolling resistance measurement
- There are other items for possible future standardization and regulations and activities by international fora such as UNECE/WP29 and ISO would be a necessary condition for achieving the energy savings assumed to be realized by the IEA recommendations