IEA activities on fuel economy and vehicle emissions
Implications for the case of Mexico

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8th Forum on Energy Efficiency in Transport

Energy Efficiency Regulation for HDV

Mexico City

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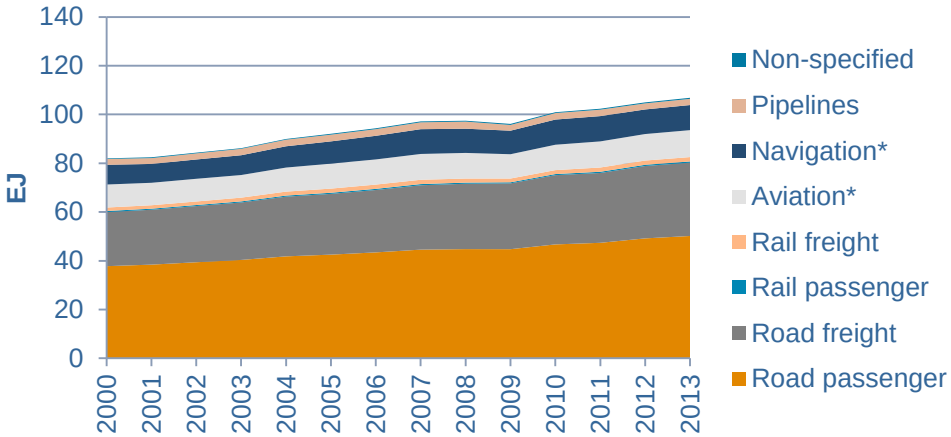
Road freight energy use - Global picture

Road freight accounts for 28% of total transport energy use

Global transport energy demand

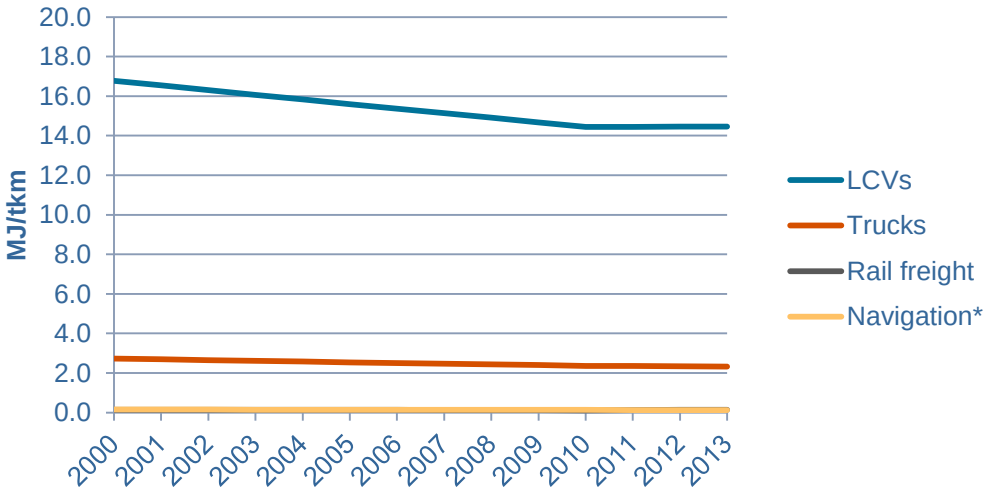


Source: IEA energy balances and IEA Mobility Model

* Includes international bunkers

Road freight way more energy intensive than rail and shipping

Energy intensity of freight transport by mode, global averages

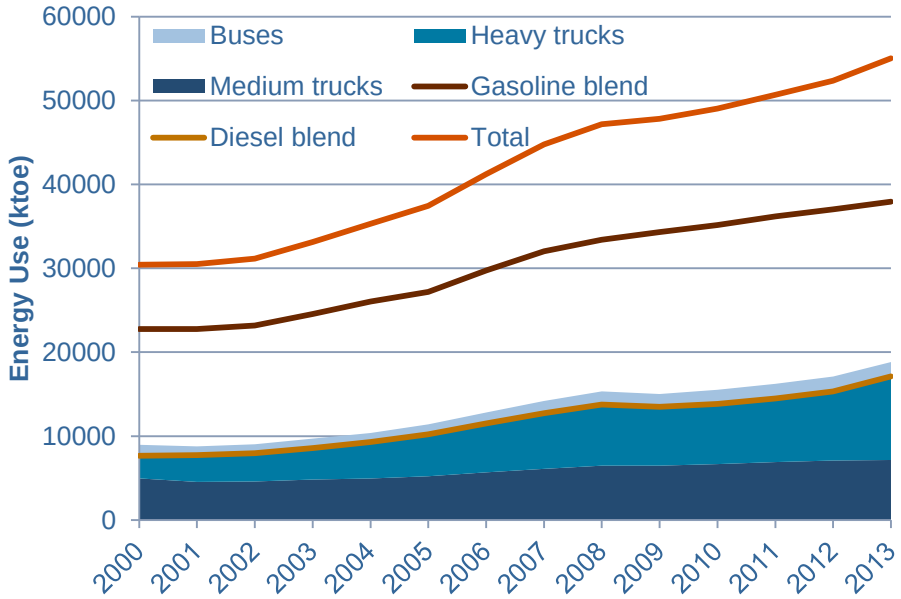


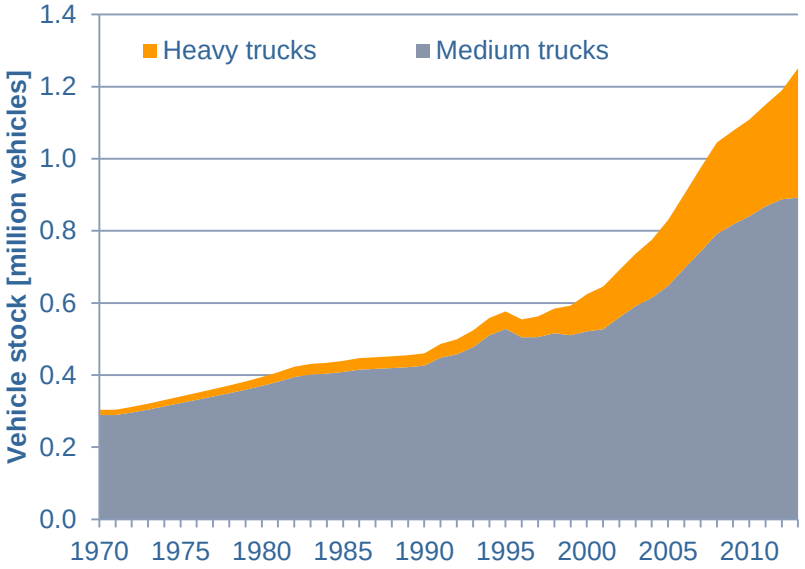
Sources: IEA energy balances, IEA Mobility Model, UNCTAD Review of Maritime Transport, UIC rail transport database

* Navigation allocated only to freight transport, it includes international bunkers

Heavy-Duty vehicles energy use - Mexico

- Heavy-Duty Vehicles represent:
  - More than 1/3 of the Mexican road transport energy demand
  - Close to 90% of the total diesel consumption by road modes
- Most of this is due to trucks
  - Shift toward larger reliance on heavy trucks in place



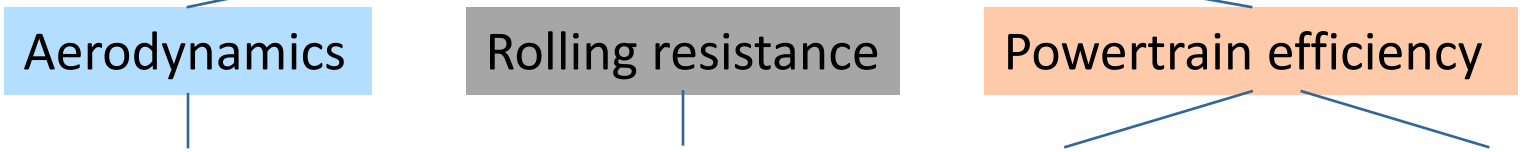


Source: IEA energy balances and IEA Mobility Model Database

Regulating HDV Fuel Economy – IEA's position

- **The IEA supports all actions taken towards regulatory improvements in vehicles fuel economy**
  - Action on Heavy Duty vehicles is especially relevant
- GHG emissions reduction potential to be harvested:

30 to 50%/new vehicle
(TIAX/ICCT 2012, NRC 2010)



Largest opportunities:

Long distance

→ Relevant for Mexico given current take up of HFT

All HDV

→ Low hanging fruit for regulation through limitations or labelling

Engine efficiency: all HDV

Hybridization: Medium distance

IEA's Energy Efficiency in Emerging Economies Programme

- Support for energy efficiency scale-up in major emerging economies, aiming to generate economy-wide benefits
- Builds on IEA's existing EE portfolio: data, indicators, modelling and policy recommendations
- Target countries:
  - Work started in China, India, Indonesia, Mexico, South Africa and Ukraine
  - Potential future work in Brazil, Thailand and Vietnam
- Target Regions: Latin America and South East Asia
  - Energy efficiency policy recommendations and indicators training
- Working with global initiatives, building on previous efforts, avoiding duplication

HDV fuel efficiency regulation for India – workshop 29 April 2015

- Co-hosted by Indian PCRA and the IEA, supported by the IEA E4 programme
- Aligned with priorities of G20 Energy Efficiency Action Plan, matches IEA involvement in GFEI
- International and Indian speakers, welcomed by all Indian stakeholders
- Attended by institutional delegates from other emerging economies (Indonesia, Mexico, Thailand and Viet Nam)

Outcomes

- Stakeholder agreement on the need to develop an HDV fuel consumption simulation tool for the Indian context
- Focus exclusively on this may increase the risk to delay regulations for several years, locking-in inefficient technologies
- Engine based regulations could help find a compromise for the short term
- Analysis of technical potentials, costs and benefits: priority to allow the development of targets
- All stakeholders supportive of regulatory action on rolling resistance

G20 EE Action Plan and IPEEC Transport Task Group

The present workshop is aligned with priorities identified in the G20 energy efficiency action plan 2015 (preliminary) and the activities of the newly established Transport Task Group under IPEEC

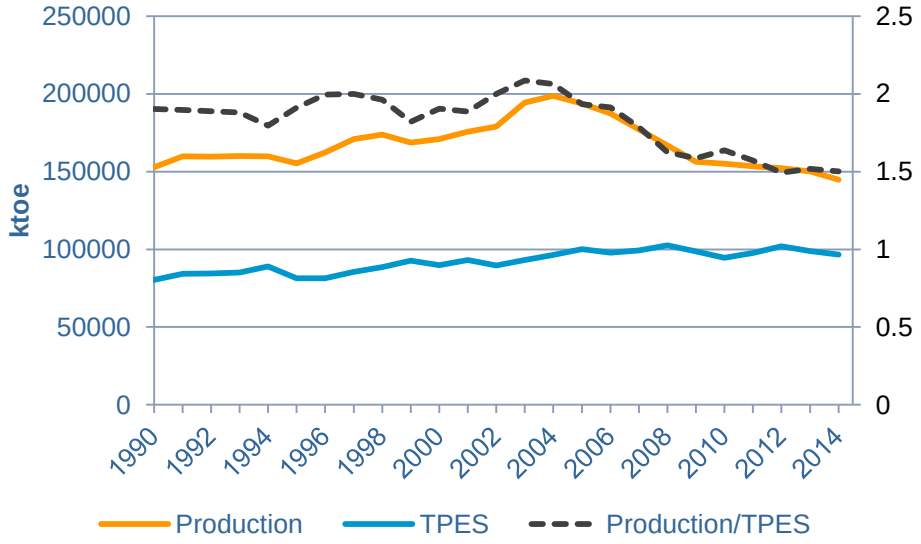
- Action targeting vehicle energy efficiency and emissions performance
- Action to be undertaken particularly on HDV
- Objectives are :
  - Exchange experiences and best practices (national standards, alternative fuels, transport decarbonization)
  - Develop recommendations for strengthened standards related to clean fuels, vehicle emissions and vehicle fuel efficiency in G20 countries
  - Provide individual support to countries in the development of HDV standards

HDV regulations aligned with GFEI goals

- GFEI established in 2009 to promote fuel economy improvements of cars – IEA is a founding member
- **Main target: halve new cars' fuel consumption per km globally by 2030 (2050 for the vehicle stock) compared to 2005**
- Now widened to HDV
- Activities: fuel economy benchmarking, impact assessments, capacity building/training, policy support, stakeholder engagement
- Current members:
- Recognized as an effective initiative by international fora
- Supported by EU and GEF

Regulating HDV Fuel Economy – Mexico

- Regulating HDV FE in Mexico would be an important step forward for a more energy efficient transport sector:
  1. High share of energy consumption and emissions from road heavy duty vehicles
  2. The dynamics of oil production and the Mexican demand for petroleum products have been changing in the past decade



Source: IEA energy balances

- ✓ This translated in actions targeting fuel subsidies
- ✓ Containing demand growth by enhanced energy efficiency is also an effective manner to address the problem

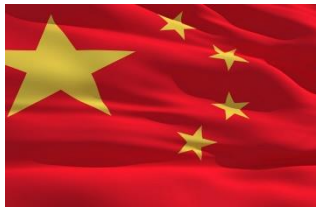
Regulating HDV Fuel Economy – Mexico

- Regulating HDV FE in Mexico would be an important step forward for a more energy efficient transport sector:

3. Opportunity to follow up on advanced regulation on pollutant emissions
   - Ambitious pollutant emission regulations would be primarily met with SCR: this has good synergies with fuel economy improvements (tradeoff between emissions and fuel economy is primarily an EGR issue)

4. Opportunity to be one of the world leaders in terms of HDV FE regulations





VECTO tool being developed but no regulation to date

Possible pathways for a Mexican regulation

0. Steps needed to develop HDV fuel economy regulations

- Benchmarking
  - Current consumption and duty cycles
  - Mission profiles
- Understand potential available
  - Technologies
  - Feasibility, costs and benefits for different mission profiles
- Set targets
  - Payback periods differ based on tech costs and mission profiles

This has implications for the policy development process to be undertaken in Mexico

Possible pathways for a Mexican regulation

1. Following existing regulations

- Software already developed (e.g. GEM or VECTO), analysis of available potential already available, targets already set
- Reasons to take inspiration from US
  - Paybacks, vehicle and fuel costs likely to be comparable
  - 2nd hand cross-border vehicle market well established
  - Europe does not have targets, Japanese & Chinese truck markets less similar to Mexico than US market
  - opportunity for HDV exports to the US?

- Mexican vehicle definitions (NOM-012-SCT-2-2014) not aligned with definitions in use in existing regulations
- Need to adapt software in use to accommodate differences
- Likely to require a long policy development time (software adaptation is a complex task)

Possible pathways for a Mexican regulation

2. Developing a different set of regulations

- Simpler approach, e.g. combining engine based standards and rolling resistance regulations
- Possibly quicker, e.g. leveraging on test cycles in use for pollutant emission regulations, extending them to fuel economy/GHG emissions

- Tests not optimized (especially to reflect different duty cycles), engine based standards do not incentivize aerodynamic improvements and weight reductions
- Engine based standards and rolling resistance regulations/labels should be developed in parallel (it would be good to develop tire labelling schemes in any case)

Mexican regulation for HDV Fuel Economy
IEA's message

- Full support to fuel economy improvement initiatives
- Good timing for Mexico, given:
  - Increasing HDV stock
  - Rising oil demand vs. declining production: opportunity to act on the demand side
- Would not be clashing with the most stringent pollutant emissions regulations soon to be implemented in Mexico (EURO VI and EPA 2010)
- Any type of regulation a large step forward:
  - Following existing regulation and developing/adapting simulation tool: more integrated approach, more effective in the long-term, possibility of longer development times, risk of lock-in
  - Developing separate regulation (focusing on engine efficiency): Quicker, although would miss on opportunity to harvest potential in all areas (e.g. aerodynamics), approach that might be developed as a first step

International Energy Agency

Gracias por su atención