

GFEI Working Paper 15: Fuel economy trends 2005-2015: Fuel economy policies work but more action is needed

GFEI Working Paper 15 examines global trends in light-duty vehicle fuel economy over the decade from 2005 to 2015. It provides in-depth analysis of other vehicle characteristics such as dimensions, weight, fuel type, engine power and displacement, and assesses the factors affecting progress in improving fuel economy in 17 countries and new analysis of the relationship between fuel economy and market prices globally.

Key Findings:

1. FUEL ECONOMY IS IMPROVING GLOBALLY BUT MORE ACTION IS NEEDED TO FURTHER IMPROVE FUEL ECONOMY AS RATES OF IMPROVEMENTS HAVE BEEN SLOWING

- **Without exception, all 25 countries monitored in the report showed an improvement in the average fuel economy of the light-duty vehicles (LDVs) entering the national fleet in the period between 2005 and 2015.**
The country that made the greatest progress (measured as percentage improvement over 2005 values) was Turkey, followed by the United Kingdom and Japan. However fuel economy stagnated in other countries, such as the Russian Federation and India.



- **Overall, fuel economy improvement rates were significantly lower than those required to meet the 2030 Global Fuel Economy Initiative (GFEI) target of halving fuel consumption to 4.4 Lge/100 km from 8.8 Lge/100 km in 2005**

The global annual average improvement in fuel economy was 1.5% between 2005 and 2015. This is around half the 2.8% rate required to achieve GFEI's target of doubling average fuel economy by 2030 for new vehicles.

- **The annual improvement in average fuel economy at the global level slowed during the course of the past decade, from 1.8% in 2005-08 to 1.2% in 2012-15 and 1.1% in 2014-15.**
OECD countries saw their improvement rate drop to only 1.0% between 2012 and 2015. However, the rate improvement in fuel economy accelerated in non-OECD countries over the same period, reaching 1.4% per year, on average, between 2012 and 2015

2. ENGINE TYPE AND AN EVOLUTION TOWARDS LARGER VEHICLES ARE IMPORTANT FACTORS THAT EXPLAIN COUNTRY DIFFERENCES

- **Six out of seven markets with the highest fuel consumption per km had diesel and hybrid shares below 5%.**
Japan was the only country where hybrid LDVs had a market share exceeding 10% in 2015. LDVs sold in North America and Australia continued to use more fuel per km than those sold in any other OECD economy due to larger vehicles.
- **Sales of crossovers (medium-sized sport utility vehicles [SUVs] and pick-up trucks) have experienced significant growth across all countries: their market share has tripled over the past decade.**
Crossovers are an example of a global evolution towards larger vehicles that has occurred over the past decade, and has intensified since 2010
- **On average, new LDVs in non-OECD countries have significantly higher specific fuel consumption per kilowatt (kW) compared with OECD countries.**
This suggests a significant technological gap or time lag in engine technology deployment between OECD and non-OECD countries.

3. THE COMBINED ADOPTION OF REGULATORY INSTRUMENTS AND FISCAL INCENTIVES HAVE LED TO THE HIGHEST ENERGY SAVINGS FROM LDVS.

- **Differentiated vehicle taxation has been effective at improving fuel economy, even when it was not coupled with fuel economy standards**
This is especially the case in markets with lower purchasing power due to low average income levels.
- **Fuel economy standards have provided effective improvements in fuel economy.**
In the absence of policies, the tendency for most vehicle attributes (including fuel use/km is to stagnate) In Japan fuel economy stopped improving after the target was met.
- **Fuel economy policies had little effect on the weight or size of vehicles**
The weight of newly registered LDVs shifted towards the middle segment between 2005 and 2015 - a development that mirrors that of engine power and market segmentation.

4. LDV PRICES VARY WIDELY BETWEEN COUNTRIES AND PRICE PREMIUMS ARE NOT UNIFORM, BUT FOCUSING ON LARGER VEHICLE SIZES HAS THE BIGGEST IMPACT ON FUEL ECONOMY.

- **In 2015, the gap between the highest and lowest average vehicle price was twice as large as the LDV price in the cheapest market.**
LDVs sold in the OECD are on average one-third more expensive, 65% more powerful, 38% heavier and have a 22% larger footprint than those sold in non-OECD countries.
- **Average vehicle prices are not strongly driven by fuel economy parameters, but rather by other attributes such as engine power and brand.**
The price premium for a 15% fuel economy improvement ranges between USD 500 and USD 2 500 and has a global average of USD 1 500.
- **Achieving fuel economy reductions may come at a lower cost for consumers if efforts are focused on larger vehicle segments and power classes**
Policies should therefore include provisions requiring greater relative fuel economy improvements in these classes, especially in the non-OECD



5. POLICY ACTIONS THAT ARE MEASURABLE SOLELY AGAINST TEST RESULTS WILL NOT CLOSE THE GAP IN FUEL ECONOMY BETWEEN TEST AND REAL-WORLD DRIVING CONDITIONS.

- **On-road and in-use testing is needed**
Achieving greater accuracy and representativeness of tested fuel economy as against real-world consumption will require the use of on-road tests, and the introduction of in-use conformity tests of randomly selected production vehicles.