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Fuel economy trends – latest data and analysis

1. Global Progress

This latest analysis in GFEI Working Paper 12 suggests that overall the global average fuel economy improved on average by 1.6% a year between 2005 and 2013. This is significantly short of the 2.7% annual rate of improvement needed to achieve the GFEI targets. It means that an annual improvement rate of 3.3% is now needed between 2013 and 2030 to achieve GFEI's target to improve average fuel economy of new vehicles globally by 50% by 2030.

Overall, the improvement rate was 2.5% a year on average in OECD countries, and 0.5% a year in non-OECD countries. More progress is needed in all markets to achieve GFEI's targets.

The methodological revisions in this paper, including normalising results to the World Light-duty vehicle Test Cycle (WLTC), mean that the key message stemming from this revision is less optimistic than has been previously assessed: reaching the GFEI target of halving the fuel consumption per km of new LDVs by 2030 (compared with 2005) will be more challenging. This is because historic improvement rates evaluated by the new methodology are lower than the values estimated in the 2014 GFEI Working Paper 11 report (IEA, 2014). Table 1 provides a comparison of fuel economy progress by different methodology between 2005 and 2013.

TABLE 1: Impacts of methodological changes on global fuel economy developments, 2005-13

Values published in IEA, 2014 report (WP11) with no LCVs, based on NEDC

			2005	2008	2011	2013	2030
OECD average	average fuel economy (Lge/100km)		8.6	7.9	7.3	6.9	
	annual improvement rate (% per year)		-2.7%		-2.6%	-2.6%	
			-2.6%				
Non-OECD average	average fuel economy (Lge/100km)		7.3	7.4	7.3	7.2	
	annual improvement rate (% per year)		0.5%		-0.4%	-0.9%	
			-0.2%				
Global average	average fuel economy (Lge/100km)		8.3	7.7	7.3	7.1	
	annual improvement rate (% per year)		-2.3%		-1.9%	-1.8%	
			-2.0%				
GFEI target	average fuel economy (Lge/100km)		**8.3**				**4.2**
	required annual improvement rate (% per year)	2005 base year	**-2.7%**				
		2012 base year	**-3.1%**				

Values published in this report (2016) including LCVs, based on WLTC

			2005	2008	2011	2013	2030
OECD average	average fuel economy (Lge/100km)		8.9	8.4	7.8	7.5	
	annual improvement rate (% per year)		-2.1%		-2.5%	-1.9%	
			-2.2%				
Non-OECD average	average fuel economy (Lge/100km)		8.5	8.5	8.4	8.2	
	annual improvement rate (% per year)		-0.1%		-0.4%	-1.2%	
			-0.5%				
Global average	average fuel economy (Lge/100km)		8.8	8.4	8.0	7.8	
	annual improvement rate (% per year)		-1.7%		-1.6%	-1.4%	
			-1.6%				
GFEI target	average fuel economy (Lge/100km)		**8.8**				**4.4**
	required annual improvement rate (% per year)	2005 base year	**-2.7%**				
		2012 base year	**-3.3%**				

2. Country average fuel economy and vehicle characteristics

Table 2 provides an overview of the main characteristics of the LDV markets for 26 countries. This shows that countries such as France, Turkey and Japan have the lowest average fuel economy levels (Litres of gasoline equivalent needed to travel 100km), whereas Canada, the US and the Philippines have the highest average fuel economy. Globally, the average engine power of new LDVs sold in 2013 was 110 kW. India had the lowest average vehicle power rating (57 kW), while the average new LDV in the United States was almost three times as powerful (173 kW). While the global average engine displacement in 2013 was almost 2 litres (L), the average Japanese car had an engine size slightly above 1.3 L, whereas engine displacement averaged more than 3 L in the United States.

TABLE 2: Summary of country-specific LDV market characteristics and fuel economy trends

	Average fuel economy 2013 (Lge/100km, NEDC)	Average fuel economy 2013 (Lge/100km, WLTC)	Average power 2013 (kW)	Average displacement 2013 (cm^3)	Average empty weight 2013 (kg)	Average footprint 2013 (m^2)
Argentina	7.1	7.9		1689	1285	3.9
Australia	8.0	8.8	128	2344	1570	4.2
Brazil	7.3	8.2	80	1508	1168	3.8
Canada	9.0	10.2	129	2164	1715	4.8
Chile	7.6	8.3	94	1845	1402	4.0
China	7.5	8.5	94	1709	1440	4.0
Egypt	7.4	8.2	62	1639	1337	4.1
France	5.1	5.4	80	1592	1352	4.1
Germany	5.8	6.3	100	1754	1453	4.2
India	5.8	6.3	57	1355	1110	3.5
Indonesia	7.4	8.3	78	1568	1237	3.8
Italy	5.3	5.7	76	1507	1281	3.9
Japan	5.5	6.1	73	1311	1167	3.5
Korea	5.7	6.3	120	1936	1517	4.2
Malaysia	6.9	7.7		1606	1228	3.9
Mexico	7.7	8.7	95	1796	1402	4.0
Peru	7.3	8.2			1417	4.0
Philippines	8.0	9.1			1527	4.1
Russian Federation	7.7	8.6	94	1865	1384	4.0
South Africa	7.0	7.7	96	1899	1491	4.1
Thailand	7.4	7.9	88	2004	1529	4.3
Turkey	5.5	5.8	79	1546	1356	4.1
Ukraine	7.1	7.8		1796	1411	4.0
United Kingdom	5.6	6.0	92	1683	1401	4.1
United States	8.4	9.4	173	3069	1812	4.5
OECD	**6.7**	**7.5**	**128**	**2283**	**1559**	**4.2**
Non-OECD	**7.3**	**8.2**	**89**	**1680**	**1362**	**3.9**
World	**7.0**	**7.8**	**110**	**1993**	**1470**	**4.1**

Note: Results in Table 2 reflect the consistent inclusion of LCVs and pick-up trucks in all countries and are hence not directly comparable to the data shown in the upper part of Table 1. Revised conversion factors to normalise CAFE test values to NEDC test values (based on ICCT, 2012) also lead to lower NEDC based average fuel economies for the OECD countries and the world when compared to the results of Table 1.