Fuel Economy State of the World 2016

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Overview

- Status of light and heavy-duty vehicle fuel economy and greenhouse gas emission standards in the US and globally
- Progress towards GFEI target of doubling new passenger vehicle fuel economy by 2030
- In-use emissions data reveals a growing gap between test cycle and real world emissions.

Global car stock to 2050

FIGURE 1 Global passenger light duty vehicle stock out to 2050



Source: IEA ETP 2015 (IEA 2015)

KEY MESSAGE • THE GLOBAL PASSENGER LIGHT DUTY VEHICLE STOCK IS EXPECTED TO ALMOST TRIPLE BETWEEN NOW AND 2050.

UNEP Policy Progress Map



Fuel economy standards around the world

Table 1. Comparison of the latest adopted regulations for light- and heavy-duty efficiency in selected regions

		Light-duty vehicles		Heavy-duty vehicles			
Region	Percent of world vehicle sales, 2013	Baseline model year ^ь	Implementation period (model year)	Reduction in average CO ₂ rate (grams/vehicle-km)	Baseline model year	Implementation period (model year)	Reduction in average CO ₂ rate (grams/vehicle-km)
China ^c	25%	2011	2012-2015	9%	2012	2014-2015	11%
EU	19%	2015	2020-2021	27%			0%
US	17%	2017	2017-2025	35%	2011	2014-2018	14%
Japan	6%	2015	2020	16%	2006	2015	12%
Brazil	4%	2013	2013-2017	12%			0%
India	4%	2012	2017-2021	17%			0%
Russia	3%			0%			0%
Canada	2%	2011	2011-2016	20%	2011	2014-2018	14%
South Korea	2%	2011	2012-2015	9%			0%
Australia	1%			0%			0%
Mexico	1%	2012	2014-2016	13%			0%

Adopted or newly implemented between Jan. 2013 and Aug. 2014

Adopted or implemented prior to Jan. 2013

^a Includes eleven major vehicle markets

^b Percent reduction in new fleet fuel consumption estimated from a baseline year (determined by expert judgment rather than regulatory requirement) to the final model year covered by the regulation. Reductions for HDVs are activity-weighted by vehicle type.

^c China has adopted separate standards for passenger cars and light commercial vehicles. The latest adopted standard for passenger cars (Phase 3) is summarized here.

^d Brazil's Inovar-Auto program requires a 12.1% improvement for manufacturers to qualify for a 30% reduction in vehicle sales tax.

° Canada has announced intention to harmonize with the US 2017-2025 GHG standards; however formal adoption has not occurred as of August 2014.

Status of LDV (car) fuel economy standards, normalized to U.S. CAFE

CAFE

Miles per gallon (gasoline equivalent), normalized to



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Compliance pathways for US 4-door sedans



Fuel Economy Standards Consumer cost and payback

Rule	Per-Vehicle Cost	Payback Period
US LDV 2017–2025	\$1,800 (avg. 2025)	3.5 years
US LDV 2012–2016	\$950 (avg. 2016)	3 years
Canada LDV 2017-2025	\$707 (2021); \$2,095 (2025)	2 to 5 years
Canada LDV 2011-2016	\$89 (2011); \$1,195 (2016)	1.5 years
European 95g CO2/km Standard 2020	€1,300	4-5 years
India LDV 2020	\$478 to \$637	2–3 years

Global Fuel Economy Initiative Progress towards 2030 target



Country by country progress on fuel economy

			Reduction in new LDV CO ₂ rates	
		Projected share	with adopted	
		of global LDV	standards	
Status	Region sales in 2030		2005-2030	
	China	29%	34%	
	India	16% 📒	26%	
	US	13% 📒	52%	
	EU	12% 📕	39%	
Adopted LDV	Brazil	3%	13% 📃	
efficiency	Japan	2%	27%	
standards	Mexico	2%	14% 📃	
	Canada	1%	49%	
	South Korea	1%	48%	
	Saudi Arabia	1%	15% 📃	
	Total	80%	38%	
No efficiency			1	
standards	Total	20%	4%	
Global sales-we	eighted average	100%	27%	

Source: Fuel Economy State of the World 2016, GFEI

Progress towards doubling new passenger vehicle fuel economy by 2030



Source: Fuel Economy State of the World 2016, GFEI

Meeting GFEI target will stabilized global CO₂ emissions



Estimated using ICCT's <u>Global Transportation Roadmap model</u> (Facanha, et al., 2012). **Business as usual** = vehicle efficiency remains at 2005 levels. **Adopted** = currently adopted policies. **GFEI Target** = countries adopt standards that reduce average fuel consumption of new vehicles to 50% below 2005 levels by 2030 (GFEI, 2014).

Compliance Challenges



The importance of mandatory standards

CO₂ performance standards in the European Union



Data sources: 1995-1999 ACEA data for EU-15; 2000-2013 EU CO₂ monitoring data (2000-2003 EU-15, 2004-2006 EU-25, 2007-2013 EU-27). Note that changes in the number of member states (from 15 to 27) have only minor effects on the overall emission level (about 0.5 g CO₂/km) as passenger car sales numbers in the new member states are relatively low.

Rising concern: real world emissions diverging from standards



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Thank you!

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