

Best Practices in Reducing CO₂ from Road Transport

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Introduction to the ICCT

- The International Council on Clean Transportation:
 - Independent nonprofit organization
 - Research and analysis to environmental regulators
 - National and regional governments, multilateral bodies
 - Collective expertise of a global network of specialists
- Programs:
 - Modes – PV, HDV, Aviation, Marine
 - Regions – US, EU, China, India, Brazil, Mexico, Canada, Japan, and others
 - Global – Fuels, Climate and Health, Roadmap



Regions

- [Asia](#)
- [Australia](#)
- [Europe](#)
- [North America](#)
- [South America](#)
- [Global Comparisons](#)

Modes

- [Heavy-duty vehicles](#)
- [Light-duty vehicles](#)
- [Motorcycles](#)
- [Nonroad](#)
- [Locomotives](#)
- [Marine](#)
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Policies

- [Emissions standards](#)
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Toolbox

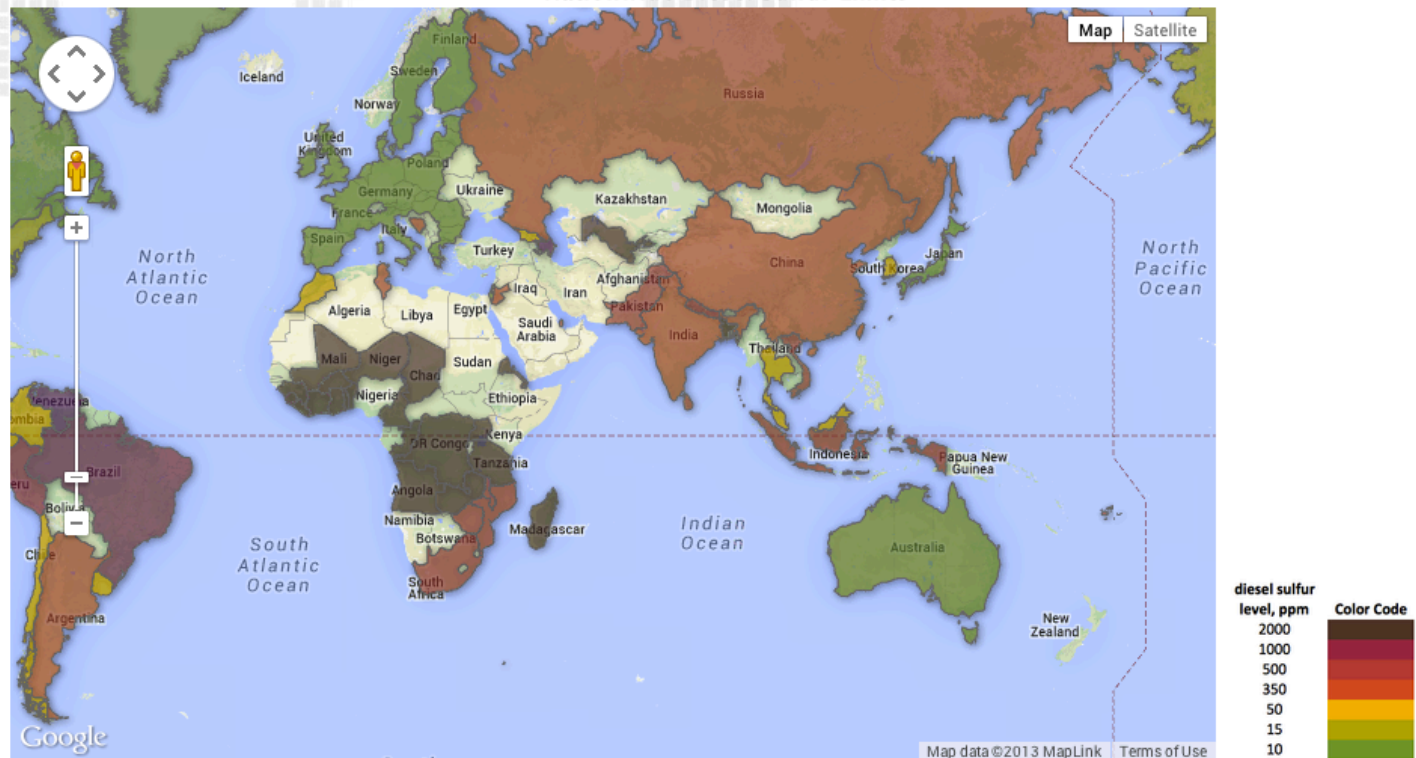
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Global Comparison: Fuels

1 Map

Low sulfur fuel is a key to the implementation of advanced vehicle emission controls. Progress in reducing fuel sulfur levels around the world has been significant but uneven since 2001. The following map shows the current (2013) nationwide fuel sulfur levels for diesel around the world. Note that this map shows national regulations only; several countries around the world, including Brazil, China, and India, have sub-national regulations requiring higher quality fuels in key cities and regions.

Nationwide Diesel Sulfur Limits



2 Timelines

Selected desulfurization timelines are summarized below for both diesel and gasoline.

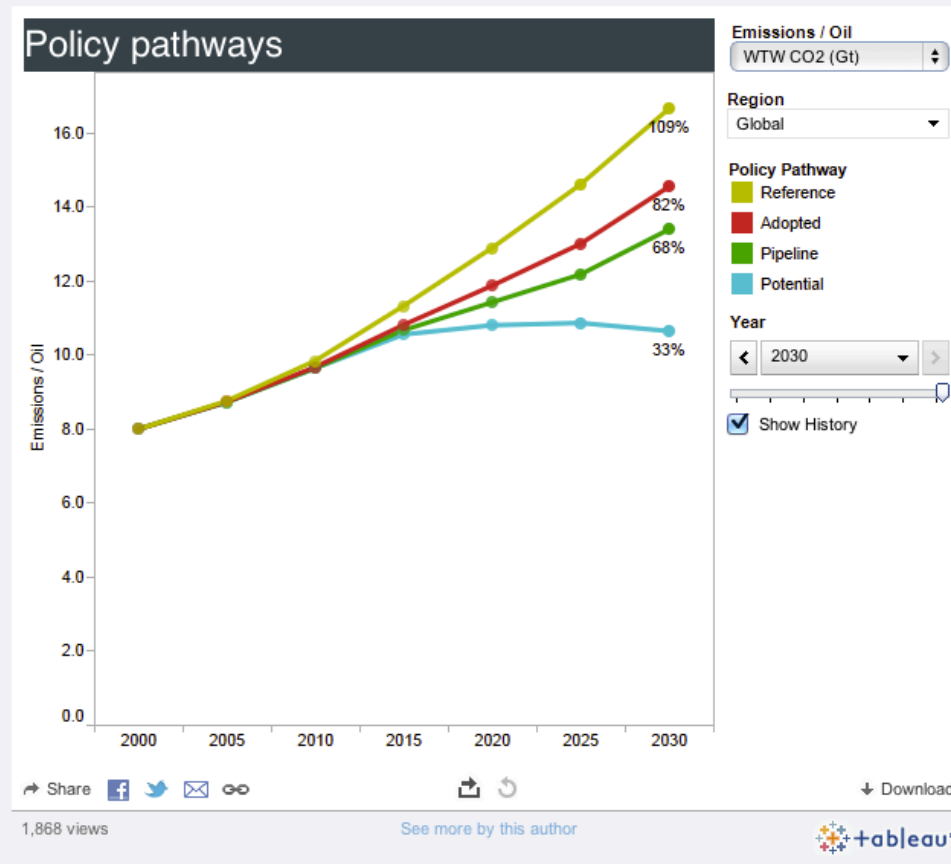
Source: TransportPolicy.net

Global Transportation Roadmap Model

The Roadmap model is an Excel-based tool designed to help policy makers see trends, assess emissions and energy-efficiency implications of different policy options, and conceptualize strategies to reduce both greenhouse gas emissions and local air pollution. Users can define and test policy scenarios, and view and adjust underlying data and assumptions.

The model is a global project, intended to be useful and informative to stakeholders in jurisdictions worldwide. For a full description, download the [Model Documentation and User Guide](#) [.pdf]

Example output: Transportation oil consumption and GHG emissions projected in a limited set of policy and modeling scenarios.



DOWNLOADS

- [ICCT Roadmap model v1.0](#)
- [Documentation—scope, structure, and functionality](#)
- [Responses to external reviewer comments](#)
- [Model validation](#)
- [Report: "Global transportation energy and climate roadmap"](#)
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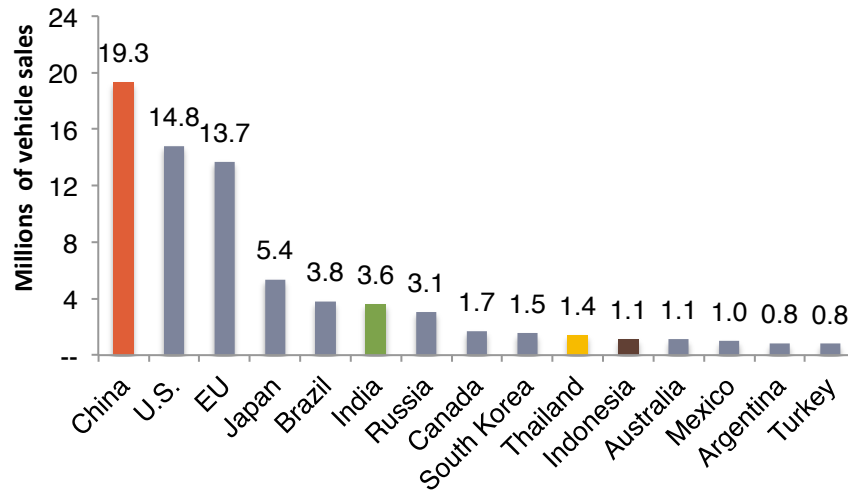
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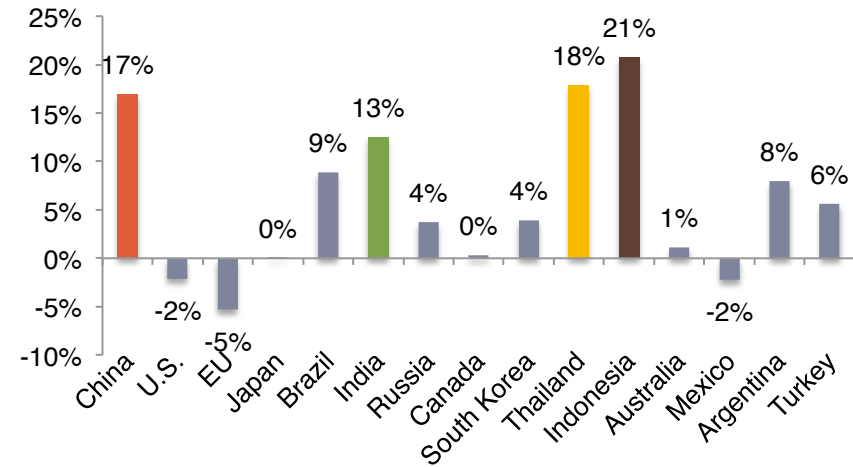
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Fastest-growing top vehicle markets are in Asia

Top 15 Vehicle Markets – Sales in 2012



Top 15 – Annualized Sales Growth 2007-12

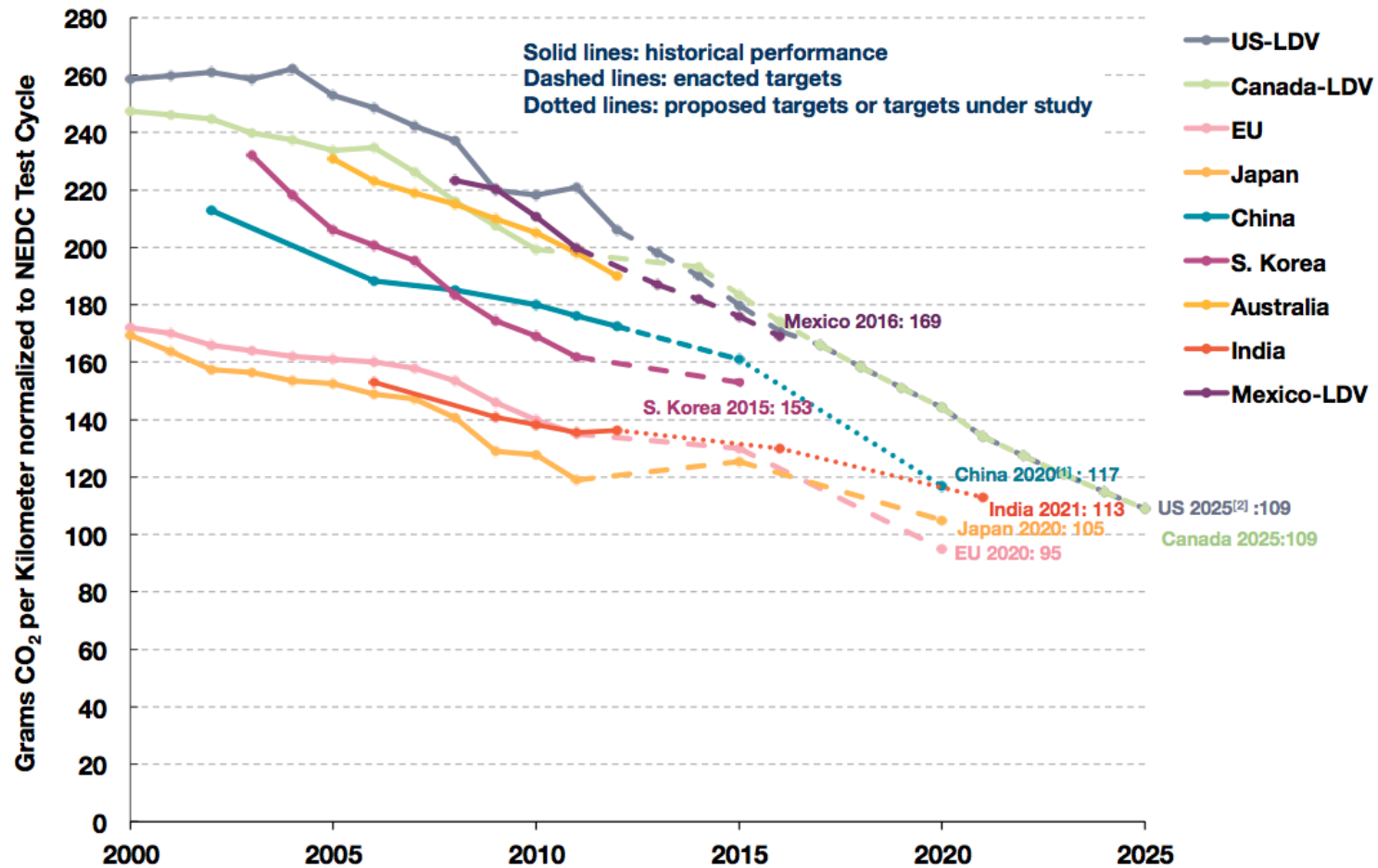


- Strategy for reducing transport CO₂ must include new vehicles in Asia
- Best practice strategies for new vehicles:
 - (1) emissions performance standards
 - (2) fiscal measures for vehicles and fuels

Performance standards steadily increase efficiency of new vehicles

- Performance standards require reductions in fuel consumption, fuel economy, and/or GHGs of new vehicles
- Currently in effect for more than 70% of the global new vehicle market
- Drive development and introduction of new energy-efficient technologies, smaller engines, and lighter vehicles
- Many governments around the world have proposed, established, or are in the process of revising light-duty vehicle fuel economy or GHG emission standards

Global comparison of passenger vehicle standards





[1] China's target reflects gasoline vehicles only. The target may be higher after new energy vehicles are considered.

[2] US, Canada, and Mexico light-duty vehicles include light-commercial vehicles.

[3] Supporting data can be found at: <http://www.theicct.org/info-tools/global-passenger-vehicle-standards>.

Options for efficiency gains with existing technology

FIGURE 6: EFFICIENCY GAINS AND COSTS
Compared with model year 2008 vehicles

	Technology	Reduction in CO ₂ emissions	Incremental price per vehicle
 Engine	Low-friction lubricants	0.5%	\$3
	Engine friction reduction	1–3%	\$50–100
	Variable valve timing and lift	3–4%	\$125–259
	Cylinder deactivation	6%	\$150–169
	Turbocharged downsized engine	5–7%	\$149–1,099
	Camless valve actuation	5–15%	\$501
	Gasoline direct injection (stoichiometric)	1–2%	\$209–346
 Transmission	Continuously variable transmission	6%	\$192–224
	Six-speed automatic	4.5–6.5%	\$99
	Six-speed dual clutch	5.5–13%	\$47–92
	Aerodynamic drag reduction (20% cars, 10% trucks)	2–3%	\$42
	10% reduction in tire-rolling resistance	1–2%	\$6

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https://www.yunbaogao.cn/report/index/report?reportId=5_6667

