Vehicle Fuel Economy Standards and Feebate System

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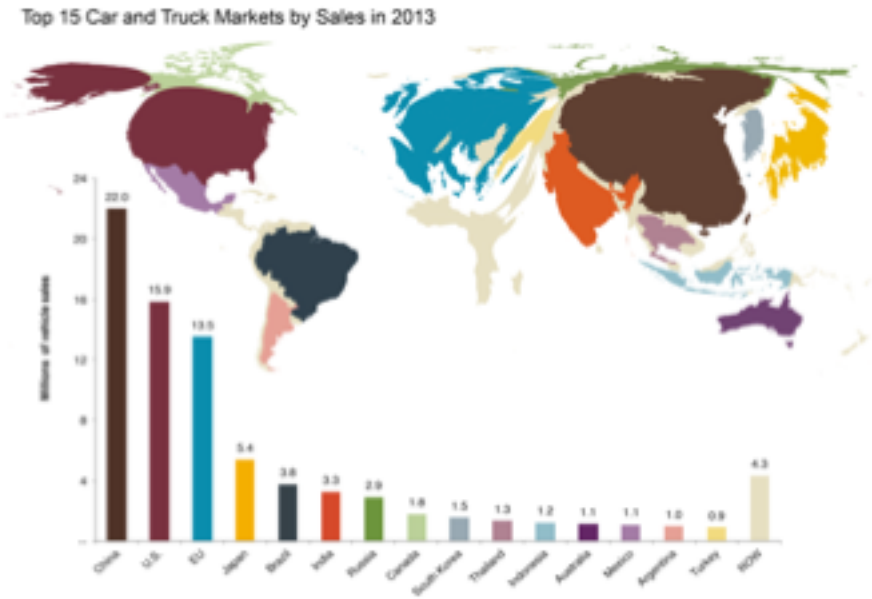
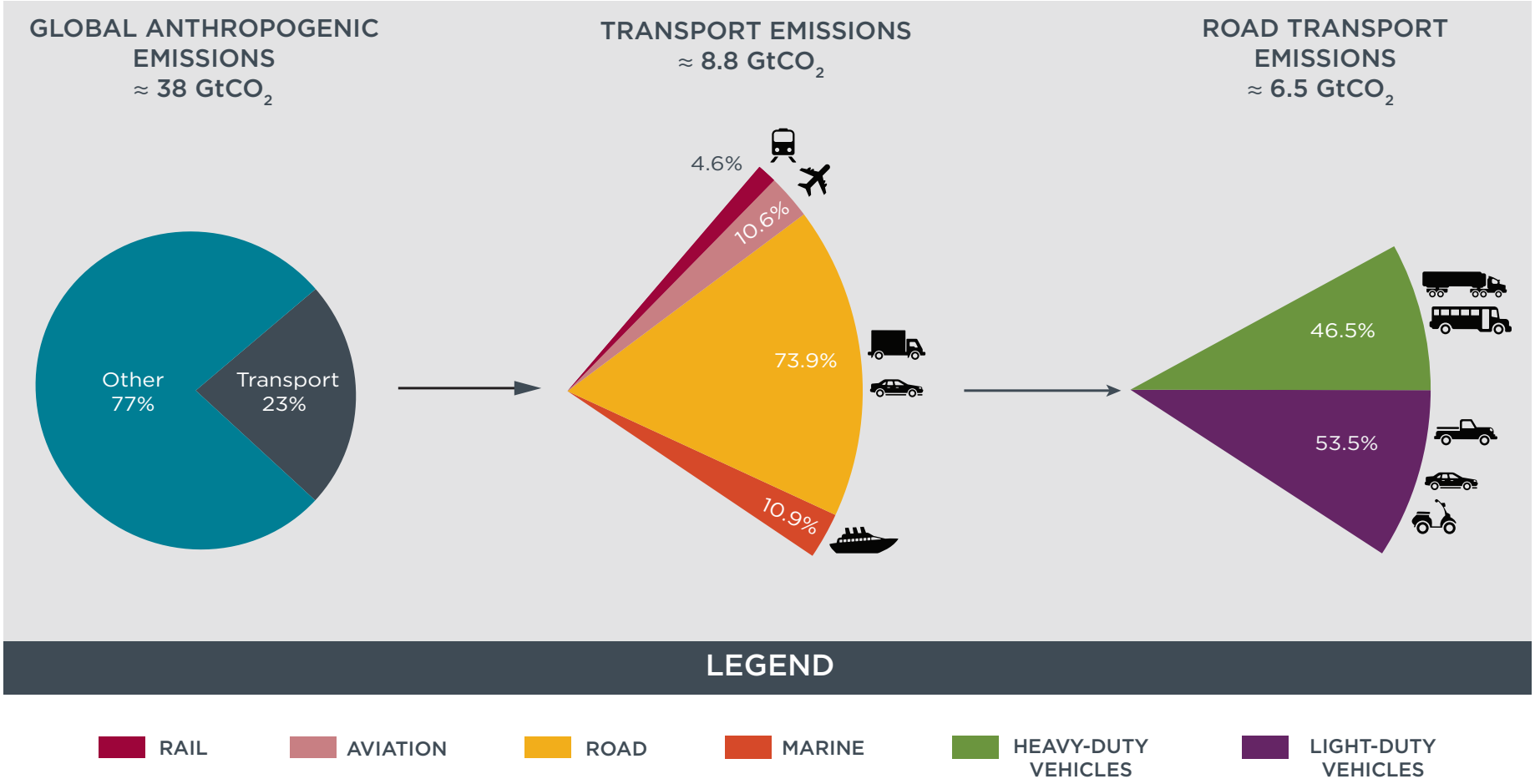
What is ICCT?

- ICCT is an independent non-profit research organization that provides technical support on transport efficiency and emission policies in major auto markets



1 Motivation of reducing vehicle fuel consumption

Vehicles make up more than 20% of greenhouse gas emissions …



Notes:
Global anthropogenic CO_2 emissions in 2010 based on IPCC (2014).
Transport CO_2 emissions in 2010 estimated by ICCT (2014) include the full fuel lifecycle, including direct emissions from combustion & upstream emissions from extraction, refining, & distribution of fuels.

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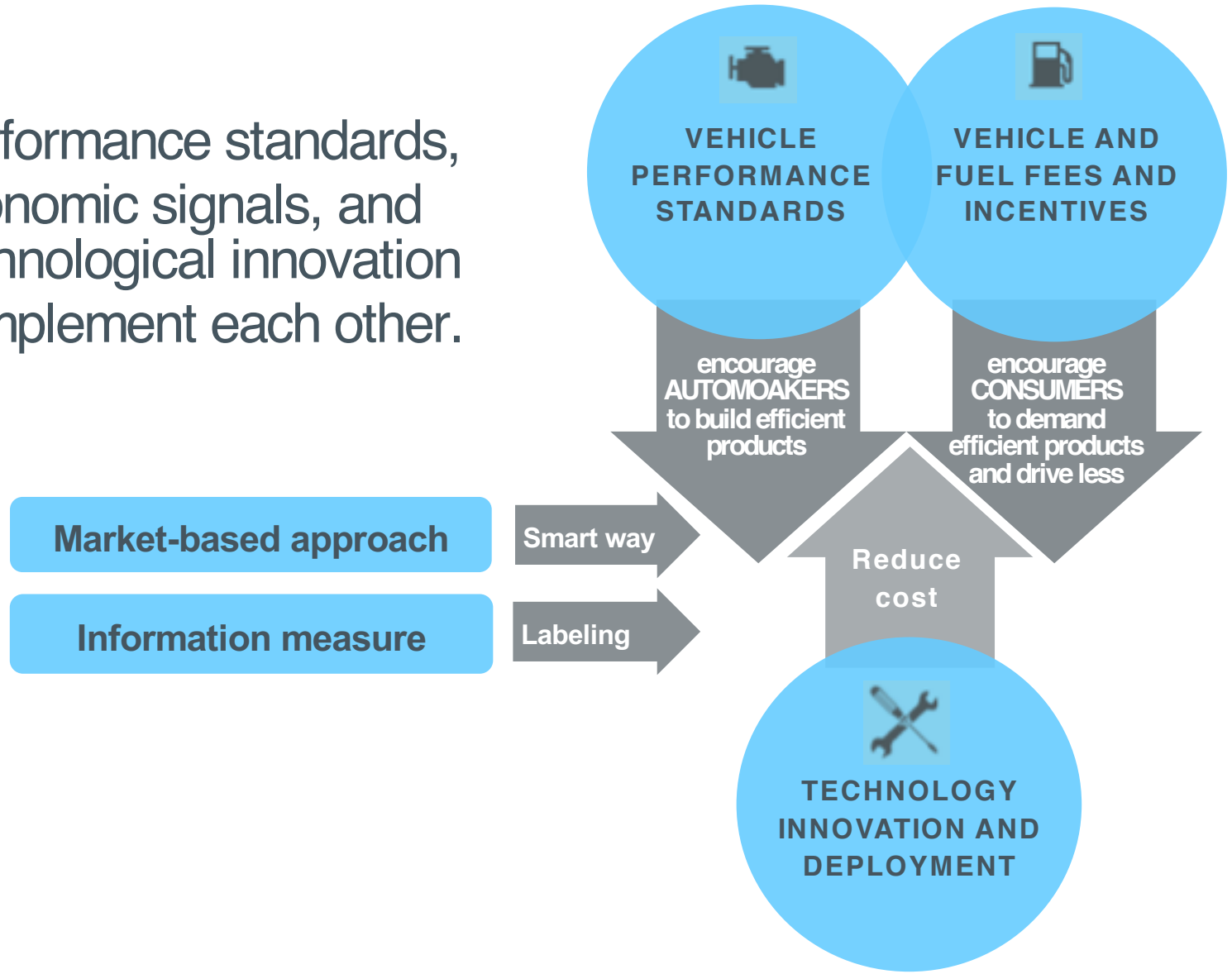
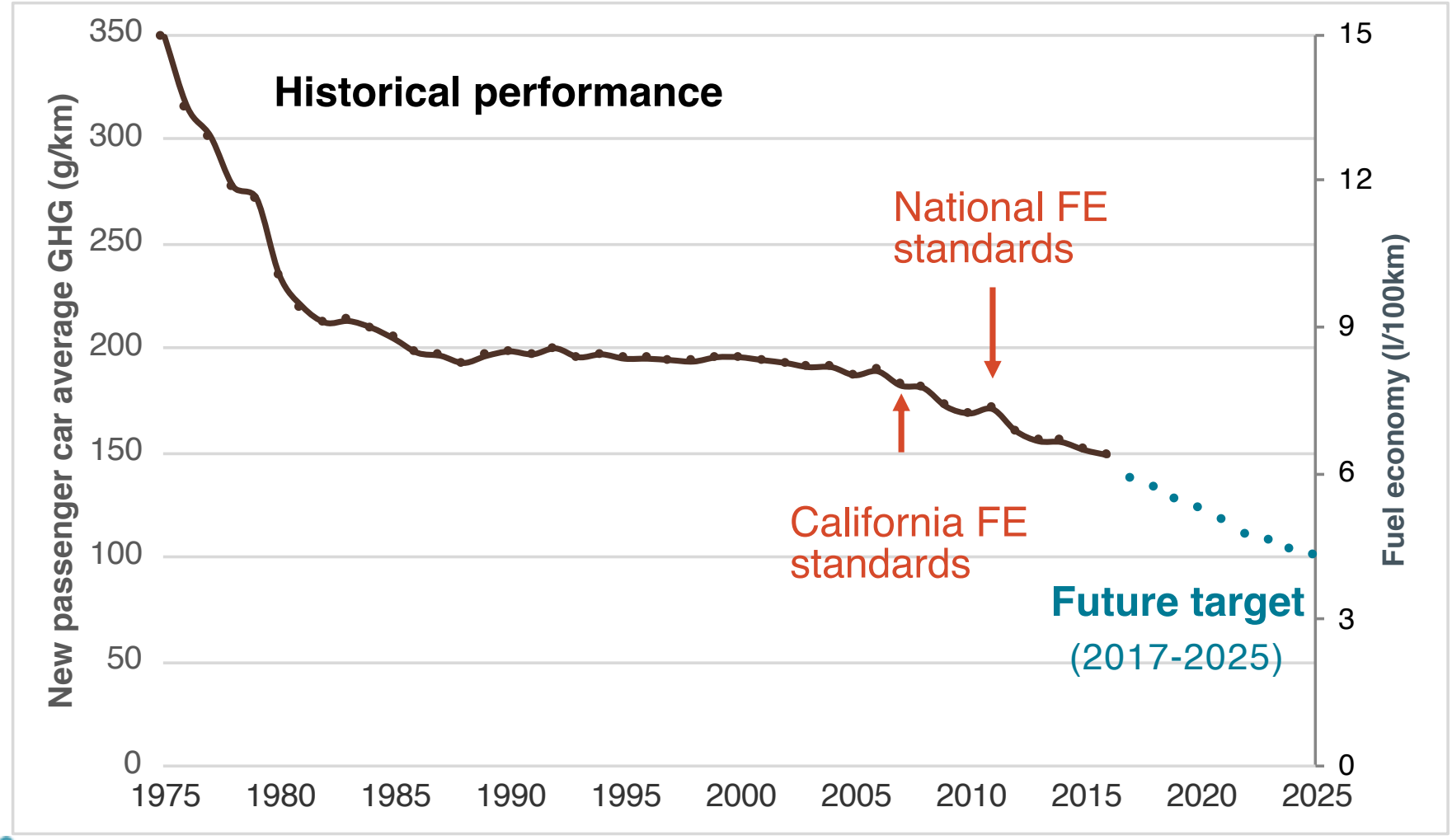
Integrated vehicle efficiency policy portfolio

Performance standards, economic signals, and technological innovation complement each other.



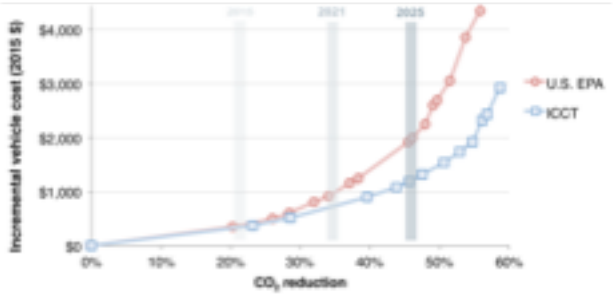
2 Fuel efficiency standards

U.S. fuel economy/GHG standards



Technology innovation continues to lower projected costs of compliance with 2025 standards

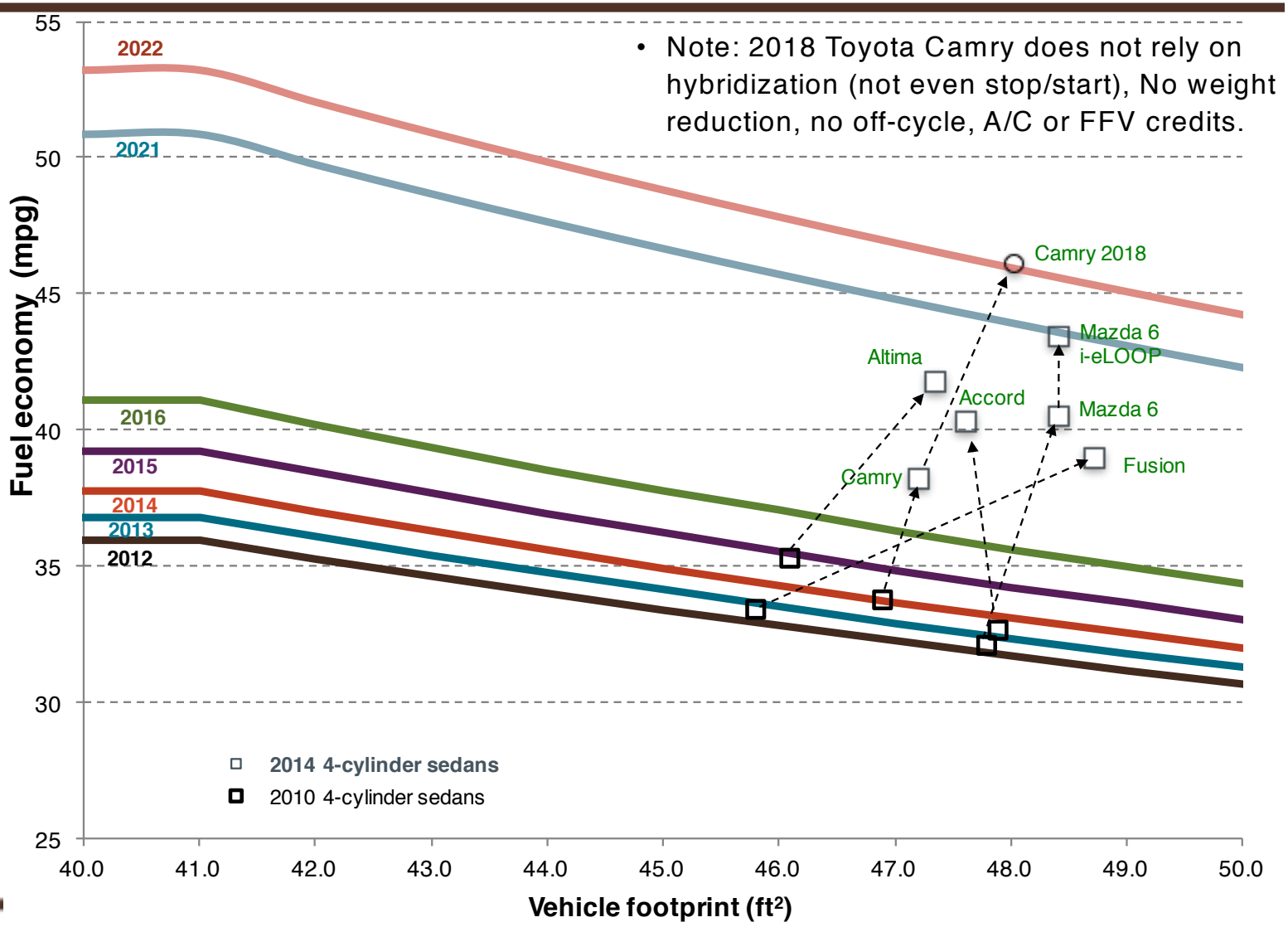
- Costs of compliance with 2025 standards (vs. 2015) have decreased dramatically
  - 2012 rulemaking: $1800
  - EPA assessment (PD-2016): $1300
  - ICCT assessment (2017): $886



- Consumer payback period is shortened
  - EPA: 5 years due to lower oil price forecasts
  - ICCT assessment: 3 years

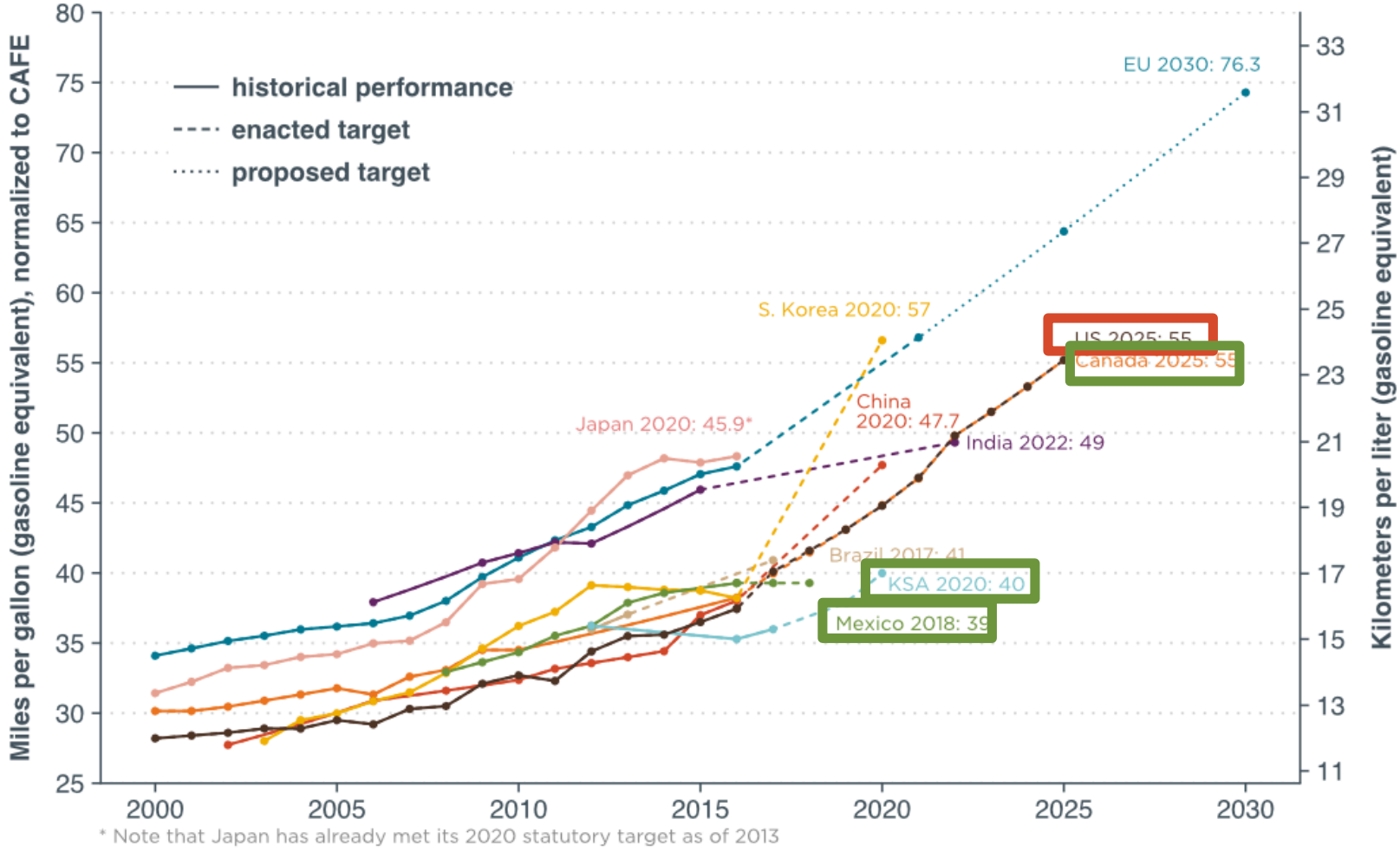
http://www.theicct.org/US-2030-technology-cost-assessment

Consumer acceptance of energy efficiency technologies demonstrated by best selling cars



Source: https://www.theicct.org/publications/how-things-work-omega-modeling-case-study-based-2018-toyota-camry

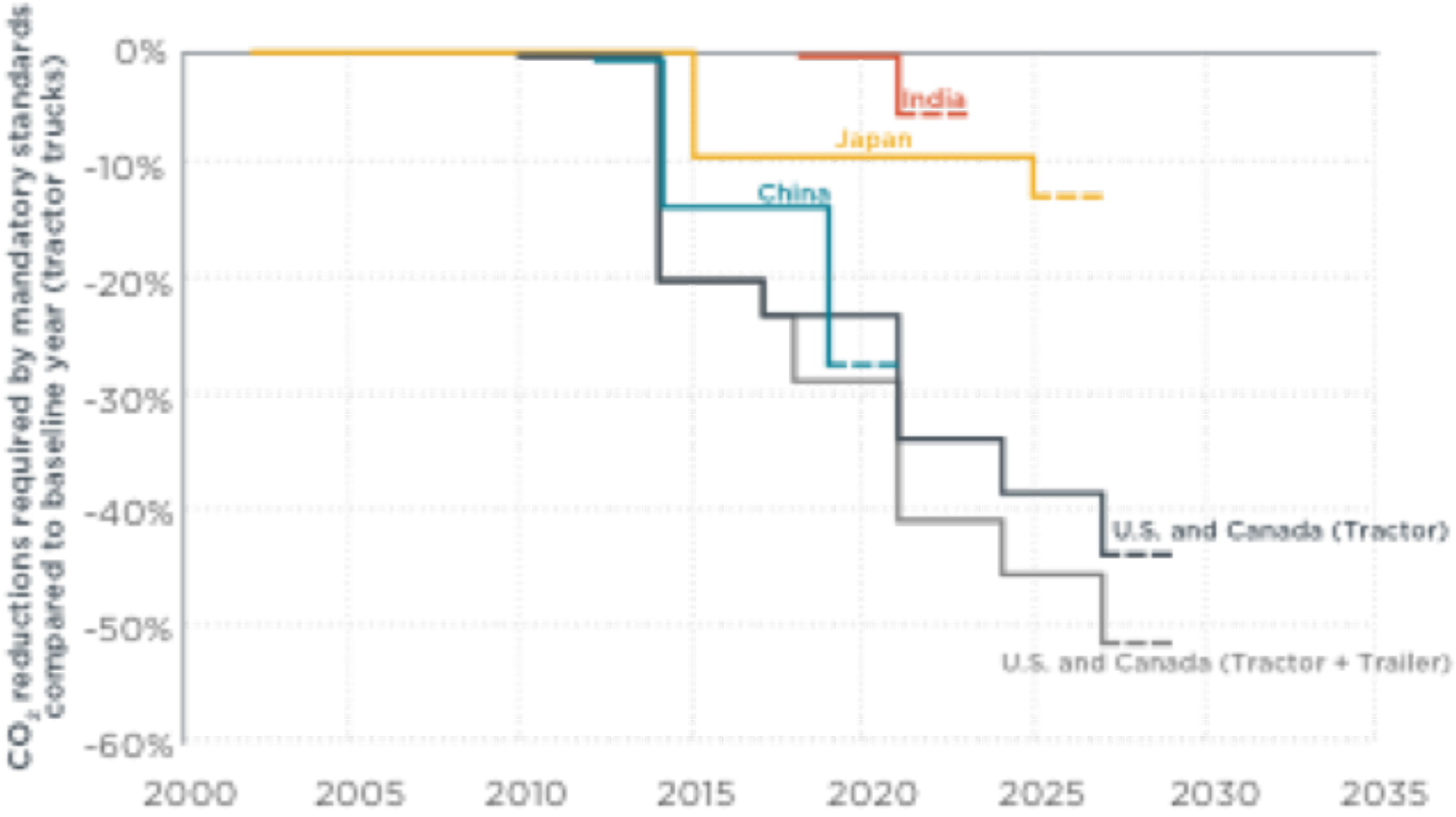
Status of passenger car fuel economy standards, normalized to U.S. CAFE



2017 Global update: Light-duty vehicle greenhouse gas and fuel economy standards
https://www.theicct.org/publications/2017-global-update-LDV-GHG-FE-standards

Heavy-duty vehicle GHG and fuel economy standards

Five nations: US, Canada, Japan, China and India

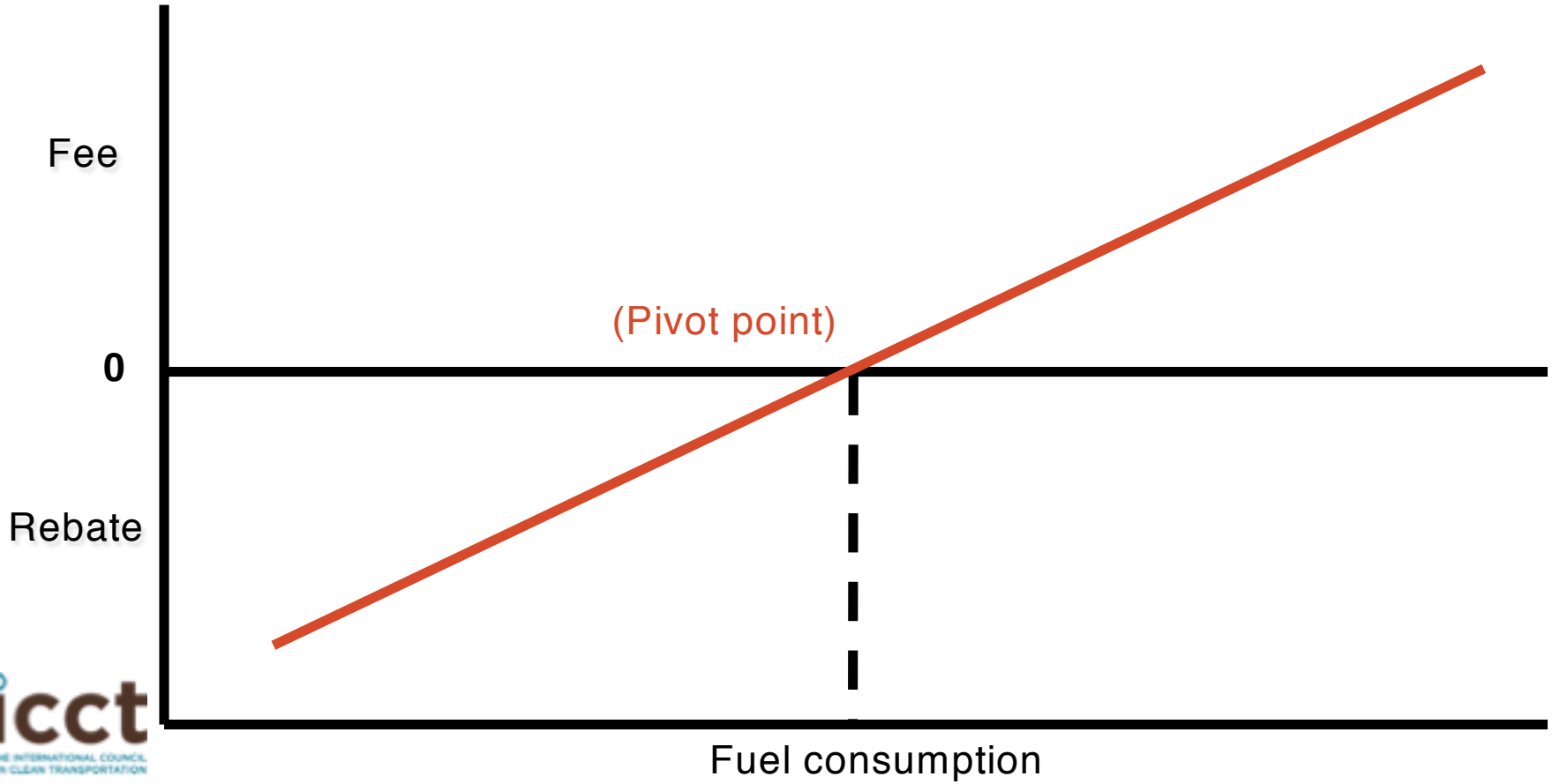


- Europe has released a proposal for establishing CO2 standards for HDVs. The standards are expected to run until 2030.

3 Fuel efficiency fiscal policies

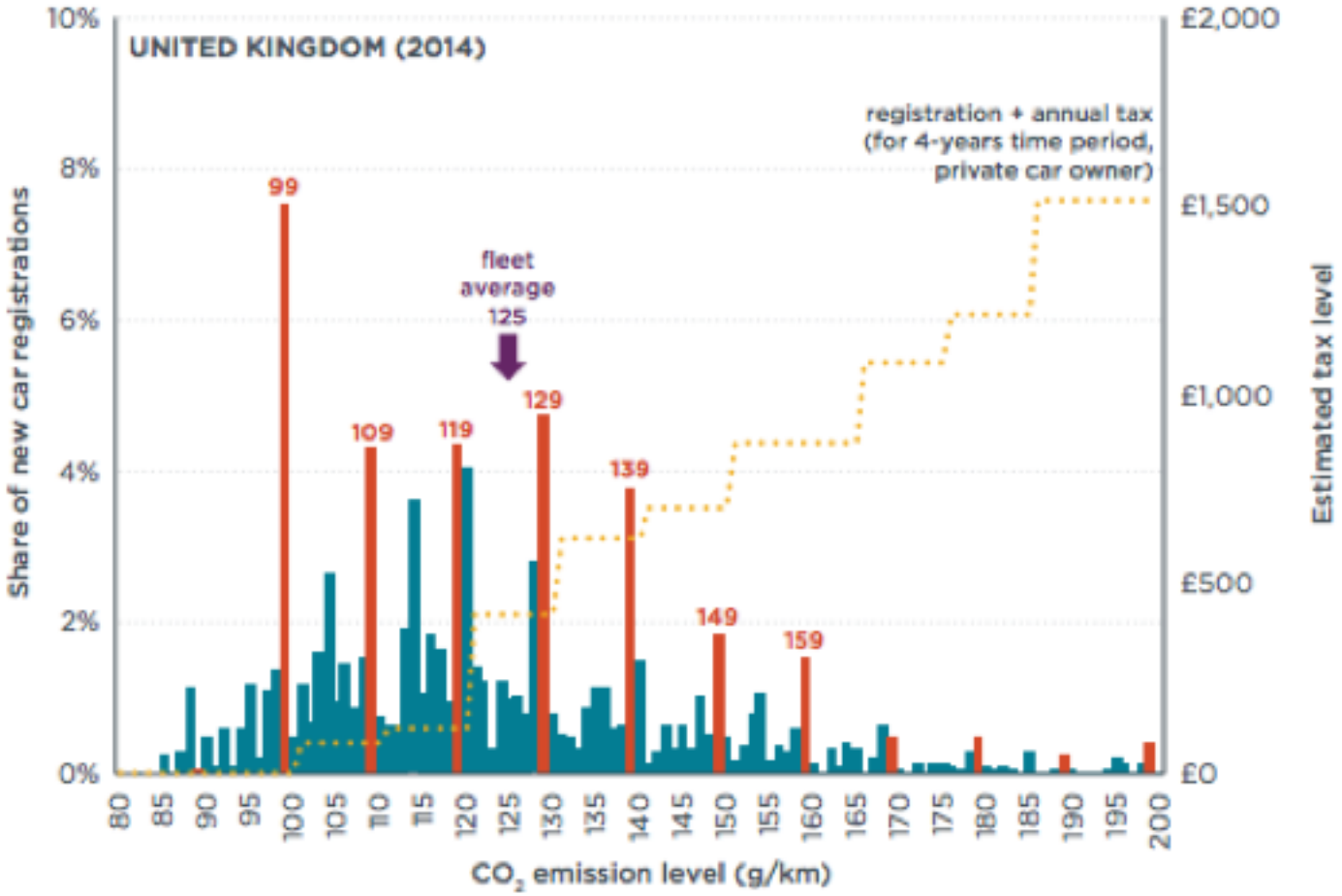
Fuel consumption-based feebate program

- Feebates = fee + rebate
  - Higher fuel consumption vehicles receive rebates
  - Lower fuel consumption vehicles pay fees



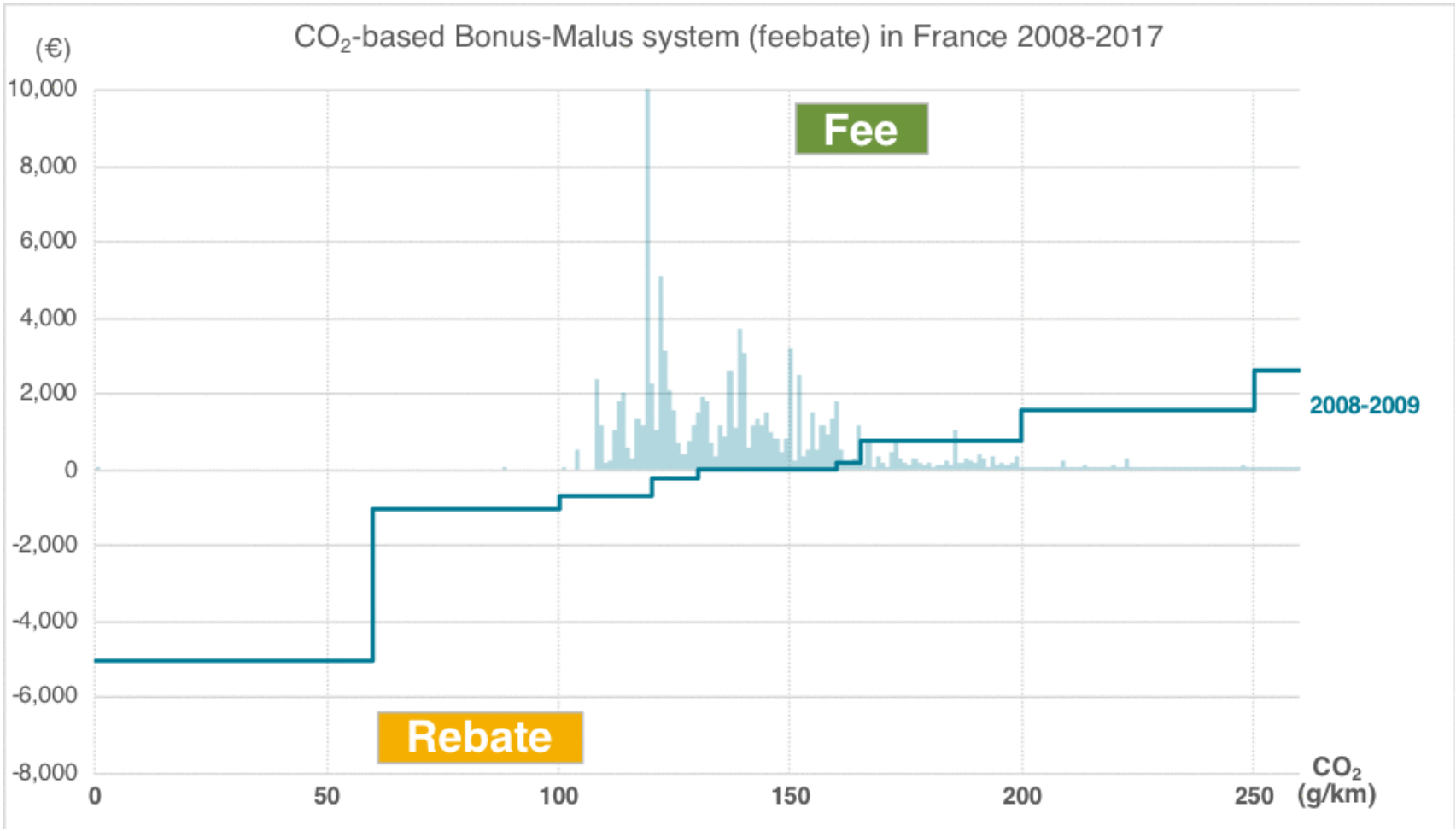
The design of the feebate function matters

- **Tax-optimized vehicles**



Link to the report: Optimizing to the last digit: how taxes influence vehicle CO2 emission level
http://www.theicct.org/sites/default/files/publications/Tax_Step_Analysis_201510.pdf

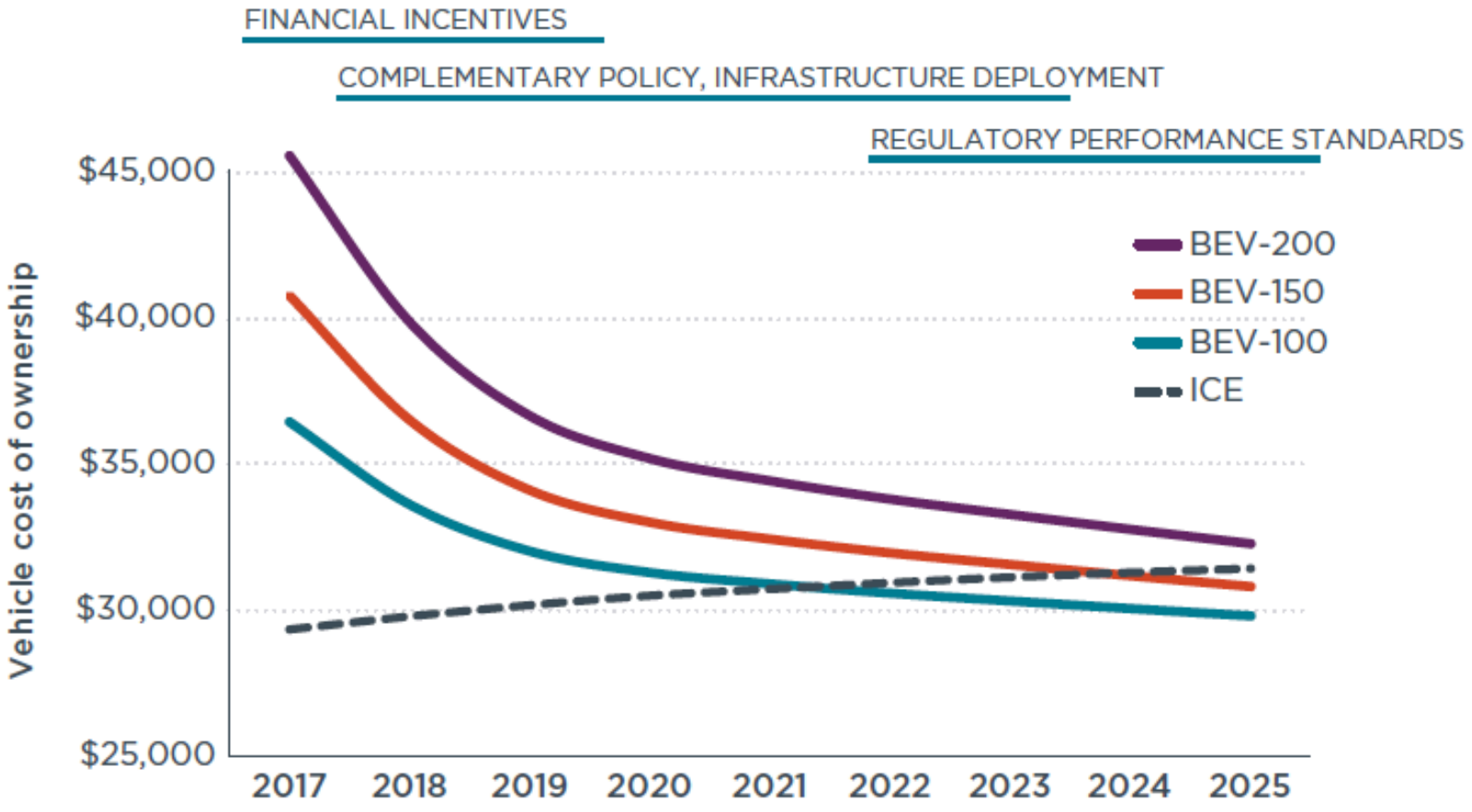
Gradually optimized system



US: fuel economy related tax and incentive

- Gas guzzler tax
  - Passenger cars (only)
  - Tax for a model type having fuel economy below certain thresholds: 22.5 mpg
  - Very few cars fall below the taxable level of 22.5 combined city/hwy mpg (10.5 l/100km)
- Incentive for electric vehicles
  - Federal subsidy- a one-time bonus, depending on the battery capacity of the vehicle (2,500 USD - 7,500 USD)
  - State level incentives- fiscal, non-fiscal

Electric vehicle could be cost-competitive to conventional vehicles



Slowik et al (2016). Evolution of incentives to sustain the transition to a global electric vehicle fleet. http://www.theicct.org/evolution-incentives-electric-transition

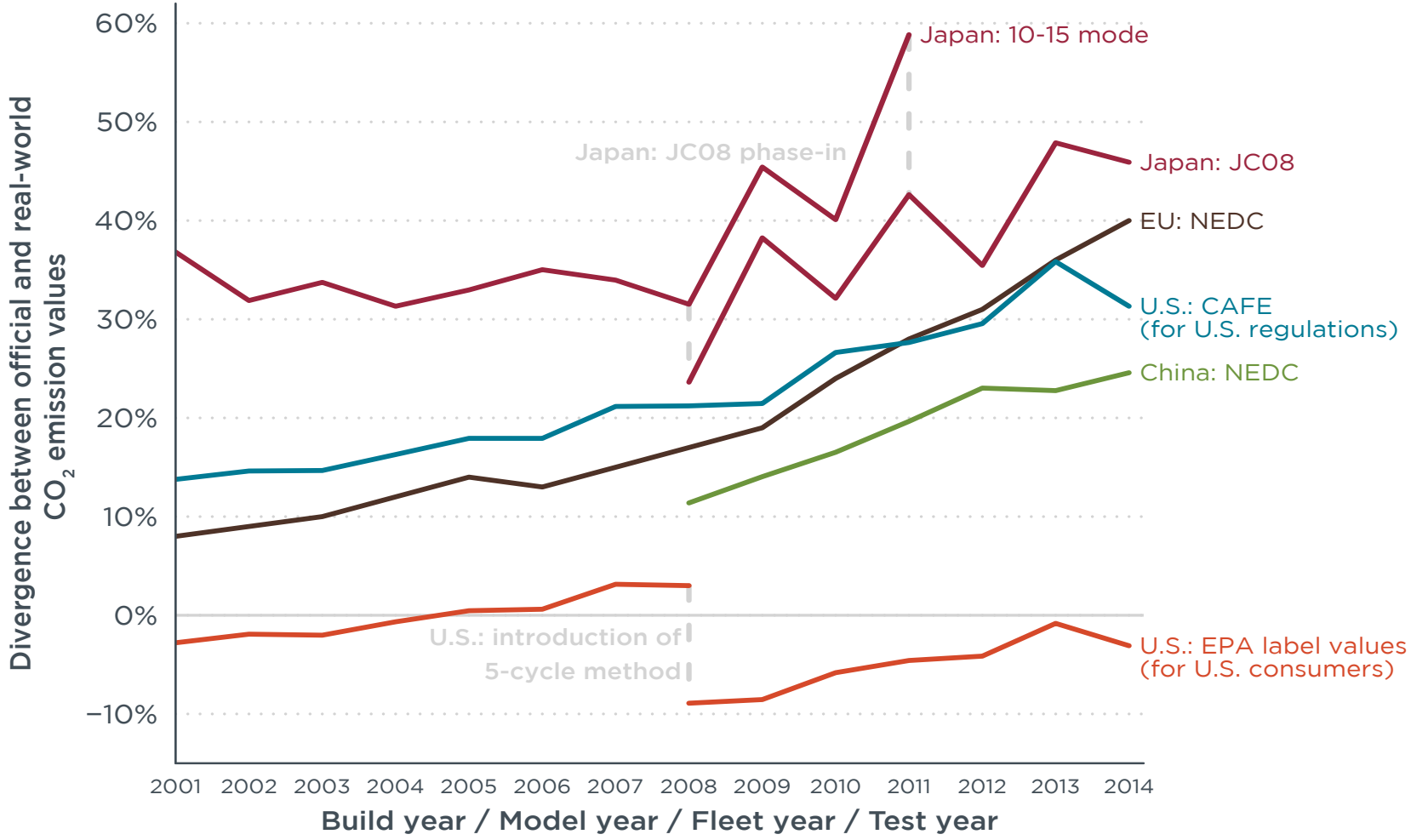
Final thoughts

- Fuel economy standards are one of the most cost effective and politically attractive energy reduction measures
  - US 2025 standards and onward

- Emerging markets are considering adopting fiscal measures such as feebates (which are easier to development and implement), especially in the context of vehicle electrification

4 Back up slides

Real world emissions are an issue that needs to be addressed



https://www.theicct.org/publications/laboratory-road-intl

Implementation of vehicle fuel economy labeling scheme