

Electric mobility

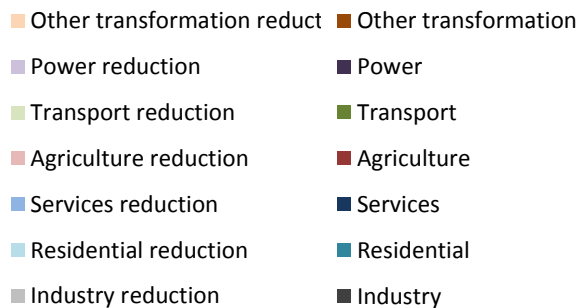
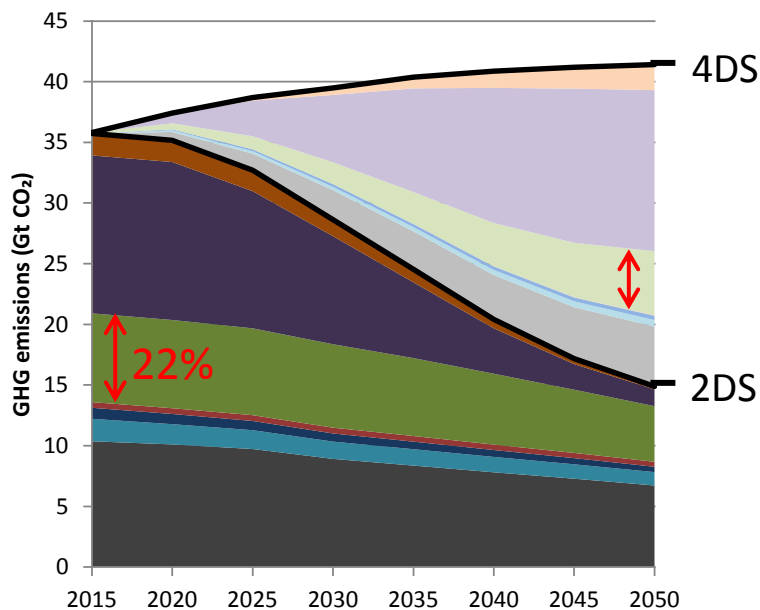
Status, policies and prospects

Clean Transport Forum - 22 September 2016, Bogotá
Marine Görner, International Energy Agency

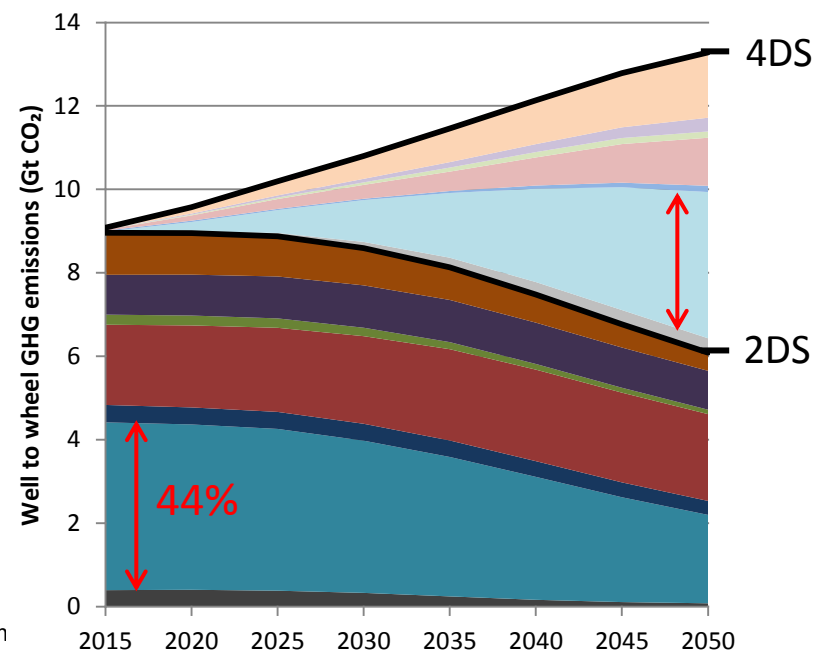
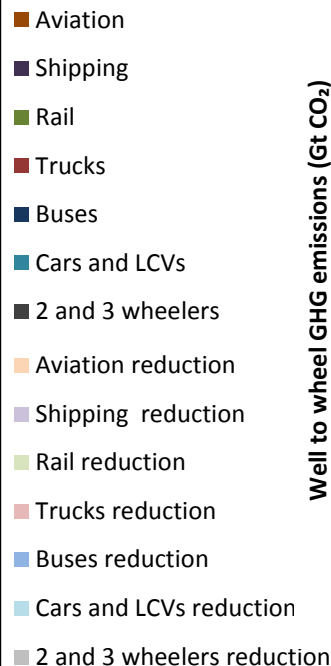


The role of electric cars in sustainable transport

Total GHG emissions – all sectors



GHG emissions – transport



Electric cars can make a major contribution, but are also needed:

→ “avoid, shift, improve”

→ electrified road freight and mass transport

The role of electric cars in sustainable transport

■ Electric cars benefits

	Climate	Health	Energy security
Better energy efficiency than internal combustion engines			
Absence of tailpipe emissions (CO ₂ and pollutants)		<i>(paramount in urban areas)</i>	
Low-carbon mode, provided that the electricity mix is low-carbon			
Reduction of oil dependency			<i>(+ potential for harvesting local, renewable energy sources)</i>

■ Main hurdles and challenges

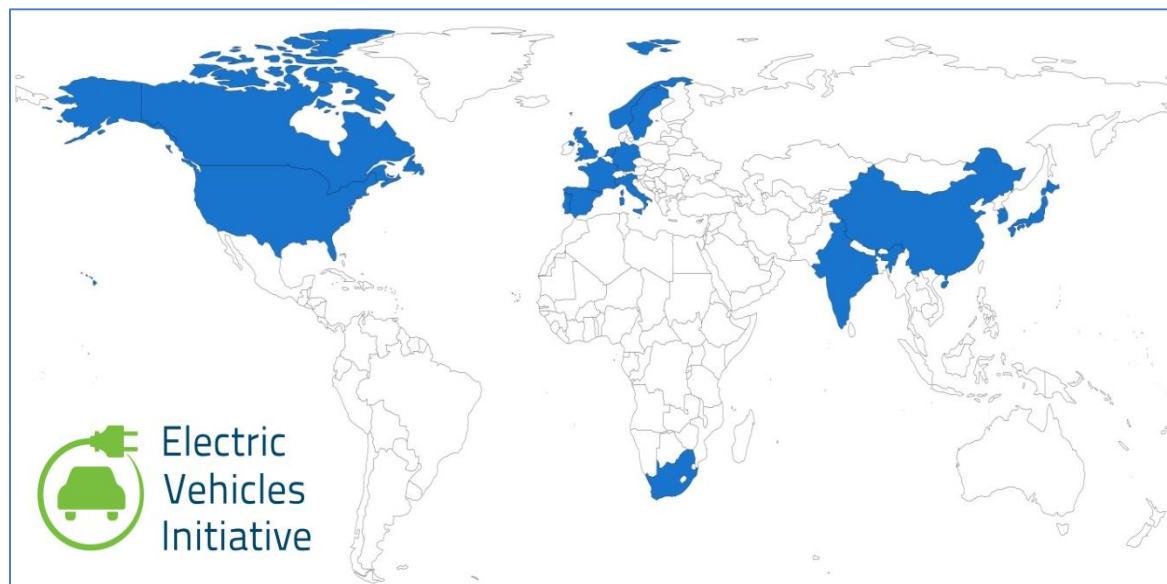
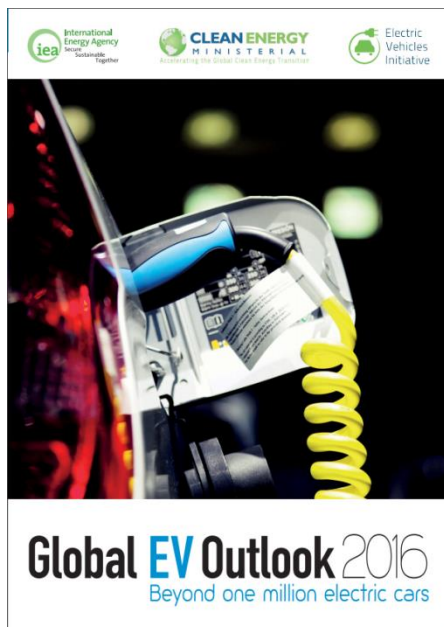
Upfront cost

Charging infrastructure and range anxiety

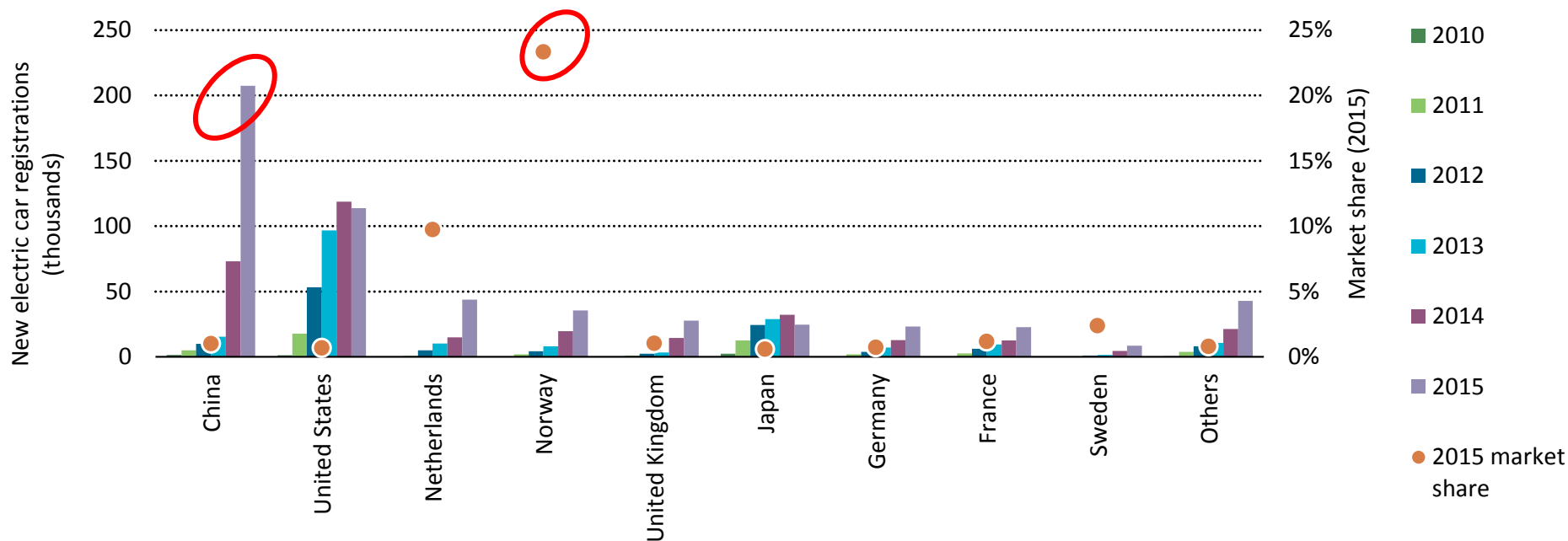
- Need for policy action to lift up barriers, spur adoption and harvest the benefits of EVs.

The Electric Vehicles Initiative and IEA's EV-related work

- EVI: Multi-government policy forum established in 2009 under CEM
- Knowledge-sharing on policies and programs that support EV deployment
- Global EV Outlook 2016, released on 31 May
- EVI data and analysis are at the basis of IEA's WEO and ETP scenarios

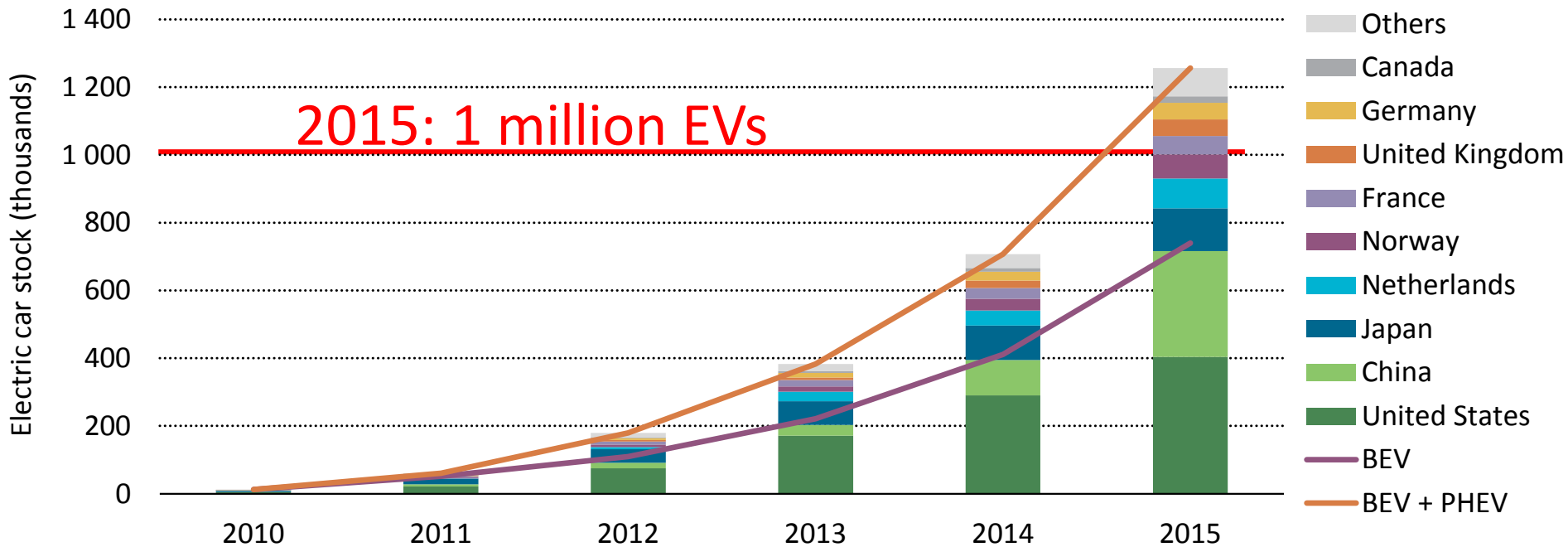


GEVO 2016: the electric car market in 2015



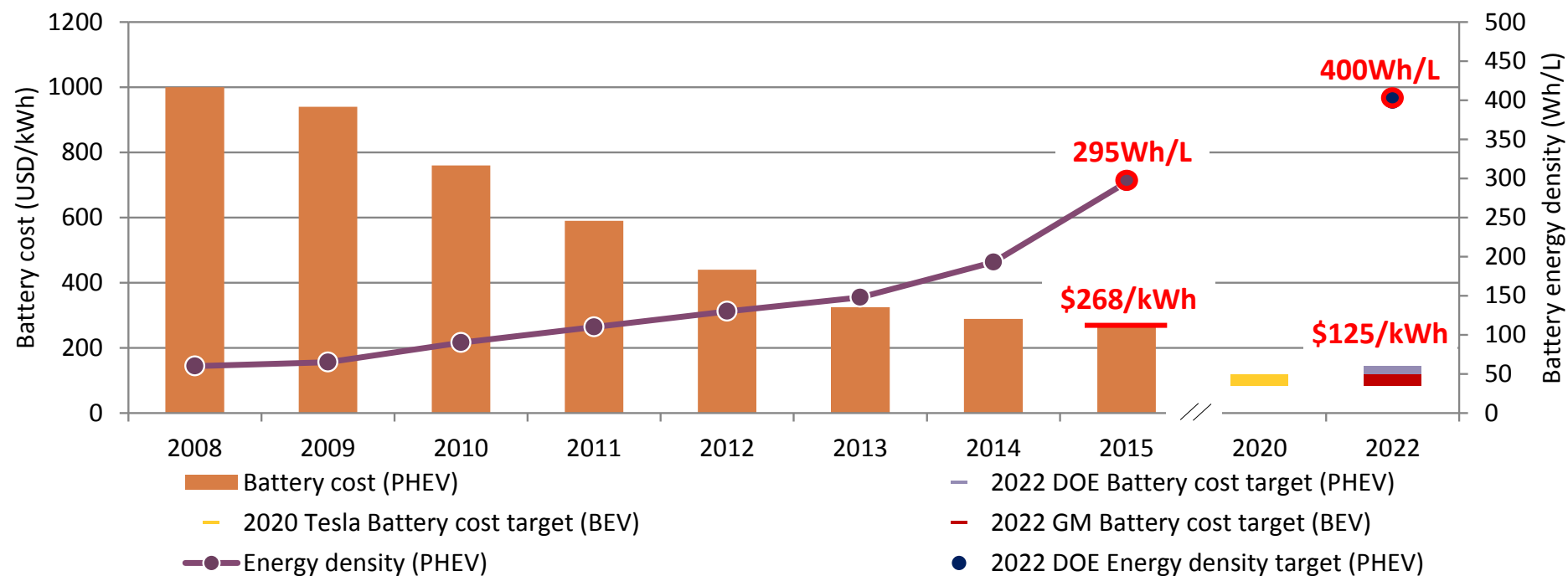
- 550,000 EVs sold in 2015 (+ 70%)
- China became the first EV market in 2015
- 9/10 EVs sold in 8 countries (China, US, Netherlands, Norway, UK, Japan, Germany, France)
- 7 countries >1% market share (Norway, Netherlands, Sweden, Denmark, France, China, UK)

EV stock evolution, 2010-2015



- 1.26 million EVs in circulation by end of 2015
- 59% BEVs
- 4/5 EVs in 5 countries (US, China, Japan, Netherlands, Norway)
- Other modes: 200 M e-2Wheelers, 173 k e-buses (mainly in China)

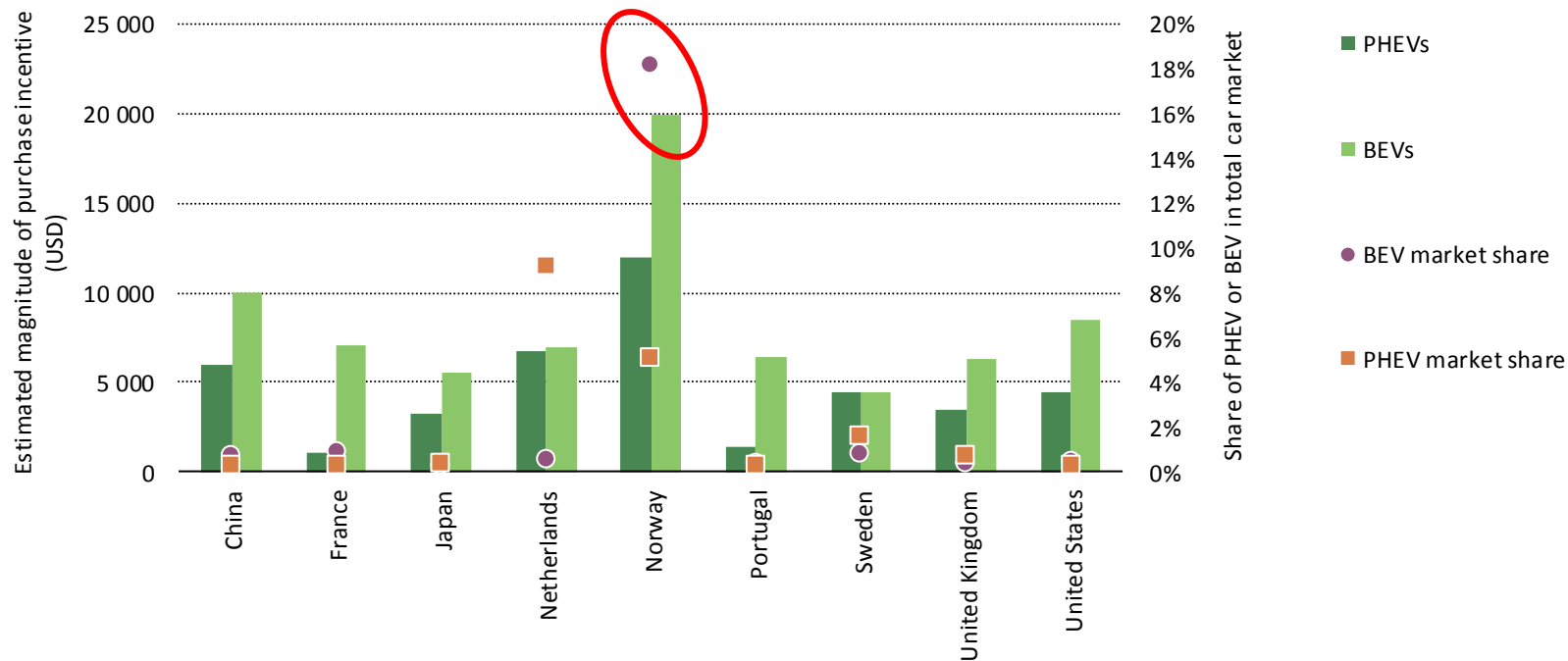
RD&D: battery costs and energy density



■ PHEV battery costs:

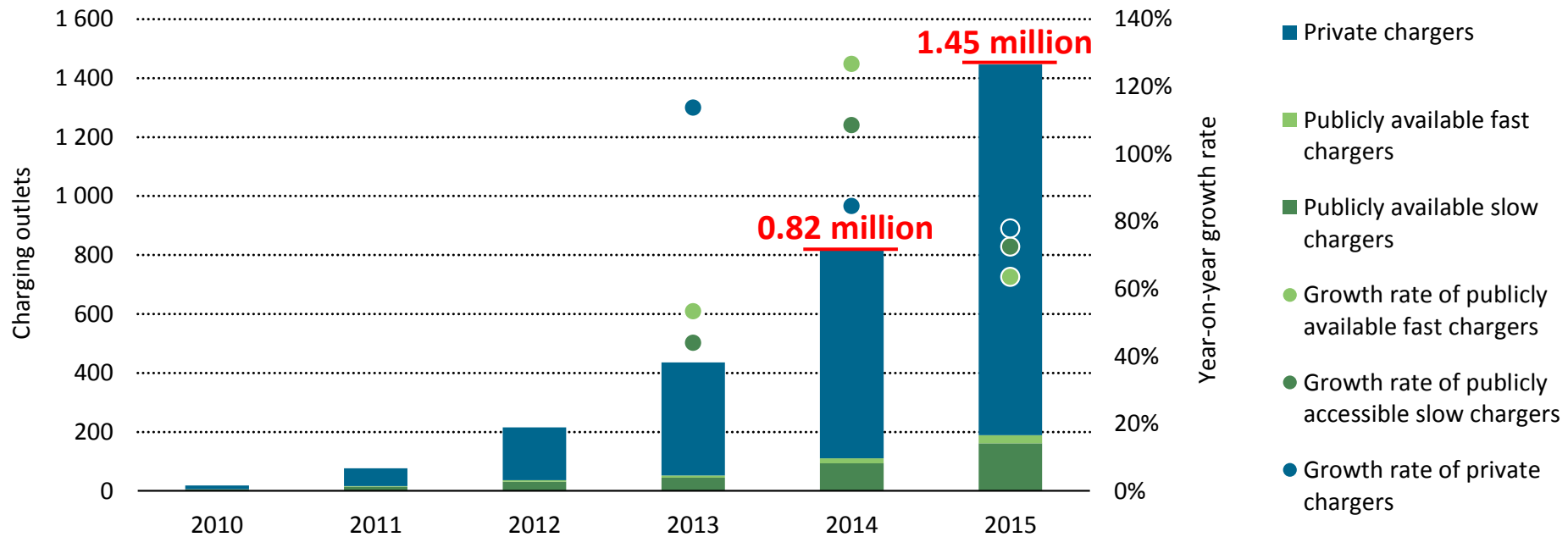
- -73% in the past 7 years
- Ambitious announcements in the next future: -58% to go in the next 7 years
- *Wider model availability (Renault-Nissan, BMW, GM, Tesla (...)) did not offer the same variety of EVs 5 years ago...)*
- *Further improvements needed to enable longer ranges for lower costs, addressing range anxiety and increasing EV competitiveness*

Purchase incentives and EV market shares, 2015



- Various policy mechanisms behind the “market pull”
 - Differentiated taxation: CO₂-based rebates, technology-based rebates, feebates, VAT exemptions
 - Waivers on charges, preferential treatment possible if differentiated number plates are in place
- Norway stands out in terms of incentives and EV adoption
- Difficult to come to conclusions for other markets (very early phase)

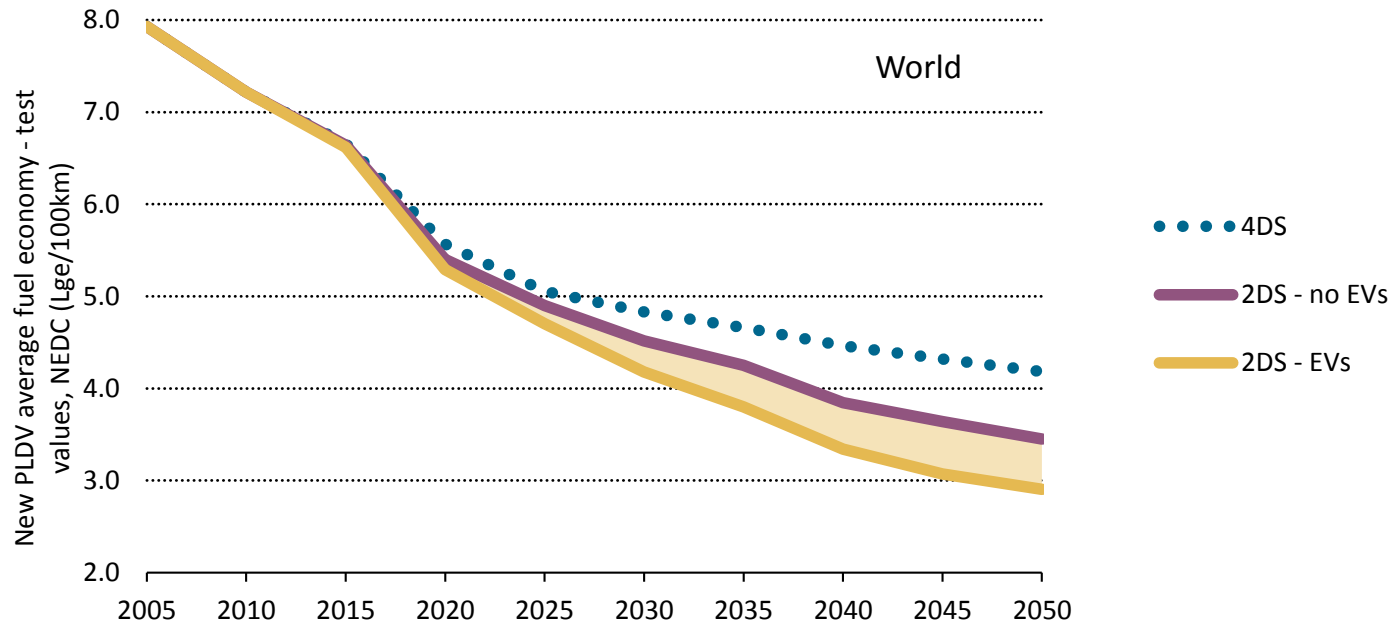
EV Supply Equipment



- The deployment of publicly accessible chargers is positively correlated with the growth in EV sales
- Need for charging network to overcome range anxiety barrier
- Incentives are not just needed for vehicle purchase

- A policy framework with high taxes on conventional fuels and stringent fuel economy standards is favorable for EVs
- Purchase and circulation incentives and the availability of charging infrastructure are positively correlated with EV uptake
 - Need for fiscal measures (e.g. differentiated taxation, feebates) to kick start the market uptake
 - Need for mechanisms supporting the deployment of recharging infrastructure
- Additional measures can further increase the value proposition of EVs
 - Examples: waivers on access restrictions (bus lanes) and urban/parking pricing schemes
- Incentives can only be transitional
 - Risk of tax revenue losses (incl. from fuel purchase). Need to adapt taxation mechanisms.
 - Risk of congestion effects and detrimental effects to public transportation.
 - Need for close monitoring and periodical revisions to adapt to a fast evolving market

Illustration: a possibly sizeable contribution of EVs to fuel economy targets



GFEI targets

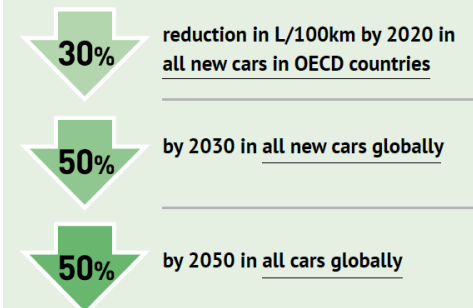
- 2030: fuel consumption per km of new LDVs 50% better than in 2005

IEA 2DS

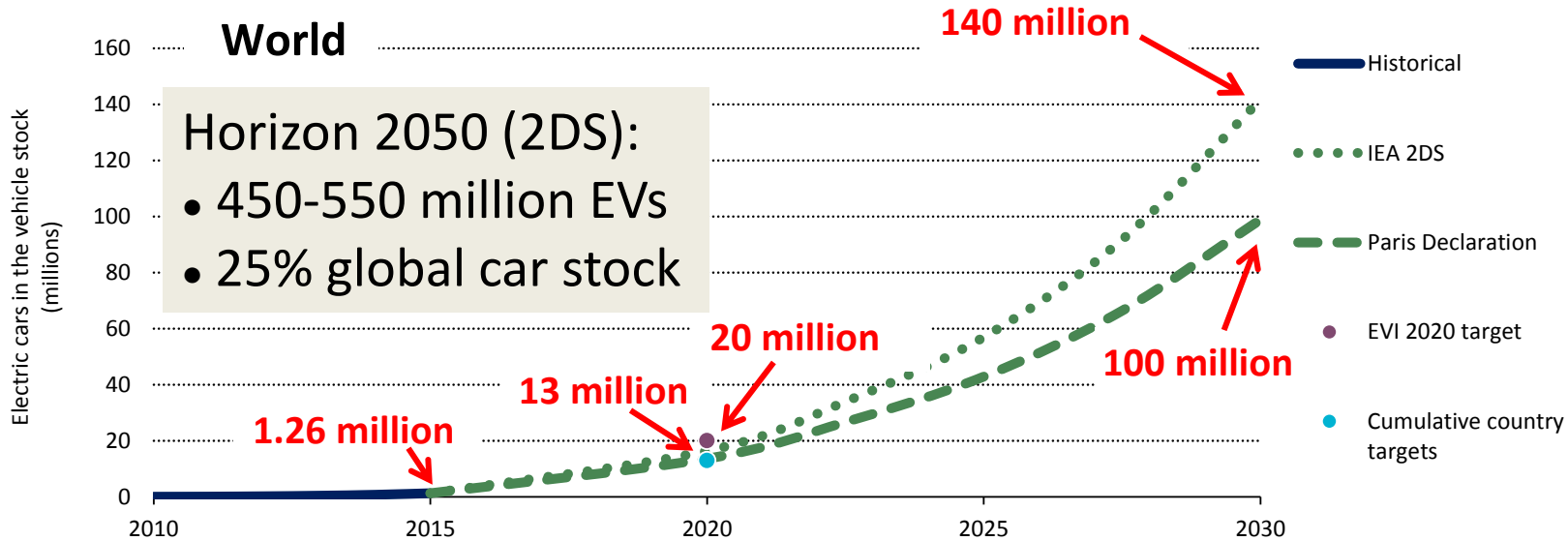
- GFEI target needs ICE improvement, hybrids & EVs
- EVs (PHEV and BEVs): sizeable impact after 2020

THE GFEI FUEL ECONOMY TARGETS

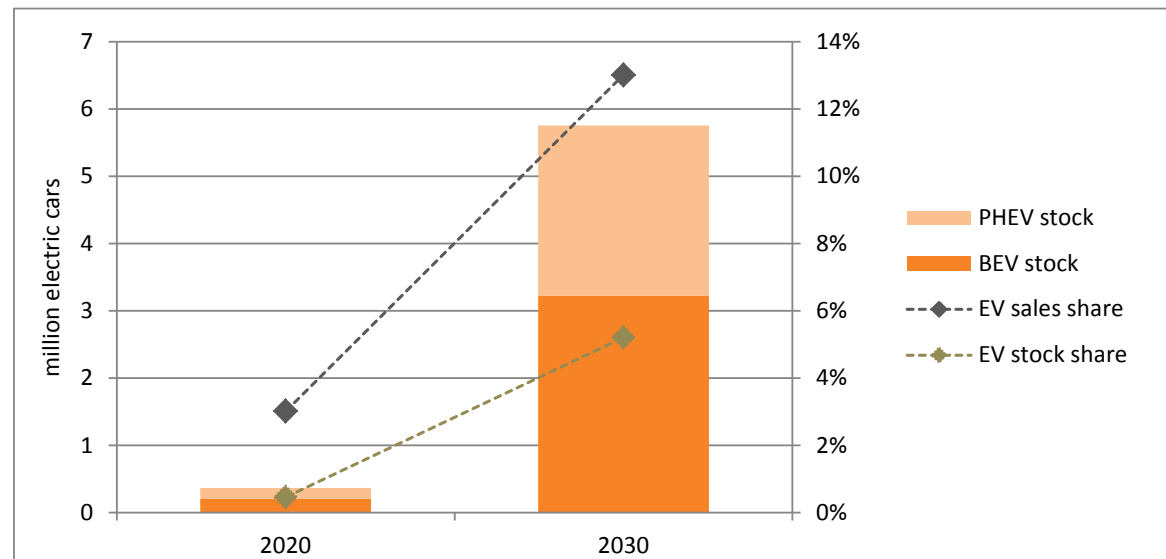
From 2005 baseline:



EV deployment targets



Latin America, IEA 2DS



Thank you for your attention