The Global EV Outlook 2018

Pierpaolo Cazzola

MOVE's monthly webinar - Perspectiva mundial de la movilidad eléctrica

IEA

Electric Vehicles Initiative (EVI)

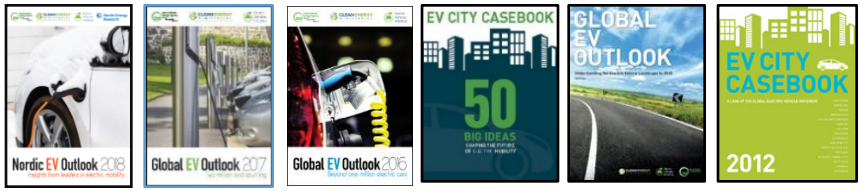
Electric Vehicles Initiative

Multi-government policy forum dedicated to conducting collaborative activities that support the design and implementation of domestic electric vehicle (EV) deployment policies and programs

In 2010, EVI was one of several initiatives launched under the CEM

Currently co-chaired by Canada and China, and coordinated by the IEA

Released several analytical publications, demonstrating leadership to strengthen the understanding of the opportunities offered by electric mobility to meet multiple policy goals



Instrumental to mobilize action and commitments (Paris Declaration on Electro-Mobility and Climate Change at COP21, Government Fleet Declaration at COP22)

Launched the EV30@30 Campaign in June 2017

Now launching the **Pilot City Programme**

Also working with the **Global Environment Facility** on the preparation of a project for the support of EV policy-making in developing regions

Members

in 2018

gef

EV30@30 Campaign

Designed to accelerate the global deployment of electric vehicles

Sets a collective aspirational goal to reach 30% sales share for EVs by 2030

Launched at the 8th CEM meeting, in Beijing, by Minister Wan Gang

Implementing actions include:

- Supporting the deployment of chargers and tracking its progress,
- Galvanising public and private sector commitments for electric vehicle (EV) uptake in company and supplier fleets
- Scaling up policy research and information exchanges
- Supporting governments in need of policy and technical assistance through training and capacity building
- Establishing the Global EV Pilot City Programme, aiming to achieve 100 EV-Friendly Cities over five years

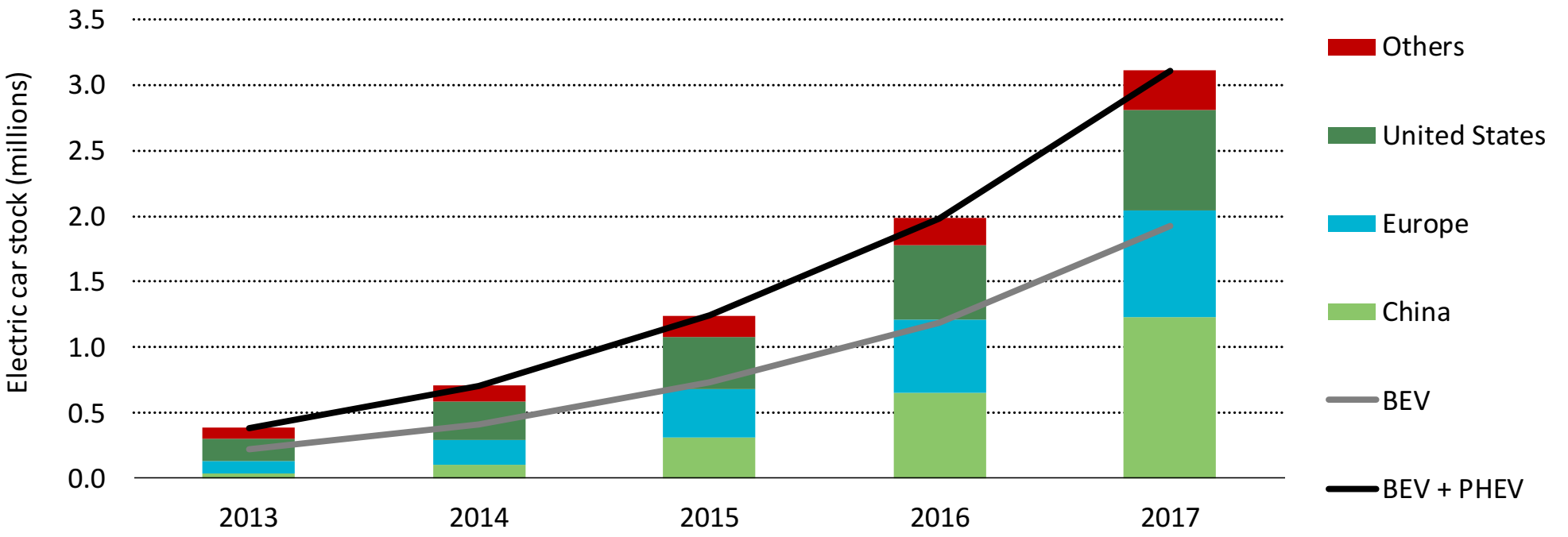
Supported buy several partners

Members

Global EV Outlook 2018

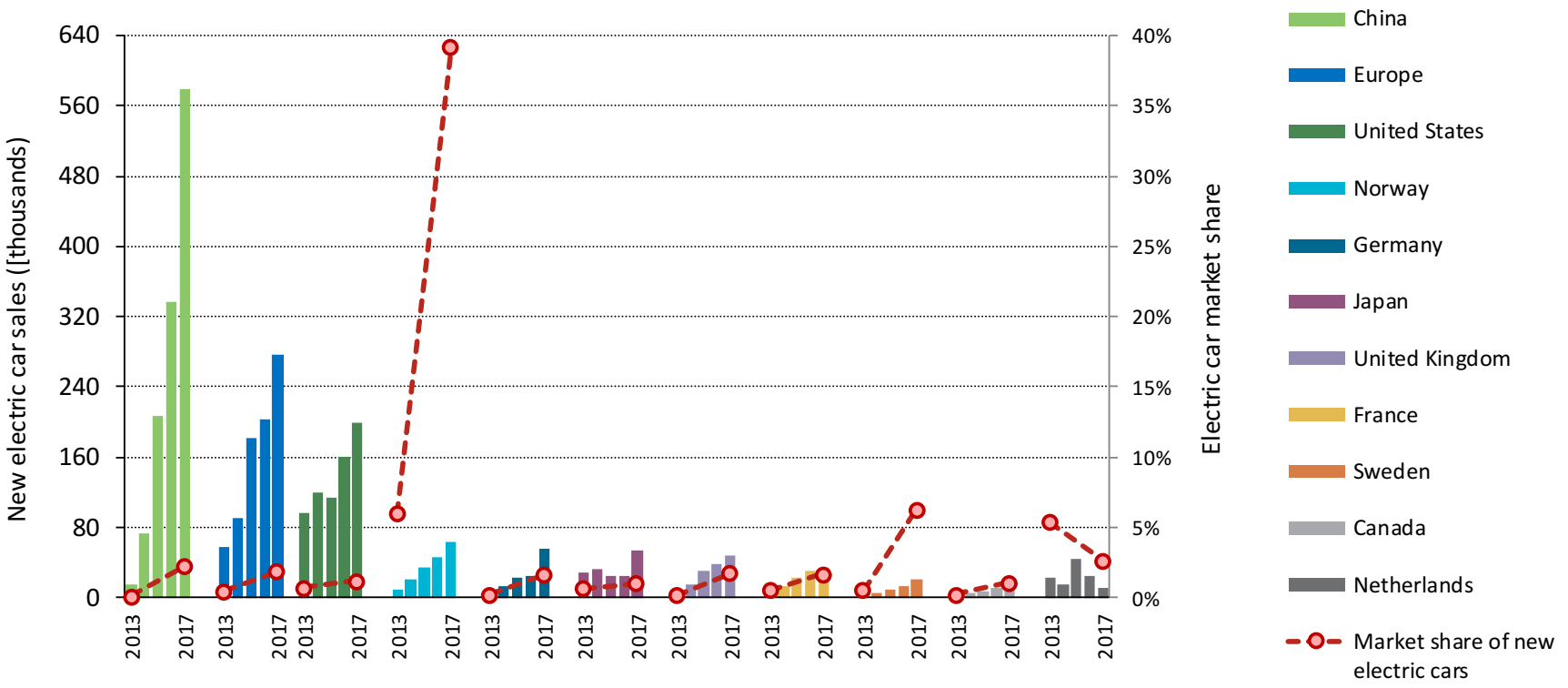
- EVI flagship report by the IEA
- 2018 edition includes
  - Data reporting (EV stock, sales, EVSE, battery costs)
  - Overview of existing policies
  - Battery technology and cost assessment
  - Implications on the TCO of road vehicles
  - Role of EVs in low carbon scenarios (2030 timeframe)
  - Electricity demand, oil displacement and GHG emission mitigation
  - Material demand
  - Policy recommendations
- 2018 edition also paired with the Nordic EV Outlook 2018
  - Focus on one of the most dynamic global regions for EV uptake
  - Opportunity to learn on policy efficacy and consumer behaviour

The number of electric cars on the road continues to grow



The electric car stock exceeded 3 million in 2017
However, electric cars still only represent 0.3% of the global car fleet

Electric car sales are on the rise in all major car markets



China is the largest electric car market globally, followed by Europe and the US
Norway is the global leader in terms of market share, with 40% in 2017

Electric mobility is not limited to cars

Electric 2-wheelers: major phenomenon in China, where there are 250 million in the rolling stock and 30 million sales per year

Low Speed Electric Vehicles: estimated at 4 million units in China (sales above 1 million). Not favoured by policy support but by cost and practicality (small size, no driving license/registration required)

Buses: 360 000 in China. Close to 90 000 sales in 2017 . Stimulated by policy support.

Growing interest in C40 cities (better economics: not only pollution and climate-driven phenomenon)

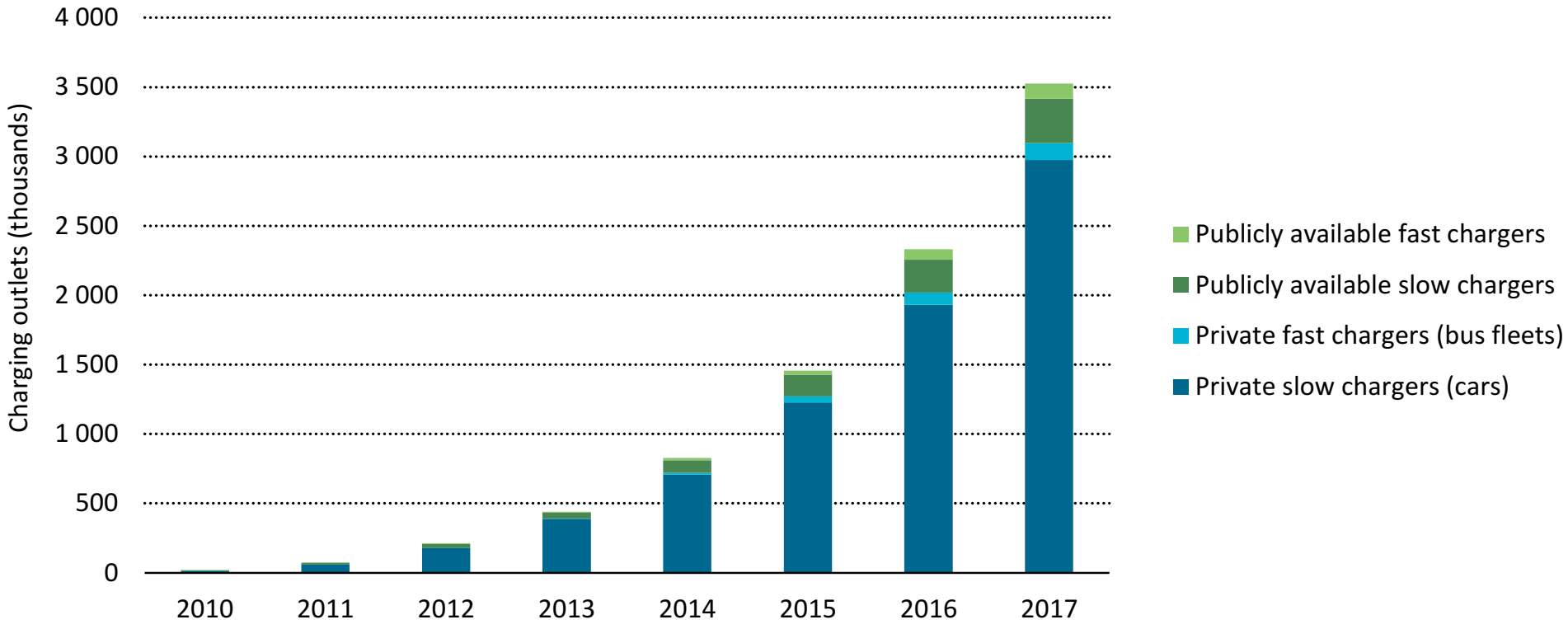
EV uptake is still largely driven by the policy environment

- All 10 leading countries in electric vehicle adoption have a range of policies in place to promote the uptake of electric cars

- Policies have been instrumental to make electric vehicles more appealing to customers, reduce risks for investors and encourage manufacturers to scale up production

- Key instruments deployed by local and national governments for supporting EV deployment:
  - public procurement
  - financial incentives facilitating the acquisition of EVs and reducing their usage cost (e.g. by offering free parking)
  - financial incentives and direct investment for the deployment of chargers
  - regulatory instruments, such as fuel economy standards and restrictions on the circulation of vehicles based on their tailpipe emissions performance

Charger deployment accompanies EV uptake

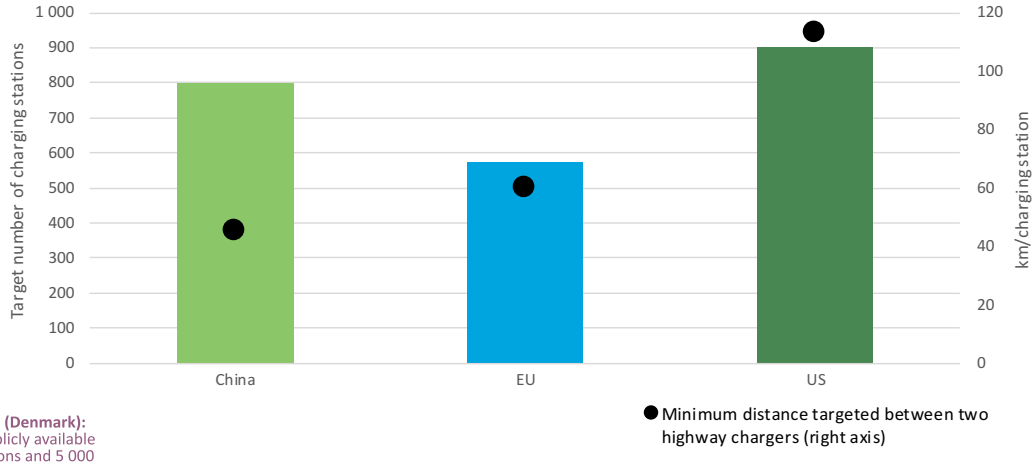


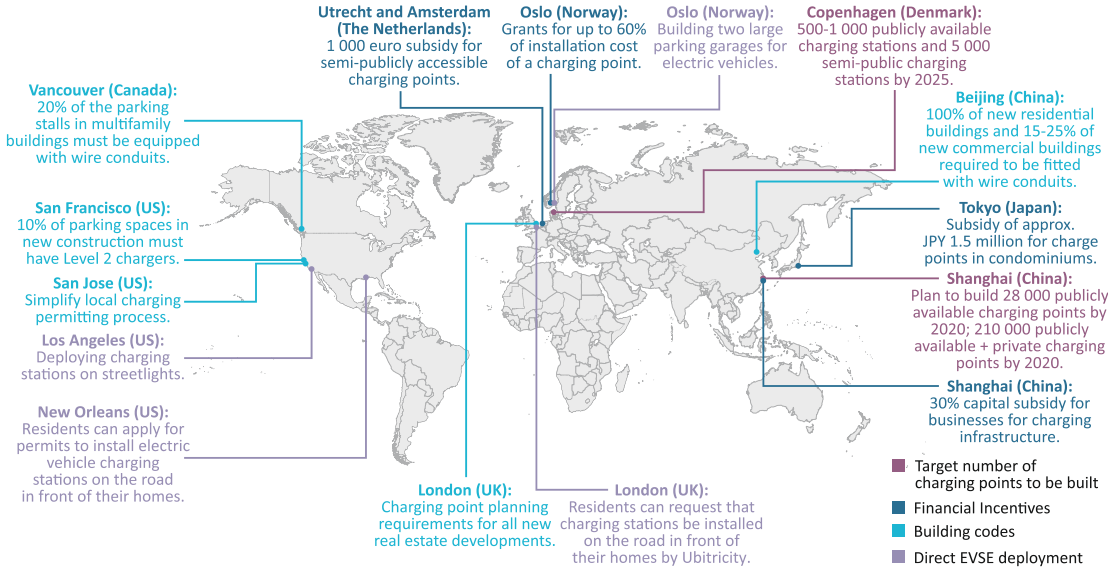
EV owners charge mostly at home or at work: private chargers far exceed publicly accessible ones

Publicly accessible chargers important to ensure EV market expansion, fast chargers essential for buses

Charger deployment also currently supported by policy

Major markets such as China, the European Union and the United States clearly have ramped up their ambition to install fast charging facilities along highways

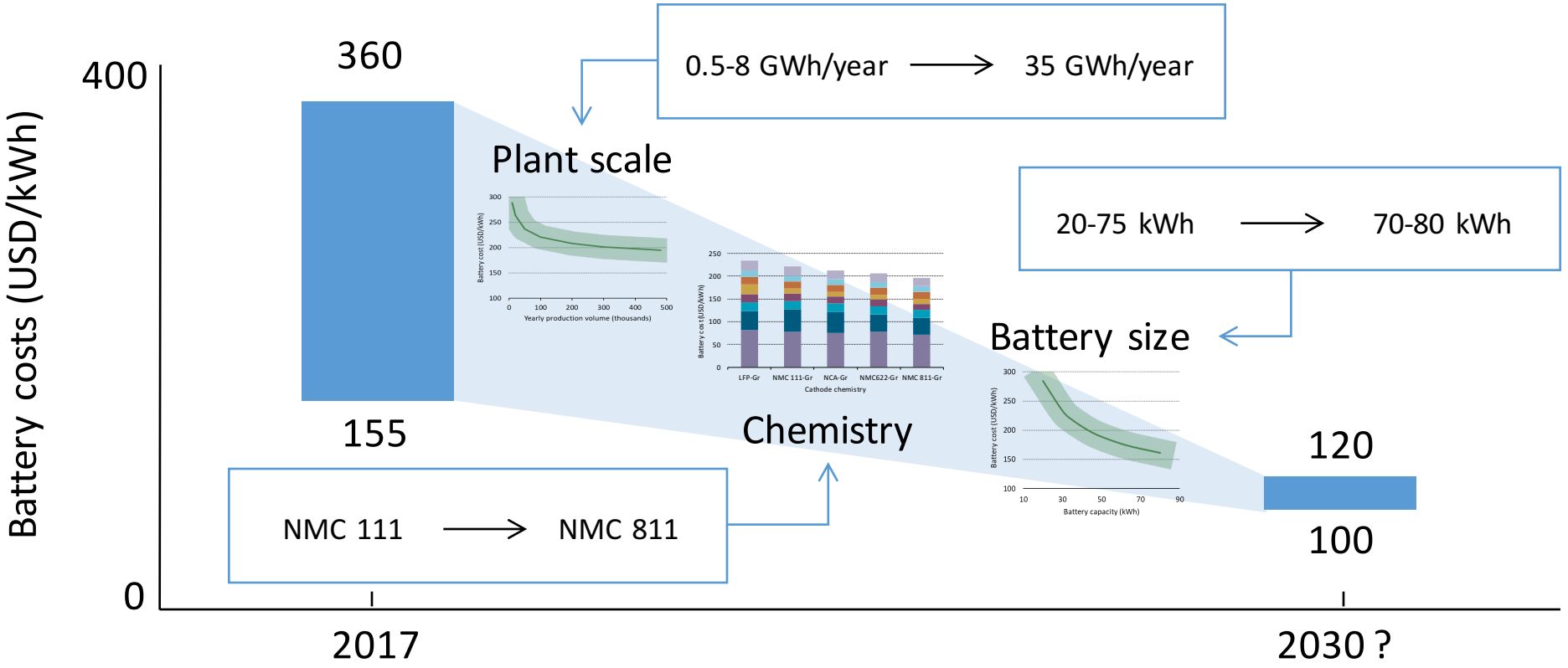




Cities are using a variety of measures to support charger deployment

Four main categories: targets, financial incentives, regulatory requirements (building codes) and direct deployment of chargers

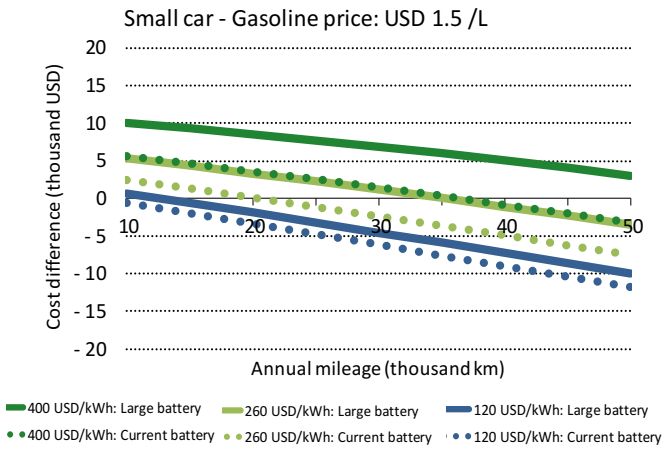
Lithium-ion batteries: further cost reductions at reach…



The combined effect of manufacturing scale up, improved chemistry and increased battery size explain how battery cost can decline significantly in the next 10 to 15 years

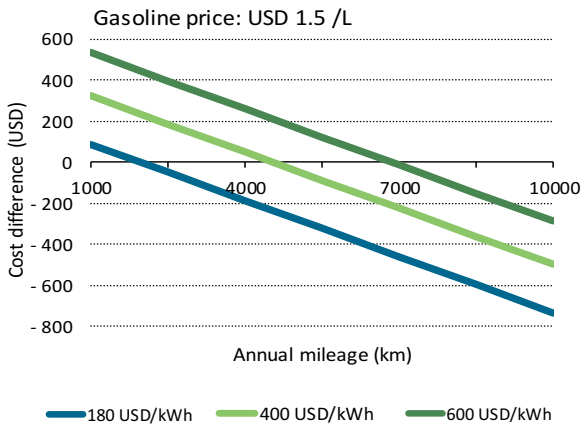
Implications for the cost competitiveness of EVs

LDVs - BEV



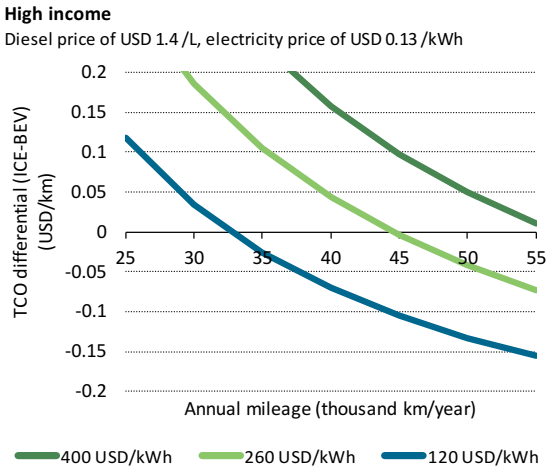
BEVs are most competitive in markets with **high fuel taxes** and at **high mileage** At a USD 120/kWh battery price and with EU gasoline prices, BEV are competitive even at low mileage

2-wheelers



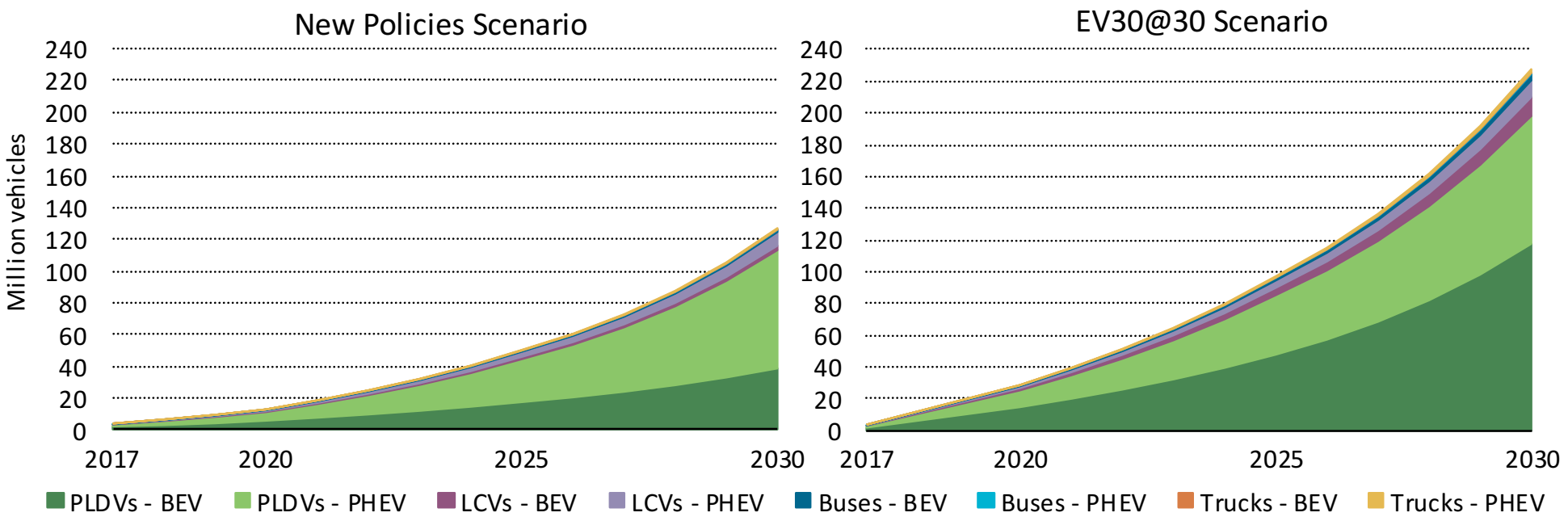
The economic case for electric two-wheelers is strong: in countries with **high fuel taxes** electric two-wheelers **are already cost competitive** with gasoline models

Buses



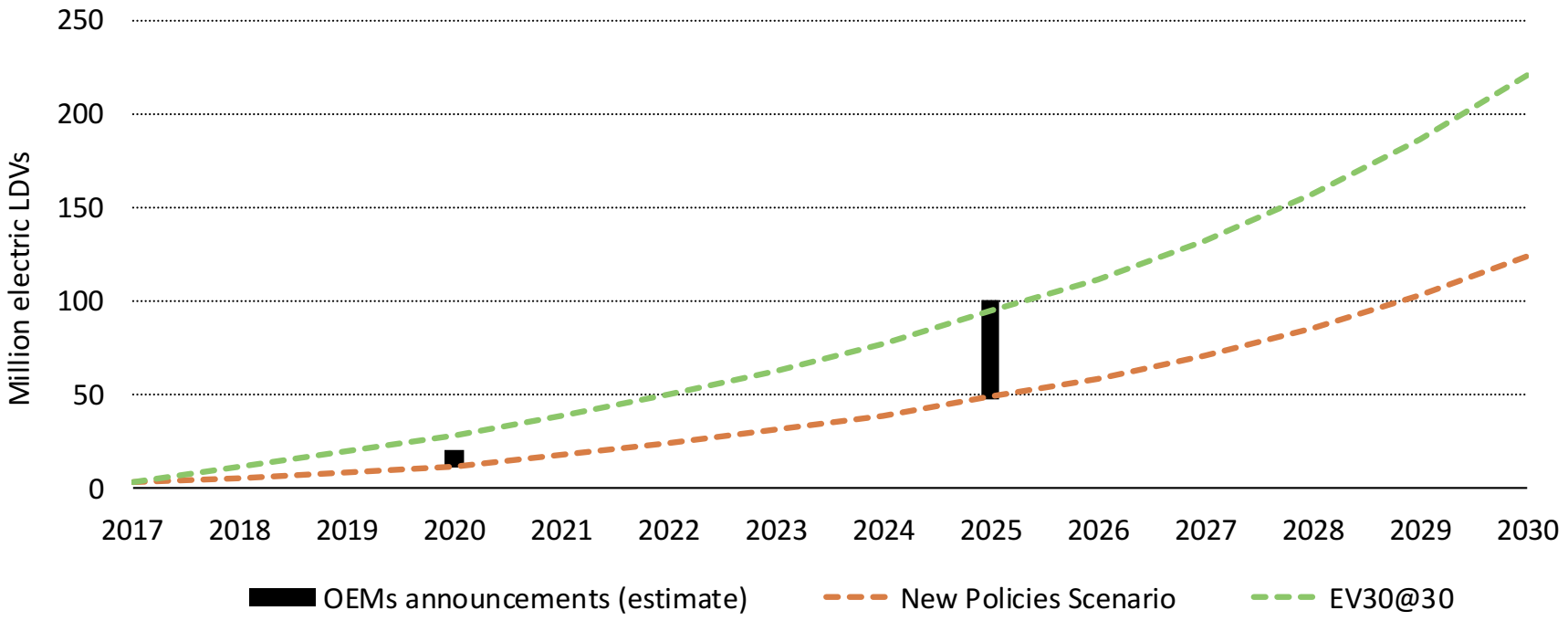
Electric buses travelling 40 000-50 000 km/year are cost competitive in regions with **high diesel taxation** regimes if battery prices are below USD 260/kWh

Global EV deployment under the NPS and the EV30@30 scenario



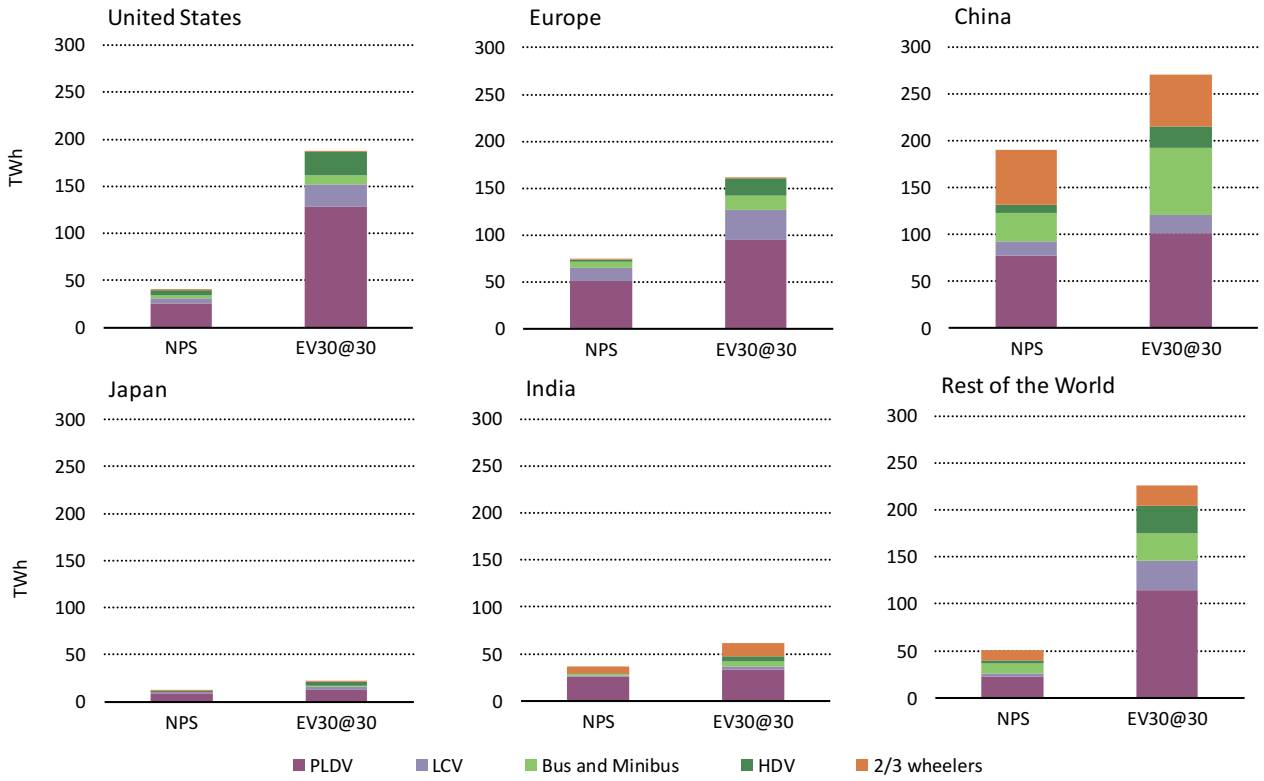
The EV30@30 Scenario sees almost 230 million EVs (excluding two- and three-wheelers), mostly LDVs, on the road by 2030. This is about 100 million more than in the New Policies Scenario

Benchmarking scenario results against OEM targets for PLDVs



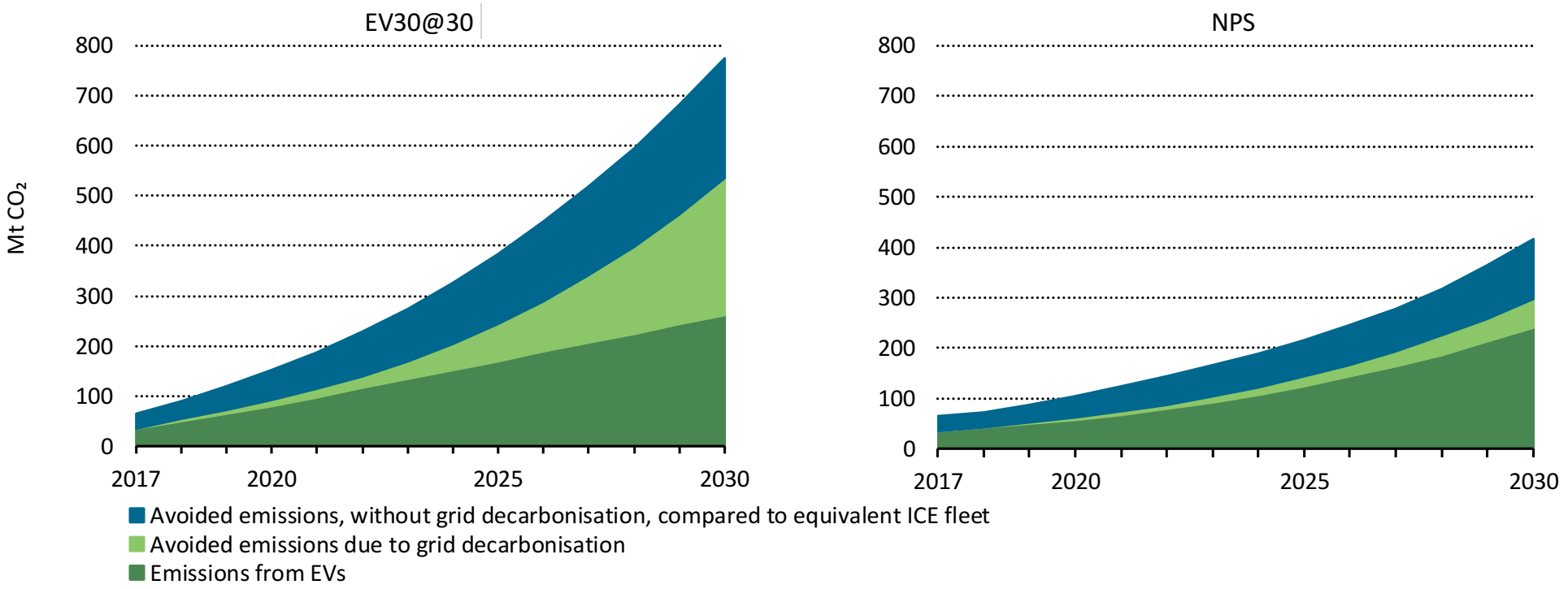
Estimates based on manufacturers' projections suggest an uptake of electric LDVs ranging in-between the New Policies and the EV30@30 scenarios by 2025

Power demand projections



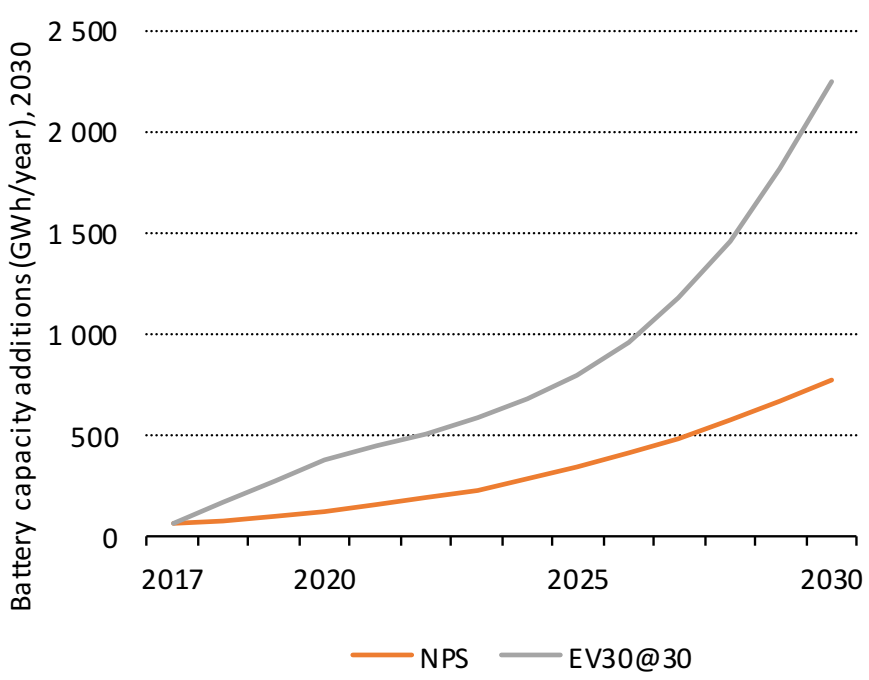
Two-wheeler and bus electricity demand make China the highest consumer of electricity for EVs in both scenarios. In the EV30@30 Scenario, electricity demand for EVs is more geographically widespread

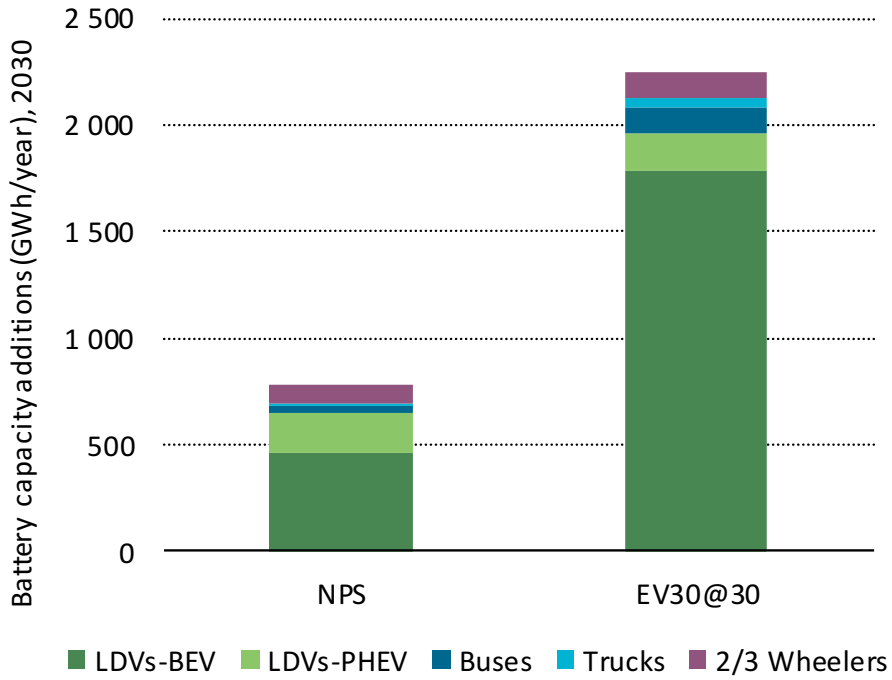
GHG emissions



In 2030, CO_2 emissions associated with the use of EVs are lower than those of equivalent ICE vehicles at a global scale, even if electricity generation does not decarbonise from current levels

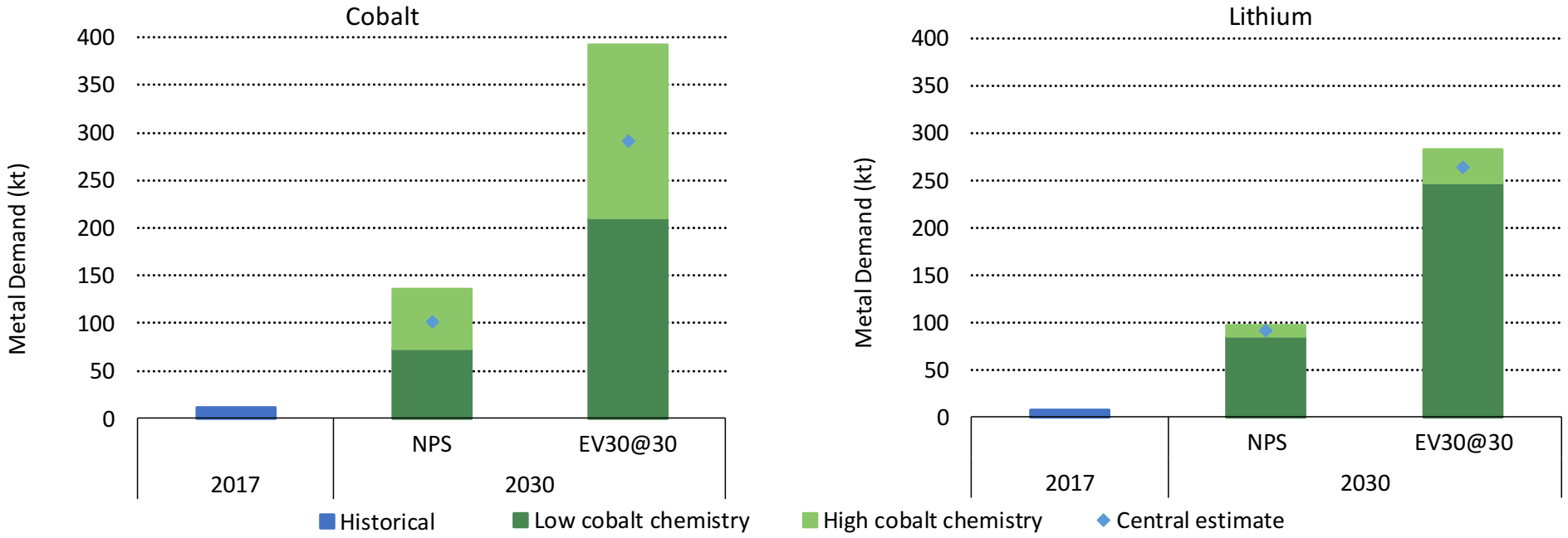
Battery capacity





Demand for battery capacity for electric vehicles, primarily PLDVs, is projected to increase to 0.78 TWh per year in the New Policies Scenario and 2.2 TWh per year in the EV30@30 Scenario and to 2030

Material demand



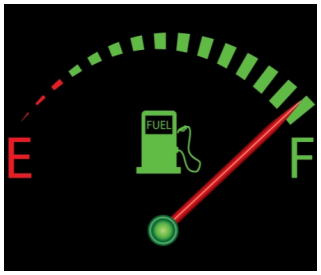
Lithium and cobalt demand from electro mobility in 2030 will be much higher than current demand
Developments in battery chemistry can greatly affect future demand

Policies favouring the transition to electric mobility

CARBON PRICING OF FUELS

PUBLIC PROCUREMENT

BRIDGING THE PRICE GAP



FUEL ECONOMY STANDARDS

LOCAL ACCESS REGULATIONS

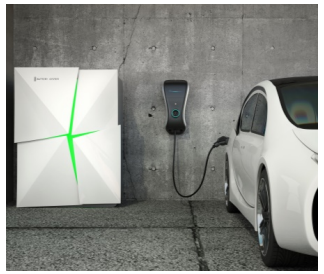
ROAD PRICING

PRIVATE & PUBLIC EVSE ROLLOUT

DEMAND-DRIVEN & BUSINESS-DRIVEN EVSE

SUCCESSFUL GRID INTEGRATION

MATERIAL DEMAND MANAGEMENT



SECOND LIFE, END-OF-LIFE AND RECYCLING

www.iea.org

IEA