

致：立法會環境事務委員會全體委員

**《電動車政策研究組》就  
立法會環境事務委員會議程「推廣使用電動車輛」的意見書**

**1. 國際電動車發展概況**

聯合國潔淨能源部長會議（Clean Energy Ministerial, CEM）於 2010 年成立電動車倡議（Electric Vehicles Initiative, EVI）論壇推動全球電動車發展，共有 16 個國家參與（包括中國、挪威、美國、英國、日本等），佔全球 95% 以上的電動車市場。

2016 年，8 個 EVI 成員國簽署及發表「政府車隊共同宣言」，承諾增加政府車隊的電動車數目，同時呼籲其他國家仿效。2017 年 6 月，第 8 屆潔淨能源部長級會議於在北京舉行，會中通過啟動“EV30@30 項目”，目標是在 2030 年電動車（私家車及商用車）佔市場新增汽車銷售量 30%。

“EV30@30 項目”的 5 大具體行動如下：

- 1) 支持電動車充電設施建設並檢視進度；
- 2) 鼓勵公共機構和私營公司承諾發展電動車車隊；
- 3) 推動政策研究及促進資訊交流
- 4) 透過培訓和能力建設，協助需要政策和技術支援的國家；
- 5) 開展「全球電動汽車示範城市項目」，目標是在五年內全球有超過 100 個電動車友善城市。

2018 年 5 月，第 9 屆潔淨能源部長級會議在哥本哈根舉行，並宣佈開始“EV30@30 項目”中第 5 點的「全球電動汽車示範城市項目」。截至去年 9 月，全球已有 30 個城市參加（表一），包括北京、上海、深圳，但香港未有參加。

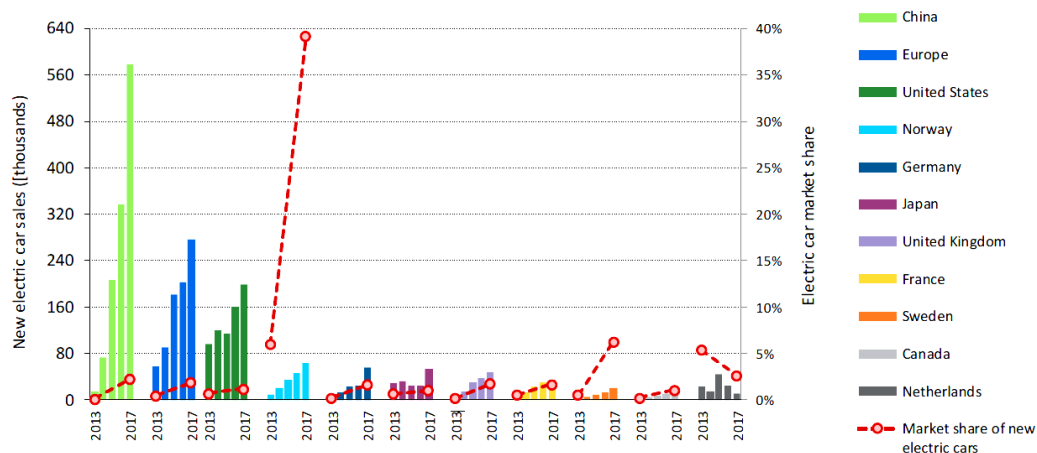
(表一, EVI Pilot City Programme)

Country	Cities
Canada	Calgary, Halifax Regional Municipality, Montréal, Stratford, Surrey, Richmond, Winnipeg
China	Beijing, Rugao, Shanghai, Shenzhen, Yancheng
Finland	Helsinki, Espoo, Oulu, Tampere, Vantaa
Japan	Aichi, Kanagawa and Kyoto Prefectures; Tokyo Metropolitan Government
Netherlands	Metropolitan Region Amsterdam and G4 Cities (Utrecht, Amsterdam, the Hague, Rotterdam)
New Zealand	Christchurch (upcoming)
Norway	Bergen (upcoming), Oslo
Sweden	Stockholm
Thailand	Betong (interested), Nonthaburi (interested)
United Kingdom	Dundee, London
United States	New York City

根據國際能源署 (IEA) 發表的《2018 全球電動汽車展望》(附件一)，截至 2017 年，全球電動車數量已突破 3 百萬輛。中國是全球最大的電動車市場，歐洲及美國緊隨其後。若單以國內電動車市場佔有率計算，挪威以 40% 領先其他國家 (表二)。

(表二, The Global EV Outlook 2018)

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



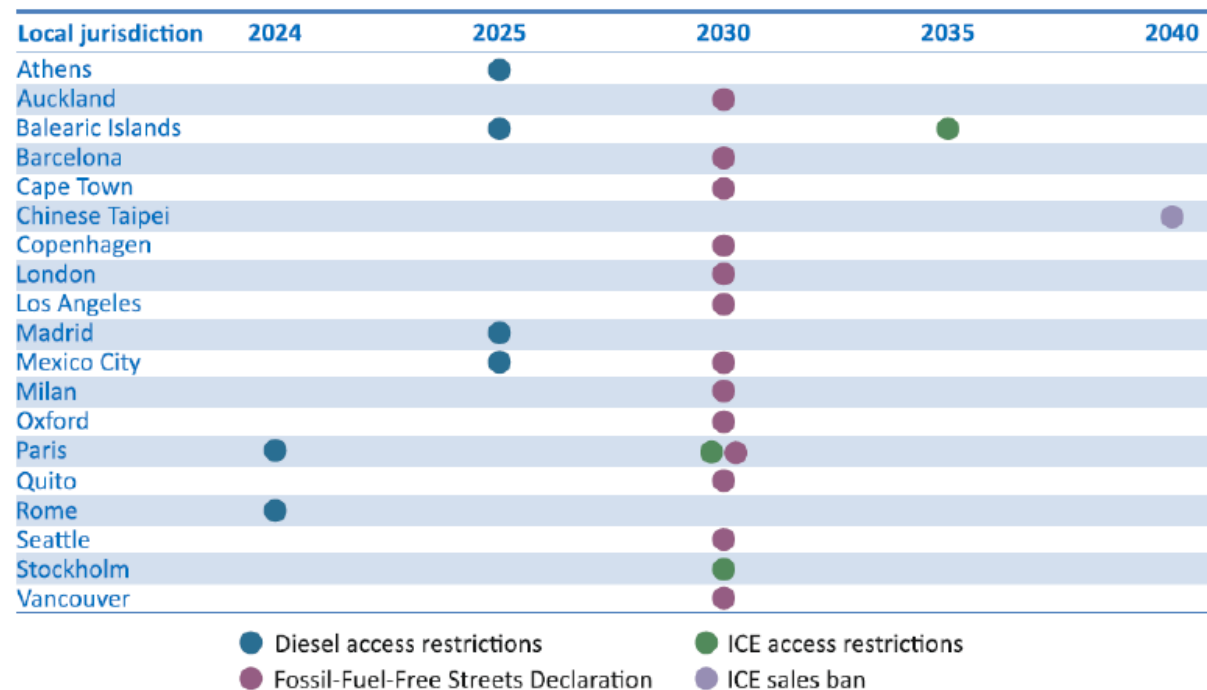
為了進一步推動電動車普及化及盡快實現路邊零排放的目標，多國政府已定出時間表禁止出售燃油車，讓汽車製造商及消費者及早準備。

世界各地禁售燃油車時間表 (部分國家)：

1. 2025 年禁售：挪威
2. 2030 年禁售：荷蘭、德國、丹麥
3. 2040 年禁售：法國、英國

多國城市政府亦已計劃於 2024 年至 2035 年期間陸續實行燃油車禁行令，當中包括：巴黎、羅馬、馬德里、巴塞隆拿、倫敦、米蘭等 (見表三)：

(表三, The Global EV Outlook 2018)



## 2. 特區政府就電動車發展的承諾及目標

特區政府曾先後就電動車政策進行研究，並提出具體目標，唯至今仍然未能落實。

### 施政報告

2009 年，時任行政長官曾蔭權發表施政報告，提出長遠的政策目標是令香港成為亞洲區內，最廣泛使用電動車的地區之一。

### 長遠目標

2011 年，政府修訂新建築物的規劃標準，規劃署發出的《香港規劃標準與準則》中第 7.2.7 段至 7.2.11 段指出「在私營及公眾停車場提供足夠的充電設施，對車主會否使用電動車輛至為關鍵。就私家車而言，政府的較長遠目標是在二零二零年，有 30% 私家車屬電動車輛或混合動力車輛。假設電動私家車對充電站的比例應不低於一比一，則在適當情況下，下述類型或以下述類型組合的新發展內的 30% 私家車泊車位，應提供電動車輛一般充電設施-」

### 中策組研究報告

2015 年，中央政策組發表《推廣使用電動車背景研究》報告，當中表示「香港在推動使用電動車方面有多項獨特優勢。首先，香港地方小、車程短，絕大部分車輛不能出境，續航里程不是問題。其次是氣候溫和，冬天不太冷，氣溫不會低於電池工作溫度。香港的人口稠密，且習慣使用公共交通工具，運輸系統的經濟效益高。此外，內地正大力發展電動車產業，是全球最大研發者和使用者之一。這方面能為香港的電動車發展提供有力後盾。因此，香港可以說是「全世界最適合用電動車的地方」，尤其是電動的公共交通工具。」

### 3. 電動車政策變更及成效

政府自 1994-1995 財政年度起，豁免電動車的首次汽車登記稅，鼓勵市民購買電動車。但當時電動車的技術尚未成熟，續航力較低，加上市場上的選擇不多，所以相關稅務誘因未見成效。經過近 20 年的發展，多間汽車製造商陸續投放資源研發電動車，並在香港市場推出不同車款，令消費者有更多選擇。直至 2014 年下半年，部分月份錄得超過 100 輛電動車首次在港登記，豁免電動車首次汽車登記稅的政策漸見成效。

#### 稅務政策：全數豁免電動車首次汽車登記稅

時期 (年/月)	累積已登記電動私家車	累積已登記私家車	電動車普及率
2014 年 12 月	1,160	541,751	0.214%
2017 年 3 月	10,589	589,362	1.797%

2014 年 12 月至 2017 年 3 月 (共 27 個月)，電動私家車有 9,429 輛增長，增幅達 9 倍。當電動車普及化在香港漸見勢頭之際，政府公佈 2017-2018 年度的財政預算案，並宣佈終止全數豁免電動車首次登記稅的政策，寬免額改為以 \$97,500 封頂。政策誘因被削減後，市民購買電動車的意欲隨即太減，電動車在港發展進入冰河時期。

#### 稅務政策：電動車首次汽車登記稅寬免額為 \$97,500

時期 (年/月)	累積已登記電動私家車	累積已登記私家車	電動車普及率
2017 年 4 月	10,588	590,129	1.794%
2018 年 2 月	10,676	603,407	1.769%

從 2017 年 4 月至 2018 年 2 月的數字顯示，電動車發展近乎停頓，但新登記的燃油車輛數目繼續上升，令電動車普及率出現微跌跡象。雖然政府願意回應民間的訴求，於 2018-2019 年度的財政預算案推出「一換一」計劃，但礙於計劃限制太多，成效有限。

**稅務政策：電動車首次汽車登記稅寬免額為\$97,500 + 「一換一」計劃寬免額為\$250,000**

時期 (年/月)	累積已登記電動私家車	累積已登記私家車	電動車普及率
2018 年 3 月	10,692	604,732	1.768%
2018 年 10 月	10,940	614,561	1.780%

按政府向立法會環境事務委員會提交的文件，「一換一」自 2018 年 3 月至 12 月期間，只有 321 宗申請獲批，即平均每個月只有大約 32 宗申請。由於車主必須連續持有車輛 3 年才符合參與「一換一」計劃的資格，不少車主因為未能取得稅務優惠而繼續更換燃油車。由此可見，門檻太高的政策誘因只會帶來反效果。按政府的數據推算成效，「一換一」計劃於 2021 年終結時，大概只有 1,500 宗成申請獲批，對推動電動車普及化是微不足道。

#### 4. 歐洲國家的電動車稅務寬免政策

歐洲汽車製造商協會 (European Automobile Manufacturers Association) 去年列出歐洲多國政府就鼓勵市民使用電動車提供不同的稅務寬免(附件二)：

國家	電動車稅務寬免政策 (部分)
德國、瑞典、意大利	首次登記日起計，電動車獲連續 5-10 年豁免年度流轉稅 (Annual circulation tax)
西班牙	多個主要城市，電動車獲寬免年度流轉稅 (Annual circulation tax)75%
葡萄牙、荷蘭、波蘭、匈牙利	電動車獲豁免登記稅 (registration tax)
捷克	電動車獲豁免所有道路稅 (road tax)
斯洛文尼亞、羅馬利亞	提供購買電動車津貼 200 至 10,000 歐元不等

## 5. 香港的電動車充電配套

就電動私家車的充電安排，政府的政策方針是車主應在其居所、辦公室或其他適當場所，為其車輛作日常充電；而公共充電網絡主要是輔助設施，在電動車車主駕駛途中偶有需要時為其電動車補充電力，它們並非亦不能替代日常充電的設施。

政府認為「公共充電網絡主要是輔助設施」是「離地」的想法，既不了解電動車車主的需要，亦迴避其推動電動車發展的責任。當局一直未有教育私人屋苑的管理者有關安裝電動車充電器的好處及必要性，只把責任推在電動車車主身上實在說不過去。

電動車發展初期，公共充電網絡的角色尤其重要，政府亦要把握時間教育社會，讓不同持份者為電動車普及化做好準備。

### 家用充電器

家用充電器無疑是對電動車普及化起舉足輕重的作用，但現時不少電動車車主在住所停車場安裝充電器時遇上不少困難，當中以大型屋苑的問題較為普遍。由於管理公司及業主組織對電動車充電器的認識不深，所以在討論安裝充電器時會採取較保守的態度。

### 公共充電器

截至 2018 年 12 月，全港共有 2,072 個電動車充電器，分類如下：

標準(慢速)充電器：844 個 (40%)

中速充電器：730 個 (35%)

快速充電器：498 個 (24%)

總數：2,072 個 (註：同時兼備標準及中速功能的充電器，被歸類為標準充電器。)

隨著電動車技術不斷改進，電池容量增加令續航力不斷提升。但標準充電器的充電速度

太慢，已經不為電動車車主所用，所以實際上只有 6 成的中速及快速充電器為電動車提供服務。在 498 個快速充電器中，更只有 4 個是政府安裝，不足 1%，可見政府對充電器的投資及承擔遠遠不及其他市場持份者。

### 新建私人樓宇樓面面積寬免

雖然政府於 2011 年起透過收緊提供新建私人樓宇樓面面積的寬免，鼓勵發展商在新建樓宇的私人停車場配備可為電動車提供充電裝置的基礎條件（包括充足的電力供應、所有泊位預設電纜及管道等）。但這些基礎條件是十分寬鬆的要求，當中無指明充電器的制式，更未有要求發展商必須開放充電器供車主使用。結果不少發展商只是提供基本設施而賺取了樓面面積的寬免，但未有正式安裝任何充電器供車主使用，整個政策完全是本末倒置，明益發展商。

### 電動車專用泊位

現時不少配備電動車充電器的泊車位，非為電動車專用，更常被燃油車霸佔，導致緊拙的充電資源一再減少。充電器和電動車的關係好比加油站和燃油車，任何霸佔充電泊位的情況都會窒礙使用電動車。政府有責任帶頭杜絕這些霸佔行為，透過立法及政策將充電泊位列為電動車專用。

## 6. 世界各地的電動車充電設施及政策

多國城市透過不同策略增設電動車充電站(附件一)，包括：就充電器數目定下目標、財政資助、建築物標準規範、直接設置充電器

城市	電動車充電設施及政策 (部分)
奧斯陸 (挪威)	為每個充電站提供最多 60% 安裝成本津貼



哥本哈根 (丹麥)	目標在 2025 年設置 500-1000 個公共充電站及 5000 個半公開充電站
上海 (中國)	目標在 2020 年設置 28,000 公共充電點
烏特勒支及阿姆斯特丹(荷蘭)	為半公開的充電點提供 1000 歐元津貼
洛杉磯 (美國)	在路邊街燈安裝充電器

## 7. 香港電動車政策倡議

1. 積極參與「全球電動汽車示範城市項目」，將香港建設為電動車友善城市。
2. 採納“EV30@30 項目”定出的目標，在 2030 年電動車 (私家車及商用車) 佔市場新增汽車銷售量 30%。
3. 響應 EVI 的「政府車隊共同宣言」，為政府車隊全面電動化定下目標。
4. 立即制定禁售燃油車時間表，讓社會不同持份者為路面零排放做好準備。
5. 提高電動車首次登記稅寬免額，鼓勵市民購買零排放電動車，為淘汰燃油車鋪路。
6. 改革「一換一」計劃，降低申請門檻及增加稅務寬免額，鼓勵更多車主轉用電動車。
7. 大幅增加公共充電設施，並將所有標準充電器提升至中速或快速，同時增設更多路邊充電設施。
8. 研究修訂相關法例及推動教育工作，在停車場設電動車專用充電泊位，禁止燃油車輛霸佔資源。
9. 增撥資源協助私人住宅停車場安裝電動車充電設施，可考慮的措施包括成立基金資助安裝工程、差餉寬免、提供綠色標籤等。
10. 修訂相關政策或法例，要求發展商在新建樓宇的私人停車場配備中速以上制式的電動車充電器才可獲總樓面面積寬免。
11. 研究在流量較低的隧道豁免電動車收費或在假日提供優惠，作為推動市民使用電動車的誘因。
12. 豁免電動私家車的牌照收費。

電動車政策研究組

2019 年 1 月



# The Electric Vehicles Initiative

EV30@30 campaign, Pilot City Programme and GEF project

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Pierpaolo Cazzola - International Energy Agency

Pilot City Forum – Helsinki, 28 May 2018



# Clean Energy Ministerial (CEM)

High-level global forum to promote policies and programs that advance clean energy technology, to share lessons learned and best practices, and to encourage the transition to a global clean energy economy.

## Three Main Activities

- **High-level policy dialogue at annual ministerial meetings** helps advance international collaboration to accelerate the adoption of clean energy policies and practices.
- **Public-private engagement** builds the industry, government, and civil society cooperation needed to scale up clean energy around the globe.
- Year-round work through action-driven, transformative clean **energy initiatives and campaigns** expands the deployment of clean energy technologies, policies, and practices.

## Members



# Electric Vehicles Initiative (EVI)

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

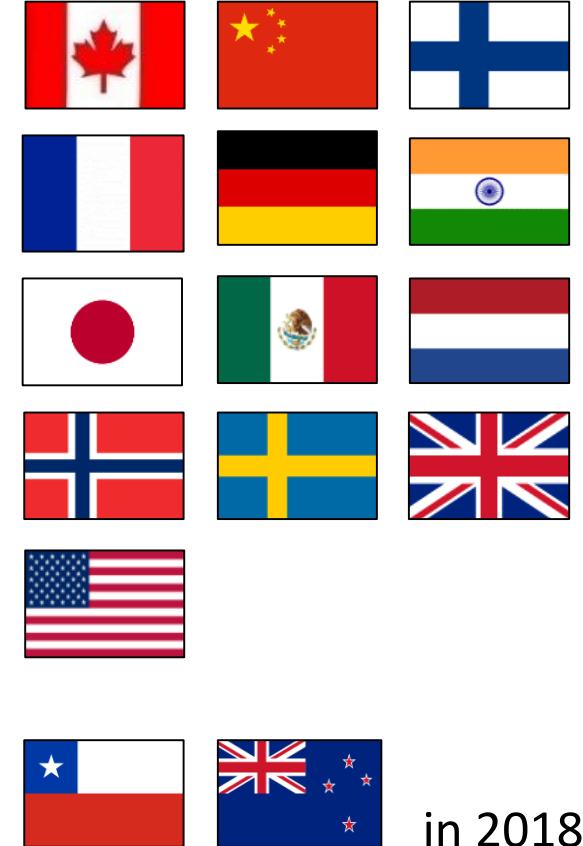


Instrumental to mobilize action and commitments ([Paris Declaration on Electro-Mobility and Climate Change](#) at COP21, [Government Fleet Declaration](#) at COP22)

Launched the [EV30@30 Campaign](#) in June 2017

Now launching the **Pilot City Programme**

## Members



in 2018

# EV30@30 Campaign



# EV30@30

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 8<sup>th</sup> CEM meeting, in Beijing, by China's Minister of Science and Technology 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

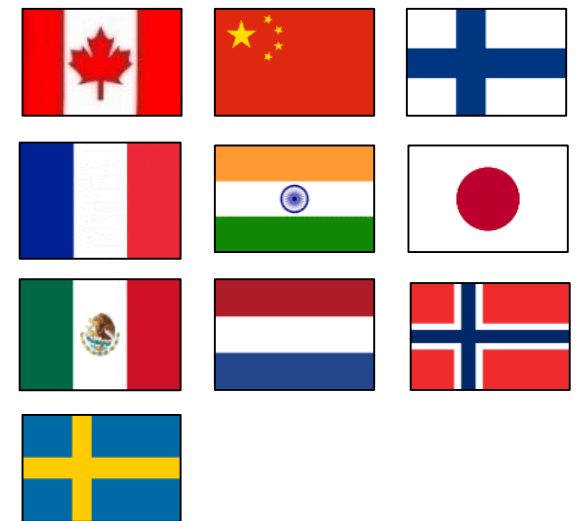
Supported by several partners



# M2020



## Members





# Pilot City Programme



**EV30//30**

## Aims to accelerate the global deployment of electric vehicles in cities

Inspired by China’s Pilot City network and the leading role of cities for innovation

Launched at the 9<sup>th</sup> CEM meeting, in Copenhagen, by Finland’s Minister of Environment Kimmo Tiilikainen and China’s Deputy Minister of Science and Technology Li Meng

**30+ cities engaged at the launch, aiming for 100+ cities in 5 years**



Country	Cities
Canada	Calgary, Halifax Regional Municipality, Montréal, Stratford, Surrey, Richmond, Winnipeg
China	Beijing, Rugao, Shanghai, Shenzhen, Yancheng
Finland	Helsinki, Espoo, Oulu, Tampere, Vantaa
Japan	Aichi, Kanagawa and Kyoto Prefectures; Tokyo Metropolitan Government
Netherlands	Metropolitan Region Amsterdam and G4 Cities (Utrecht, Amsterdam, the Hague, Rotterdam)
New Zealand	Christchurch (upcoming)
Norway	Bergen (upcoming), Oslo
Sweden	Stockholm
Thailand	Betong (interested), Nonthaburi (interested)
United Kingdom	Dundee, London
United States	New York City



- Provide **support** to municipal governments
  - Opportunities for advanced pilot projects/ test of concepts (coopetition)
  - Opportunities to city to gain more visibility on their actions leveraging on the attention given to EVI and the visibility of EVI products
  - Thematic webinars (by topic/issue)
  - EV hub, virtual sharepoint (tools, discussion forum)
- Support greater **dialogue**
  - Opportunities to engage with peers in municipal governments
  - Opportunity to liaise with national governments (unique advantage of EVI)
- **Monitor and report** progress: data and information sharing
  - Establish common indicators to monitor EV-related developments, such as number of vehicles, vehicle travel activity, and number and type of chargers
- Identify **good practices**
  - Leverage on knowledge base of EVI, the information collected from PCP cities (monitoring & reporting tools) and other networks (e.g. C40)
  - Innovative/virtual best practice "city case book"
- Facilitate their **replication** and improvement
  - Contacts with private sector (utilities, vehicle manufacturers, service providers)
- Organize of the **Pilot City Forum**
  - Key instrument to facilitate exchanges between cities and with private sector

## Topics/Themes

- Standards (includes connectors, communication protocols) – need to focus on implementation and need to enable interoperability
  - ABB: EU project exists for pantograph charging (allowing interoperability)
  - ENSTO: EU standard for car charging are sorted out already
  - BYD: need for combined package for chargers and buses
  - Amsterdam Met. Region: need to ensure open access in the future of market (no technology lock-in)
- Types of chargers (private & publicly accessible, slow or fast)
- How to deal with EV penetration for individuals not having access to private parking
- New financing instrument to bridge the cost gap
  - ABB: banks are willing to finance this
- Park and ride facilities, other parking policies (differentiated parking fees)
- Procurement (EV prioritization or mandates)
- Road tolls (differentiated rates for EVs)
- Mandates for EV charging capabilities in parking spaces (residential) – also covered by EU Directive
- Environmental Zones
- HOV lanes
- Street parking
- Enforcement/coexistence of EVs and ICEs
- How cities monitor public opinion (preventing bubble effect)
- EV & public transport
  - Temptation to say EVs are good enough
  - Effect of MaaS/Autonomous vehicles
- Policy transition from phase I to phase II
  - E.g. access to bus lanes, free parking... What to do once you have many EVs on the road?
  - Japan: reluctant to introduce advantages difficult to lift up at a later stage (tax incentives, environmental zones)

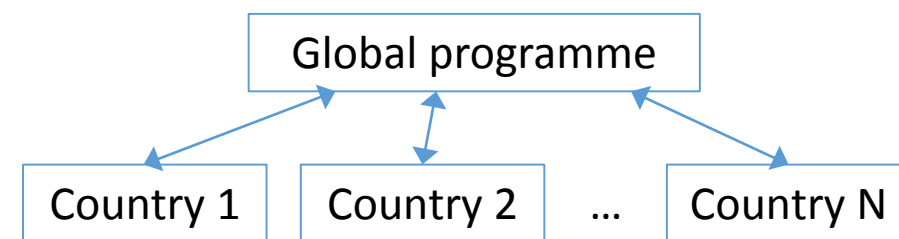
## Other ideas

- Themes could be good to define topics of webinars
  - Canada: cities to share information of what they would like to discuss
- Build a repository of contacts by area of competence as an asset for all cities
- Data collection methods: sharing experiences on how cities monitor EV uptake
- Leverage other types of collaborative projects
  - HEV Technology collaboration programme (including DOE)
- Opening up the programme to other countries/cities/jurisdictions
- Projects to be conducted together: maybe call for project proposal at each PCF?
- Collective targets for the cities?





- EVI involved in the development of a programme aiming to support policy development on e-mobility
- Focused on low and middle income countries
- Supported from the Global Environment Facility (GEF)
- Budget envelope could be significant (pending approval by GEF)
- Project structure includes a global programme supporting national projects
  - Global component to develop tools and methodologies to help countries introduce electric mobility, working groups focusing on different policy options (policy matrix) and training and awareness at global and regional level
  - Country project focused on the development of policy tools at the national and/or local scale
- Relevance for the EVI (and the PCP) is the expansion in scope and increased dialogue with cities in the developing world



	Vehicles	Chargers	Grid
National			
Local			



# The Global EV Outlook 2018

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Pierpaolo Cazzola - International Energy Agency

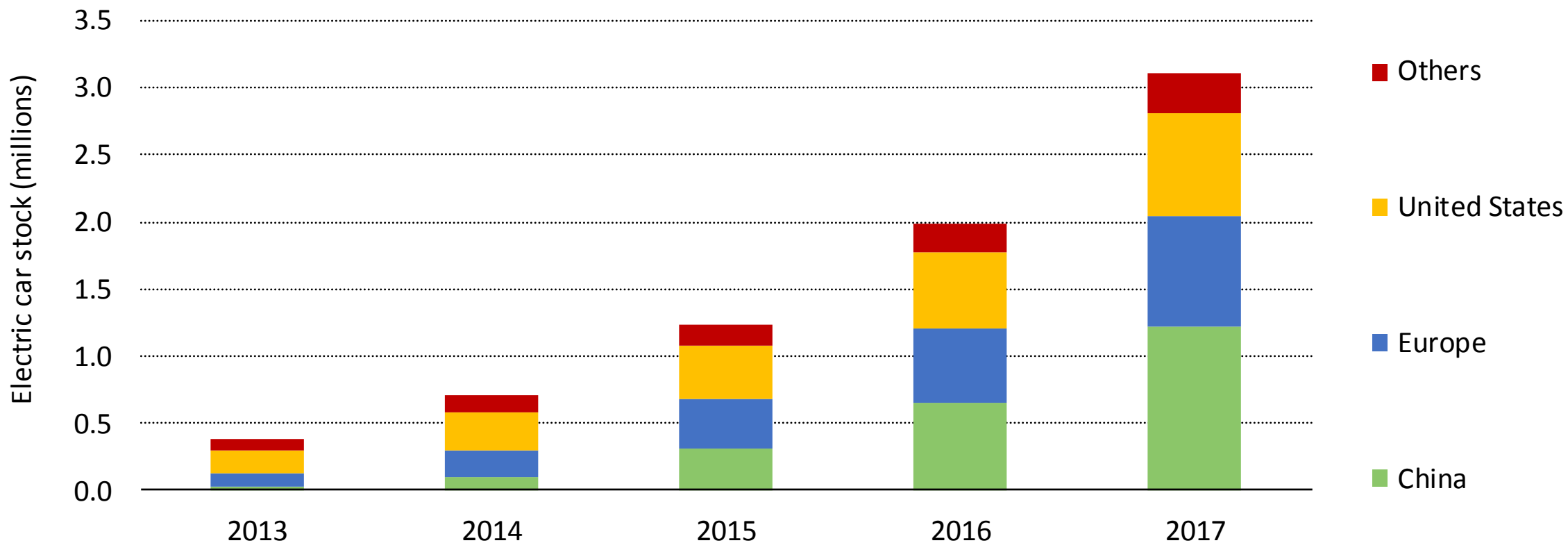
Pilot City Forum – Helsinki, 28 May 2018



- 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

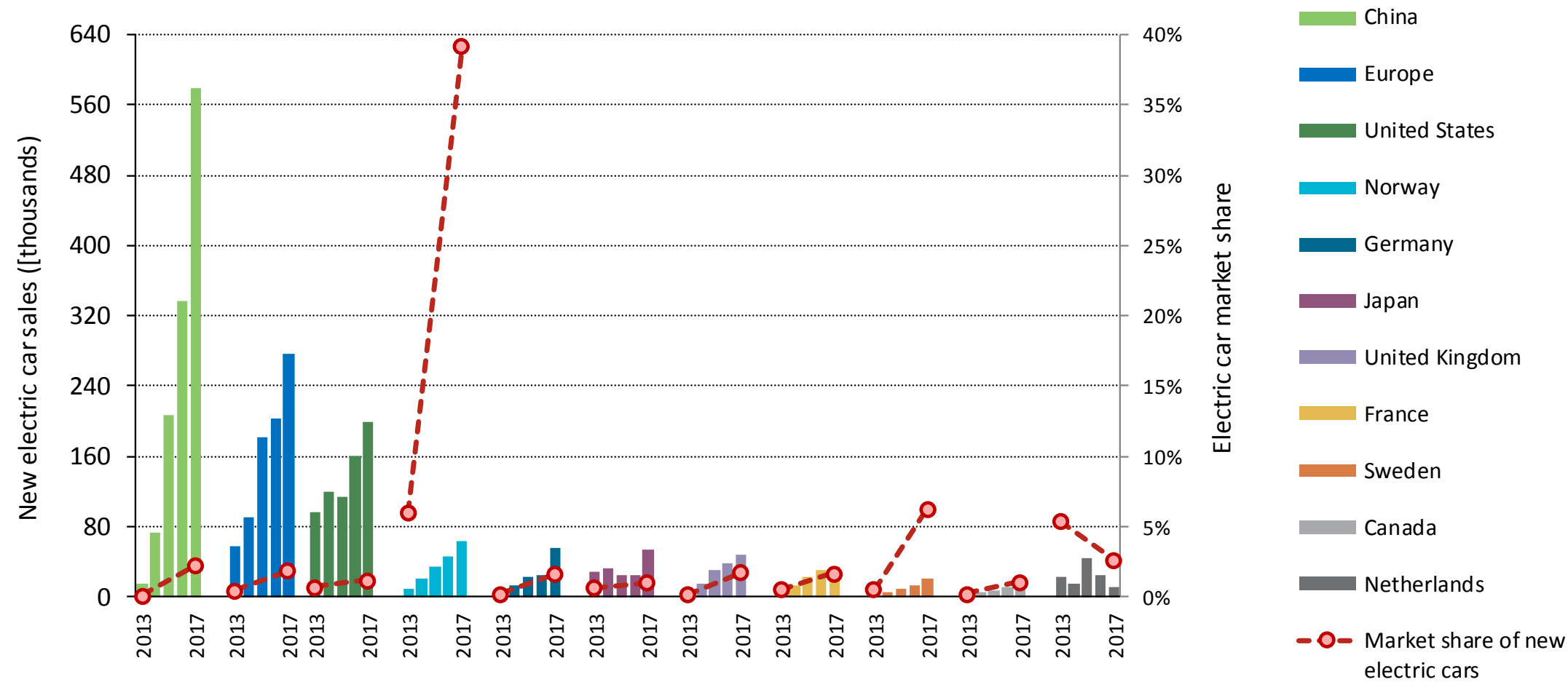


# The number of electric cars on the road also continues to grow



**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)**

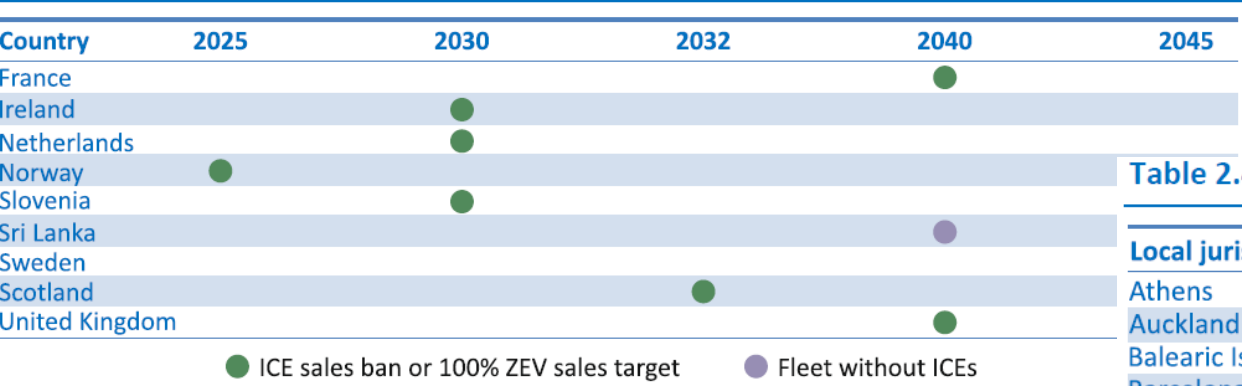
**Buses: 360 000 in China. Close to 90 000 sales in 2017 . Stimulated by policy support.**

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

# EV uptake is still largely driven by the policy environment

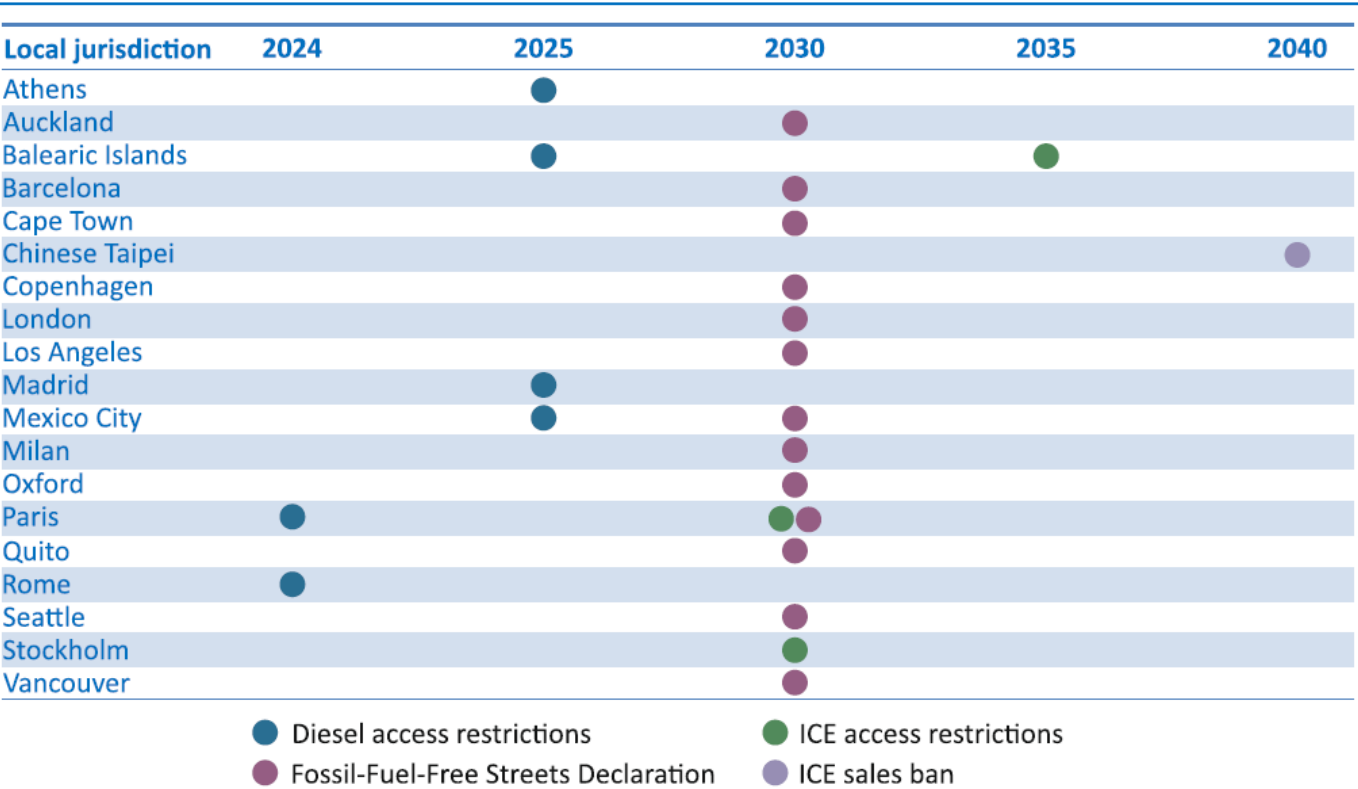
- All 10 leading countries in electric vehicle adoption have a range of policies in place to promote the uptake of electric cars
- Policies have been instrumental to make electric vehicles more appealing to customers, reduce risks for investors and encourage manufacturers to scale up production
- Key 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

Table 2.3 • Announced sales bans for ICE vehicles



+ EV30@30 and country/state-level EV targets

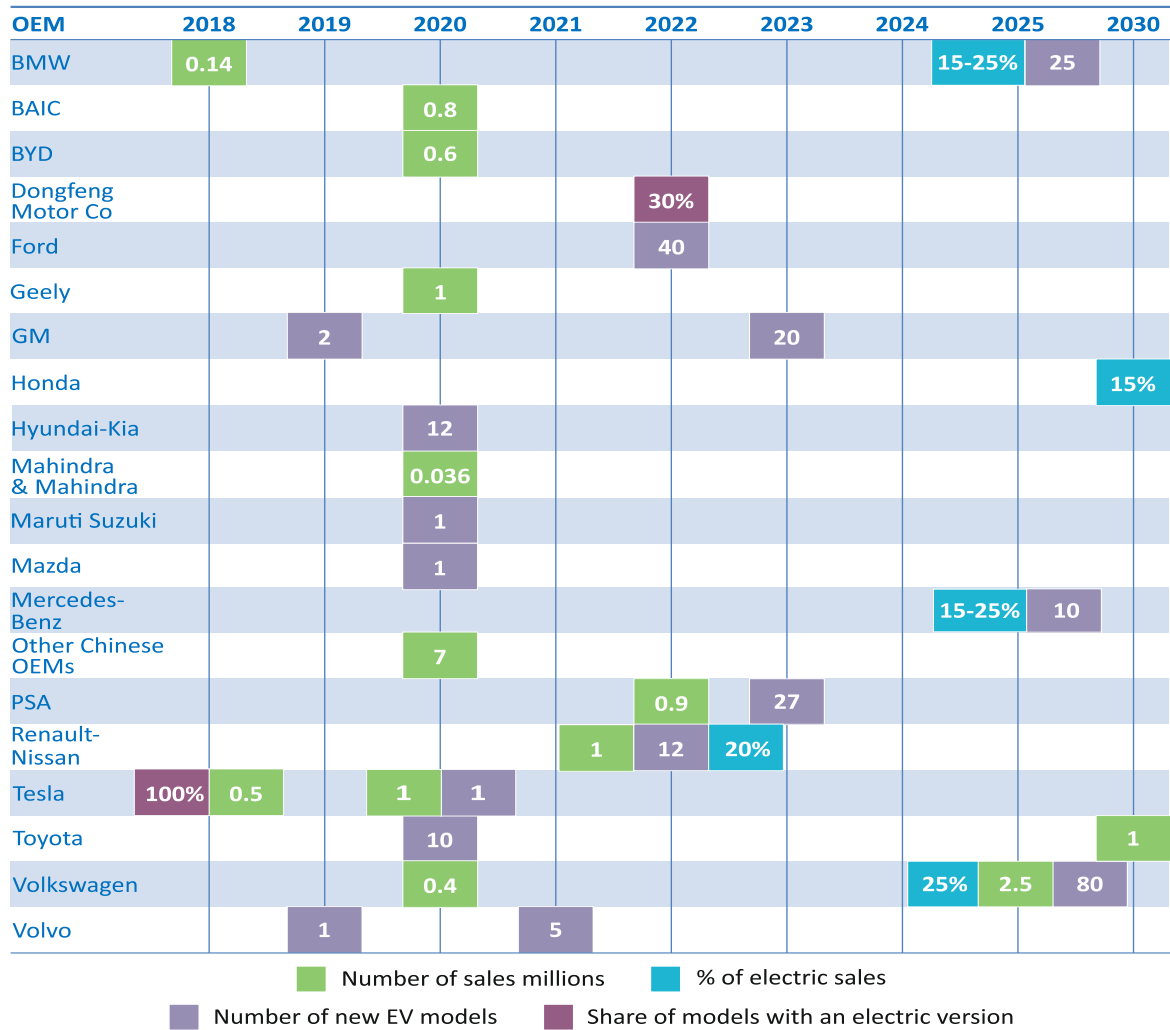
Table 2.4 • Announced access restriction mandates in local jurisdictions



ICE phase-out pledges have been mainly announced in Europe  
China has also mentioned that it is considering the ICE phase out



# OEM announcements



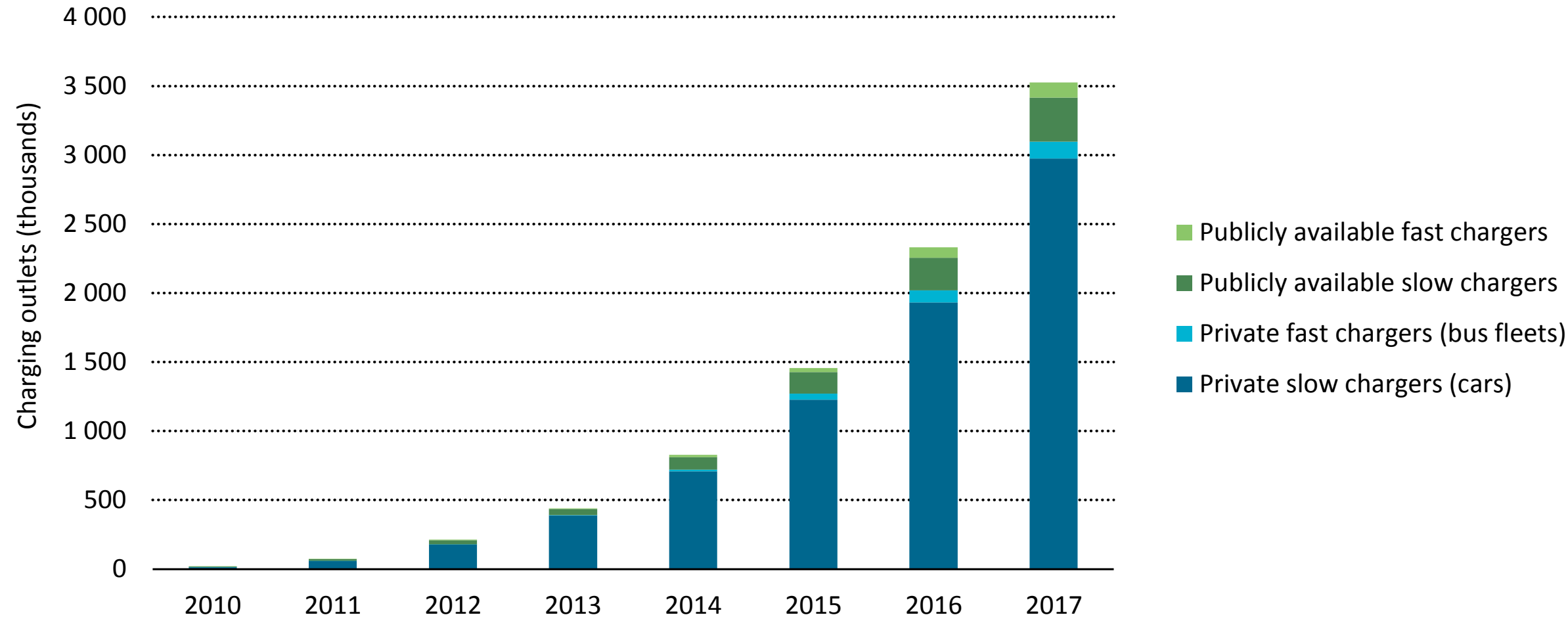
← Electric LDV deployment targets

Diesel phase out  
↓

OEM	Action
Fiat Chrysler	Phase out diesel across its model line-up as of 2022.
Honda	Discontinue production and sales of a flagship diesel-powered vehicle in Europe.
Porsche	No diesel units for major models of the brand; focus on optimised ICEs, PHEVs and BEVs.
Subaru	Withdraw diesel car production and sales by FY 2020.
Toyota	Stop selling diesel cars in Europe by the end of 2018.
Volvo	Stop developing diesel engines.

These announcements indicate a strong industry commitment to invest in electric mobility and to scale up efforts to advance EV technology in the coming years

# Charger deployment accompanies EV uptake

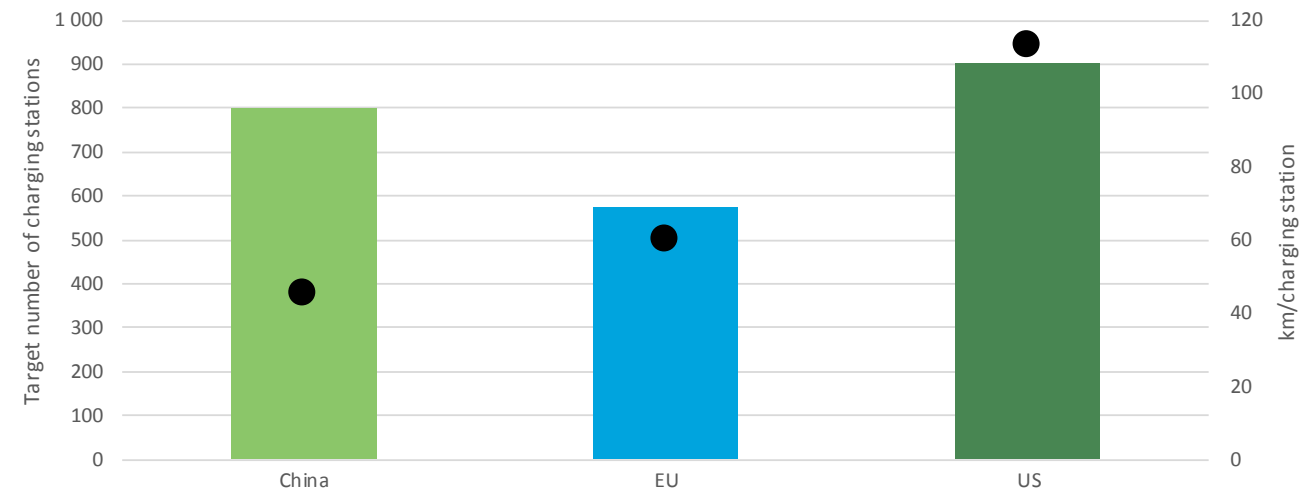


**EV owners charge mostly at home or at work: private chargers far exceed publicly accessible ones**  
**Publicly accessible chargers important to ensure EV market expansion, fast chargers essential for buses**

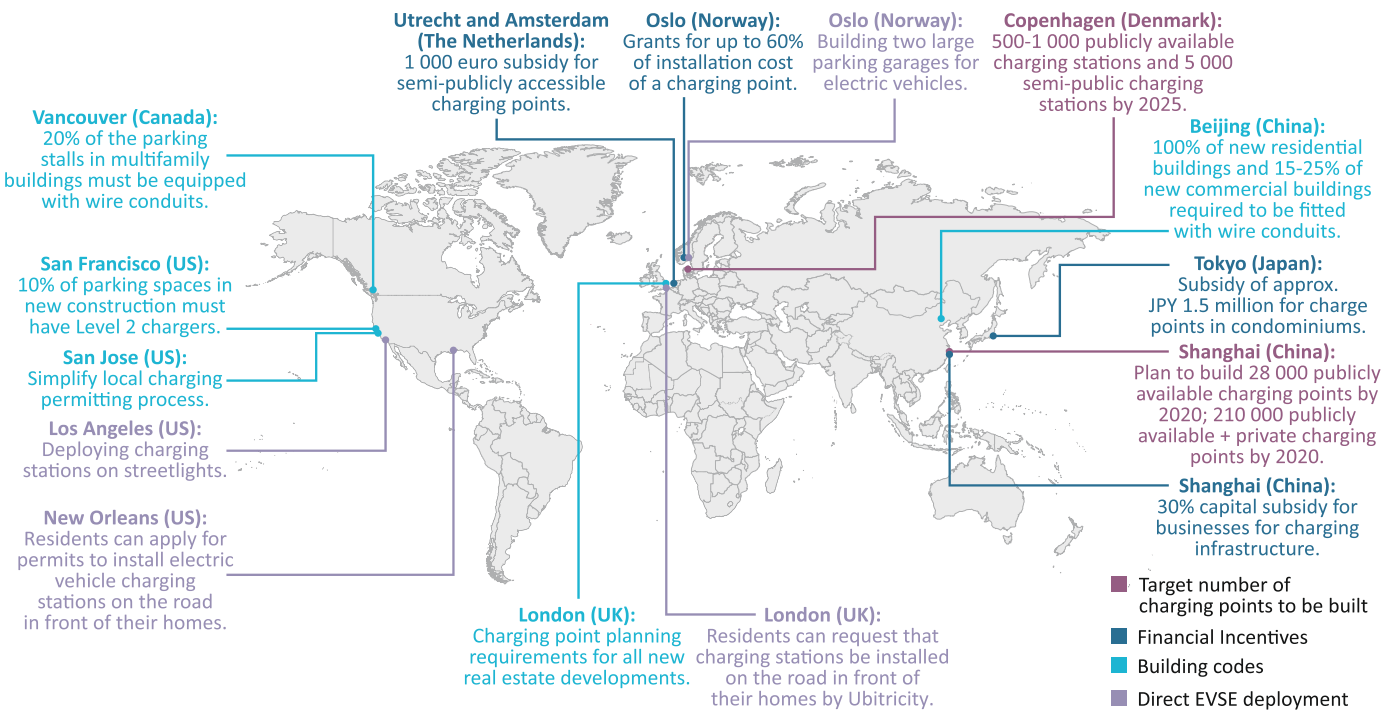
# Charger deployment also currently supported by policy



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



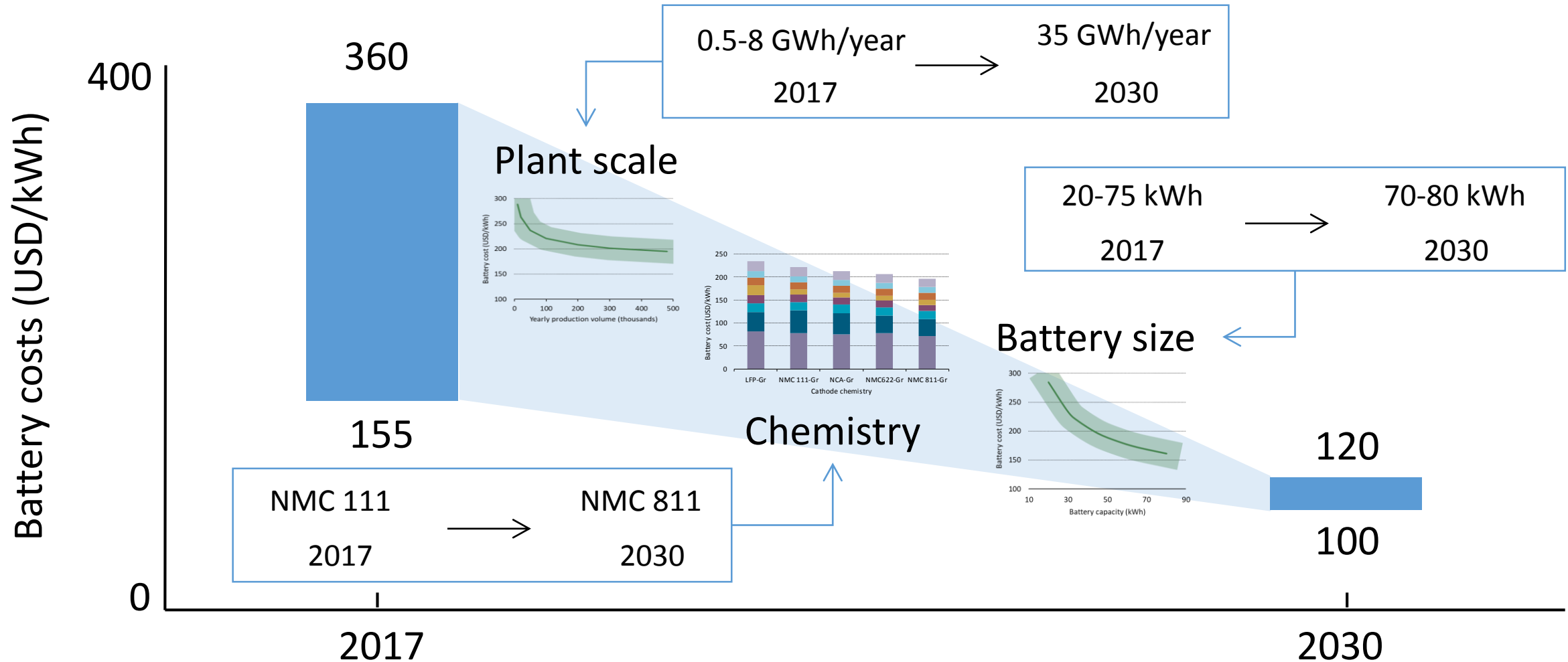
● Minimum distance targeted between two highway chargers (right axis)



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

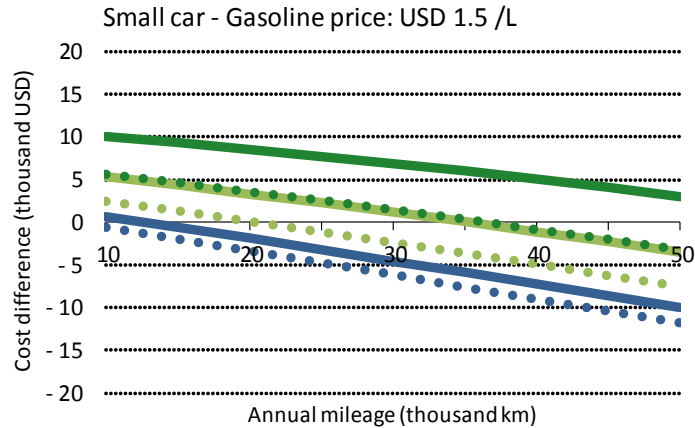
# Battery cost already declined significantly and expected to fall...



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

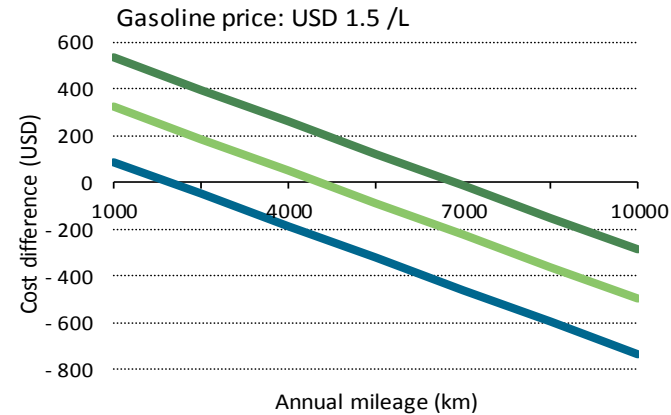
# ... and this has implications for the cost competitiveness of EVs

## LDVs - BEV



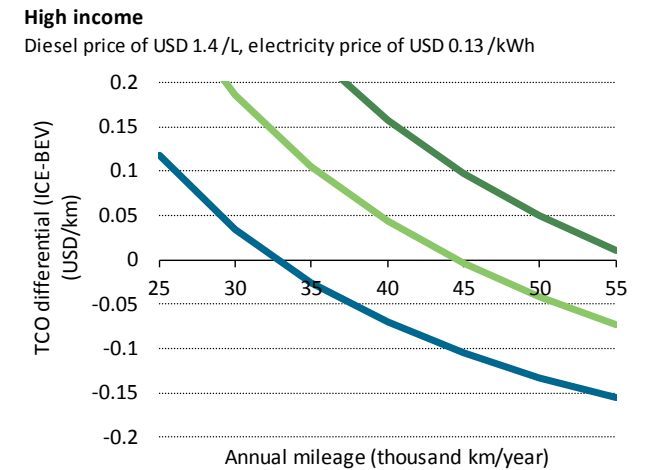
BEVs are most competitive in markets with **high fuel taxes** and at **high mileage**. At a USD 120/kWh battery price and with EU gasoline prices, BEV are competitive even at low mileage.

## 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.

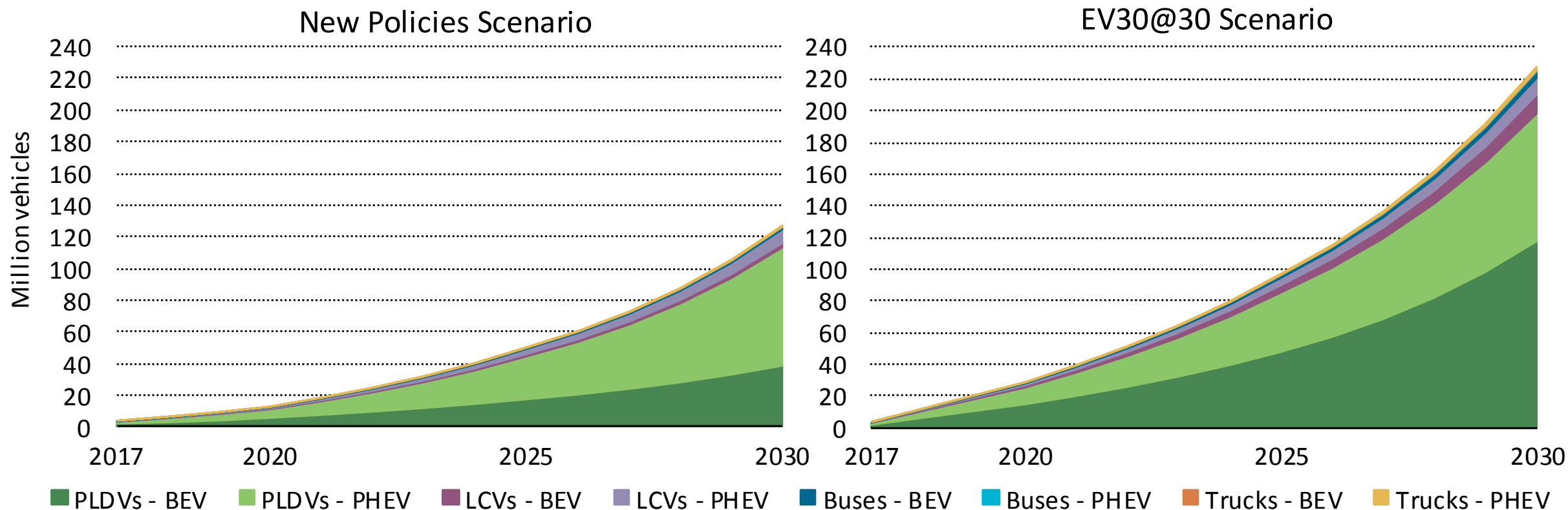
## Buses



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.

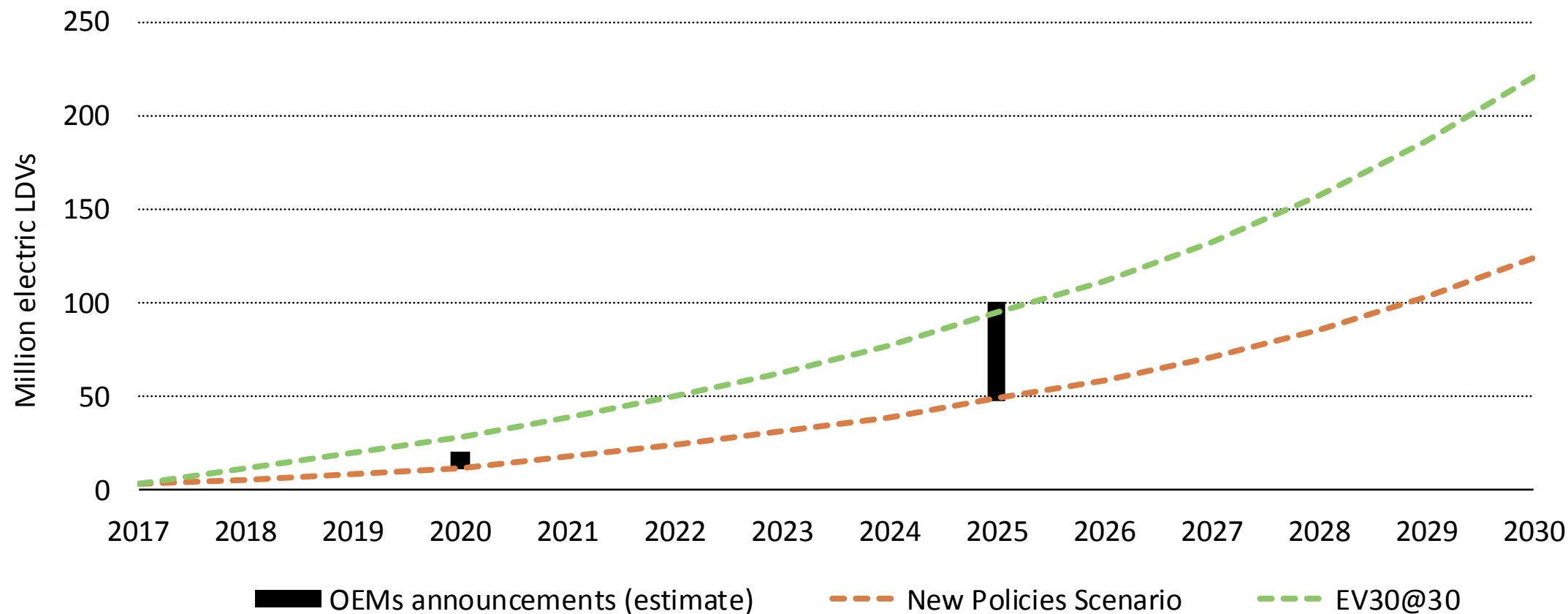


# Global EV deployment under the NPS and the EV30@30 scenario



**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**

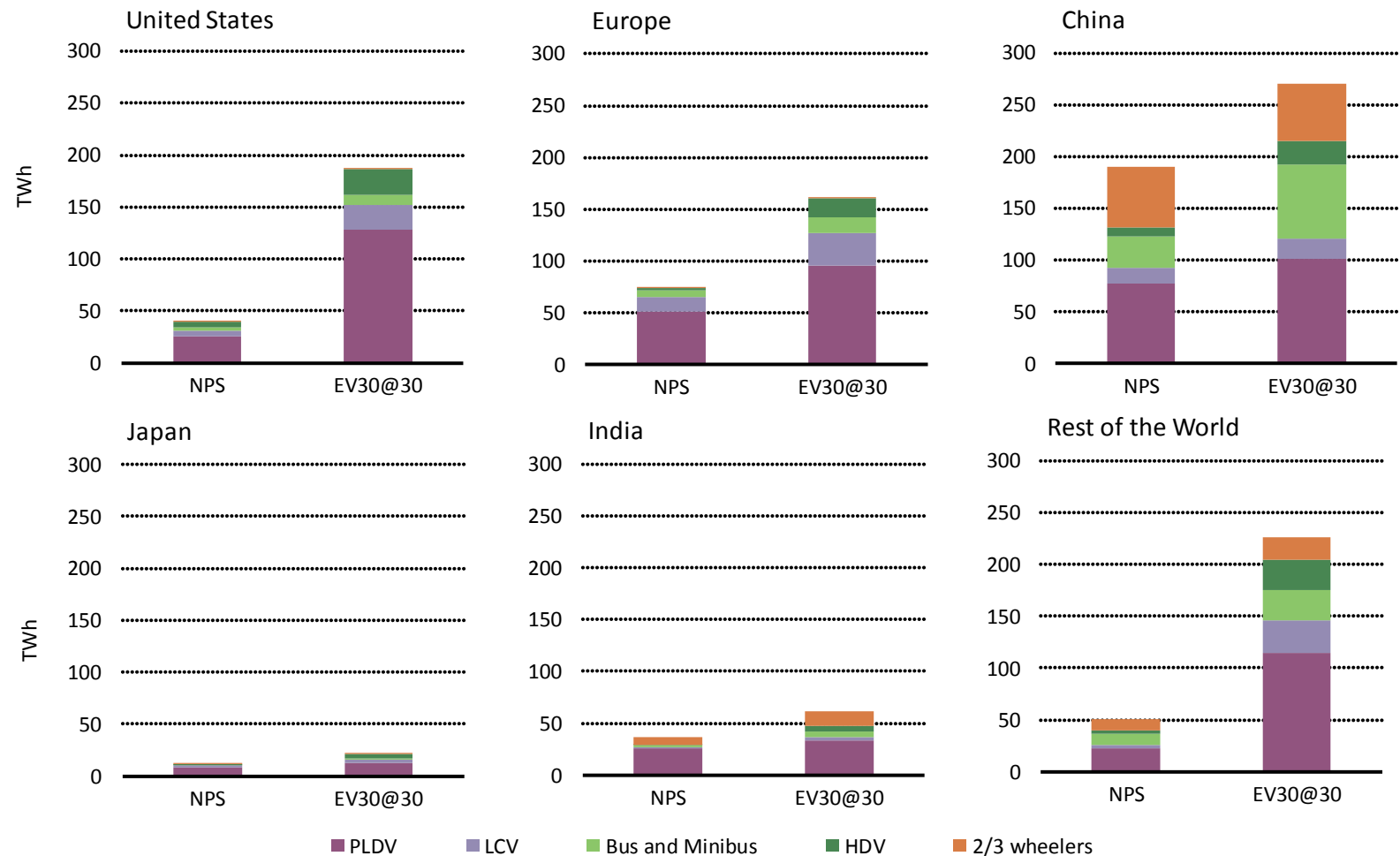
# Benchmarking scenario results against OEM targets for PLDVs



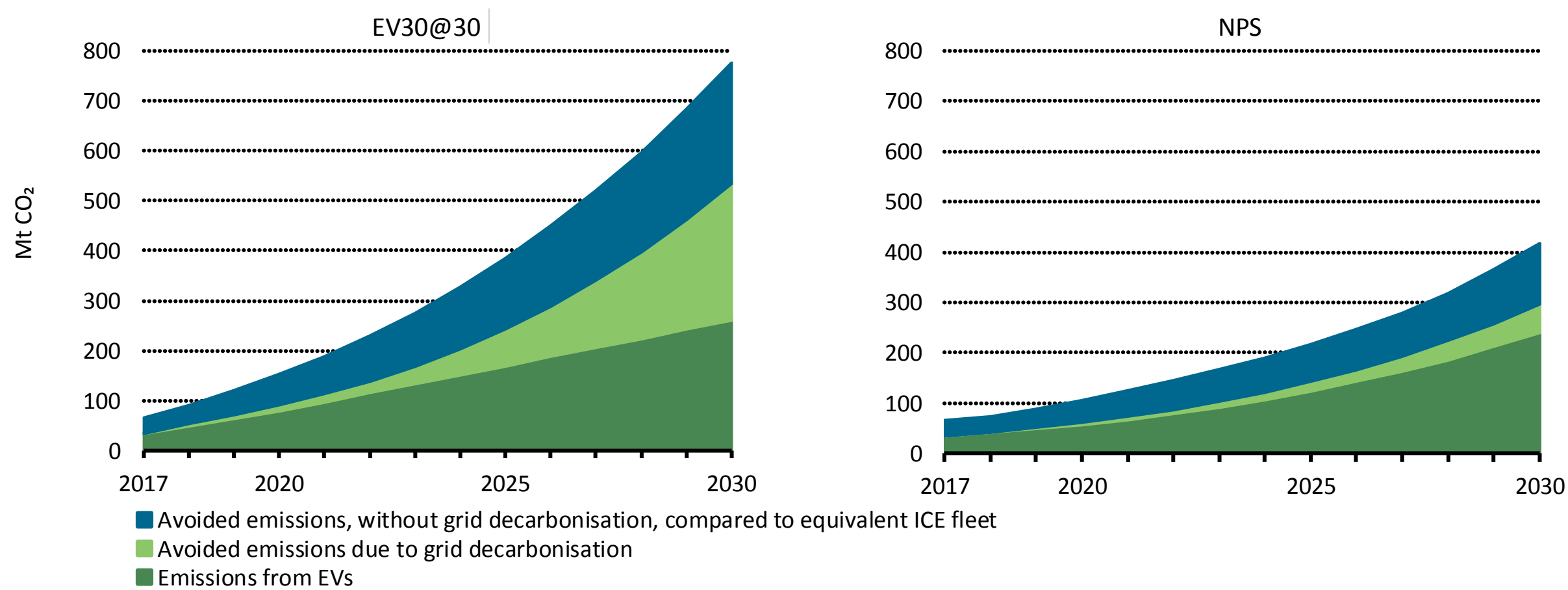
**Estimates based on manufacturers' projections suggest an uptake of electric LDVs ranging in-between the New Policies and the EV30@30 scenarios by 2025**



# 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



**In 2030, CO<sub>2</sub> emissions associated with the use of EVs is lower than those of equivalent ICE vehicles at a global scale, even if electricity generation does not decarbonise from current levels**

# Policies favouring the transition to electric mobility

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- Carbon pricing of fuels
- Public procurement
- Bridging the price gap
- Emission regulations/fuel economy standards
- Local initiatives to regulate access
- Complementing fuel taxes with road pricing
- Supporting the roll out of private and public chargers
- Achieving demand- and business-driven EVSE development
- Ensuring that EVs are effectively integrated in the electricity grid
- Managing changes in material demand from EV batteries
- Managing the battery end-of-life treatment

# Focus on local initiatives (vehicle uptake)

- Public procurement
  - Co-benefits for municipalities and businesses:
    - Bulk purchase reduces units costs
    - Helps mobilizing interest from the auto industry
    - Kick-starts charger deployment
  - Benefits for the public:
    - Demonstrates the technology to the public, makes EVs familiar in the daily environment
    - Facilitates charger roll-out and the emergence of publicly accessible infrastructure
  - Relevance for buses
- Setting targets
- Regulating access
  - Low-emission zones: complementary to national-level targets and bans, easier to implement, they can have significant impacts
  - Concerns over “clusterizing” the market: harmonized labelling can provide clarity to both consumers and OEMs
- Supporting/regulating the deployment of chargers
- Integrating electrification with Mobility as a Service

## OVERVIEW ON TAX INCENTIVES FOR ELECTRIC VEHICLES IN THE EU

<b>AUSTRIA</b>	<p>Electric vehicles are exempt from fuel consumption/pollution tax, ownership tax and company car tax. In addition, a deduction of VAT is applicable for zero-CO<sub>2</sub> emission cars (eg electric and hydrogen-powered cars).</p> <p>The Austrian automobile club ÖAMTC publishes the incentives granted by local authorities on its website (<a href="http://www.oeamtc.at/elektrofahrzeuge">www.oeamtc.at/elektrofahrzeuge</a>).</p>
<b>BELGIUM</b>	<p>Electric vehicles pay the lowest rate of tax under the annual circulation tax in all three regions.</p> <p>In the Brussels-Capital region, financial incentives apply to companies electric, hybrid or fuel-cell vehicles.</p> <p>Electric and plug-in hybrid (until 31 December 2020) vehicles are exempt from registration tax in Flanders. Incentives ("Zero Emission Bonus") for the purchase of battery electric and hydrogen-powered cars and vans are granted.</p> <p>The deductibility rate from corporate income of expenses related to the use of company cars is 120% for zero-emissions vehicles.</p>
<b>BULGARIA</b>	Electric vehicles are exempt from ownership tax.
<b>CROATIA</b>	None
<b>CYPRUS</b>	Vehicles emitting less than 120g CO <sub>2</sub> /km are exempt from registration tax and pay the lowest rate of tax under the annual road tax.
<b>CZECH REPUBLIC</b>	Electric, hybrid and other alternative fuel vehicles are exempt from the road tax.
<b>DENMARK</b>	Electric vehicles (BEVs) pay only 40% of the registration tax (in 2017). This percentage will be gradually increased at 65% in 2018, 90% in 2019 and 100% in 2020. Hydrogen and fuel cell-powered vehicles are exempt from registration tax until the end of 2020.
<b>ESTONIA</b>	None

<b>FINLAND</b>	Pure electric vehicles always pay the minimum level of the CO <sub>2</sub> based registration tax.
<b>FRANCE</b>	<p>Regions have the option to provide an exemption from the registration tax (either total or 50%) for alternative fuel vehicles (ie electric, hybrids, CNG, LPG, and E85).</p> <p>Electric vehicles and vehicles emitting less than 60g CO<sub>2</sub>/km are not subject to the tax on company cars.</p> <p>Electric and hybrid electric vehicles emitting 20 g/km or less of CO<sub>2</sub> benefit from a premium of €6,000 under a bonus-malus scheme.</p> <p>An incentive scheme grants an extra €4,000 for switching an eleven year or more diesel vehicle for a new BEV (or €2,500 in case it's a PHEV).</p>
<b>GERMANY</b>	<p>Electric vehicles are exempt from the annual circulation tax for a period of ten years from the date of their first registration. From July 2016, the government granted an environmental bonus of €4,000 for pure electric and fuel-cell vehicles and €3,000 for plug-in hybrid and range-extended electric vehicles.</p>
<b>GREECE</b>	Electric and hybrid vehicles are exempt from registration tax, luxury tax and luxury living tax. Electric and hybrid cars (with an engine capacity of up to 1,549cc and first registration date before 31 October 2010) are exempt from circulation tax.
<b>HUNGARY</b>	Electric cars and plug-in hybrids are exempt from registration tax, annual circulation tax and company car tax.
<b>IRELAND</b>	<p>Electric vehicles qualify for VRT (purchase tax) reliefs of €5,000 until 31 December 2021 (€2,500 for plug-in hybrids until 31 December 2018). In addition, electric vehicles and plug-in electric hybrids entitle the buyer to a grant of up to €5,000 on purchase until 31 December 2021 for electric vehicles and December 2018 for plug-in hybrid electric vehicles.</p> <p>Electric vehicles pay the minimum rate of the road tax (€120).</p>
<b>ITALY</b>	Electric vehicles are exempt from the annual circulation tax (ownership tax) for a period of five years from the date of the first registration. After this five-year period, they benefit from a 75% reduction of the tax rate applied to the equivalent petrol vehicles.

<b>LATVIA</b>	Pure electric vehicles pay the lowest fee for technical annual inspections and the lowest amount for the company car tax (€10).
<b>LITHUANIA</b>	None
<b>LUXEMBOURG</b>	Electric and fuel cell vehicles benefit from a tax allowance on the registration fees of €5,000. Electric vehicles also pay the minimum rate of the annual circulation tax.  Pure electric and hydrogen cars pay the lowest tax on benefit in kind for private use of a company car.
<b>MALTA</b>	Registration tax is based on length of vehicles, emissions and age. For pure electric vehicles the emission tax is zero.
<b>NETHERLANDS</b>	Zero emission cars are exempt from paying registration tax. Passenger cars with zero CO <sub>2</sub> emissions are exempt from motor vehicle tax up to and including 2020.  Zero emission cars pay the lowest percentage (4%) of the income tax on the private use of a company car.
<b>POLAND</b>	Electric and plug-in electric vehicles exempt from registration tax <sup>1</sup> .
<b>PORTUGAL</b>	VAT is deductible for electric vehicles (with acquisition cost <€62,000) and plug-in hybrids (with an acquisition cost <€50,000).  Pure electric cars are exempt from the registration tax ( <i>Imposto Sobre Veículos</i> or <i>ISV</i> ). Plug-in hybrid cars with all-electric mode up to 25km benefit from a 75% reduction of the tax.
<b>ROMANIA</b>	An incentive scheme grants €10,000 for the purchase of a new pure electric vehicle (plus €1,500 for scrapping a vehicle older than eight years) and €4,500 for the purchase of a new hybrid vehicle.  Electric vehicles are exempt from the ownership tax.

<sup>1</sup> To be introduced after EC positive decision for public aid

<b>SLOVAKIA</b>	Pure electric vehicles pay the lowest amount for the registration tax (€33) and are exempt from motor vehicle tax. Hybrids and natural gas (CNG) vehicles benefit from a 50% reduction of the tax.
<b>SLOVENIA</b>	<p>An incentive scheme grants:</p> <ul style="list-style-type: none"> <li>• €7,500 for a new electric vehicle with zero emissions or a BEV (M1)</li> <li>• €4,500 for a new electric vehicle with zero emissions or a power-driven vehicle (N1 or L7e)</li> <li>• €4,500 for a new plug-in hybrid or a new electric vehicle with a range extender, with emissions &lt; 50g CO<sub>2</sub>/km (M1 or N1)</li> <li>• €3,000 for a new electric vehicle with zero emissions or a power-driven vehicle (L6e)</li> <li>• €1,000 for a new electric vehicle with zero emissions (L3e, L4e or L5e)</li> <li>• €500 for a new electric vehicle with zero emissions (L1e-B or L2e)</li> <li>• €200 for a new electric vehicle with zero emissions (L1e-A)</li> </ul> <p>BEV's pay the lowest (0,5%) rate of tax on motor vehicle.</p>
<b>SPAIN</b>	Main city councils (eg Madrid, Barcelona, Zaragoza, Valencia etc) are reducing the annual circulation tax (ownership tax) for electric and fuel-efficient vehicles by 75%. Reductions are applied on company car taxation for pure electric and plug-in hybrid vehicles (30%), and for hybrids, LPG and CNG vehicles (20%).
<b>SWEDEN</b>	'Climate bonus' (Klimatbonus) is available for the purchase of new vehicles with CO <sub>2</sub> emissions of maximum 60g/km. It ranges from SEK 60,000 for electric vehicles (BEV) with zero emission to plug-in hybrids (PHEV) with emission of 60g/km. Electric cars and plug-in hybrids are exempted from paying annual circulation tax for five years. 40% reduction is applied on company car taxation for electric cars and plug-in hybrids.
<b>UNITED KINGDOM</b>	<p>From April 2018 until March 2021, cars that emit less than 50g/km qualify for 100% first year writing down allowances (FYAs). Zero emission vehicles attract a zero rate of vehicle excise duty (VED)</p> <p>Ultra-low emissions and electric vehicles pay reduced company car tax rates. For more details see:  <a href="http://www.gov.uk/government/publications/finance-bill-2017-draft-legislation-overview-documents/overview-of-legislation-in-draft">www.gov.uk/government/publications/finance-bill-2017-draft-legislation-overview-documents/overview-of-legislation-in-draft</a></p>