Accelerating electric vehicle deployment and support policies

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The Electric Vehicles Initiative (EVI) and IEA’s role in EV support

- EVI: Multi-government policy forum established in 2009 under the Clean Energy Ministerial, coordinated by IEA

- 2015: Paris Declaration on Electro-Mobility and Climate Change and Call to Action

- Global EV Outlook 2016, released on 31 May

- EVI supports IEA data and analysis which are the basis of WEO and ETP scenarios
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Electric vehicles are a major component of the 2DS, and vital to achieving “well below 2 degree” ambitions.
Policy support needs to be continued to reach the very ambitious targets of 30% of sales by 2030 set during COP 21.
Battery costs and energy density showed impressive improvements over the past decade.

RD&D investments will be important to ensure that this trend continues.
EV support policies needed in multiple fields of mobility

Purchase incentives
- CO\textsubscript{2}-based, technology-based differentiated taxation and rebates
- Feebates
- VAT exemptions

Charging infrastructure roll-out
- Direct public investment
- Public-private partnerships
- Charger standards harmonization
- Fast and slow charging network planning

Circulation incentives
- Differentiated plates
- Access to bus lanes
- Free/dedicated parking
- Circulation/congestion charge exemption

Standards, regulations and mandates
- Fuel economy standards
- Fuel taxes
- Public fleets, taxi fleets initiatives
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Thank you

Explore the data behind *ETP*

The Global EV Outlook 2016 is freely accessible [online]

[www.iea.org/etp](http://www.iea.org/etp)
### Electric cars benefits

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<th>Climate</th>
<th>Health</th>
<th>Energy security</th>
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<tr>
<td>Better energy efficiency than internal combustion engines</td>
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<td>Absence of tailpipe emissions (CO₂ and pollutants)</td>
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<td>(paramount in urban areas)</td>
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<td>Low-carbon mode, provided that the electricity mix is low-carbon</td>
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<td>Reduction of oil dependency</td>
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<td>(+ potential for harvesting local, renewable energy sources)</td>
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### 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.
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)
Recent market developments: EV sales and market share

What is happening in 2016?

EU: +20% sales in Q1-Q2 2016 compared to Q1-Q2 2015

China: +160% sales in Q1-Q2 2016 compared to Q1-Q2 2015

Netherlands: 2.5% market share in 2016 (ytd) vs. 10% in 2015, due to changes in support mechanism and drop in PHEV sales

→ expecting dynamic global growth in 2016, mainly driven by China sales
Various policy mechanisms behind the “market pull”

- Differentiated taxation: CO$_2$-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)
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
Today:
Countries are still in trial and error phase:
- Which policies have the highest impacts?
- Do any policies have unanticipated adverse effects?
- What is the cost-optimal and most effective combination of support policies?

Tomorrow:
- How to accompany mass market deployment within budget constraints ...
- How to rethink vehicle taxation to accommodate for fuel tax losses (electric cars do use public infrastructure and remain part of the congestion challenge) ...
- How to prevent potential competition between EVs and public transport ...

... without hampering EV rollout?
EV deployment targets

World

Horizon 2050 (2DS):
- 450-550 million EVs
- 25% global car stock

1.26 million
13 million
20 million
100 million
140 million

Implications in terms of production scale up and need for raw materials?
Impacts on the grid?

Slow charging:
- Potential for flexibility through variable charging: requires price signal, demand-side management tools, but not necessarily “vehicle-to-grid” operations.
- Synergies with the integration of variable renewables

Fast charging:
- Potentially disruptive locally for distribution grids
- Does not offer flexibility
- However, fast charging is not likely to take place in the evening demand peak (home chargers are slow chargers)
(RTE) Hourly load of a winter day with different charging modes

Source:
Thank you for your attention

The Global EV Outlook 2016 is freely accessible [online](#)
Policy needs

- 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