The European Battery Alliance
Can the EU avoid technological dependence?

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The European Political Strategy Centre

➢ From ideas to proposals
Translate political priorities into strategies with concrete deliverables

The European Commission wants Europe to be the leader when it comes to the fight against climate change.

The new Industrial Policy Strategy we are presenting today will help our industries stay, or become, the number one in innovation, digitisation and decarbonisation.

Jean-Claude Juncker, State of the Union Address, 13 September 2017
Why?

The ‘Perfect Storm’ Challenges: Complex and Cross-Cutting

The EU is preparing its future

Source: Oxford Martin School, European Political Strategy Centre

FUTURE OF EUROPE | DEBATE

“It is time for a united Europe of 27 to shape a vision for its future.”

European Commission President Jean-Claude Juncker, 1 March 2017
We'll have to **adapt** to climate change
... but also prepare Europe's economic transformation and turn challenges into opportunities.
... this includes also a better quality of life and reduced oil dependency

Reducing CO2 emissions and air pollutants altogether is possible.

Transport is responsible for half of the EU's 400 billion euro annual energy import bill.
... and future **jobs** and **growth** for Europe

Jobs in renewable energy sector worldwide

Jobs and growth in the environmental goods and services sectors


Source: European Commission
The momentum is growing

October 2016:
The EU ratifies and triggers the Paris Agreement
Transforming the mobility system will not be easy

Greenhouse Gas Emissions (GHG) from transport

Percentage of total transport GHG emissions
- Road Transportation 73%
- Domestic aviation 12%
- International aviation 12%
- Domestic navigation
- Others
- Railways

Source: European Environment Agency

Percentage change
- Transport
- Residential and Commercial
- Waste & Others
- Industry

Yearly data from 1990 to 2014
No silver bullet, but **batteries** are expected to play a **crucial role** in the transition towards a low-emission mobility

...linking the mobility and energy systems

... 'batteries' are therefore not only about batteries
But things are changing: we see the market of electric vehicles growing.
... and it is expected to grow much faster soon.

Source: Bloomberg New Energy Finance, and organisations’ websites

EV forecasts then and now...

Source: Bloomberg New Energy Finance, and organisations’ websites

Notes: IEA forecasts to 2030 and BP forecasts to 2035. OPEC has not yet published its 2017 Oil Outlook. Only BNEF and OPEC provide annual data points for EV fleet size. Some data points for BP, ExxonMobil, OPEC and the IEA are estimated based on organization charts, reports and data. BNEF, BP and OPEC forecasts exclude just BEVs and PHEVs. ExxonMobil and IEA forecasts exclude BEVs, PHEVs and fuel cell vehicles. For more on the changes between BNEF’s 2016 and 2017 long-term EV forecasts, see our July 6, 2017 Research Note “Global EV Sales Outlook to 2040.”
...probably even more **outside Europe** though

**Total car sales**

**Sales volume**\(^1\)  

<table>
<thead>
<tr>
<th>Region</th>
<th>2016</th>
<th>Growth</th>
<th>2022E</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>22.8</td>
<td>+7.4</td>
<td>30.1</td>
</tr>
<tr>
<td>Europe</td>
<td>14.4</td>
<td>+0.2</td>
<td>14.7</td>
</tr>
<tr>
<td>United States</td>
<td>14.4</td>
<td>-0.7</td>
<td>13.7</td>
</tr>
<tr>
<td>India</td>
<td>2.9</td>
<td>+2.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>22.3</td>
<td>+4.9</td>
<td>22.3</td>
</tr>
</tbody>
</table>

**2016-22 growth**  

<table>
<thead>
<tr>
<th>Region</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>52.6</td>
</tr>
<tr>
<td>Europe</td>
<td>1.7</td>
</tr>
<tr>
<td>United States</td>
<td>-5.2</td>
</tr>
<tr>
<td>India</td>
<td>15.9</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>34.9</td>
</tr>
</tbody>
</table>

Source: McKinsey&Company
confirmed by the announcements by major carmakers

<table>
<thead>
<tr>
<th>Carmaker</th>
<th>Announcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMW Group</td>
<td>• 100,000 electric vehicles sales in 2017</td>
</tr>
<tr>
<td></td>
<td>• 15-25 percent electric vehicles share by 2025</td>
</tr>
<tr>
<td>Chevrolet</td>
<td>• 30,000 electric vehicles sales in 2017</td>
</tr>
<tr>
<td>Chinese OEMs</td>
<td>• 4.52 million electric car sales by 2020</td>
</tr>
<tr>
<td>Daimler</td>
<td>• 100,000 electric car sales by 2020</td>
</tr>
<tr>
<td></td>
<td>• 15-20 percent battery electric vehicles share of sales by 2025</td>
</tr>
<tr>
<td></td>
<td>• 10 percent hybric electric vehicles share of sales by 2025</td>
</tr>
<tr>
<td></td>
<td>• 10 new electric vehicle models by 2022</td>
</tr>
<tr>
<td></td>
<td>• Investments of EUR 10 billion until 2022 into electric vehicles</td>
</tr>
<tr>
<td>Ford</td>
<td>• 13 new electric car models by 2020</td>
</tr>
<tr>
<td>Honda</td>
<td>• Electric vehicles with a share of two thirds of sales in 2030</td>
</tr>
<tr>
<td>Renault-Nissan</td>
<td>• 1.5 million electric car sales by 2020</td>
</tr>
<tr>
<td></td>
<td>• Investments of EUR 4 billion into electric cars as announced in 2009</td>
</tr>
<tr>
<td>Tesla</td>
<td>• 500,000 electric vehicle sales in 2018</td>
</tr>
<tr>
<td></td>
<td>• 1 million electric vehicle sales in 2018</td>
</tr>
<tr>
<td>Volkswagen</td>
<td>• 2.3 million electric car sales by 2025 with 30 new battery-powered car</td>
</tr>
<tr>
<td></td>
<td>models, which would correspond to 25 percent of vehicle production</td>
</tr>
<tr>
<td></td>
<td>• Investments of EUR 9 billion until 2022 into electric vehicles</td>
</tr>
<tr>
<td>Volvo</td>
<td>• 1 million electric car sales in 2025</td>
</tr>
<tr>
<td></td>
<td>• No new car model without an electric motor from 2019 on</td>
</tr>
</tbody>
</table>

Source: Schneider (2017); ICTSD - International Centre for Trade and Sustainable Development
... thanks to a combination of **technology**, **regulatory** and **enabling measures**

<table>
<thead>
<tr>
<th>Country</th>
<th>Target</th>
</tr>
</thead>
</table>
| China        | • Share of alternative fuel vehicles of at least 20 percent of sales in 2025, which would correspond to more than 7 million cars  
               • Target of 2 million electric cars in 2020                        |
| European Union | • EV chargers at parking spaces of 10 percent of buildings by 2023  
                    • Emission reduction target for new cars of 95 gCO₂ per km by 2021  
                    • Several EU member states have individual targets for electric car diffusion |
| France       | • Ban of petrol and diesel car sales by 2040                           |
| Germany      | • Federal Council has passed a position to ban petrol and diesel car sales by 2030 but the government rejected the demand  
                    • Goal of million electric vehicles by 2020 (dismissed) and six million by 2030 |
| India        | • Ban sales of petrol and diesel cars by 2030                         
                    • Increase EV fleet to 6 to 7 million vehicles by 2020           |
| Netherlands  | • Ban on petrol and diesel car sales by 2025 was passed in the lower house of the Parliament but not (yet) in the senate |
| Norway       | • Ban petrol and diesel car sales by 2025                             |
| UK           | • Ban petrol and diesel car sales by 2040                             |

Source: Schneider (2017); ICTSD - International Centre for Trade and Sustainable Development
The 2017 Mobility packages: Delivering on low-emission mobility

A European Union that protects the planet, empowers its consumers and defends its industry and workers

The new CO2 standards will help manufacturers to embrace innovation and supply low-emission vehicles to the market. They will also drive EU Member States to achieve their 2030 climate targets and cities to increase the quality of life and the health of their citizens. At the same time, we ensure a better deal for consumers and restore trust in the EU’s approach by putting in place a robust testing framework for type-approval based on new testing procedures that will ensure effective compliance with the rules. European citizens will only fully embrace the transition towards a new mobility system if it becomes easy to refuel and people can travel smoothly between different Member States, be it for their jobs or to go on holiday; reason why the package also includes a range of investment solutions for the trans-European deployment of alternative fuels infrastructure, leaving no region behind.

Publicly accessible recharging points

118,000 today

440,000 needed by 2020
and let's not forget, it's **not only about cars**

![Diagram showing battery capacities for different vehicle types]

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro HEV</td>
<td>0.4</td>
</tr>
<tr>
<td>HEV</td>
<td>1</td>
</tr>
<tr>
<td>pHEV</td>
<td>10</td>
</tr>
<tr>
<td>EV medium</td>
<td>25</td>
</tr>
<tr>
<td>EV long</td>
<td>75</td>
</tr>
<tr>
<td>Delivery van</td>
<td>50</td>
</tr>
<tr>
<td>E-bus</td>
<td>200</td>
</tr>
</tbody>
</table>

*Source: Umicore*
How is **Europe** doing?

**Strong**
- Research in future active materials
- Pack development, BMS
- Applications/System integration

**Lagging**
- Raw material supply
- Active materials (industry)
- Cell manufacturing (low volume, non-competitive in mass markets)

**Neutral**
- Recycling - globally under-developed area
- Research and Innovation in all non active materials area

Source: JRC, InnoEnergy, EPSC
We should not be naïve: the **competition** is fierce

- Asia is leading on Battery manufacturing

Global EV lithium-ion battery manufacturing capacity

What is Europe's response?

- New **Industrial Policy Strategy**
- The **European Battery Alliance** as a result of the 2017 Mobility Packages
a new way of working together

"No single actor can build Europe's battery market alone. But if we act together across Europe, we can capture an emerging battery market of 250 billion euro per year!"

- **Comprehensive workstream** with more than 120 European (and non-European) stakeholders representing the whole value chain + Strategic Energy Technology Plan
- Dialogue with EU **Member States**
- **Roadmap on the way forward** by May 2018
...and breaking out of the *silos*: to **win the battle for batteries** we need to activate a wide range of **integrated policy tools** jointly.
We do not start from scratch...

- Research and Innovation (Horizon 2020)
- Investments:
  - EFSI
  - Cohesion Policy
  - Important Projects of Common European Interest (IPCEI)
- Trade Policy
- Demand measures
- Keep the dialogue going
  - (...)

- (…)
The way forward & key objectives

- Securing the supply of **raw materials**
- Supporting **projects** covering different segments of the battery value chain, including cell manufacturing
- **Research and innovation** to support a competitive batteries value chain
- Making Europe the global leader in **safe and sustainable** battery technology
- Developing and strengthening a **skilled workforce**
- Creating and enforcing an enabling and regulatory framework that is supportive of **battery demand**
It's happening... but will it be a battery value chain in Europe or a European battery value chain?

Saft joins forces with European partners to develop the battery of the future

Umicore launches a placement of up to 10% new ordinary shares

Umicore is launching a capital increase of new ordinary shares through an accelerated bookbuild. The proceeds will be used to fund growth investments, particularly in cathode materials and will provide more financial flexibility to pursue potential acquisitions and partnerships that would further strengthen Umicore's offering in clean mobility materials and recycling. Details can be obtained by clicking below.

Chinese lithium-ion battery manufacturer Contemporary Amperex Technology Ltd. intends to build a factory in Europe.

Bloomberg reports that CATL is considering three countries – Germany, Poland, Hungary, which strongly support battery investments and are close to EV assembly facilities.

Poland was already chosen by LG Chem, while Hungary got the nod from Samsung SDI.

For CATL, it would be its first factory outside of China, but that's the way to go as the European market is expanding. Among customers, BMW was mentioned.

There are no numbers, but Bloomberg suggests that CATL's capacity in Europe will be bigger than Tesla's Gigafactory.
Thank you for your attention

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