



# The Future of Electric Cars - The Automotive Industry Perspective

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ACEA



## The "Engine of Europe"

### ACEA represents the whole European auto industry

- 15 major international companies & 29 associated national organizations



### An industry crucial for economy...



### ... and employment

- 35% of EU manufacturing employment
- 2.2 million direct jobs
- Indirect employment for another 9.8 million families





## Current economic situation

### New passenger cars in 2009

Production <sup>1</sup>	Units	% change to 2007
<b>Europe<sup>5</sup></b>	<b>13,985,800</b>	<b>-18%</b>
Russia	601,400	-53%
USA <sup>2</sup>	5,608,000	-47%
Japan	6,840,700	-31%
India	1,813,200	+23%
China	8,139,500	+51%

Demand <sup>3</sup>	Units	% change to 2007
<b>Europe<sup>5</sup></b>	<b>14,481,545</b>	<b>-10%</b>
Russia	1,465,917	-42%
USA <sup>2</sup>	10,402,215	-35%
Japan	3,923,740	-11%
India	1,815,205	+20%
China	8,380,870	+58%

### New commercial vehicles in Europe<sup>5</sup> 2009

Production <sup>4</sup>	Units	% change to 2007
<b>Total</b>	<b>922,614</b>	<b>-52%</b>
Heavy Trucks	175,370	-63%
Vans	722,301	-49%

Demand <sup>6</sup>	Units	% change to 2007
<b>Total</b>	<b>1,706,996</b>	<b>-38%</b>
Heavy Trucks	245,915	-45%
Vans	1,421,770	-38%

<sup>1</sup>Forecast by IHS Global Insight; <sup>2</sup>Including LCVs; <sup>3</sup>Source: VDA; <sup>4</sup>Q1-3 2009; <sup>5</sup>EU+EFTA; <sup>6</sup> Source: ACEA

3



## Low emission vehicles: What comes next?

### Internal combustion engine

- Still potential for further improvement
- Primary powertrain in the 2020 timeframe
- Drastic reductions of regulated emissions
- Important contribution to overall CO2 reductions possible



### Alternative fuels

- Need for sufficient fuel infrastructure to reap full CO2 reduction potential of biofuels, CNG and LPG



### The next steps

- Electrification (incl. fuel cells)
- Hydrogen



4



## Electrification: Part of the solution

### No 'silver bullet' towards sustainable mobility

- Diverse transportation needs

### Electrically Chargeable Vehicles

- Range of electrical technologies in development
- Applications include hybrids, plug-in hybrid electric vehicles, extended-range electric vehicles (incl. fuel cells), battery electric vehicles
- Low or zero emissions at the tailpipe



### Low-carbon energy key to realise CO2 savings potential

5



## Key pillars for success (1)

### Policy environment

- Market incentives (EU, national governments)
- Collaboration and coordination



### Market readiness

- Recharging infrastructure
- Customer acceptance, market demand



### Standardisation

- Common interfaces (e.g. vehicle-infrastructure)
- Global standards



6



## Key pillars for success (2)

### Technology ability

- Vehicles for variety of customer needs
- Costs
  - Battery costs can add 6,000 – 16,000 Euro/car\*
  - Additional costs for power electronics, wiring, etc.
- Need for further R&D (particularly battery development)



### Well-to-Wheel consideration

- Low carbon energy production

\* Typical driving range for ECV will be up to 150km, up to 20kWh electric energy consumption (small/compact car)

7



## Market potential of electrically chargeable vehicles \*

Customer expectation:	e-vehicles today:
Same driving range	150 km
Same refuelling time	3 hours
Same cost	EUR 10,000+

**A new vehicle market share in the range of 3-10% in 2020-25 is possible**

**Market penetration depends on the coordinated collaboration of all key players**

\* including battery electric vehicles, extended-range electric vehicles and plug-in hybrid electric vehicles

8



## EU leadership will make a difference

### Significant & simultaneous investment required by multiple players

- Difficult economic situation
- Limited access to financing
- Risk that investments and thus market penetration are capped

### Intensive policy support in the US, China and Japan

- Activities are well coordinated
- Joint US/China initiative on promotion of E-Mobility
- First mover advantage?



### EU competitiveness at stake

- New competences & engineering opportunities
- Positive impact on EU employment



9



## Roadmap for EU-leadership in e-mobility

Defining a supportive long-term policy environment

Building up a recharging infrastructure

Coordinating national strategies

Increasing consumer awareness, information

Ensuring access to finance

Enabling quick progress on standardisation



10



## Conclusions

### **Mobility is an enabler of economic growth and social development**

- Vision: truly sustainable mobility

### **The automotive industry is part of the solution**

- Difficult economic circumstances, but robust in the long term
- Continued investment in technology leadership

### **The regulatory framework matters:**

- Defend and strengthen Europe's manufacturing base
- Boost global competitiveness by better regulation and impact assessments

### **Electrically chargeable vehicles require a joint effort**

- Establish roadmap for EU-leadership on E-mobility
- Success depends on coordinated collaboration of all key players