



Electric Vehicle Conference Greece

Hybrid, Plug-in, Hydrogen and beyond

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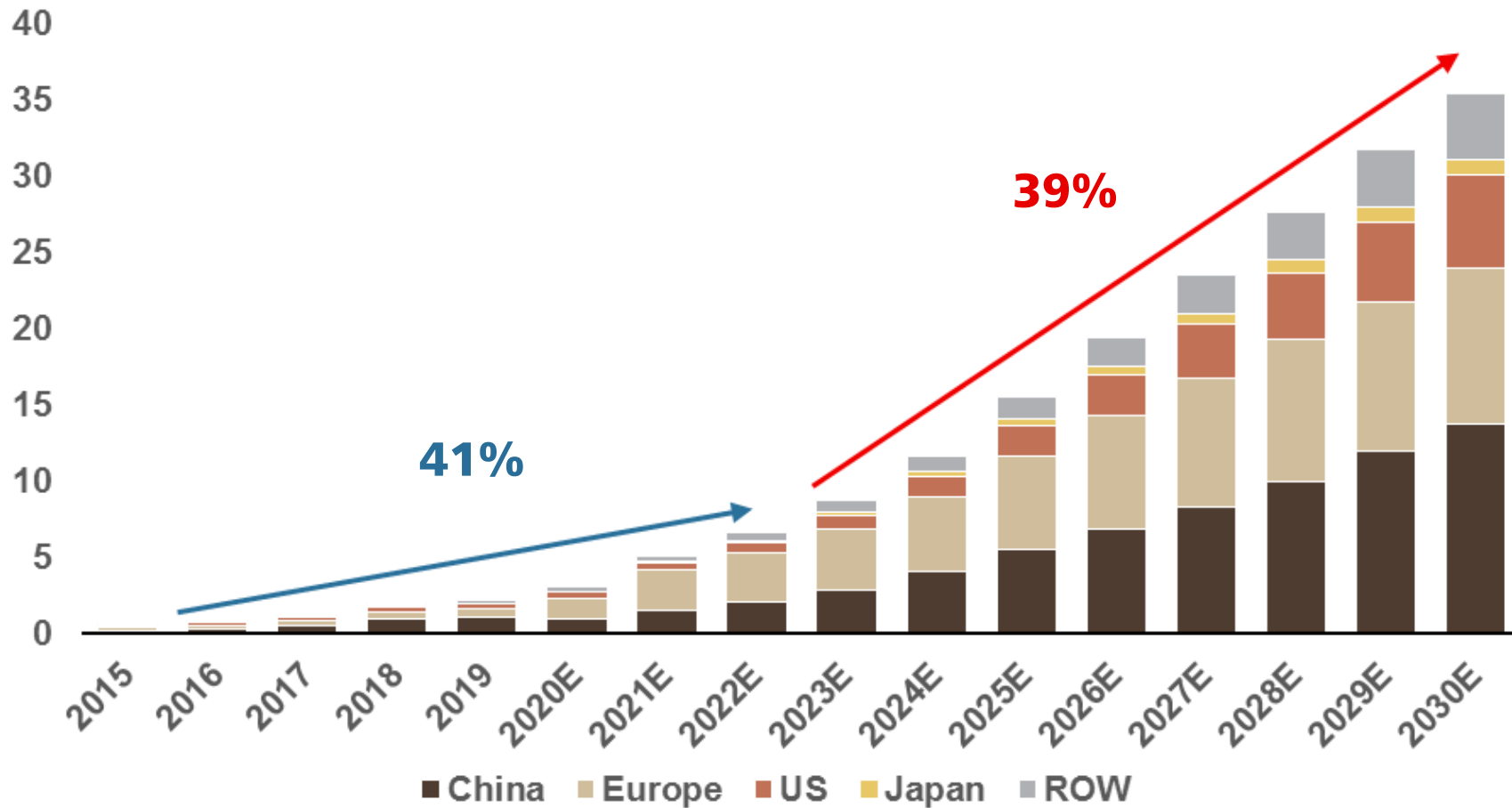


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Electric cars: drivers are Europe and China

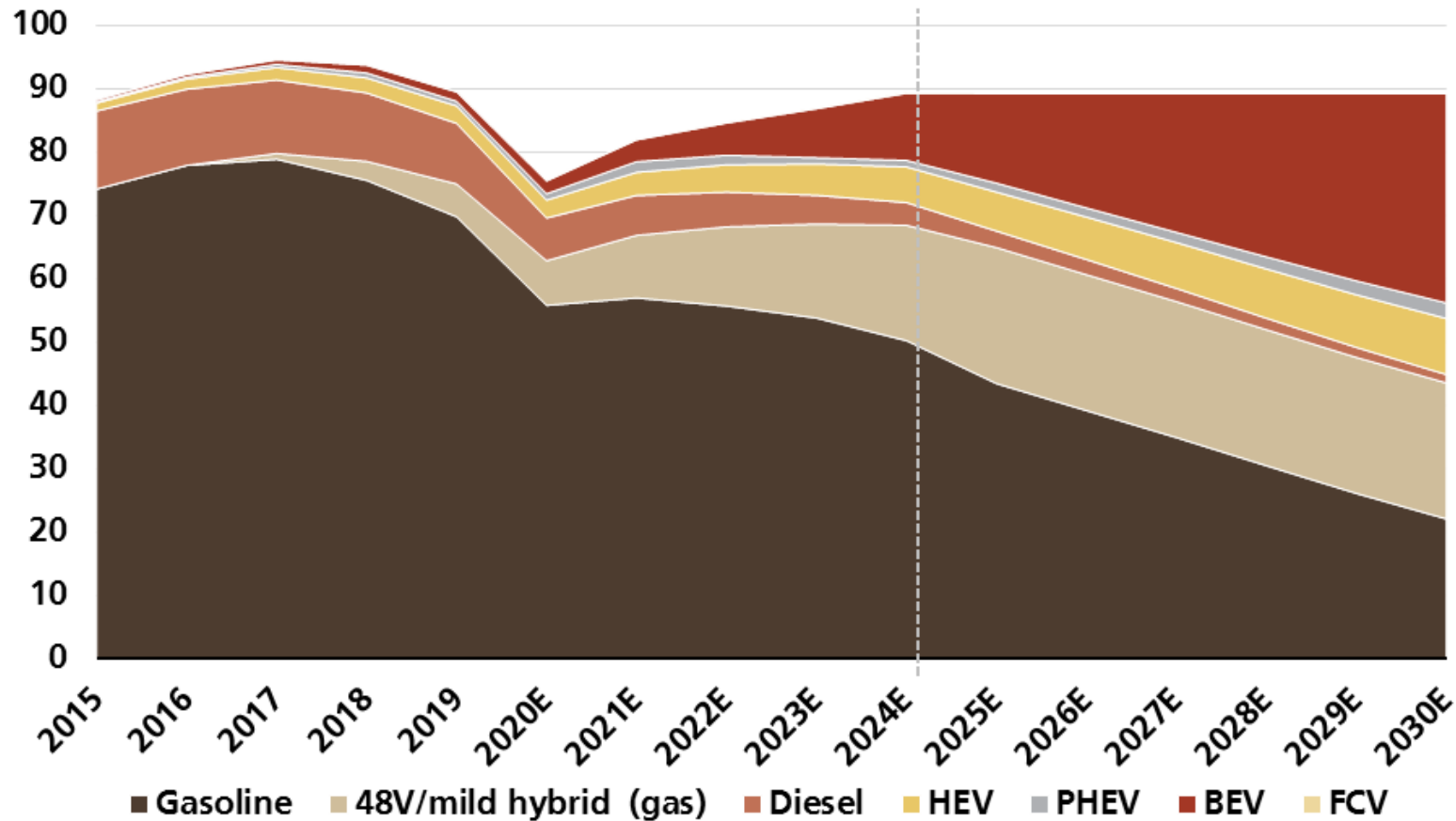
In 2025: 90 million new vehicles: regulation + (attraktive) products = electrification



- 25% electrified (>10% full electric / rest plug-in and full-hybrids)
- 20-25% 12&48 Volt mild-hybrids

Electric cars: powertrain mix shift ahead

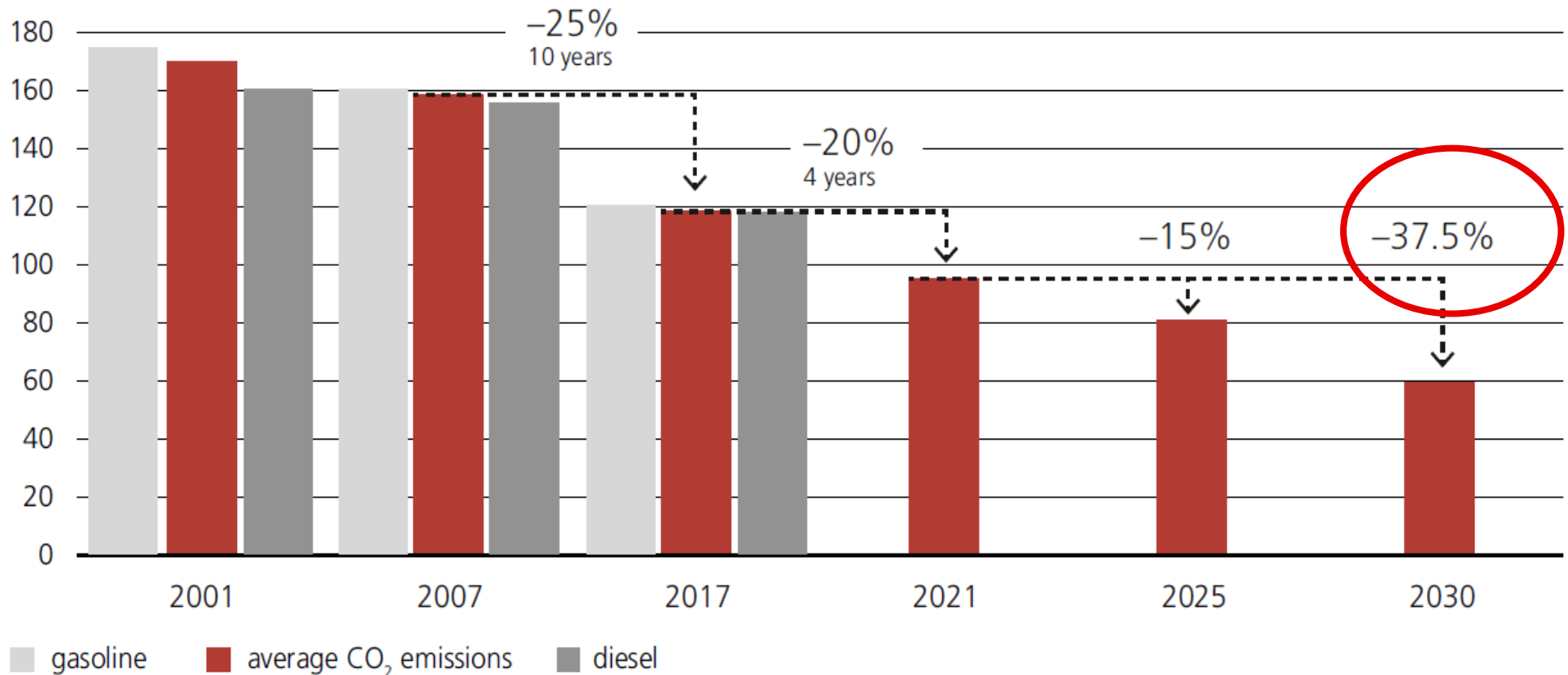
Traditional gasoline and diesel down, 12 & 48 Volt (mild) hybrids and electric vehicles up (in million vehicles)



Note: HEV = (Full) hybrid electric vehicles; PHEV = Plug-in hybrid electric vehicles; BEV = Battery electric vehicles; FCV = Fuel cell vehicles; 48V/mild hybrid (gas) = gasoline engines combined with 12 & 48 Volt mild-hybrid systems

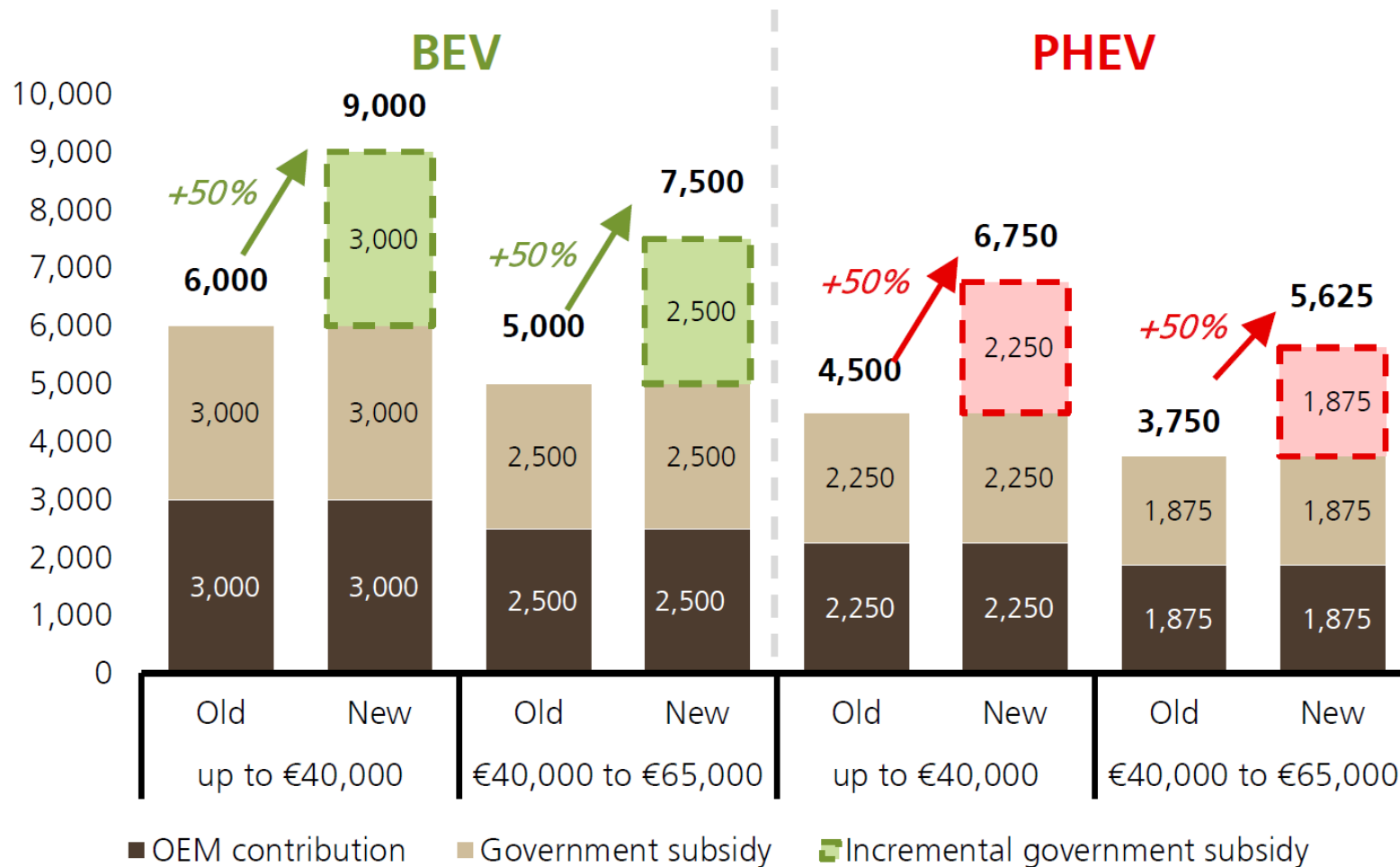
CO₂-Regulation: big hurdles for the auto industry

Europe: average fuel consumption of every new car sold in 2021 needs to be below 4.1 litre per 100/km (95 g CO₂/km) – a 20% reduction vs. 2017. By 2030 we need a cut to c. 2.5 L/100km or even c. 2 L/100km (CO₂ emissions in g/km).



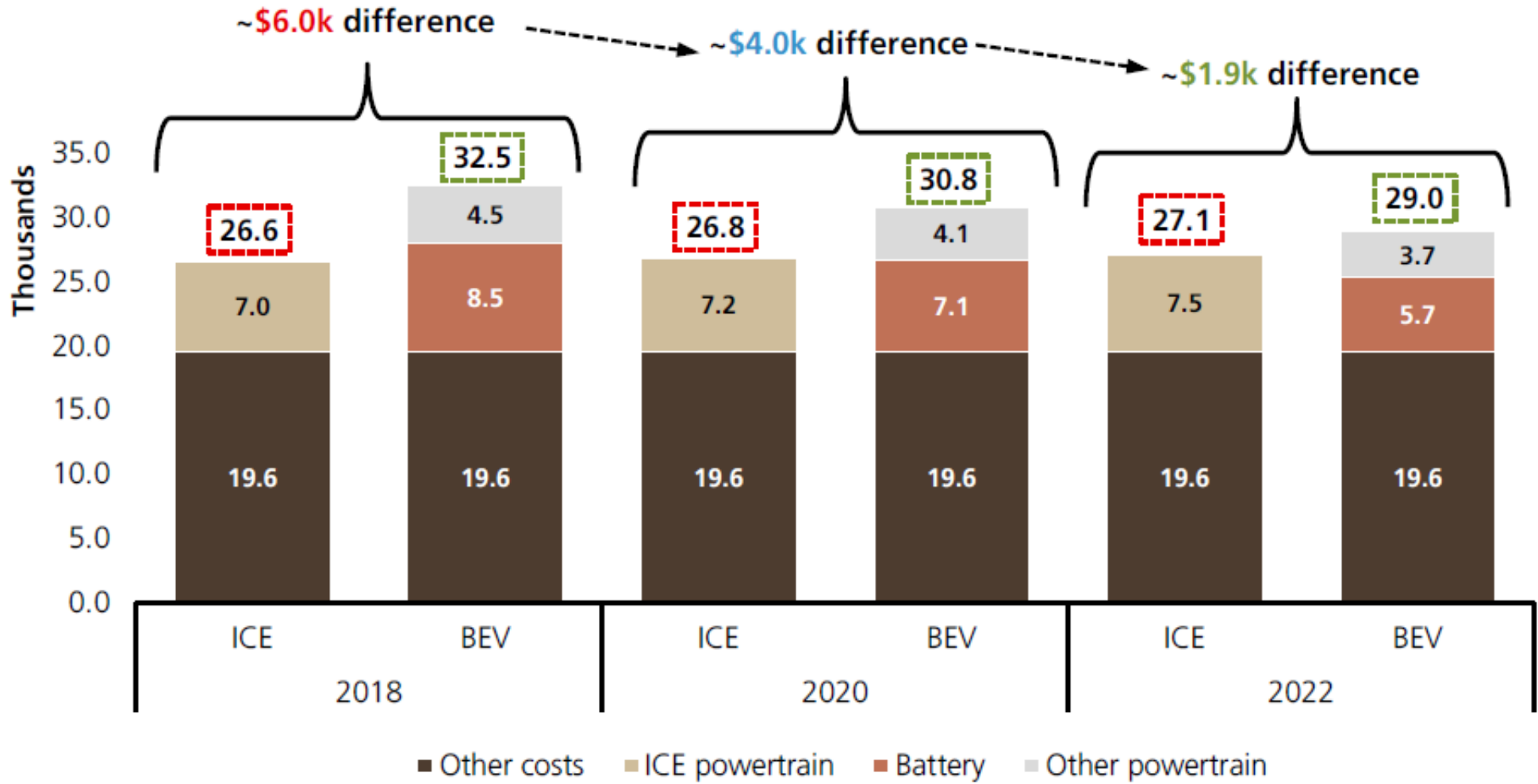
Electric cars: incentive programs in Germany

Strong increase in incentives has led to a strong increase in demand



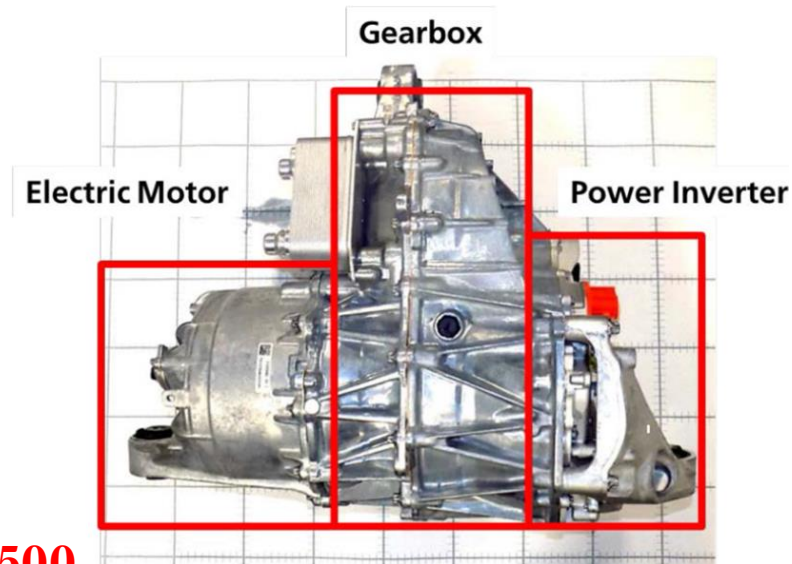
Electric cars: cost competitiveness improves

Battery electric (BEV) competitiveness improves drastically, based on UBS teardown findings (in USD '000 per car)



Note: BEV = Battery electric vehicles; ICE = Internal Combustion Engine

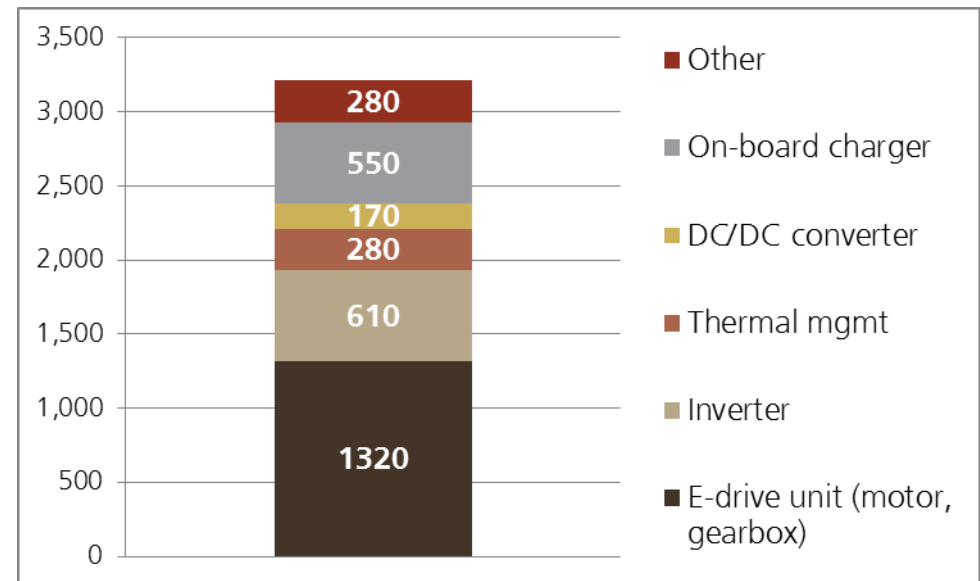
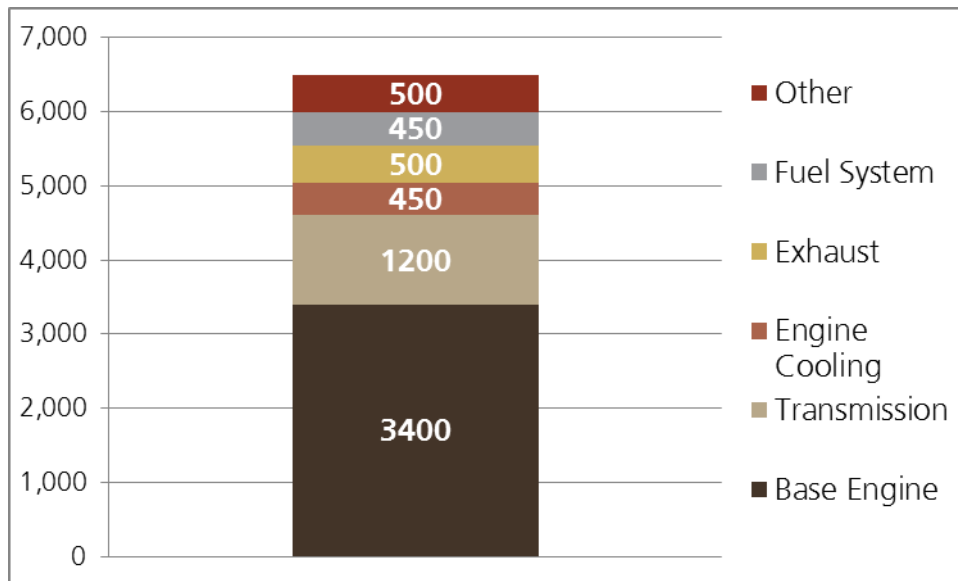
Electric cars: large changes in components and value added



Comment: Electric Motor = Elektromotor; Gearbox = Getriebe; Power Inverter = Wechselrichter

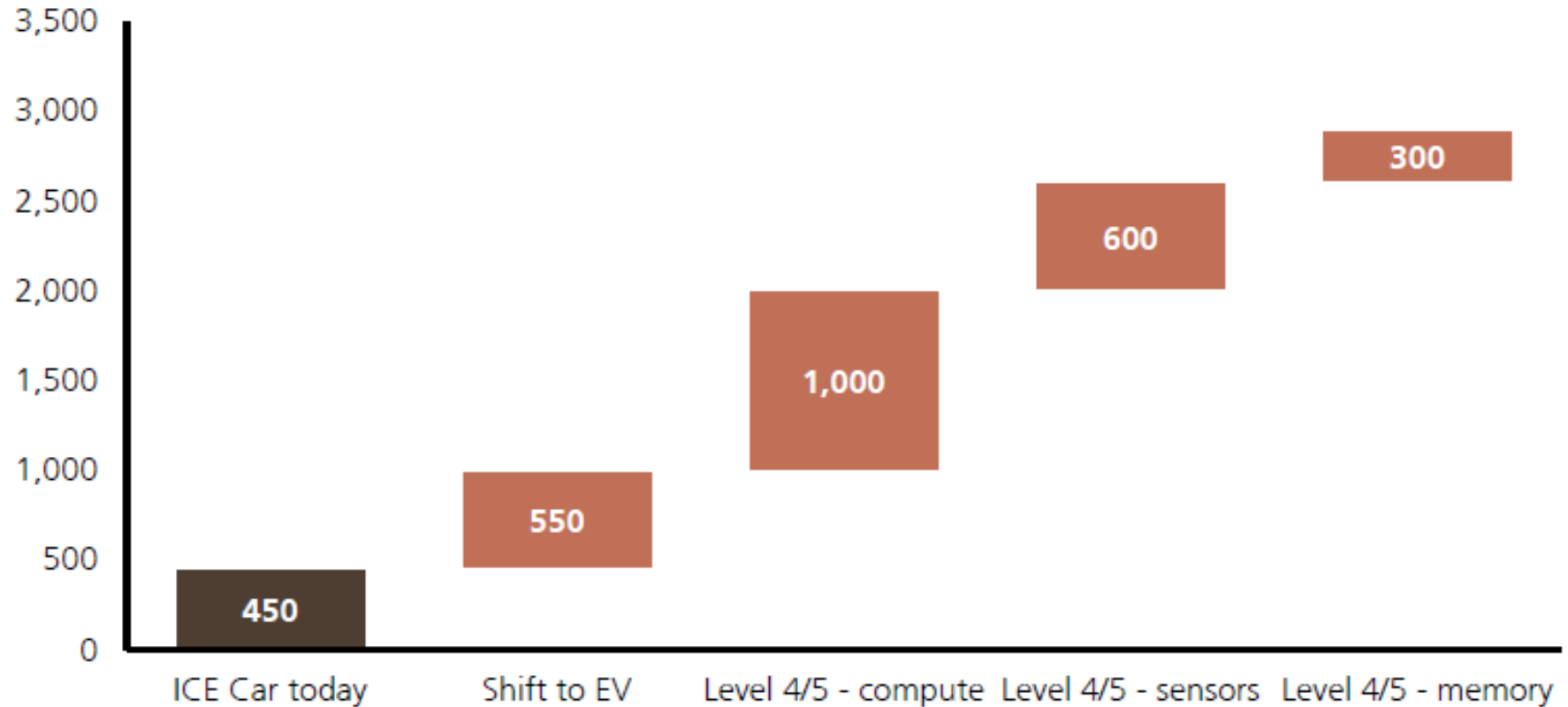
Combustion engine - USD 6,500

Full-electric - USD 3,200



Electric cars / autonomous driving: semiconductors – the individual steps

In USD per vehicle




Note 1: ICE = Internal Combustion Engine; EV = electric vehicle, ie. electric vehicle specific semiconductors

Note 2: ADAS (advanced driver assistance system) tiered from levels 0 (no automation) to level 5 (full automation, i.e. no steering wheel needed)

Automotive Industry: Three Key-Takeaways

1. Near-term **visibility** for auto sales and production **remains low**, but **sales and production have bottomed**
2. **Government incentive programs** are key to bring the industry back in shape
3. **Structural challenges** towards **Smart Mobility** will not go away and they even accelerate (Threat & Chance)



3 January 2020, 09:43AM UTC
Chief Investment Office GWM
Investment Research


3 January 2020, 09:43AM UTC
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Electrification disrupts automotive suppliers

Executives & Entrepreneurs

Author: Rolf Ganter, CFA, Analyst, UBS AG

- Electrification of cars is part of our Smart Mobility longer-term investment theme. By 2025, we expect it to create an USD 80-110bn annual revenue opportunity across electric powertrain supply chains (ex batteries), of which plug-in hybrids represent USD 15-30bn.
- Yet many business owners seem complacent about the disruption electrified cars will cause; after all, full-electric and plug-in hybrids account for less than 3% of current new car sales worldwide. But business owners shouldn't let these figures lull them into a false sense of security. The pace of electrification is accelerating rapidly.
- We calculate that, by 2025, the powertrain in one-quarter of new cars sold could contain a significant element of electric propulsion. Nearly half of these vehicles will be fully electric and contain no components from internal combustion engine suppliers.
- By 2025 we expect battery costs to fall at least 35% from 2017 levels. This price drop will improve the economics of full-electric vehicles. Plug-in hybrids, the best of both worlds for suppliers, will become less popular.
- Suppliers focused on combustion engines are in a structurally declining business. Their markets will fall in value by USD 60-120bn annually by 2025 due to regulatory changes and technological advances.
- Business owners who adapt their strategy early to electrification will be best placed to capture fresh opportunities. Investors are urged to look at our Smart Mobility theme.



Source: Gettyimages

Key takeaways for suppliers	
Opportunities & Risks	Threats & Risks
<p>Electric powertrain suppliers - Demand for motors, charging and powertrain electronics factory management systems will rise. Volume growth is likely to offset some of the projected price declines in these new technologies. Battery pack-related demand will rise.</p>	<p>Combustion-focused traditional powertrain suppliers - Existing 2%-3% annual price pressure will intensify as electric engines reduce internal combustion ones, with volume and pricing pressure hitting margins.</p>
<p>Electronics and sensors - The value of the semiconductor content in electric vehicles is twice that of combustion engine vehicles and worth about USD 1,000 per car.</p>	<p>Mechanical powertrain components - Makers of pistons, cam- and crankshafts, fuel & oil pumps, fuel injectors, exhaust & emission treatment systems and gearboxes will face volume and revenue pressures.</p>
<p>Innovative Tier 2 & 3 suppliers - Auto manufacturers (OEM) will directly work with technology leaders.</p>	<p>Large Tier 1 suppliers - OEMs will partly circumvent them to work directly with smaller Tier 2 & 3 and new tech players.</p>
<p>High aftermarket exposure - Fixing fleets of vehicles ensure ongoing spare part sales.</p>	<p>Purely OEM focused - Sales volumes will fall as price and margin pressures increase.</p>

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