

PwC Autofacts®

The turning of the tide –
impacts of the automotive transformation on the value chain

*Research results on how the
automotive transformation
will impact value add
October 2018*



The automotive transformation will bring more vehicle sales, more value per car, and more business for the automotive value chain – still, there are challenges for OEMs and suppliers

Autonomous driving changes the way vehicles are **used and owned**



Technological Changes

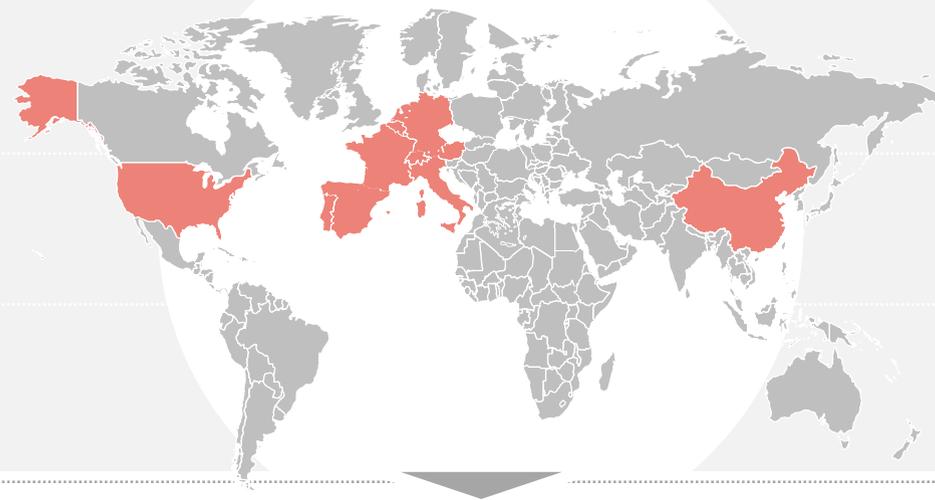


Electric drivetrains require new **technologies and capabilities**

More Sales

New forms of vehicle capabilities change the existing mobility structure, leading to an **increase of demand** for new types of mobility

Due to **new usage patterns**, new vehicle demand will increase structurally



More Value

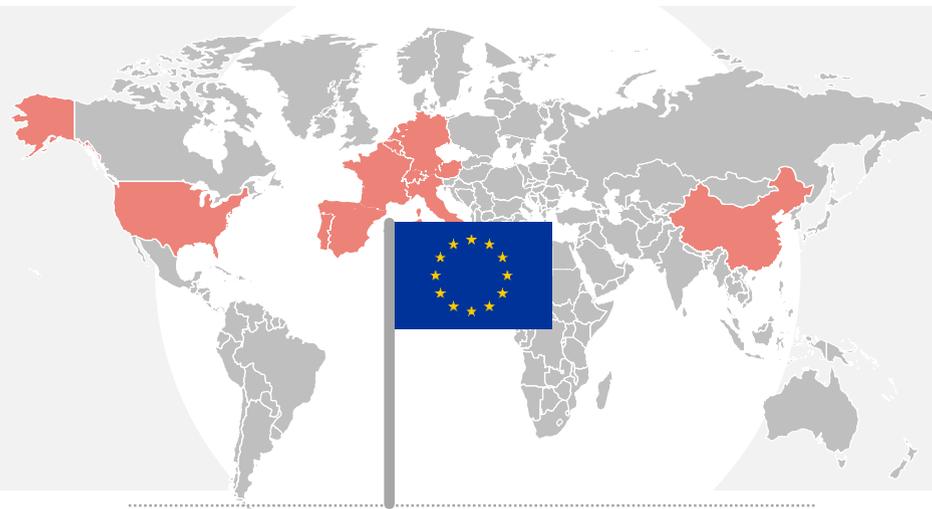
Social and political impulses drive market demand for **alternative powertrain** technologies

Vehicle **component and system** costs will shift due to new technologies

Increase of Value Add

Reorientation of existing **manufacturing processes** **+** Re-alignment of **value-add** between OEMs and suppliers

As mobility is local by nature, so is the expected adaptation of new technologies and mobility patterns between Europe, the US, and China due to political, cultural and technical differences



- Autonomous technologies may not be marketable before 2025, therefore **mobility patterns** are not expected to change notably until 2030
- Regulatory hurdles and consumer inertia due to large legacy vehicle parc may lead to **delayed market adaption**



- Autonomous Robotaxis with limited capabilities from 2025 on, wide-spread **level 4/5** adoption after 2028
- **Electric vehicle** penetration increases due to legislative demands after 2020, and receives a significant boost as new mobility forms become established after 2025



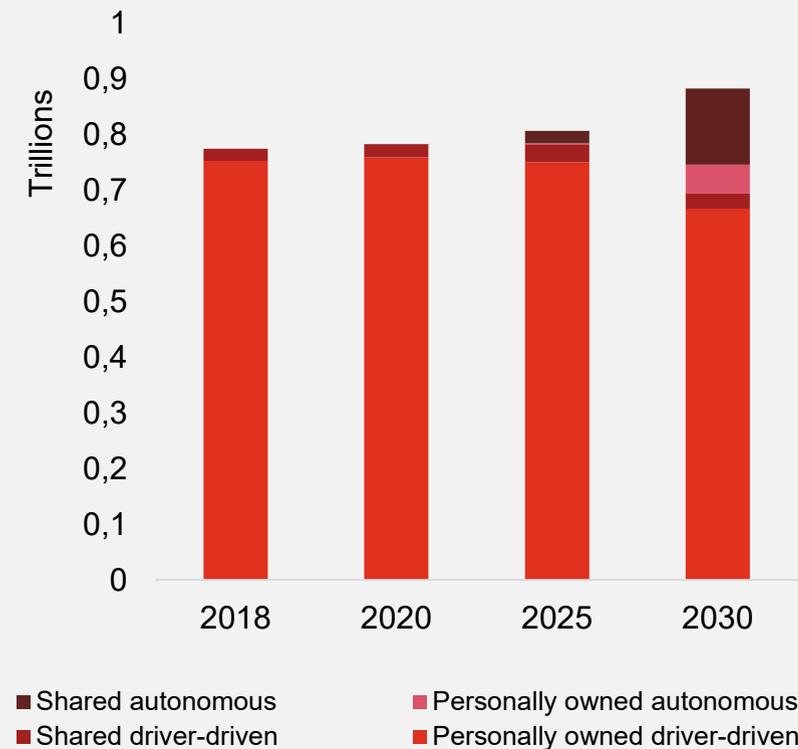
- Electric vehicle penetration with significant lift due to **legislative incentives**
- Once available, autonomous technology will have strongest growth by attracting former public-transport users with **low prices and high convenience**



The introduction of autonomous driving capabilities will trigger the transformation of individual mobility which will create new ways of using vehicles and increase overall mobility

Autonomous technology is expected to create **new markets for individual mobility types**, driven by strong mobility demand.

Person-km per Year
Germany



Autonomous vehicles will be **used much more intensely** than conventional cars, **reducing** the duration of their **lifecycle** and creating **higher replacement demand** in spite of **shrinking overall vehicle fleet**.

Self-driven ...

... Privately Owned: 208,000 vehicles, 13,500 annual mileage, 15.4 usage years

... Shared: 60,000 vehicles, 59,500 annual mileage, 1.0 usage years

Autonomous ...

... Privately Owned: 252,000 vehicles, 42,000 annual mileage, 6.0 usage years

... Shared: 286,000 vehicles, 93,000 annual mileage, 3.1 usage years

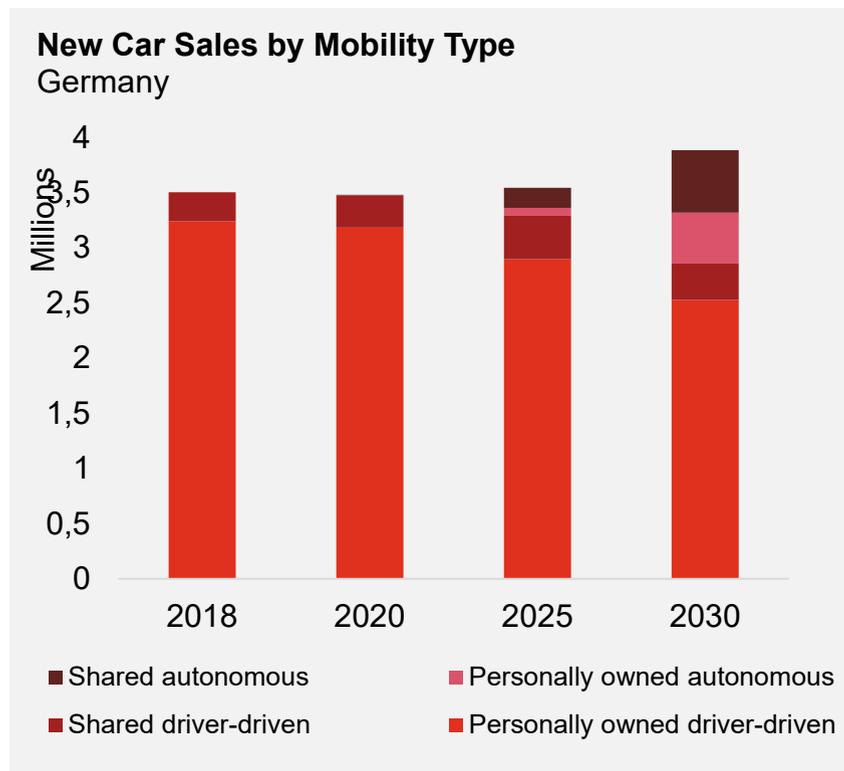
Lifecycle Mileage

Annual Mileage

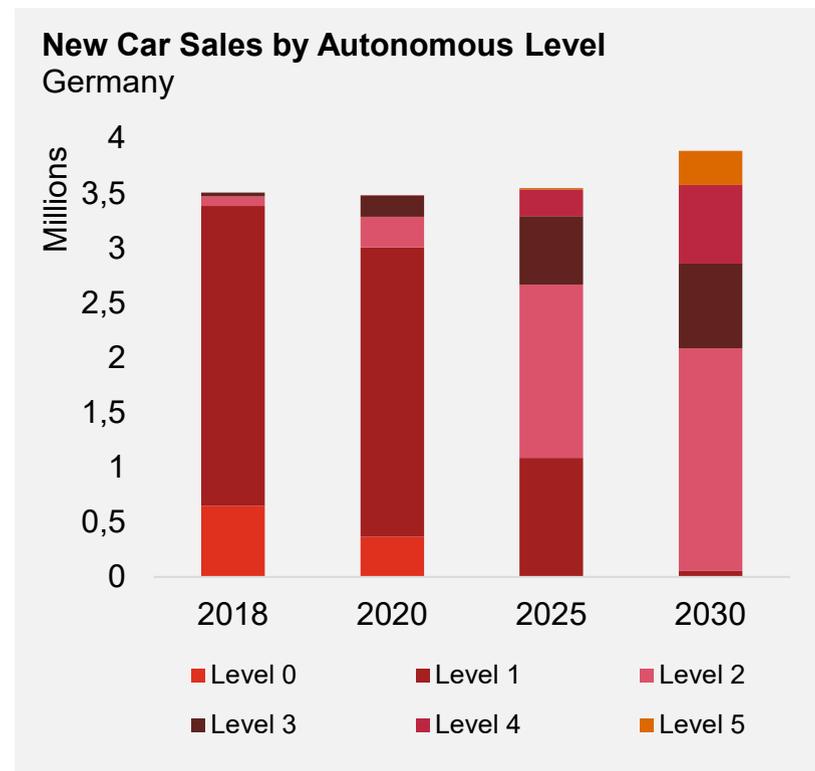
Usage Years

Forecast for 2030 – DE Normal Scenario

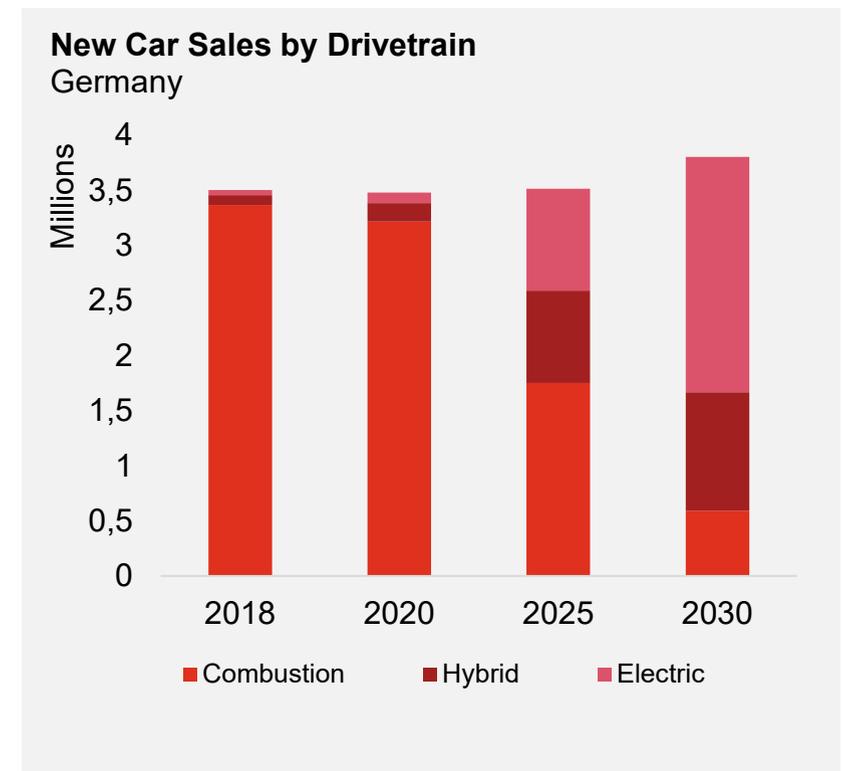
The transformation of mobility will all but decrease vehicle sales, while vehicle parc will shrink and new mobility sub-markets will accelerate demand for alternative emission-free drivetrains



- More intense use of autonomous and shared vehicles
- Quicker replacement creates additional new vehicle demand

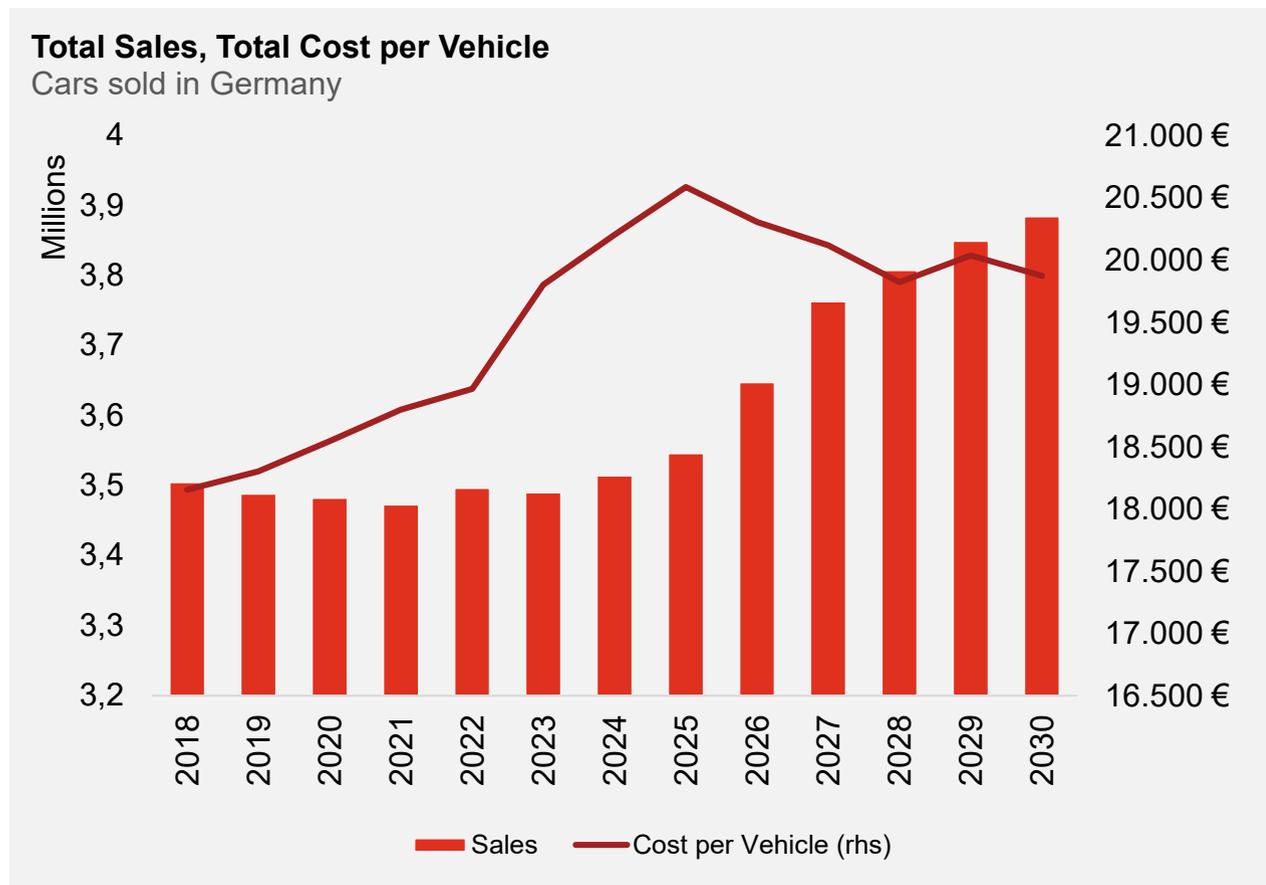


- Tech will allow level 4/5 adoption from 2028 on
- Robotaxis with limited use from 2025 on

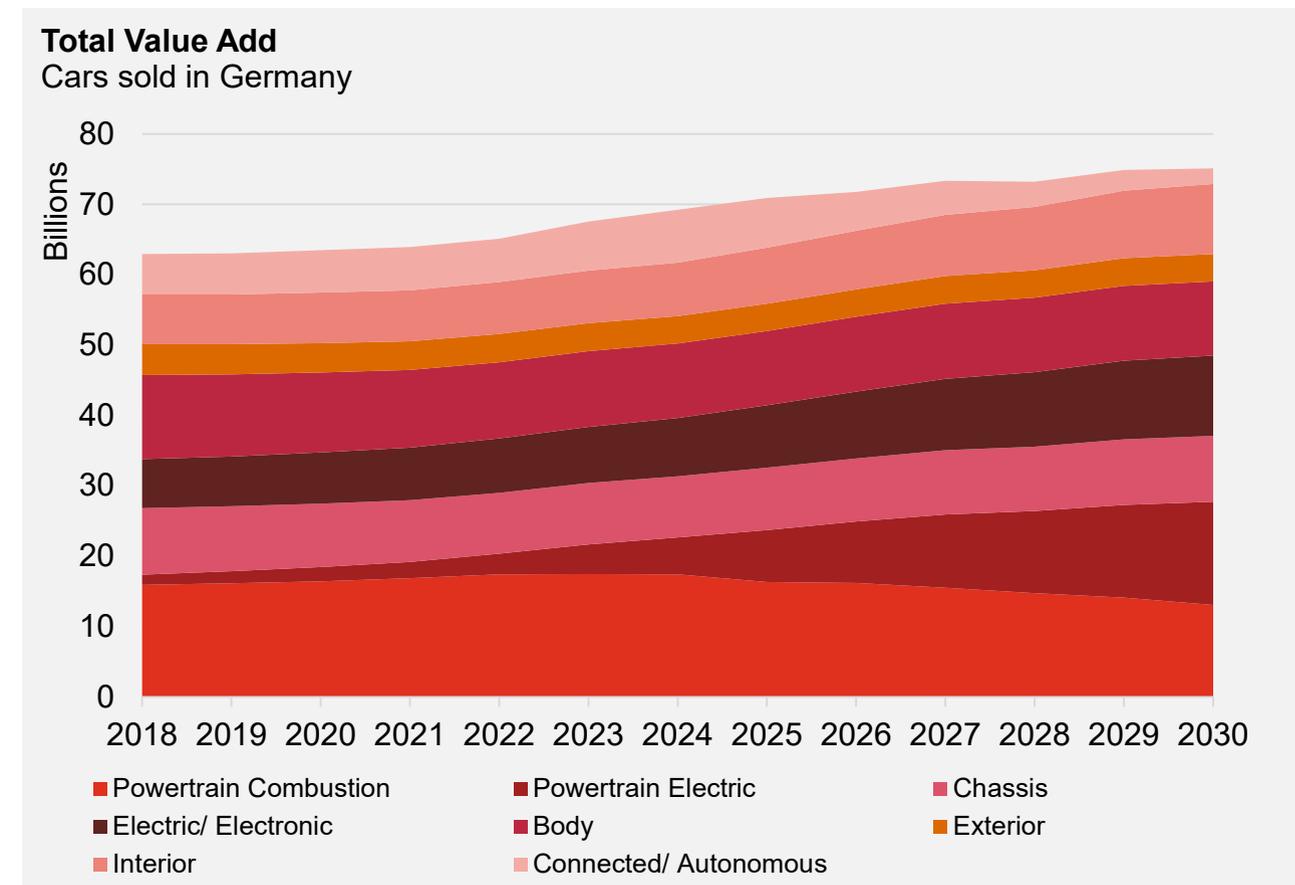


- Strong legislative push from 2020 on
- Sufficient public charging infrastructure ~2025
- Cost-of-operations tipping point differs by segment and use pattern

As vehicle sales and value per car increase, the total value add of new vehicles will grow accordingly – creating significant overall growth opportunities for the automotive value chain

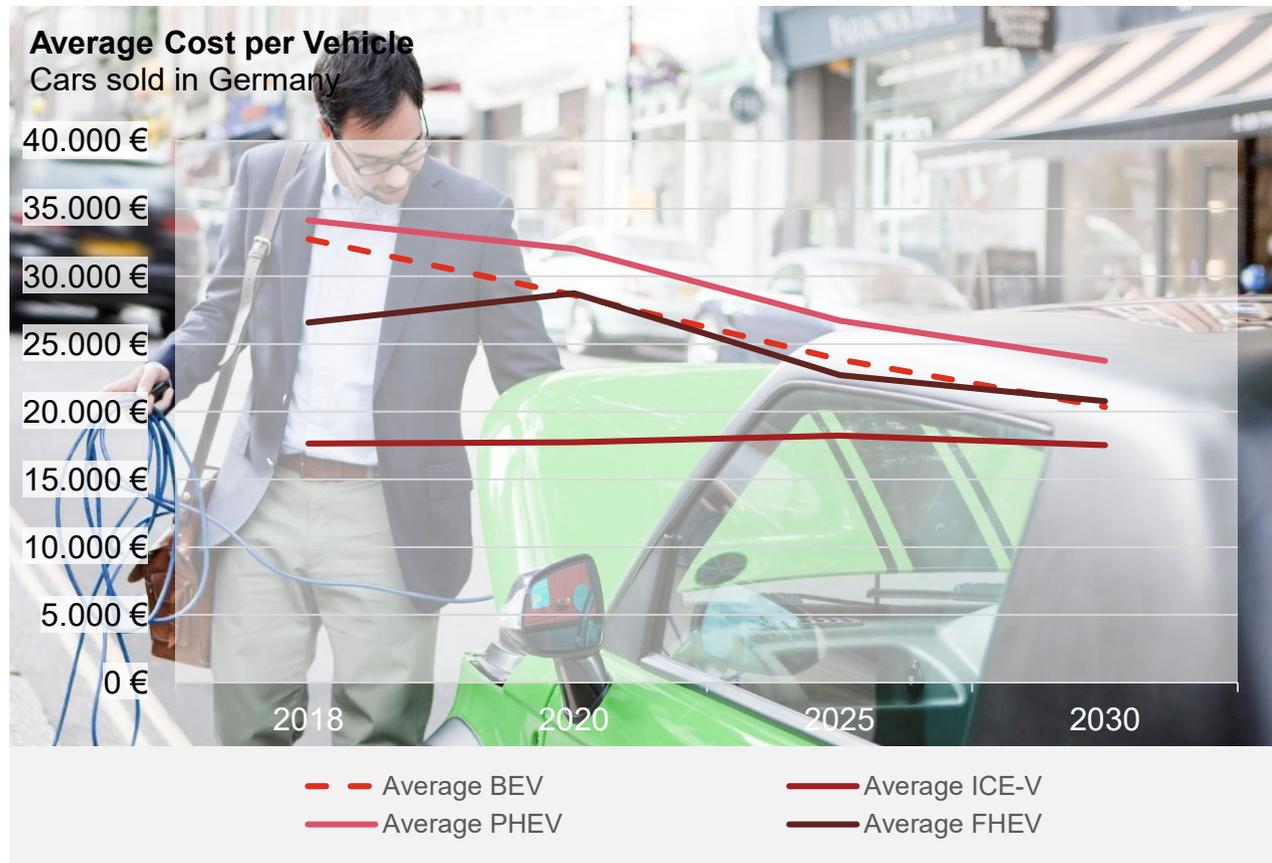


The **acceleration of market dynamics** in the new mobility segments **increase volume**. Added content for autonomous driving and connectivity create **new volume and cost dynamics in new and conventional technologies**.

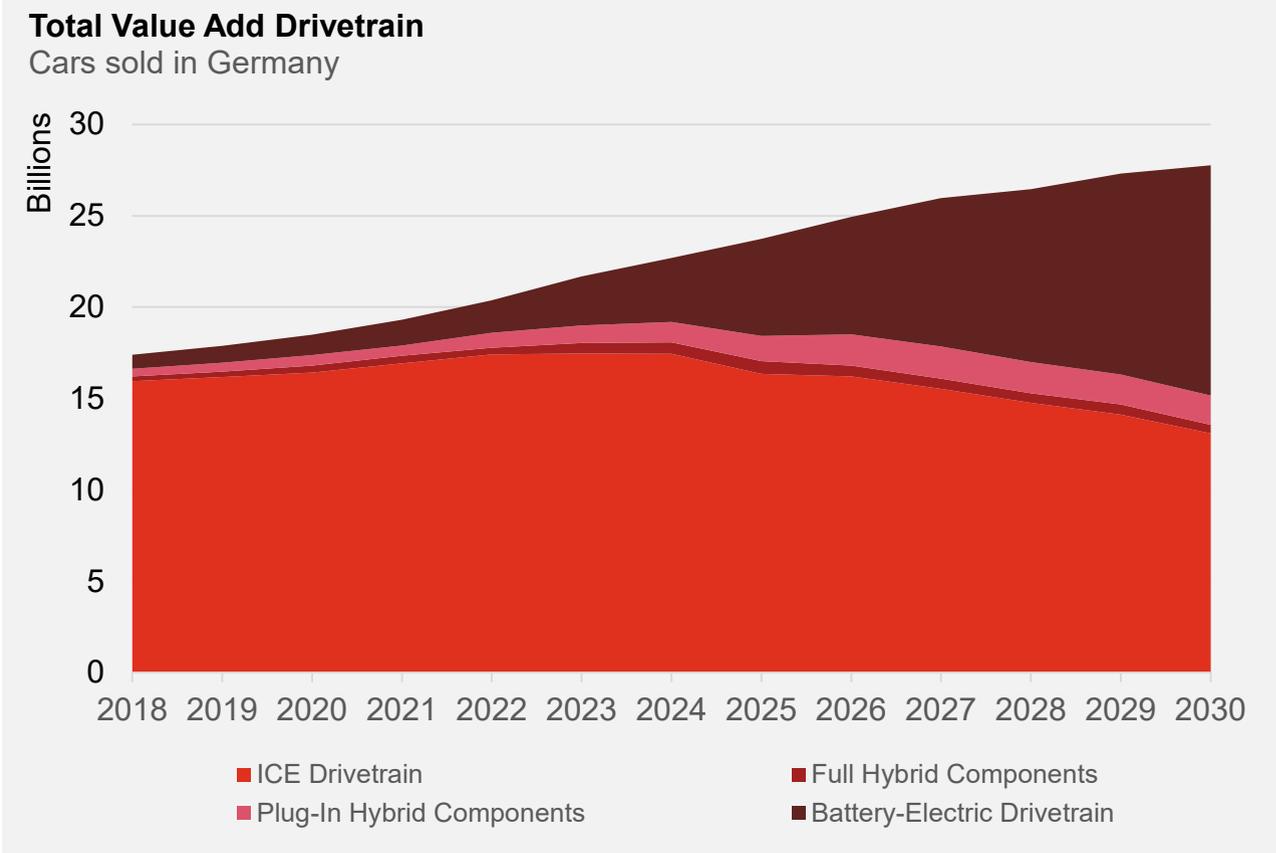


Main **growth** areas are in **E/E, interior and chassis components**, as sensing and actuation become more important in all areas of the vehicle. Over the mid-term, electric powertrains create **on-top growth opportunities**.

While conventional powertrains remain dominant in the mid-term, alternative drivetrains increase total powertrain value add requiring new skills and additional investment

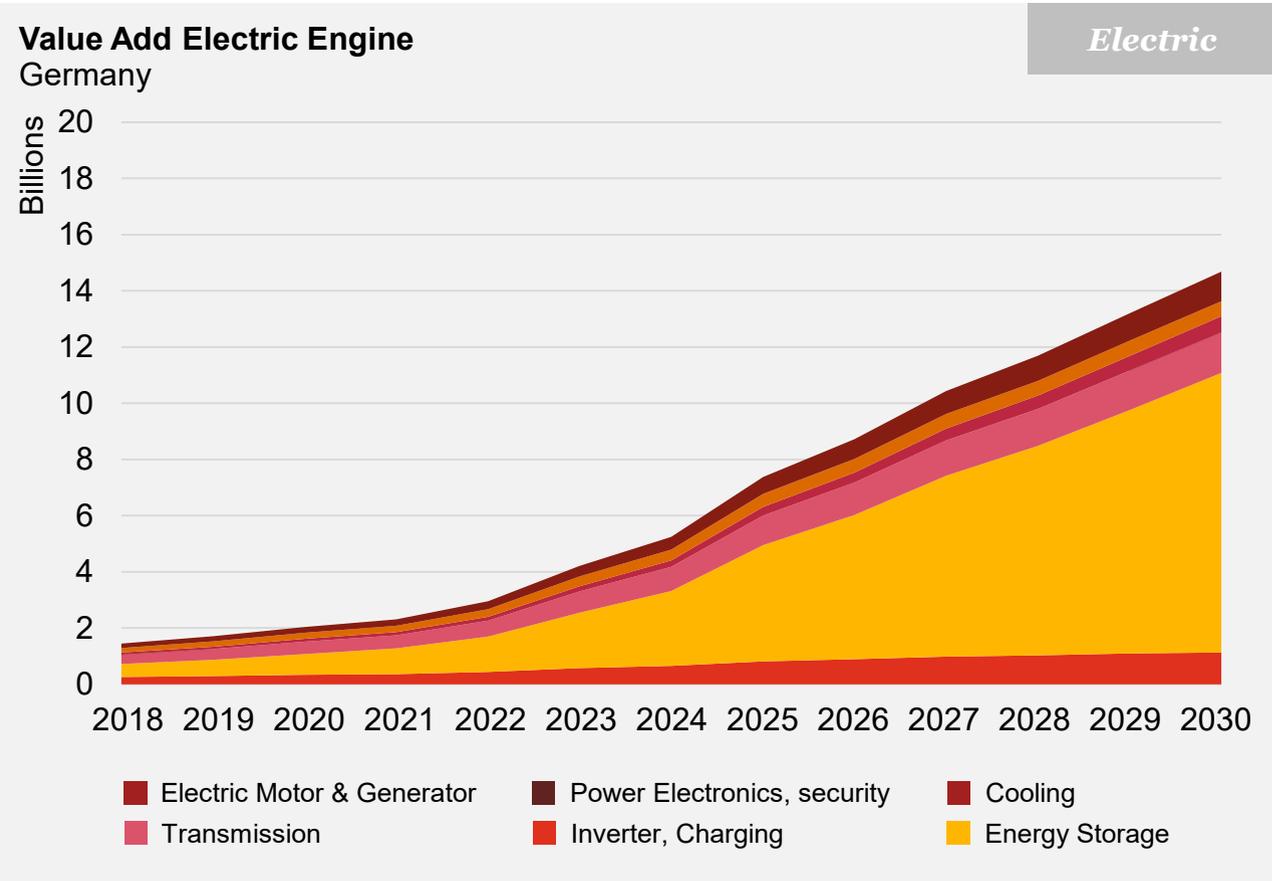
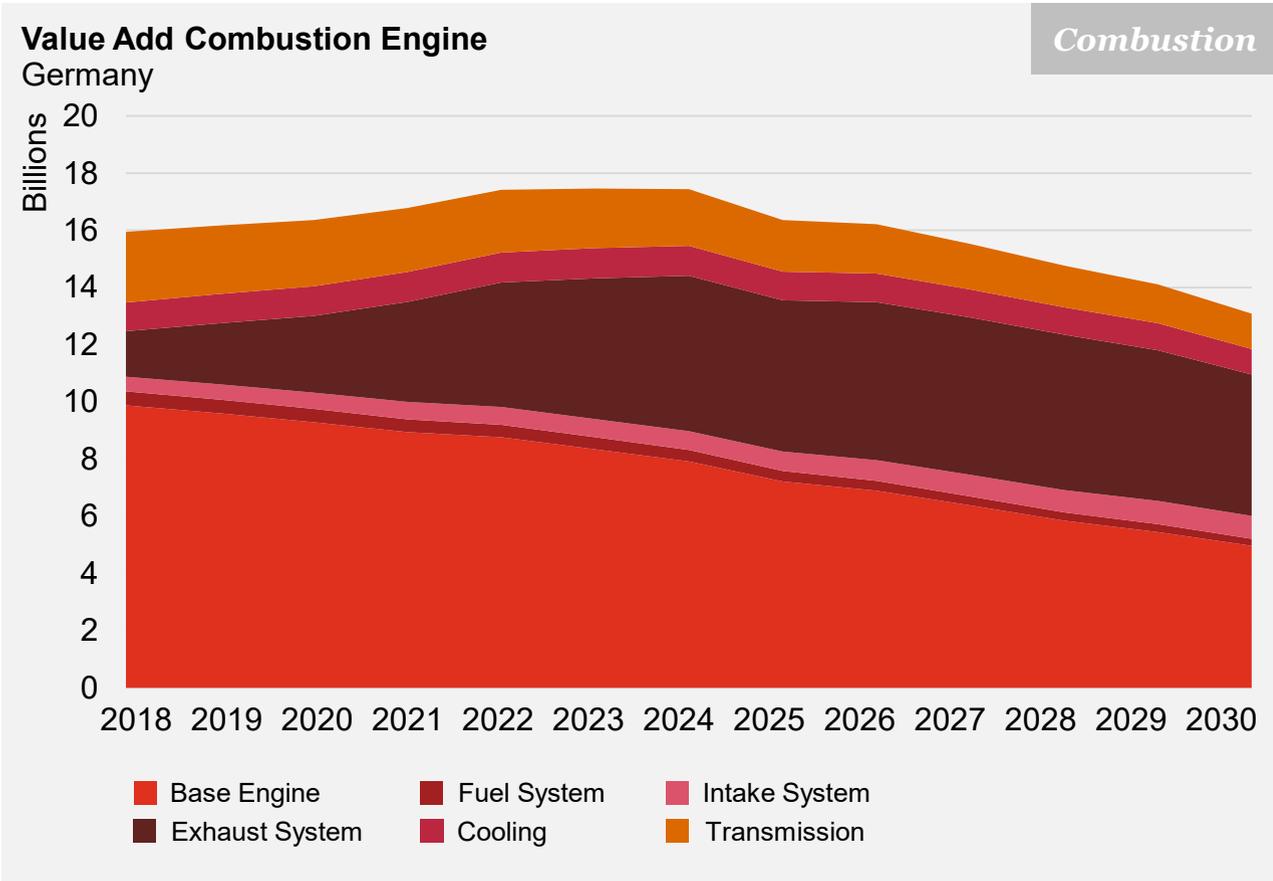


BEV and PHEV costs are currently elevated by **small-scale production** but will decrease as **volumes grow**. As average battery capacity of BEV is assumed to rise – plus **autonomous technology** – value per car remains higher than pure ICE.



The value add of total powertrain technologies is calculated on the basis of **ongoing cost reductions** of conventional components, while **electric drivetrain components** for BEV and hybrid powertrains create significant additional opportunities.

While mechanical ICE technologies decrease in value, exhaust gas treatment will still drive value add in the field while specific hybrid components only make for a small part of electric drivetrain revenues



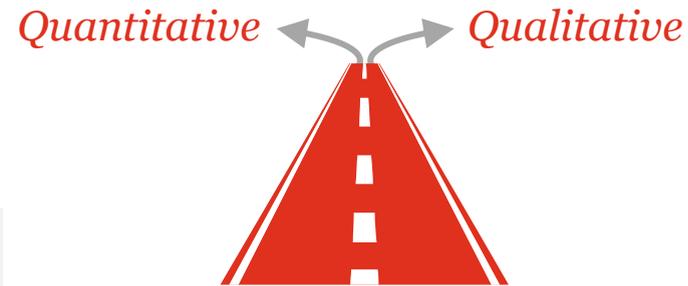
Stricter global CO₂ emission standards require new powertrain technologies. The combustion engine needs significant innovations, especially **exhaust system**, to reach the new emission requirements.

Even assuming **aggressive cost reduction potential**, the **fast rise** of electric drivetrain demand creates significant business opportunities, requiring fast decisions even today – but a **long-term strategy** and **large financial resources**.

The foreseeable changes of the automotive value chain will come in several different ways: while evolutionary change is fairly benign, transformational change requires strategic realignments.

The automotive industry has been handling technological progress continuously for over 130 years – mostly as technology leader.

Upcoming changes may require the adaptation of non-automotive technologies and skills – through cooperation, co-opetition or the creation of new business cultures.



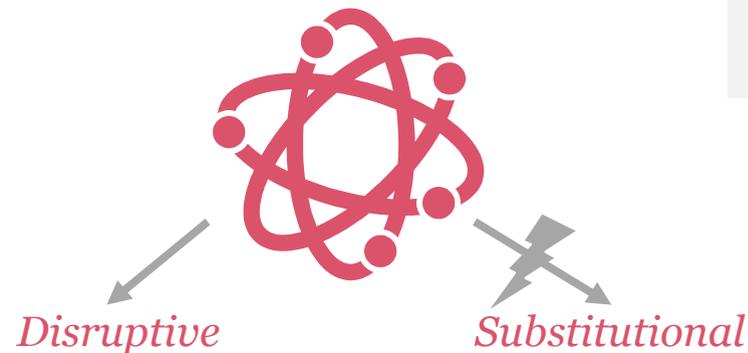
Evolutionary Change

Process

Evolutionary developments require suppliers to further develop existing business models in order to remain profitable.

Fully integrated business models of product, technology and machinery allow for seamless adaption to evolutionary changes.

Transformational Change

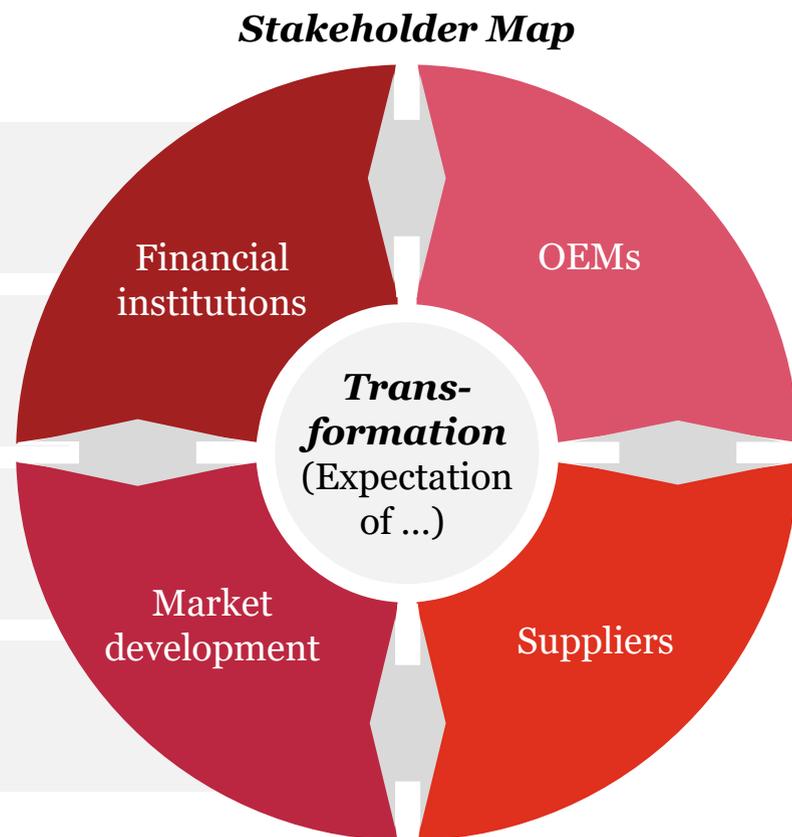


Technology

Transformative influences require action as today's business models will be strongly modified (disruptive) or replaced (substitutive) in the future.

Substitutional Transformation can lead to obsolescence of entire production areas and competencies of suppliers.

DON'T PANIC: The anticipation of the automotive transformation already influences the interactions between automotive stakeholders over the entire value chain and determines long-term strategies



Business strategy types

Portfolio Realignment

Big players such as OEMs and large suppliers are creating new markets on top of managing value shifts in existing operations

Strategic Pivot

Especially family-owned smaller companies can leverage new opportunities for pivotal shifts of business model

Last Man Standing

Specialized suppliers are striving to establish dominating positions in critical market segments to elongate business

Business as Usual

Basic technologies will continue to be in demand but fall under increasing per-unit price pressure, requiring permanent adaption

Quelle: PwC Autofacts 2018

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