

eMobil BW (2019) Strukturstudie BWe Mobil 2019

“strukturstudie BWe Mobil 2019” looks at the ongoing developments within the emobility sector of Baden-Wurttemberg, a province in the south of Germany.

Moreover, the study also looks at the consequences of the transition with regards to employment opportunities in the sector. The study ends up with two scenarios that are most likely to happen, a business as usual scenario and a progressive scenario:

In the business as usual scenario, approximately 10% (including productivity effects 27%) of employees in the drivetrain-dependent production plants could be affected by fade-out effects in 2030. Of these approximately 18,500 affected employees, approximately 5,000 could be employed in the manufacture of new components (Fade-in).

In the progressive scenario, on average almost every second employee in the power train-dependent production plants would be affected in 2030 (46%, including productivity effects 56%). In total, 39,000 employees in Baden-Württemberg would be adversely affected by the fade-out of combustion engine technology, while about 8,000 new jobs could be created by the new electrical components.

Verband der Automobilindustrie (2019) – various web pages on VDA web site

Electric mobility in Germany

Electric vehicles fill a gap in the market. Step by step, a younger as yet small but dynamically growing market is beginning to form. In no other country does the customer have such a large selection of different types of electric vehicles across the board. More than 57 electric models from German manufacturers are currently available on the market, including the foreign manufacturers there are more than 100 available models.

Electric mobility

The German automotive industry is strongly committed to pressing ahead with the development of electric mobility because climate protection, a growing scarcity of fossil fuels and an increased need for mobility due to rising population figures require new solutions and alternative propulsion systems. Electric vehicles can make a significant contribution to protecting the environment and avoiding emissions. Therefore, electric vehicles are a crucial component of the multipronged strategy of the German manufacturers and suppliers.

National Platform Mobility (former: National Platform for electric mobility)

In May 2010, the German Federal Government created the National Platform for Electric Mobility (NPE). Representatives and experts from industry, science and society observe and analyze the development of electric mobility and of electric vehicles within the context of the Platform. The

thematic focal points are being discussed in working groups regarding Research and Development, Standardization, Education and Qualification, Development of a publicly accessible Charging Infrastructure and legal Requirements.

The collective goal was the development and establishment of Germany as the lead market and the lead supplier for electric mobility by 2020. In this regard the NPE acts as an advisory body to the German government and reports extensively at regular intervals on the assumptions, recommendations and goals.

In September 2018, the German government introduced the National Platform Future of Mobility (NPM) as a replacement for the National Platform for Electric mobility. The National Platform Future of Mobility (NPM) is the focal point for discussions on strategic decisions in the field of mobility. Changes in the mobility sector are accompanied by far-reaching technical, legal and social changes. For this reason, the NPM clarifies facts on complex topics and brings together relevant stakeholders, technical expertise and politics. Based on the results from discussion in the NPM, recommendations for action are made to politicians, businesses and society.

Link report NPE: http://nationale-plattform-elektromobilitaet.de/fileadmin/user_upload/Redaktion/Publikationen/NPE_Progress_Report_2018.pdf

WISO (2018) – The Future of German Automotive industry: transformation by disaster or by design?

As the title of the report already indicates, the topic of this report is the future of the German automotive industry. Especially, is the German automotive industry going to change due to their own ability to keep up with the transition to alternative fuels or will they lack behind on the rest of the world and turn out as a disaster?

“The mobility economy is undergoing a rapid transformation. The megatrends of sustainability, urbanisation, individualisation, and digitisation require and enable both technological and social mobility innovation on a large scale. In 2010 and 2014, two projects by the Friedrich-Ebert-Stiftung (FES) dealt in detail with this transformation dynamic in global transport markets and the resulting challenges for the German automotive industry. It is now clear that these changes have entered an accelerated phase that brings with it completely new qualitative challenges. That raises the issue not only of the further innovations, and organisational cultural adaptations facing this sector of the economy, but also of how and under what conditions it can continue to exist. In this context, the spotlight is on issues of added value, employment, and social security in the regional automotive clusters and ultimately the overall economic resilience of the Federal Republic of Germany.

All of this is taking place at a time when the power technology that has thus far been the standard bearer for the European and especially the German car industry, the diesel engine, has come under strong criticism in Europe’s urban regions. The industry is facing allegations of illegal practices and

agreements contravening antitrust laws. In other words, the automotive industry is currently undergoing a transformation by disaster in which the usual procedures and arrangements have become obsolete. The sector's organisational disunity, with grandiose statements to the public accompanied by an internal clinging to often-rigid corporate hierarchies has not helped this situation. Management's actions have not only damaged the German automotive industry's reputation, but could also taint it as an industrial site, and its core brand, "Made in Germany".

Bayern Innovativ (2018) Annual report 2018 automotive cluster

The annual report 2018 of the automotive cluster of Bayern innovativ does not primarily focus on mobility. The annual report gives an overview of all the developments in the automotive industry of Bavaria, from mobility to new drive concepts and comfort.

"The automotive industry is the industry with the highest sales in Germany as well as in Bavaria and it is a major employer. An export share of over 60% shows the acceptance of their innovative products on the world markets. In Bavaria, science and business offer a wide range of research and development expertise. On this basis it is easier to bring together innovations, regionally to internationally. This applies to the further development of relevant drive technologies or for the design of new interiors, but also for longer-term perspectives like alternative fuels, autonomous driving or new mobility concepts."

Umwelt Bundesamt (2018) German adaptation strategy

According to Umwelt Bundesamt, the environmental federal office, the federal government of Germany adopted the German strategy for Adaptation to Climate Change (DAS) in December 2008. The main objective of the DAS is to reduce the vulnerability of German society, economy and environment and to maintain or increase the adaptability of the country (adaptive capacity). Against this background, the following objectives have been described:

1. Risk assessment: together with the federal states and other social groups, the risk of climate change will be assessed.
2. Development of decision making bases: the combined knowledge on climate change and its consequences contributes to the development of decision making bases by pointing out the need for action and potential measures.
3. Implementation of adaption measures: on this basis, objectives are formulated and adaptation measures are developed and implemented.
4. Awareness raising: in addition, the awareness of climate change and its consequences shall be raised and key stakeholders shall be made aware of their own actions.

Deloitte (2017) The future of the automotive value chain:2025 and beyond

As the title of this report already indicates, the report researches the future of current OEMs in the automotive industry. The core business of OEMs will undergo significant changes over the next decade. Current market shares and profits are greatly endangered by new mobility concepts and increasing competition. As pointed out in our forecast for e-mobility, alternative drives are highly likely to gain significant market shares up to 2025 and beyond. Owing to the reduced need for human labor in the production of e-cars and further efficiency measures, there is substantial pressure for workforce reduction. However, there are several future scenarios in which the OEM can successfully compete – and even increase revenues and operating profits by up to 70%. Based on the investigations in this study, there are four potential futures for OEMs:

1. Become a technology leader with strong branding through massive investment in new business models
2. Achieve at least mid-term stability of your market position through joint collaboration and lobbying with other OEMs to protect know-how and influence against emerging IT giants
3. Try to survive by focusing on efficiency improvements, niche markets, and company vehicle business to compete in a tough market environment with financially potent competitors
4. Set up strategic partnerships with IT giants. The production of high-quality and cost-effective vehicle platforms combined with a strong brand image will result in a mobility offering that leads the white label market

There is a strong indication that across these scenarios, embracing e-mobility, autonomous driving as well as Manufacturing 4.0 could well be no-regret moves. On the other hand, workforce transition management seems crucial in three out of four scenarios, holding the potential to create a burning platform if neglected. In order to prepare for the future, OEMs will have to evaluate the drivers according to the internal and external circumstances of their company. In the face of uncertainty, scenario planning permits us to map our clear paths into the future. This is by no means limited to qualitative observations. Using a parametric, driver-based model we are able to show that quantitative insights at the income statement level are possible in scenario planning too, permitting us to provide sharp, qualitative views based on figures. In fact, we strongly believe that this is the approach that will permit decisionmakers in today's automotive industry to take the necessary decisions now on a well-informed basis, actively shape the future of the industry and of their own company and continue playing a significant role in 2025 and beyond."

McKinsey & Company (2016) Disruptive trends that will transform the auto industry

This article looks at today's economies that are dramatically changing, triggered by development in emerging markets, the accelerated rise of new technologies, sustainability policies, and changing consumer preferences around ownership. Digitization, increasing automation, and new business models have revolutionized other industries, and automotive will be no exception. These forces are giving rise

to four disruptive technology-driven trends in the automotive sector: diverse mobility, autonomous driving, electrification, and connectivity.

Most industry players and experts agree that the four trends will reinforce and accelerate one another, and that the automotive industry is ripe for disruption. Given the widespread understanding that game-changing disruption is already on the horizon, there is still no integrated perspective on how the industry will look in 10 to 15 years as a result of these trends. To that end, our eight key perspectives on the “2030 automotive revolution” are aimed at providing scenarios concerning what kind of changes are coming and how they will affect traditional vehicle manufacturers and suppliers, potential new players, regulators, consumers, markets, and the automotive value chain.

This study aims to make the imminent changes more tangible. The forecasts should thus be interpreted as a projection of the most probable assumptions across all four trends, based on our current understanding. They are certainly not deterministic in nature but should help industry players better prepare for the uncertainty by discussing potential future states.

Elsevier (2015) The role of electric vehicles for supply chain sustainability in the automotive industry

Electric vehicles are perceived as key technology in the automotive industry to contribute to sustainable development with lower greenhouse gas emissions, less air pollution for citizens and new job opportunities with positive social impact. So far the impact of electrified powertrains on the automotive industry supply chain sustainability and the development of the passenger car fleet have not been investigated in an integrated way. In our study, we focus on the long-term industry supply chain design end-to-end from the raw material exploration down to vehicle sales including the vehicle usage phase as well as reverse supply chain activities. Specifically, we address the long-term dynamics in the industry supply chain together with the fleet and powertrain development towards 2030 from a global perspective with a special focus on Germany and China. Based on industry data and using a sustainable supply chain optimization framework covering economic, environmental and social objectives, the study analyzes where jobs could be created or cut down, how total emissions in the supply chain including the usage phase of passenger cars could be reduced and how supply chain wide costs would develop. In addition, the impact of alternative market and technology scenarios as well as governmental regulations on the mix of powertrains in the vehicle fleet is investigated.

German trade and invest (2015) Electromobility in Germany: Vision 2020 and beyond

“Electro mobility in Germany: Vision 2020 and beyond” shows the status quo and developments of the e-mobility eco-system in Germany. The research intends to give an answer to the question: what is

electro mobility? Moreover, the report gives an in-depth analysis of Germany as a lead market, current programs and initiatives in Germany and how Germany is making electro mobility a reality.

McKinsey & Company (2014) Electric vehicles in Europe: Gearing up for a new phase

The report “Electric vehicles in Europe: gearing up for a new phase?”, published by McKinsey & Company in collaboration with the Amsterdam Roundtables Foundation in 2014, researches the status quo and the developments in the e-mobility eco-system in Europe. The research is divided into 5 chapters, each focusing on a different part of the eco-system.

- Chapter 1: Placing EV dynamics in industry context
- Chapter 2: Cars, components, and cost
- Chapter 3: Charging infrastructure
- Chapter 4: Distribution and delivery
- Chapter 5: Innovative business models

The report suggests that the transition to e-mobility will have implications for almost every part of the powertrain portfolio. Although ICE will still dominate the portfolio for the coming years, EVs are likely to claim a substantial share of this portfolio in the long run. Moreover wired charging is clearly favored by the public. A scale-up of this concept will need standardization of accessories, economies of scale and a profitable, commercial business model.

With the amount of EVs on the road today, the impact on power infrastructure and electricity demand remains manageable. However, the adoption of EVs on a large scale will have huge implications in the short term.

McKinsey & Company (2013) The road to 2020 and beyond

According to the report “the road to 2020 and beyond”, published by McKinsey & Company in 2013, the car industry has seen constant change. With the increase of environmental requirements and the rise of new players, especially in China, the question rises; What’s next?

The interview is based on discussions and interviews with top management of leading automotive OEMs and an analysis of data from the top 17 (by sales) global OEMs. The report answers the questions:

1. How are the industry and the market evolving?
2. What are the future challenges and opportunities?
3. How can OEMs benefit from these new challenges and opportunities?
4. What are the implications for different market segments?

The key findings are as follows;

- Complexity and cost pressure. There will be more platform sharing and more modular systems. At the same time, regulatory pressures will tighten, and prices in established markets are likely to be flat.
- Diverging markets. OEMs need to adapt to changing regional and segment patterns of supply and demand with respect to their production and supply base footprints, supply chains, and product portfolios; and the emerging Chinese aftersales market offers new growth opportunities.
- Digital demands. Consumers want more connectivity, are focused on active safety and ease of use, and are increasingly using digital sources in making their purchase decisions.
- Shifting industry landscape. Suppliers will add more value in alternative powertrain technologies and in innovative solutions for active safety and infotainment; Europe needs to restructure and adjust its capacity to better match demand; and competition is emerging from China.

Elsevier (2012) Participation of suppliers in greening supply chains: an empirical analysis of German automotive suppliers

This journal introduces a conceptual framework to explain how suppliers are participating in the green initiatives. The journal is able to construct a framework like this by researching customer requirements, supplier readiness, relational norms and customer investment as possible drivers.

The research concludes that supplier readiness and customer requirements are significant drivers for supplier participation. Relational norms and customer investment did not yield significant importance for explaining supplier participation per se, but when taking into account firm size, the data suggested that cooperative relation norms and customer investment work as an additional driver in green supply chain management for larger suppliers.

Bibliography

Bayern Innovativ. (2018). *Annual report 2018 cluster automotive* .

Deloitte. (2017, Maart). *The future of the automotive value chain: 2025 and beyond*. Opgehaald van Deloitte: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-auto-the-future-of-the-automotive-value-chain.pdf>

Elsevier. (2012, Oktober). *Participation of suppliers in greening supply chains: an empirical analysis of German automotive suppliers*. Opgehaald van Elsevier: <https://pdf.sciencedirectassets.com/272895/1-s2.0-S1478409213X00044/1-s2.0-S1478409213000216/main.pdf?X-Amz-Date=20191206T105702Z&X-Amz-Algorithm=AWS4->

HMAC-SHA256&X-Amz-Signature=acf9cf28457438ede802ac583dd1f07cca63cc0a8c5cd42a63fbc3e051122ad&X-Amz-Crede

Elsevier. (2015, March). *The role of electric vehicles for supply chain sustainability in the automotive industry*. Opgehaald van Elsevier: <https://pdf.sciencedirectassets.com/271750/1-s2.0-S0959652615X00023/1-s2.0-S0959652614012530/main.pdf?X-Amz-Date=20191206T124023Z&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Signature=108d71812bff832b7477fe6104775e966035c4f0bf608cef8427df10d52283c7&X-Amz-Crede>

eMobil BW. (2019, februari). *Strukturstudie BWe Mobil 2019*. Opgehaald van eMobil BW: <https://www.e-mobilbw.de/fileadmin/media/e-mobilbw/Publikationen/Studien/Strukturstudie2019.pdf>

McKinsey & Company. (2013, August). *the road to 2020 and beyond*. Opgehaald van McKinsey & Company: https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/Automotive%20and%20Assembly/PDFs/McK_The_road_to_2020_and_beyond.ashx

McKinsey & Company. (2014, april). *Electric vehicles in Europe: Gearing up for a new phase*. Opgehaald van McKinsey & Company: <https://www.mckinsey.com/~media/McKinsey/Locations/Europe%20and%20Middle%20East/Netherlands/Our%20Insights/Electric%20vehicles%20in%20Europe%20Gearing%20up%20for%20a%20new%20phase/Electric%20vehicles%20in%20Europe%20Gearing%20up%20for%20a%20new%20phase.a>

McKinsey & Company. (2016, Januari). *Disruptive trends that will transform the auto industry*. Opgehaald van McKinsey & Company: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry>

Umwelt Bundesamt. (2018, December). *German adaptation strategy*. Opgehaald van Umwelt Bundesamt: <https://www.umweltbundesamt.de/en/topics/climate-energy/climate-change-adaptation/adaptation-at-the-federal-level/german-adaptation-strategy#textpart-1>

Verband der Automobilindustrie. (2019). *Innovation and Technology*. Opgehaald van Verband der Automobilindustrie: <https://www.vda.de/en/topics/innovation-and-technology/electromobility/Electric-Mobility.html>

WISO Diskuss. (2018). *The future of German automotive industry: transformation by disaster or by design?* WISO Diskuss.