Market Opportunity Brief & Assessment
Baden-Württemberg, Germany
Automotive Industry
Non-Road Mobile Machines

December 2023

AHP International GmbH & Co. KG, Berlin

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Introduction

- Germany is Finland's target market #1 in Western Europe.
- Finnish exporters look for customers throughout German industry.
- The common approach to market is either a direct outreach, a presence on German trade fairs or the participation in Trade Missions and similar projects.
- Germany is complex and decentralized economy.
- Baden-Württemberg in the South-West is no only the most innovative State, home to hidden champions and the birthplace of the German automotove industry. It is also a regular and prime target for Finnish exporters of machinery, parts and tech of all kinds.
- In this presentation we want to give you an overview of "The Länd" as BW promotes itself, identify opportunities, provide some initial guidance for the market development and raise your appetite to dig deeper into this unique and attractive eco-system in the South West of Germany.

Berlin, December 2023

Stefan Peikert
Partner & Founder AHP-International Group

The State– Facts & Figures

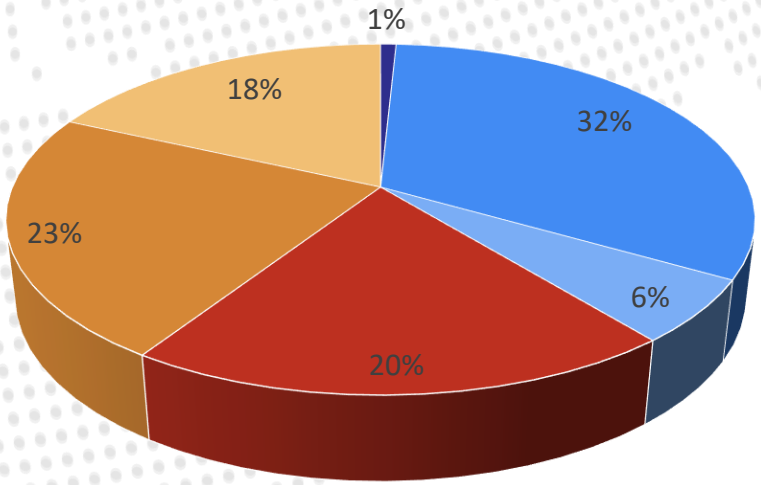
- Third largest federal state by surface area and population size
  - Inhabitants: 11.236 million (~13% of Germany)
- State capital (and largest city): Stuttgart
  - 613,000 inhabitants
- Diverse landscapes
  - Black Forest in the West
  - Lake Constance and ridge of the Alps in the South
  - Swabian Alb hills (Schwäbische Alb) in the East
  - Hohenloh plain (Hohenloher Ebene, a high plain in the North
- Area by type of use
  - 45% Agriculture and farming
  - 38% Forest
  - 15% Settlement and transportation
  - 1% Bodies of Water

The State– Facts & Figures

- Total workforce: 6.384 million
  - > 4.3 million in the service sector
  - > 1.9 million in industry **(30%!)**
  - ~ 67,000 in agriculture
- Number of companies: 457,000
- GDP: approx. 573 billion EUR
  manufacturing industry (without construction): 168.3 billion EUR (32%)
- Exports increased by 18.8% to 262.8 billion EUR
  - Leading export destinations: USA, China, Switzerland
  - Finland is in 29th place, export volume: 1.68 billion EUR, mostly motor vehicles, motor vehicle parts and machinery
- Imports increased by 31.2% to 260.0 billion EUR
  - Leading importing countries: Switzerland, China, USA
  - Finland is in 25th place, import volume: 2.25 billion EUR, mostly motor vehicles, automotive parts and metals
- Economic growth: 1.4% in 2022 (Germany: 1.8%)

The State– Facts & Figures

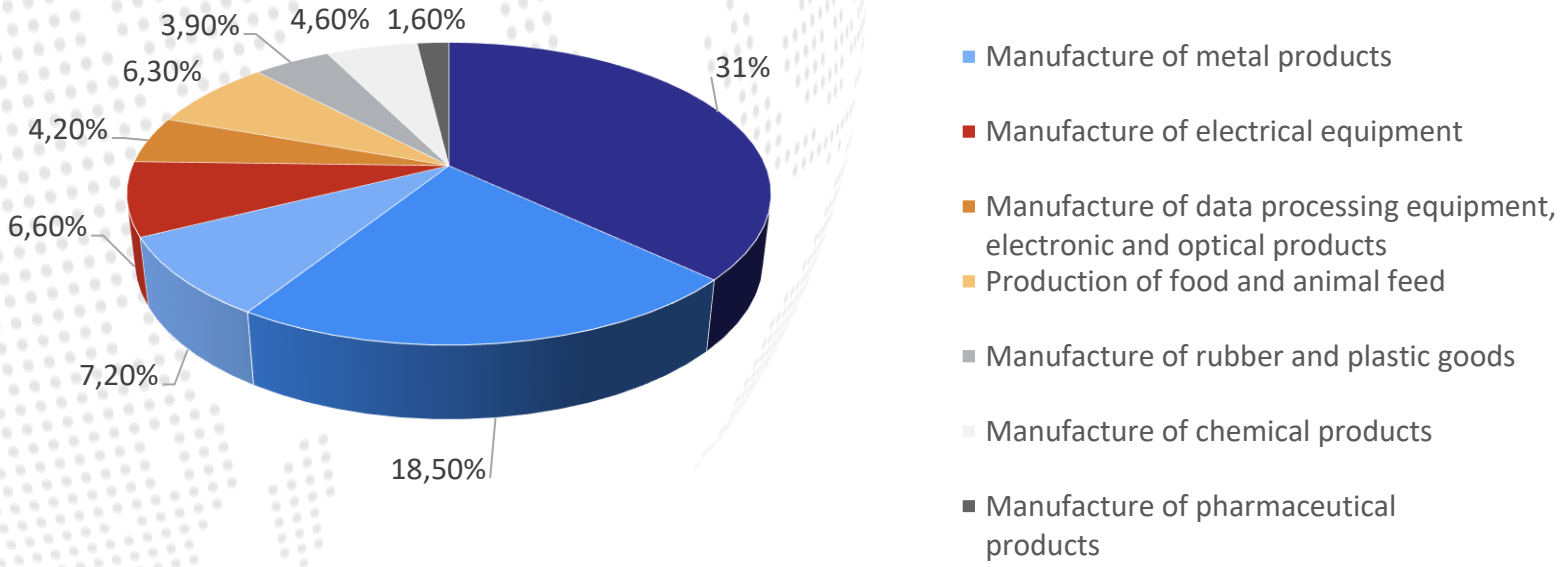
Share of economic sectors in nominal gross value added



- Agriculture and forestry, fishing
- **Manufacturing industry without construction**
- Construction industry
- Trade, transportation and warehousing, hotels and restaurants, Information and information and communication
- Finance, insurance and and business service providers; Real estate and housing
- Public and other service providers, education and Health, Private households

The State– Facts & Figures

- Pre-Industrialization a rather poor agrarian society, Baden-Württemberg developed into one of Germany's and Europe's leading industrial regions
- Within the industrial sector, the leading industries mechanical engineering, automotive engineering and electrical engineering create almost two thirds of industrial turnover



Automotive Industry

- For more than 135 years Baden-Württemberg has been Germany's leading region in the automotive sector
- About one third of German automotive companies are located in Baden-Württemberg
- In addition to leading automobile manufacturers (Mercedes-Benz, Porsche, Audi) several renowned OEMs and more than 1,000 SME are located in Baden-Württemberg
  - The well-developed network of suppliers supports automotive production in the region
  - For more information see "Market Potential Analysis – Competitive Landscape"
- The state's automotive industry generates a turnover of 135 billion EUR, holding a share of 31% of sales in the manufacturing industry
- Export rates reached 77.1%, generating a turnover of 96.9 billion EUR in 2022
- 480,000 people directly and indirectly work in the region's automotive sector (more than in any other German state)

Automotive Industry

- Baden-Württemberg invested 25 billion EUR in R&D in 2021*
- It is Germany's leading region in terms of R&D investment
  25 billion EUR invested in R&D (2021) → decreased by 300 million compared to 2019
- Nearly 50% (12.1 billion) of R&D investments were went to the automotive industry (13.3 billion in 2019)
- Focus areas in automotive R&D include electric and autonomous vehicles, environmental sustainability and digitalization/ industry 4.0
  - For more information see "Market Potential Analysis – Industry Trends and Developments"
- Several universities and universities of applied sciences have historically strong links to the automotive industry; for example:
  - University of Stuttgart
  - Karlsruhe Institute of Technology (KIT)
  - Esslingen University of Applied Sciences

*The economic sector data is collected every two years at federal state level, making data from 2021 the most recent available

Mobile Machines

- The mobile machinery sector in Baden-Württemberg comprises a large number of vehicles and machines that are used for various work applications in industry and construction
- The region has a strong industrial presence and is home to several companies that manufacture mobile machinery, including internationally renowned companies
  - For example: Daimler Truck Holding AG and Iveco-Magirus AG
- The industry is not as strongly affected by current crises
  - The sector for construction machinery was able to boost revenues by 3% in real terms in 2022 thanks to a strong spike at the end of the year
  - The agricultural machinery sector also experienced steady growth in turnover, reaching 8.4 billion EUR in 2022 (nationally), despite facing challenges due to the ongoing war in Ukraine
  - Commercial vehicles also experience a steady demand
- Specific figures for the mobile machinery sector in Baden-Württemberg are not available as the numbers are usually included in the automotive sector statistics

Key Players - OEM

Logo	Name	Location	Employees in BW	Website
Mercedes-Benz	Mercedes-Benz Group AG	Stuttgart	50,000	https://group.mercedes-benz.com/en/
PORSCHE	Porsche AG	Stuttgart	18,000	https://porsche.fi/
	Audi AG	Neckarsulm	15,600	https://audi.fi/fi/web/fi.html
DAIMLER TRUCK	Daimler Truck AG	Stuttgart	11,000	https://www.daimlertruck.com/en
IVECO	Iveco Magirus AG	Ulm	1,600	https://www.iveco.com/

Key Players - OEM

Logo	Name	Location	Employees in BW	Website
JOHN DEERE	John Deere	Mannheim	5,000	https://www.deere.fi/fi/
KÄRCHER	Alfred Kärcher SE & Co. KG	Stuttgart	4,350	https://www.kaercher.com/fi/
LIEBHERR	Liebherr	Biberach a.d. Riß	12,800	https://www.liebherr.com/en/deu/start/start-page.html
HERRENKNECHT Tunnelling Systems	Herrenknecht AG	Schwanau	2,500	https://www.herrenknecht.com/en/
Putzmeister	Putzmeister Holding GmbH	Aichtal	1,000	https://www.putzmeister.com/web/european-union

Key Players – Tier 1 Suppliers

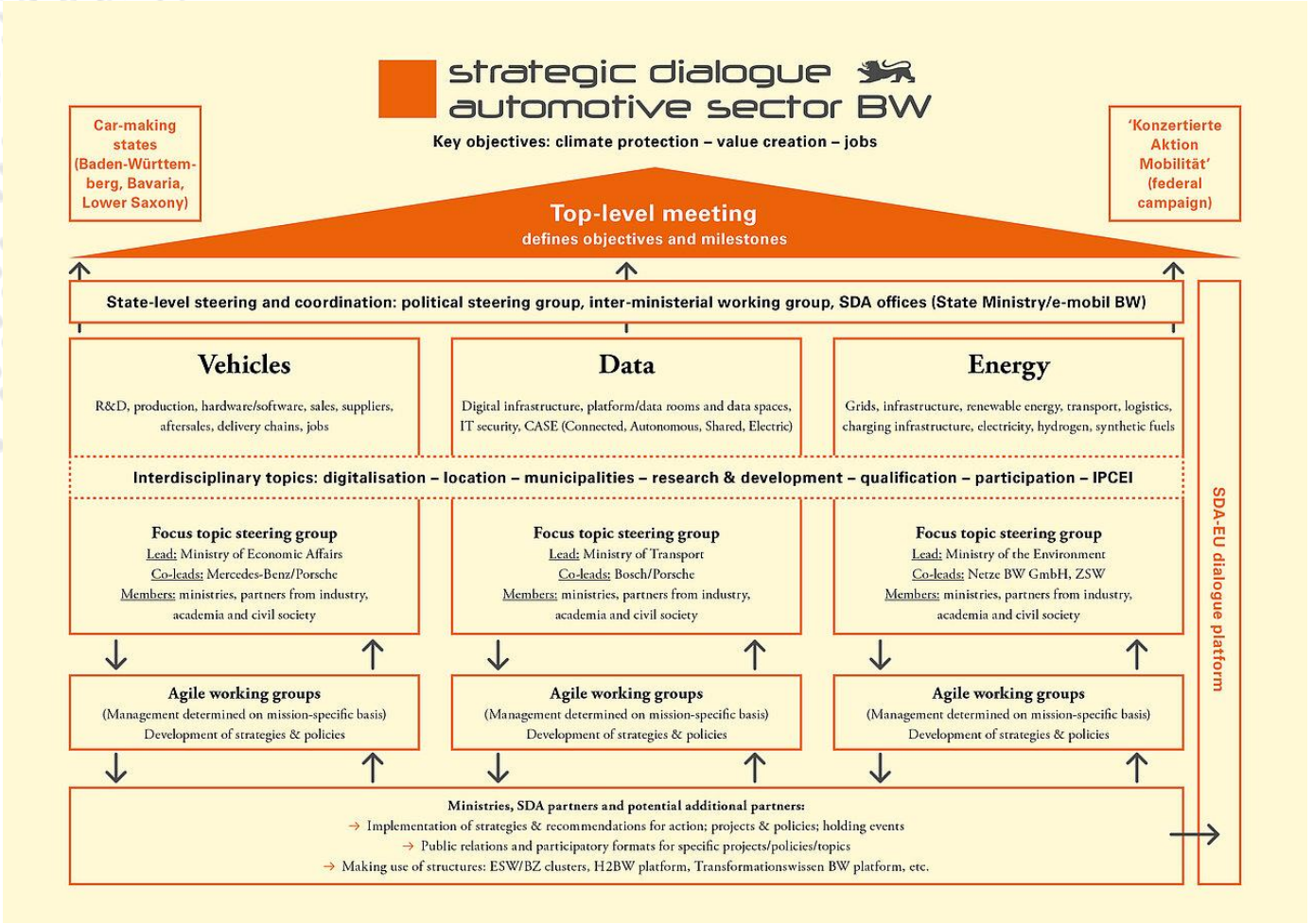
Logo	Name	Location	Employees in BW	
BOSCH	Robert Bosch GmbH	Gerlingen (Stuttgart Metropolitan Area)	60,000	https://www.bosch.de/en/
ZF	ZF Friedrichshafen AG	Friedrichshafen	11,000	https://www.zf.com/
MANN+HUMMEL	Mann + Hummel Gruppe	Ludwigsburg	23,000 (worldwide)	https://www.mann-hummel.com/
MAHLE	Mahle GmbH	Stuttgart	10,300	https://www.mahle.com/en/
Eberspächer	Eberspächer Gruppe	Esslingen am Neckar	1,750	https://www.ebersp aecher.com/en/
SCHAEFFLER	Schaeffler Gruppe	Bühl	51,000 (in Europe)	https://www.schaeffler.de/en/

Industry Trends and Developments

- The automotive industry and the mobile machinery sector share complementary and partly overlapping trends
- Topics that drive the industry and its R&D are:
  - Electro mobility: development of electrical vehicles and related technologies (i.e. advancement of batteries)
  - Alternative powertrains: research into alternatives such as hydrogen and synthetic fuels
  - Sustainability: environmentally friendly mobility concepts and solutions for sustainable means of transportation
  - Autonomous vehicles: development of autonomous driving and driver assistance systems, including AI
  - Connected mobility: development of intelligent transportation systems and connected vehicles
  - Digital manufacturing: introduction of Industry 4.0 principles for more efficient and flexible production processes
  - Lightweight construction: materials and technologies to reduce vehicle weight and improve efficiency

Industry Trends and Developments

- In 2017 the state government launched the "Strategy Dialogue Automotive Industry BW" involving diverse stakeholders working collectively to address challenges related to climate targets, technological innovations, and the transformation of the automotive industry in Baden-Württemberg
- The end of the combustion engine did by then represent5 almost exclusively risks for the regional economy.
- It targets 3 focus topics:



Industry Trends – Digital Transformation

- Digital transformation entails different trends and developments that can be observed within the manufacturing industry
- The automotive industry and its suppliers (especially in Baden-Württemberg, considering their high investment on R&D) are pioneers in this area
- Trends related to digital transformation are:
  - Digitization of conventional processes
  - Increasing innovation and digitization of vehicles
  - AI and machine learning
  - Mobile data, Cloud, 5G
  - Innovation of processes and business models

Industry Trends – Digital Transformation

- Digitization of conventional processes in the automation
  - like other manufacturing industries, the automotive industry works on digitizing production and business processes
  - Adoption of Industry 4.0 principles transforms automotive plants into intelligent, interconnected ecosystems
  - Real-time communication among machines optimizes production processes and enables predictive maintenance
  - Implementing smart manufacturing principles accelerates digital design and prototyping,
  - Digitalization transforms supply chain management, ensuring transparency and efficiency
  - Operational improvements support efficiency and optimize energy consumption, reduces waste and affect sustainability
  - Collaborations between key players like Mercedes-Benz and Siemens drive further progress (https://group.mercedes-benz.com/company/news/mercedes-benz-siemens-berlin.html)

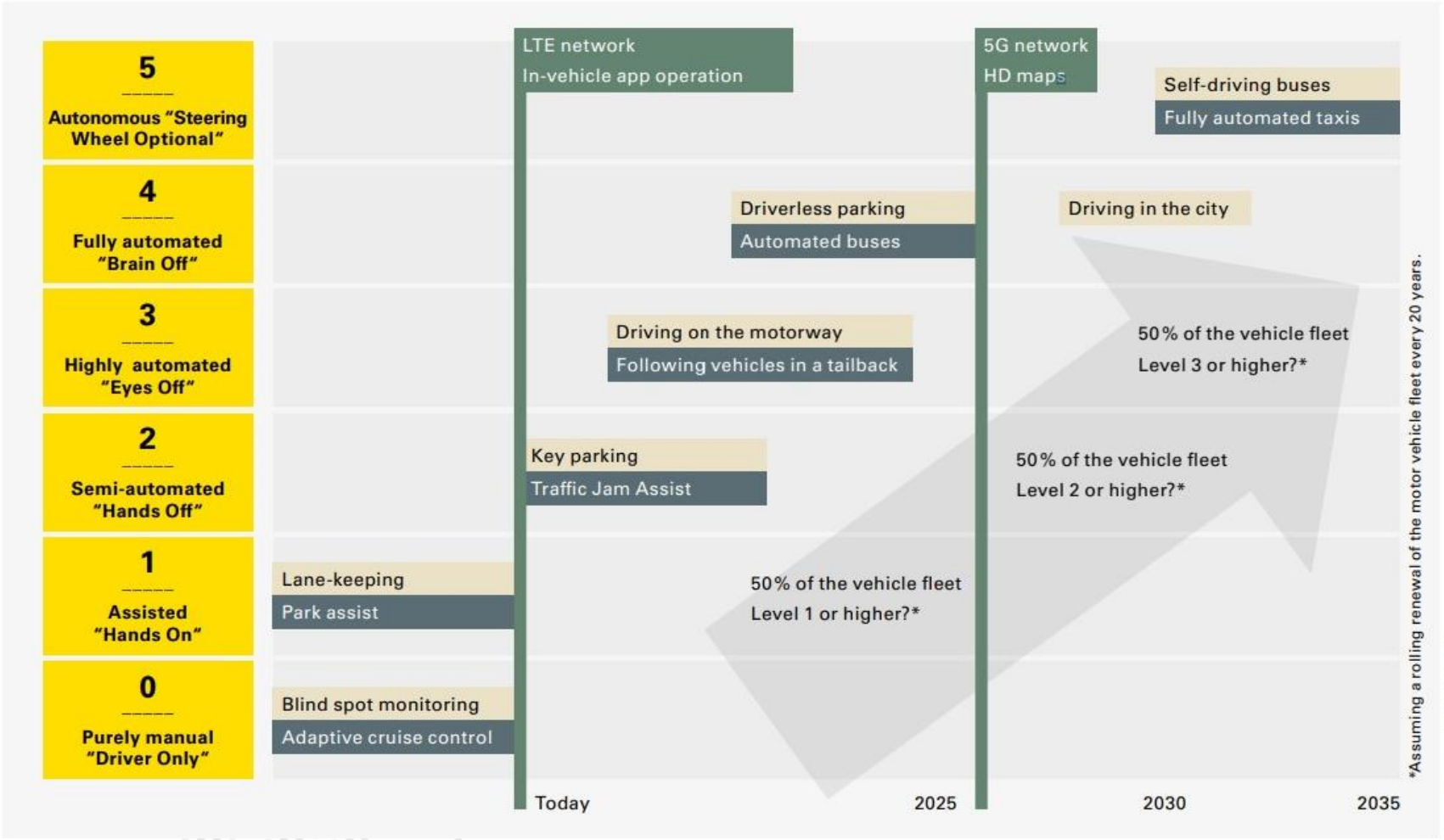
Industry Trends – Digital Transformation

- Increasing innovation and digitization of vehicles
  - Connected vehicles, enabled by IoT, transform the driving experience
  - Autonomous and connected driving (AVF) shows promise for transportation, the environment, road safety, and climate protection.
  - The Baden-Württemberg Ministry of Transport is confident in its effective utilization
  - Cars become smart with predictive maintenance, real-time navigation, and V2X communication
  - Innovations improve user experience and contribute to road safety and traffic management
  - The vehicle's software and electronics architecture is becoming more complex, creating a need for new software and IT security expertise
  - The Software-Defined Car (SofDCar) project, funded by the German government, addresses key questions in collaboration with leading companies and research institutions in Baden-Württemberg
  - Ensuring participation of small and medium-sized suppliers in the automotive cluster BW is a challenge, mission explores how SMEs can participate along the supply chain and identifies questions relevant to future value creation beyond SofDCar

Industry Trends – Digital Transformation

- Digitization of production processes as well as the increasing innovation and digitization of vehicles are additionally driven by mobile data, 5G, and AI
- Big data analytics utilizes vast data generated in the automotive lifecycle
  - Provides insights into consumer preferences, production efficiency, and quality control
  - Predictive analytics are used for demand forecasting and maintenance anticipation
- With the “Factory56” Mercedes-Benz created the world's first 5G mobile network for automobile production
  - manufacturers can use 5G to improve vehicle features, gain manufacturing efficiencies and launch new business models
- Recognizing the potential of Artificial Intelligence, Baden-Württemberg aims to become a global leading region in digital transformation with a central focus on AI
  - Utilizing AI competencies in the automotive and other sectors

Industry Trends – Digital Transformation



Industry Trends – Electrification

- To improve on sustainability, a trend highly impacting the automotive sector is electrification
- Annual comparison (Jan 1, 2022 vs. Jan 1, 2021) reveals a significant increase in electric and hybrid cars in Baden-Württemberg and Germany.
- Battery electric vehicles (BEVs) in Baden-Württemberg grew by around 95% to nearly 106,000 vehicles
- In Germany, the number of BEVs doubled to 618,000
- Plug-in hybrids (PHEVs) in Baden-Württemberg increased by about 91% to over 99,000, and in Germany, by around 102% to approximately 566,000 vehicles
- Percentage share of BEVs and PHEVs in Baden-Württemberg increased to 3% (from 1.6% in 2021) and 2.4% in Germany (from 1.2% in 2021)
- The average age of the car population in Baden-Württemberg and Germany is 10 years, slightly higher than the previous year

Industry Trends – Electrification

- The state’s Ministry of Transport supports maintenance and operating costs for new battery-electric or fuel cell-powered commercial vehicles (EC vehicle classes N1, N2, N3) and self-propelled work machines
- Eligible vehicles must be predominantly used in Baden-Württemberg
- Funding extends to purchased, leased, or rented vehicles
- Conversions of eligible vehicles are also eligible for funding support
- Ministry of Transport views the BW-e commercial vehicle program as an incentive for choosing electric commercial vehicles
- The Ministry of Transport is further expanding Baden-Wuerttemberg's leading position in charging infrastructure. The goal is to have 2 million accessible charging points in the state by 2030
- The funding aims to support improvements in air quality, noise protection, and road safety concurrently
- However, funding initiatives are expiring, resulting in a decrease of new registrations of e-vehicles and hybrids

Industry Trends – Electrification

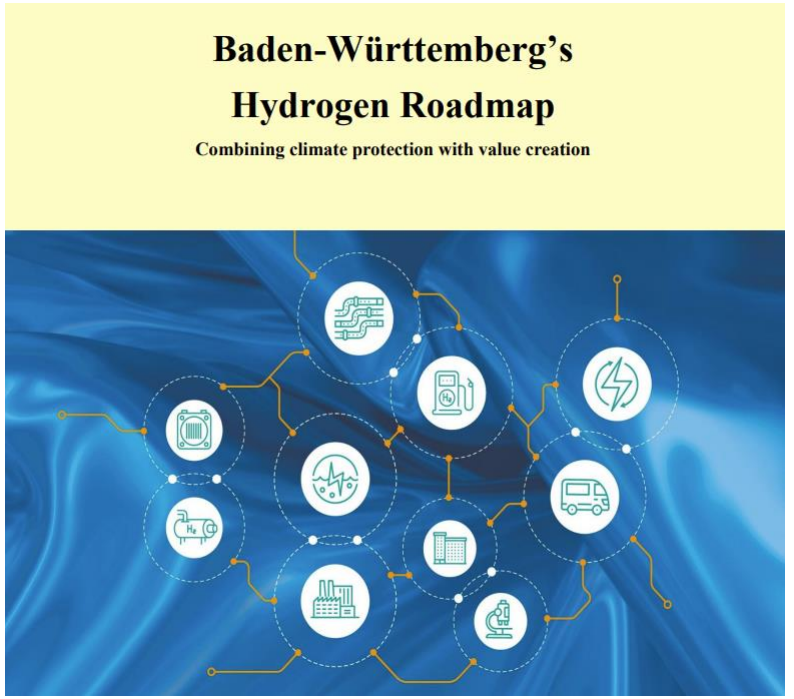
- Scenarios project purely battery-electric cars with a market share between 34% and 57% of new registrations in 2030
- For purely battery-electric trucks, new registration shares are projected between 31% and 50% in Germany in 2030
- Best-case scenario suggests approximately 10 million battery-electric cars and 0.9 million trucks by 2030
- The German government's target of 15 million purely electric vehicles by 2030 is unlikely to be met, impacting climate goals for the transport sector
- Climate targets for HGV freight transport are also unmet in various scenario calculations in the study

Industry Trends – Electrification

- Electric machinery is typically more frequently utilized in stationary applications and is not very prevalent for mobile machinery. On the other hand, there is a tendency toward more electrification. In NRMM (Non road mobile machinery), there are various options for utilizing electricity, such as:
  - The process of electrifying auxiliary equipment
  - Electric hybrid machinery that runs on diesel generators
  - Complete electrical equipment linked to the electricity grid via an electrical wire
  - Complete electric devices that rely on batteries
- Under the SESAM project, fully electric agricultural machines have been a key research area
  - SESAM is a research cooperation between John Deere, B.A.U.M. Consult GmbH, and TU Kaiserslautern, funded by the Federal Ministry for Economic Affairs and Climate Action)
- The construction sector is one of the most important early adopter of electric vehicles, but for the bigger mobile earth moving and loading equipment, electrification is still in a test and market entry phase

Industry Trends – Sustainability

- In addition to electrification, other industry trends emerged with the overall aim to make the automotive industry more sustainable
- One of the trends are alternative powertrains such as hydrogen and synthetic fuels
- first demonstration projects with commercial vehicles using hydrogen have been launched in Baden-Württemberg
  - most notable projects are H2Rivers and H2Rhein-Neckar, where 62 buses, 3 waste collection vehicles, 2 road service vehicles and 10 forklift trucks with fuel cell drives are being put into operation in addition to cars and light commercial vehicles.
- The state presented a reFuels BW roadmap in July 2022, which sets out the steps required to realize value creation potential and achieve the state's climate targets with the help of synthetic fuels



Industry Trends – Sustainability

- Attempting to reduce emissions and promote sustainability, the EU announced that no new conventional fossil fuel-powered vehicles will be able to be sold from 2035 onwards
- As a result, not only OEMs but also suppliers are adjusting their portfolio and lean towards e-mobility and fuel cell technologies
- To support SME, the federal state provided funding to automotive suppliers to help with the transformation. The funding period has now been extended until May 2024
- Financial support is provided for strategic consulting by selected consultants in one of the following subject areas (selection not exhaustive):
  - Business model development
  - Digitalization in production, processes and products
  - Research and development projects (application advice, partner search)
  - Data analytics
  - Technological development/trends

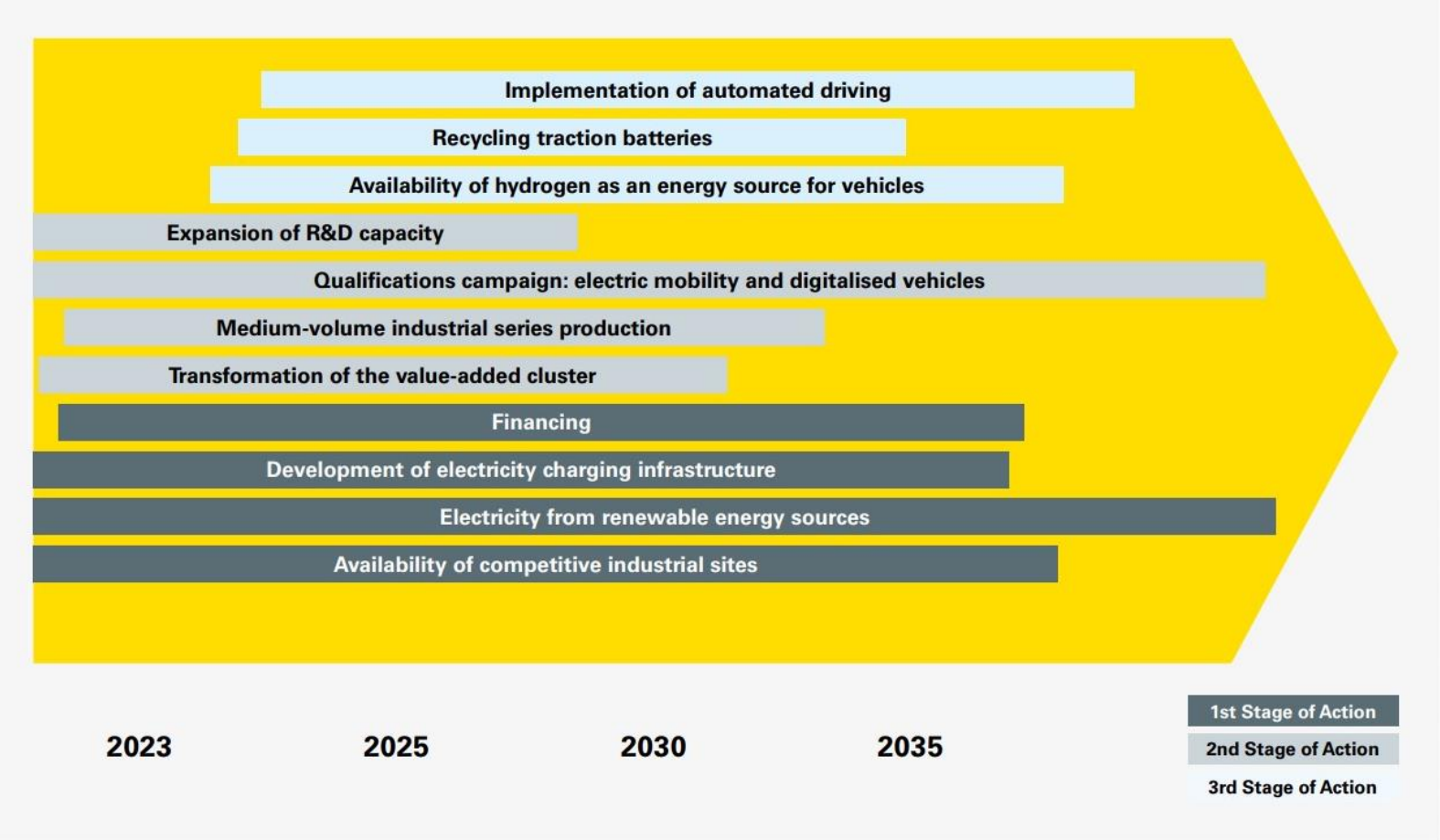
Market Potential Analysis – Industry Trends and Developments

- In summary, the trends within the automotive industry can be narrowed down to digital transformation, electrification and improving sustainability
- This not only alters the type of vehicles produced, but the means of production as well as the value-adding components
  - Mechanical parts → electrical and electronic elements
  - Hardware → software
  - Advanced driver assistance systems → autonomous driving
- While staying on top of these trends is crucial to the (automotive) industry in Baden-Württemberg, the transformation comes with challenges
  - Decline in employment due to lower complexity of electric vehicles
  - Outsourcing of key components such as batteries
  - Financial requirements
  - Strong competition in the field of e-mobility and mobility-related digital services

Market Potential Analysis – Industry Trends and Developments

- To remain competitive, companies are optimizing their production, administration and R&D activities, which can lead to job losses through automation and relocation to lower-cost countries
- Until 2030, Baden-Württemberg could face a decline in employment within the automotive industry of 8 – 14%, even 30% until 2040
- To address the challenges, companies of Baden-Wuerttemberg's automotive industry need to adapt and transform their value creation
- Other recommendations for actions published by the Baden-Württemberg State Agency for New Mobility Solutions and Automotive address a variety of stakeholders and aim at supporting the industry's transformation

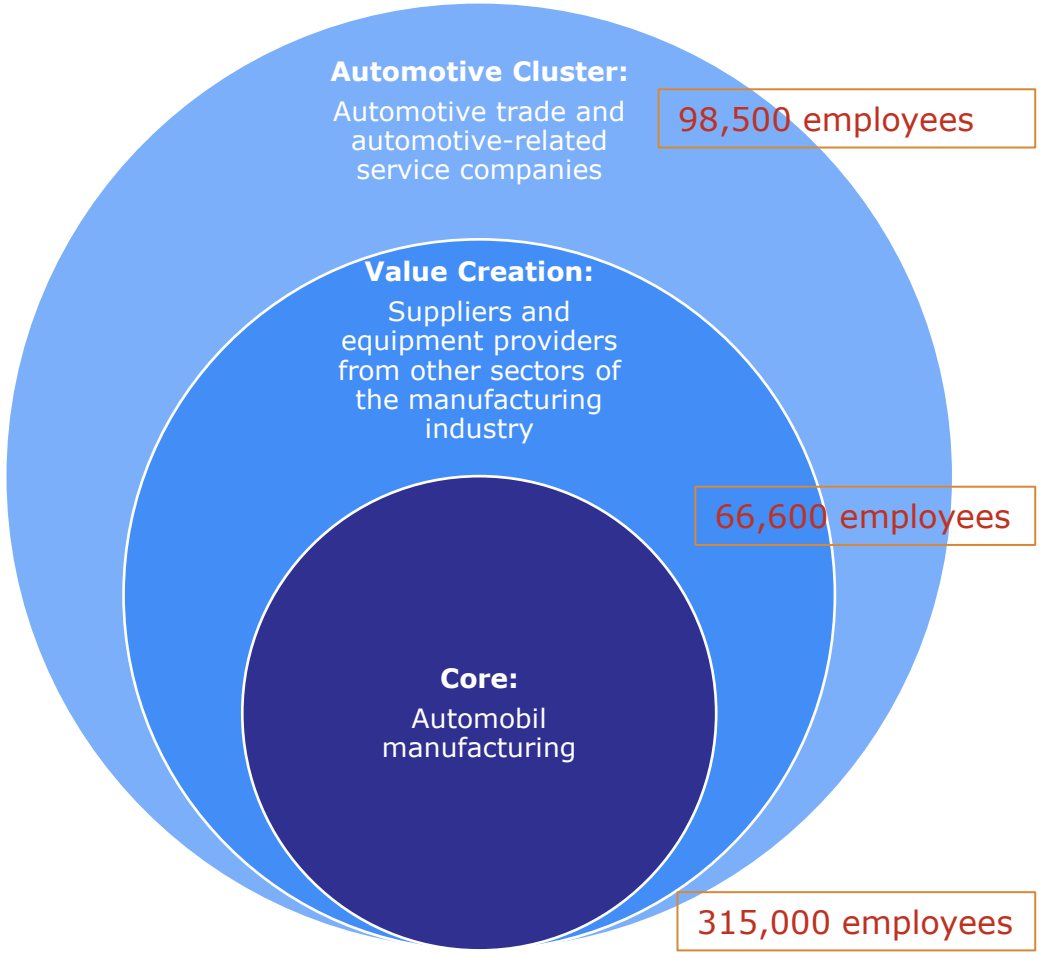
Market Potential Analysis – Industry Trends and Developments



Source: DRL and IMU own research, 2023

Market Potential Analysis – Competitive Landscape

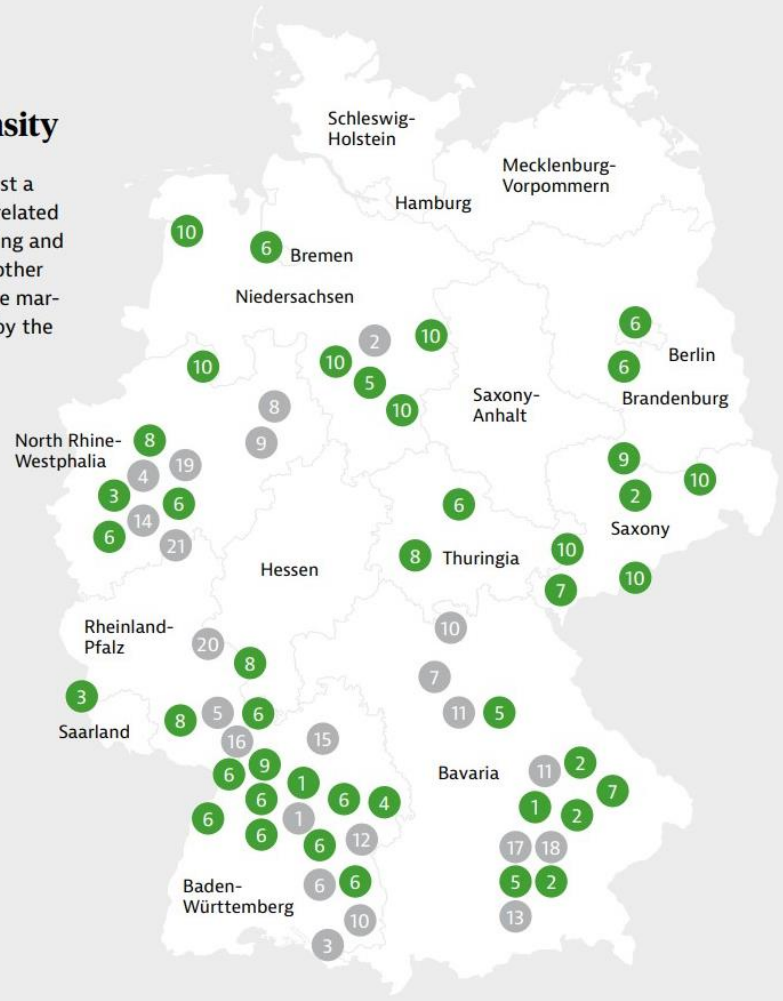
- The automotive industry has a long tradition in Baden-Württemberg and grew into a complex and diverse ecosystem, employing a total of 480,100 people
- At the core of the industry are OEMs like the Mercedes-Benz Group, Daimler Truck AG, Porsche AG and Tier1 and Tier2 suppliers like Bosch, ZF Friedrichshafen, Mahle and more (see next slide)
- In addition, there are various SME that indirectly contribute to the automotive industry for example mechanical engineering companies, material suppliers and services providers and beyond this, also Automotive trade, petrol stations and refineries



Market Potential Analysis – Competitive Landscape

German Automotive OEM and Supplier Density

No other country in Europe can boast a comparable concentration of auto-related 10 R&D, design, supply, manufacturing and assembly facilities. Accordingly, no other country in Europe provides the same market opportunities as those offered by the German auto industry.



OEMs

1. Audi
2. BMW
3. Ford
4. Iveco
5. MAN
6. Mercedes
7. Neoplan
8. Opel
9. Porsche
10. Volkswagen

Suppliers (only German headquarters)

1. Bosch
2. Continental
3. ZF Friedrichshafen
4. Thyssen Krupp
5. BASF SE
6. Mahle
7. Schaeffler
8. Bentheler Automobiltechnik
9. Hella KGaA
10. Brose Fahrzeugtechnik
11. Draexlmaier
12. Eberspaecher Holding
13. Getrag
14. Leoni
15. KSPG
16. Freudenberg
17. Webasto SE
18. Infineon
19. Leopold Kostal
20. Trelleborg Vibracoustic
21. Kautex Textron

Market Potential Analysis – Competitive Landscape

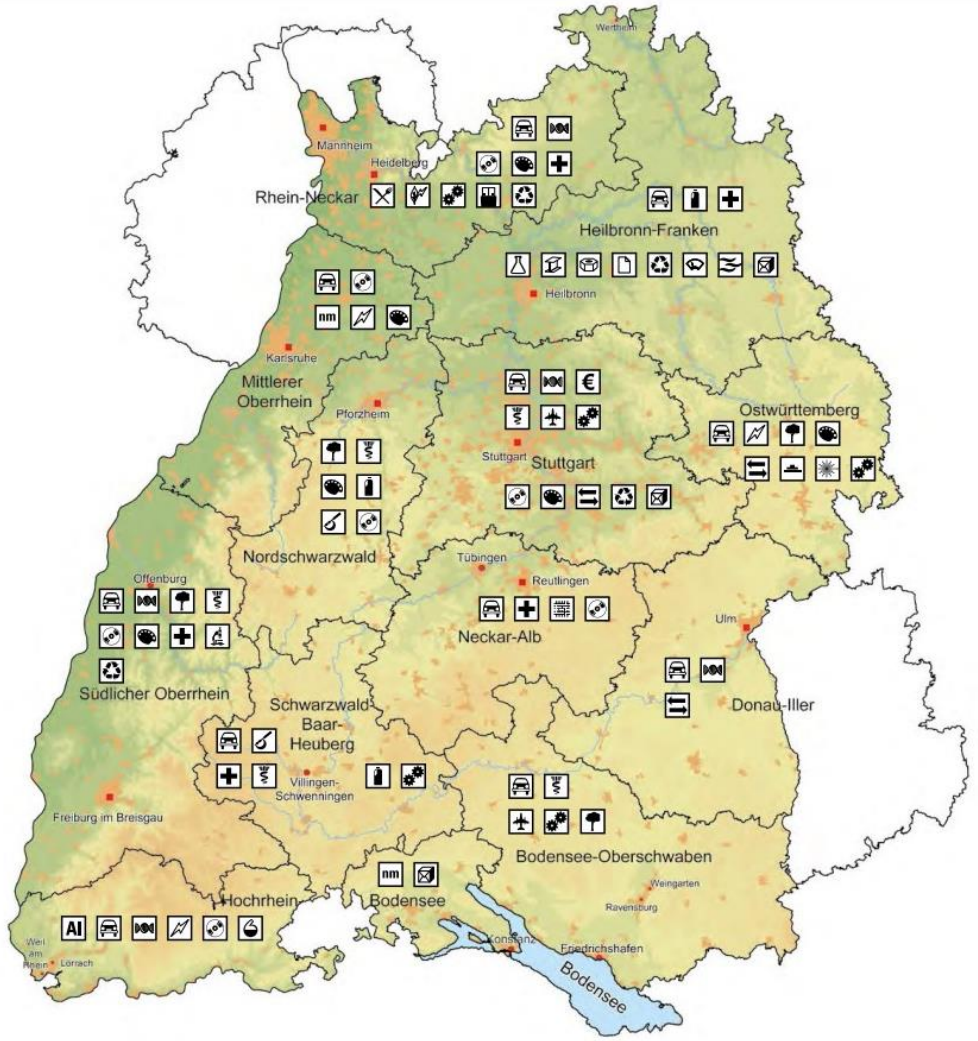
- Since the automotive and NRMM industry in Baden-Württemberg is well established, connected and innovative, it was decided to refrain from a classic gap analysis
- **The competitive landscape barely leaves room for gaps**
- Thus, the importance of being aware of local competition increases
- To portray a first impression of potential competitors of Tampere-based companies in Baden-Württemberg, the following slides show examples of the competitors in the market
- **How to sustain in such a competitive environment will be the question to reply to at the end of this presentation.**
- **Definitely Events, Clusters and Industry Associations are a key tool to meet local industry and to create connectionsto customers and partners**

Key Events – Trade Shows in Baden-Württemberg

Trade Show	Focus Industry	Location	Link	Date
LogiMAT	Intralogistics Solutions and Process Management	Stuttgart	https://www.logimat-messe.de/en	19. – 21. Mar. 2024
iMOBILITY	Smart Mobility	Stuttgart	https://www.messe-stuttgart.de/i-mobility/	04 – 07 Apr. 2024
Motek	Automation in Production and Assembly	Stuttgart	https://www.motek-messe.de/en/	08 – 11 Oct. 2024
AMB	Metalworking industry	Stuttgart	https://www.messe-stuttgart.de/amb/en/	10 – 14 Sept. 2024
NUFAM	Commercial Vehicle Industry	Karlsruhe	https://www.nufam.de/en/	25 – 28 Sept. 2025

Key Networks – Clusters

- Aluminium processing
- Automotive
- Biotechnology
- Chemicals
- Energy
- Precision engineering / mechanics etc.
- Financial accounting
- Forestry and wood
- Healthcare
- Information technology / corporate software
- Creative economy
- Plastics engineering and processing
- Laboratory glass
- Food industry
- Logistics (incl. intralogistics)
- Aerospace
- Medical technology
- Metalworking
- Microsystems technology
- Assembly and fastening technology
- Nanotechnology
- Surface technology
- Organic electronics
- Paper processing
- Photonics
- Production engineering
  Machine, system and tool construction
- Memory systems and smart grids
- Textiles and clothing
- Environmental technology
- Valve, measurement and control technology
- Fans and ventilation technology
- Packaging technology



Key Networks – Clusters

- Automotive clusters in Baden-Württemberg, operating statewide
  - Automotive-bw: association of regional cluster initiatives with a focus on the automotive industry. Members: 62
  - Cluster fuel cell BW: connects four state ministries of Baden-Wuerttemberg and representatives from the economy, science and various associations. The objective is to accelerate market-ready series products within hydrogen mobility. Members: 74
  - Electric mobility south-west: In the four innovation fields of vehicles, energy, information and communication technology (ICT) and production, renowned large, medium-sized and small companies cooperate with excellent universities and research institutions in Baden-Württemberg. Members: 152
  - e-mobil BW GmbH: e-mobil BW GmbH is the innovation agency and competence center of the state of Baden-Württemberg for new mobility solutions and automotive. Members: 400
- In addition there are more than 25 regional clusters related to the automotive industry
- Information on statewide and regional clusters in Baden-Württemberg is provided by the Clusterportal Baden-Württemberg

Key Networks – Industry Associations

- Verband der Automobilindustrie e.V. (VDA): Leading association of German automotive manufacturers and suppliers. It is one of the most influential interest groups in Germany. Members: 650
- DVF Deutsches Verkehrsforum e.V.: industry association for passenger and cargo transport. It represents companies and associations, manufacturers, service-providers, consulting firms and transport users, reflecting the entire value chain of mobility. Members: 170
- Bundesverband der Deutschen Industrie e.V.: The Federation of German Industries (BDI) is the umbrella organization of German industry and industry-related service providers. The BDI Articles of Association restrict the circle of members to industrial umbrella organizations and working groups. Consequently, individual companies or networks of companies cannot obtain membership. Members: 35

Key Networks – Industry Associations

- VDMA e. V.: VDMA is the largest network organization and an important voice of the mechanical engineering industry in Germany and Europe. VDMA has a regional subsidiary in Baden-Württemberg and different focus groups, such as "Connected Mobile Machines" Members: 3,600/ **870 in Baden-Württemberg**
- VDE Verband der Elektrotechnik Elektronik Informationstechnik e. V.: one of the largest technology organizations in Europe, unites science, standardization, testing, certification and application consulting under one roof. Members: 1,500
- ZVEI e. V.: The association of the Electrical and Digital Industry, represents the economic, technological and environmental policy interests of the German electrical and digital industry. Members: 1,100
- VDBUM: The Verband der Baubranche, Umwelt- und Maschinentechnik e.V. (VDBUM) is a professional interest group that provides a forum for construction professionals. Its members include users and manufacturers of construction machinery with their sales and service partners. Members: 280V

Key Networks – Industry Associations

- VdAW: The Verband der Agrargewerblichen Wirtschaft (VdAW) e.V. is the economic and professional association for medium-sized companies in the private agricultural sector in southern Germany. It is organized in various specialist groups, among them are motorized equipment, forestry and agricultural technology. Members: 1,200
- wvib Schwarzwald AG: wvib Schwarzwald AG is the platform for connecting entrepreneurs and managers who are committed to companies, employees, customers, the environment and society in the family-oriented, industrial SME sector in Baden-Württemberg. Members: 1,025
- Allianz Industrie 4.0 Baden-Württemberg: Network founded and sponsored by Germany's federal state of Baden-Württemberg, aiming to pool technological expertise in production and ITC to provide support for medium-sized industrial companies in their shift towards Industry 4.0. Members: ~100

Business Culture – Baden Württemberg

- Objectivism: Focus on tasks, facts and figures, objectives are central point of interest, not the persons behind them
- Rule-oriented, internalized control: stick to their rules, responsibilities and competencies, keep their promises, arrangements, agreements and contracts, implement decisions, follow guidelines exactly, are reliable and punctual, take responsibility for their actions
- Time planning: punctual and reliable, time is a valuable asset, that should not be misused
- Separation of personality and living spheres “professional – private”: at work Germans are task oriented, in private life they focus on their private relationships
- Low context: German communication style is famous for being very explicit and direct, sometimes undiplomatic. They mean what they say, and they say what they mean
- Individual: Personal independence and self-sufficiency are highly regarded

Business Culture – Baden-Württemberg

- While Germany itself is diverse and decentralized with 16 federal states, a similar observation can be made about Baden-Württemberg
- Baden-Württemberg is divided into:
  - 4 administrative districts
  - 12 regions (each with a regional association)
  - 35 rural districts and 9 urban districts
- The 4 administrative districts are
  - Freiburg
  - Karlsruhe
  - Stuttgart
  - Tübingen

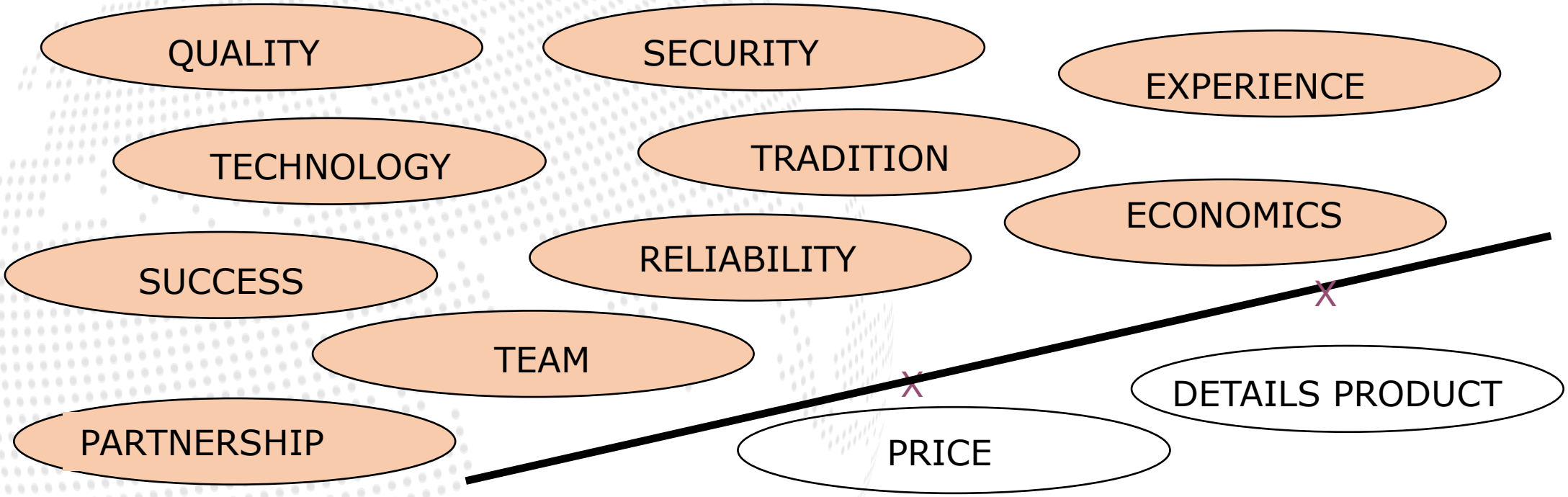
Business Culture – Baden-Württemberg

- When doing business with Baden-Württemberg, it is advisable to be aware of the different cultural regions within the federal state
- Especially Baden and Swabia share a historic feud and are differentiated by different dialects, traditions and historically also by religion
- The self-image of the people of Baden-Württemberg can be described as creative, resourceful, and willing to work hard
- From an outside perspective they are often perceived as reserved, humble and efficient

The state's crest is a good representation of its historic diversity

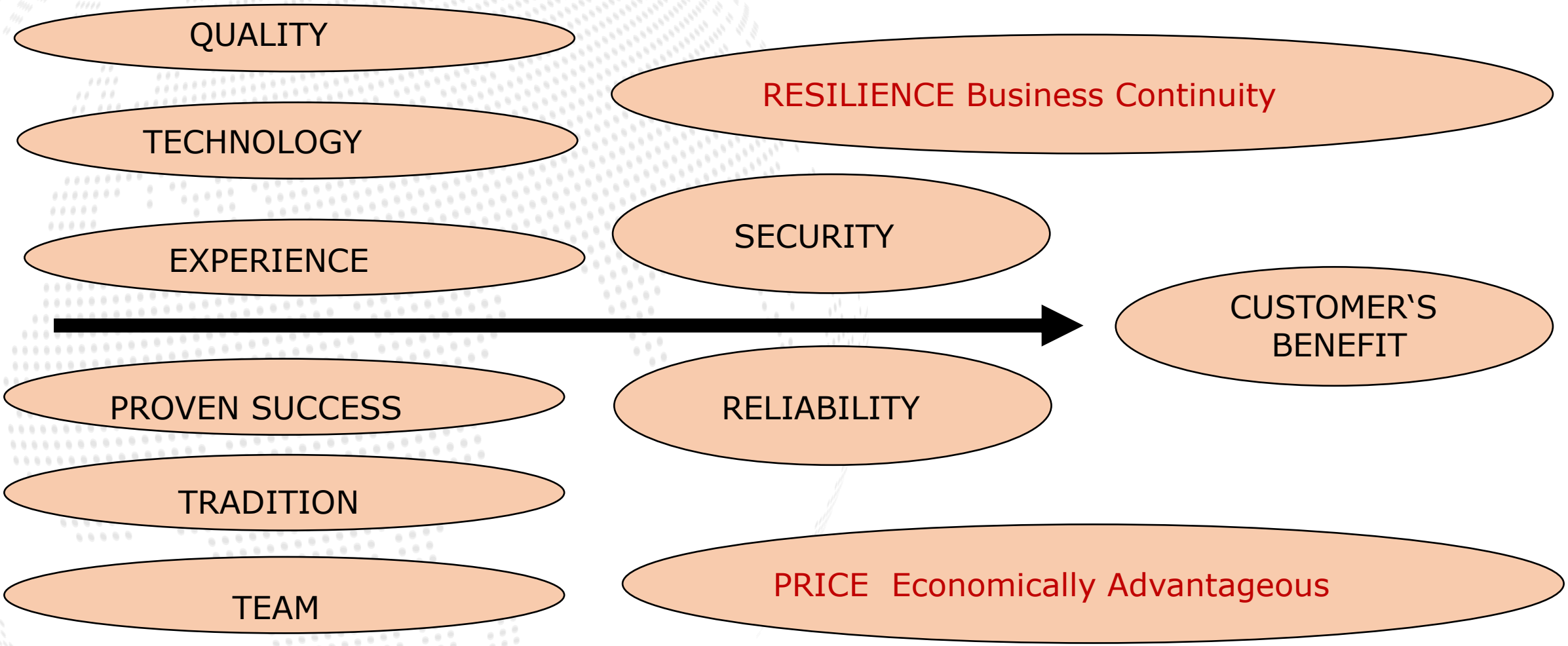
- Lions on a golden background represent Swabia
- The griffin on the right represents Baden
- Stag on the left represents Württemberg
- The six coats of arms on top are of the historical landscapes from which Baden-Württemberg was formed. These are: Vorderösterreich, Kurpfalz, Württemberg, Baden, Hohenzollern, and Franconia
- The coats of arms of Baden and Württemberg are slightly larger

Germany: Argumentation flow



You need to qualify – so how to successfully introduce yourself before being allowed to offer a high quality solution according to German habits?

Structured Argumentation



Doing Business in Baden-Württemberg – Our Adivse

- Quality oriented: quality is good for the customer - price follows quality
- Punctuality: Germans are known for their punctuality and expect others to be punctual as well
- Direct communication: Germans value honesty and directness in communication, tend to be straightforward and may seem blunt to other cultures
- Process driven attitude: rather formal („Sie"), keep it professional
- Pedigree: a company needs to show a detailed company information, positive track record, infrastructure, the right resources
- Formality - German business culture is formal and hierarchical. It is important to address people by their professional titles and use formal language, especially when first meeting someone

Doing Business in Baden-Württemberg – Our Adivse

- Thorough preparation: Germans value thorough preparation and expect others to be well-prepared for meetings and presentations. This includes providing detailed data and analysis
- Attention to detail: Germans are known for their attention to detail and focus on quality. They may take more time to ensure that everything is done correctly and may be less willing to take risks
- Personal space: Germans generally value personal space and may stand further apart from others than people from other cultures. They may also prefer less physical contact, such as handshakes instead of hugs
- Work-life balance: While Germans work hard and value efficiency, they also place a high importance on work-life balance. They generally take their vacation time seriously and may be reluctant to work outside of normal business hours

Market Approach

- The automotive and mobile machinery industry in Baden-Württemberg is well equipped and connected throughout the region and created a strong cluster along the value chain
- To set foot in the highly competitive market requires preparation and a thorough understanding of the market
- Considering the competition and highlighting not only the USPs of the technology one wants to sell, but also the value it creates for customers is of importance to build a convincing sales pitch
- German companies are, despite facing challenges, open for win-win proposals and strategic cooperation
- However, it is important to ensure a strong market fit.

Reducing the perceived Distance

- Once the market fit is approved, market entry can be initiated
- The strong interconnectedness of the industry in Baden-Württemberg cannot only be seen as a challenge, but also as an opportunity
- Engaging in the present clusters and industry associations can be a helpful tool
- It provides a joint platform shared with potential customers and partners
- It establishes trust and helps overcome perceived distances
- The perceived distance to suppliers becomes even more significant with after-sales services, so considering a local presence can be beneficial

Recommendations – Keys to Success

- Differentiate yourself from local competition – take your time
- Reduce Perceived Distance – Memberships, Virtual Presence, Strategic Alliances with German Partners
- Simple Selling Falls Short – Unless you are disruptive
- Focus on content: “Embedded Software” instead of “Digital Transformation”
- Keywords 2023/2024 – AI / Autonomy – see trends
- Without Localization no Sustainable Success into Germany
- E.g. VAISTO, Tampere – launching local entity in Cyberforum Karlsruhe in March 2024

See you in Germany!

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GTAI GERMANY TRADE & INVEST

INDUSTRY OVERVIEW

The Automotive Industry in Germany

ISSUE 2022/2023

The World's Automotive Innovation Hub

"The automotive sector is the backbone industry in Germany, and the German automotive industry is a global leader. Germany is also one of the strongest countries in the world when it comes to high-tech automotive products, including autonomous driving technology."

Hui Zhang
Managing Director, NIO Germany GmbH

+60%
R&D growth in Europe created by German automotive sector

3.1 m
passenger vehicles produced in 2021 – making Germany Europe's leading production site

1 in 5
cars that roll of the international production line is German OEM made

24%
of total domestic industry revenue generated by automotive industry

1/3
of global automotive R&D spending made by German OEMs

77%
of cars manufactured in Germany in 2021 destined for export markets

Engineering and Production Excellence
Germany is recognized the world over for its outstanding automotive industry and excellence in engineering. From Asia to the Americas, German cars embody highly cherished values of innovation, reliability, safety, and design. Germany is by some distance Europe's leading production and sales market. The country's world-class R&D infrastructure, complete industry value chain integration, and highly qualified workforce create an internationally peerless automotive environment. It enables companies to develop cutting-edge technologies which perfectly address tomorrow's mobility needs.

Beyond Covid-19 to the Mobility Future
Germany's auto sector is bouncing back from the Covid-19 pandemic thanks to a broad array of forward-looking instruments and measures that will transform both the industry and future mobility. Significant investment in autonomous driving and battery research and development, massive expansion of charging infrastructure and electric vehicle cash incentives are driving prospects in the resurgent industry.

Germany's Automotive Industry in Numbers

Germany's automotive sector is the country's key industry. As Europe's leading market and producer, the industry is also a global export powerhouse and driver of mobility innovation.

Germany is Europe's biggest automotive market; number one in production and sales terms, accounting for around 25 percent of all passenger cars manufactured and almost 20 percent of all new registrations. Germany also boasts the largest concentration of OEM plants in Europe. There are currently 44 OEM sites located in Germany. German OEM market share in the EU was more than 55 percent in 2021.

Manufacturing Leader Germany
German automobile manufacturers produced over 15.6 million vehicles in 2021. Fifteen of the world's 75 top automotive suppliers are German companies. Germany is the European car production leader: more than 3.1 million passenger cars – and 351,000 commercial vehicles – were manufactured in German plants in 2021.

Export Success
German passenger car and light commercial vehicle OEM generated foreign market revenue of almost EUR 274 billion in 2021 – a ten percent increase over 2020. Automotive exports account for more than 13 percent of all German exports in 2021 – the product group with the largest export share. Domestic market revenue is EUR 136.9 billion, compared to 2021.

R&D Leadership
German OEMs were responsible for internal R&D investments amounting to almost EUR 28.3 billion in 2021. Germany's automotive sector is the country's most innovative industry sector, accounting for 34.1 percent of total German industry R&D expenditure of around EUR 71 billion in 2020. Research and development personnel within the German automobile industry reached a level of around 134,000. Manufacturers and suppliers of the German automotive industry will invest more than EUR 220 billion in electric mobility and digitalization for the period 2022 to 2026.

Germany's industry numbers speak for themselves and for a secure and successful investment in the country.

786,109
Workforce

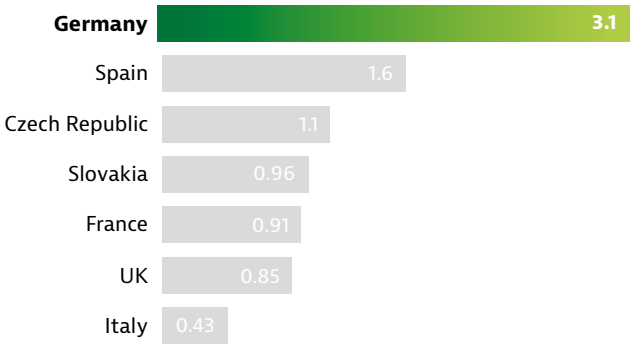
933
OEMs and Suppliers

EUR 410.9 bn
Industry Turnover

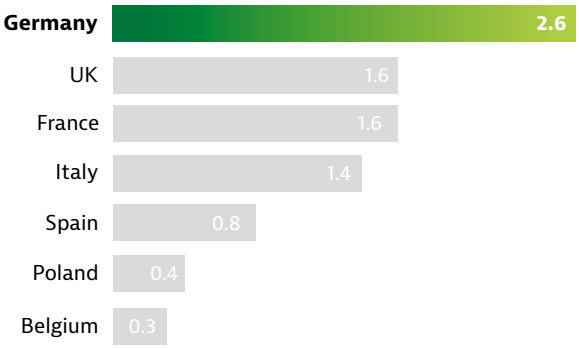
EUR 273.9 bn
Export Turnover

Source: Statista 2022

Passenger car production in Europe 2021
in million units



Passenger car registrations in Europe 2021
in million units



Sources: VDA, ACEA 2022

Global Market Perspective

Germany is the world's premium car production hub. Of all premium branded vehicles produced globally, 65 percent are German OEM-manufactured. Of all vehicles produced globally, 40 percent of vehicles were produced in Europe – of which 23 percent were made in Germany in 2021.

German autos remain in great demand internationally – particularly in the premium market sector

Within Europe, more than 80 percent are German OEM-badged vehicles – 57 percent of these vehicles were made in Germany. The western European light vehicle production sector is predominantly premium sector focused. According to LMC Automotive, the western European light vehicle market hit a seasonally adjusted annual running rate of around 13 million units in May 2021 – up from around 12.7 million units in May 2020.

Growing Premium Market

Globally, the premium market segment will grow at a much faster rate than the total passenger car segment in the next decades. This can mainly be attributed to growing international demand for high-value, premium small- and compact-sized cars as well as premium SUVs. The German automotive industry is one of the world's leading producers of premium cars. Almost all German and Germany-based manufacturers have already launched or intend to launch new products meeting premium segment demand. The expertise based on the country's automotive manufacturing tradition will further strengthen Germany as a leading international automotive manufacturing location.

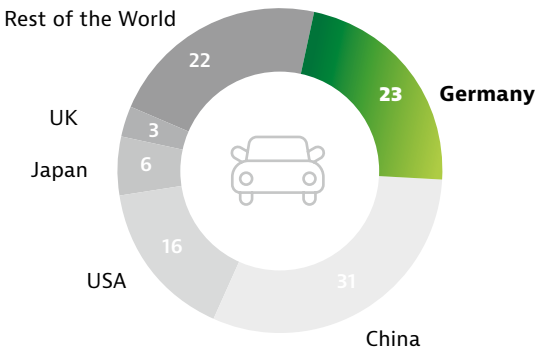
Strong R&D Investment

German automotive company investment in research and development remains strong as manufacturers seek to maintain the competitiveness of vehicles "Made in Germany." In 2021, German automotive companies spent almost EUR 28.3 billion on internal R&D projects – more than any other domestic manufacturing sector. More than one third of Germany's total manufacturing industry R&D expenditure is spent by automotive manufacturers and suppliers, with R&D budgets expected to rise. Germany's automotive companies employ the largest number of research personnel in the manufacturing sector. Automotive companies employ about one quarter of the total R&D workforce in Germany's private economy.

Innovative Production Location

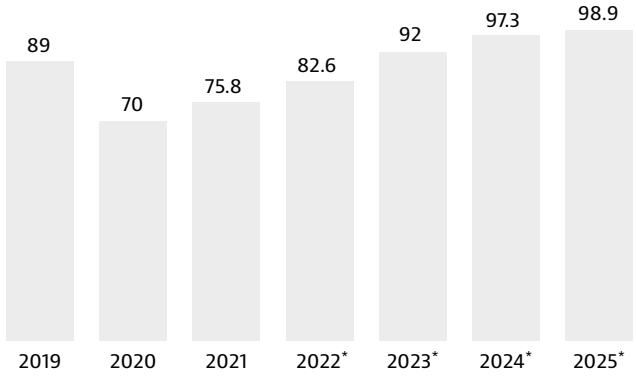
Germany's automotive industry occupies pole position in international innovation rankings according to the German Association of the Automotive Industry (VDA). Volkswagen, BMW and Daimler occupy the top three slots with suppliers including Bosch, Schaffler, and ZF also coming out top internationally. The industry plans to invest EUR 150 billion in digitalization, electric mobility and drive systems, hydrogen technology and transport safety in the coming years.

Premium Car Production by Country 2021
in percent



Sources: Marklines, GTAI Research (2022)

Global light vehicle production trend
in million units



*forecast
Source: Statista

Technological Trends

Automotive engineers in Germany are hard at work improving internal combustion engine energy efficiency, developing alternative drive technologies (including electric, hybrid, and fuel cell cars), and adapting lightweight materials and electronics.

Carbon-emission reduction targets, smart traffic management, and the government's electric mobility initiative are major drivers for future mobility growth. Impressive developments have been made in developing smaller, highly charged-up "homogeneous combustion" engines and dual clutch transmissions (DCTs). Optimized combustion engines that make use of synthetic fuels will provide a short-term solution for some manufacturers before the introduction of the European Union mandate that all new vehicles be emissions free by 2035.

E-Mobility
Domestic and international market potential for energy-efficient passenger cars is huge. The global market is expected to outgrow that of conventional vehicles in the near future. Supported by the country's ambitious e-mobility plans, the German government has set itself the goal of 15 million fully electric vehicles by the year 2030 and a role as lead provider and market for e-mobility solutions. The speed and scale of transformation in mobility and the automotive sector is remarkable. According to the Federal Statistical Office, 88 percent more EVs were produced in 2021 than were in the previous year. Exports increased by 92 percent during the same period. The 328,000 fully electric vehicles manufactured had a market value of around EUR 13.7 billion – up from EUR 8 billion in 2020. In marked contrast, the number of combustion-engine vehicles produced fell by 23 percent year-on-year.

German OEMs are also keen to meet rising export demand for vehicles in the USA and from emerging economies. Economic growth, the changing mobility needs of a young and aspirational consumer population and relatively low passenger-car density levels are driving demand in emerging economies. This will allow manufactures located in Germany to follow a proven strategy of increased imports and on-site production.

Car Connectivity
Demand for connected cars is set to increase significantly – and nowhere more so than in the premium segment. Facilitating a raft of innovative safety, comfort and information services, smart technologies are revolutionizing the driving experience. According to Mordor Intelligence, car connectivity is the fastest-growing feature being adopted into new vehicles – with the connectivity market forecast to generate up to USD 1 trillion by the end of 2030. Germany's industry strength in electronic technologies and software solutions is critical to technological advancement in this sector.

Covid-19 and Supply Chain Security

The global Coronavirus pandemic has had far-reaching effects on the global auto industry. Supply chains from China were already partially disrupted or suspended with the initial spread of the SARS-Cov-2 virus in Wuhan. The role of suppliers within the industry had notably increased prior to this due to the classical OEM business model being slowly superseded. The Covid-19 crisis has forced all actors to reassess their supply chain and sourcing strategies. However, major changes in the global structures of supply chains for the auto industry are not currently envisioned, with OEMs most likely to use alternative suppliers for critical components and initiate early warning systems to preempt any potential health or economic crises in the future. Stock volumes in Europe and Germany will most likely be increased as the industry seeks more supply chain independence from China. Due to further supply chain disruptions (China lockdowns in spring 2022) and the lack of semiconductors, the consequences of this will be felt in the short term. The microelectronics-intensive premium segment will be most affected, however the situation should hopefully ease by mid-2023.

Value Added in the Value Chain

The auto industry in Germany thrives as a result of the diversity of companies active in the sector: large and medium-sized auto manufacturers alike are to be found there, as are system and module suppliers – not to mention numerous small and medium-sized tier 2 and 3 suppliers.

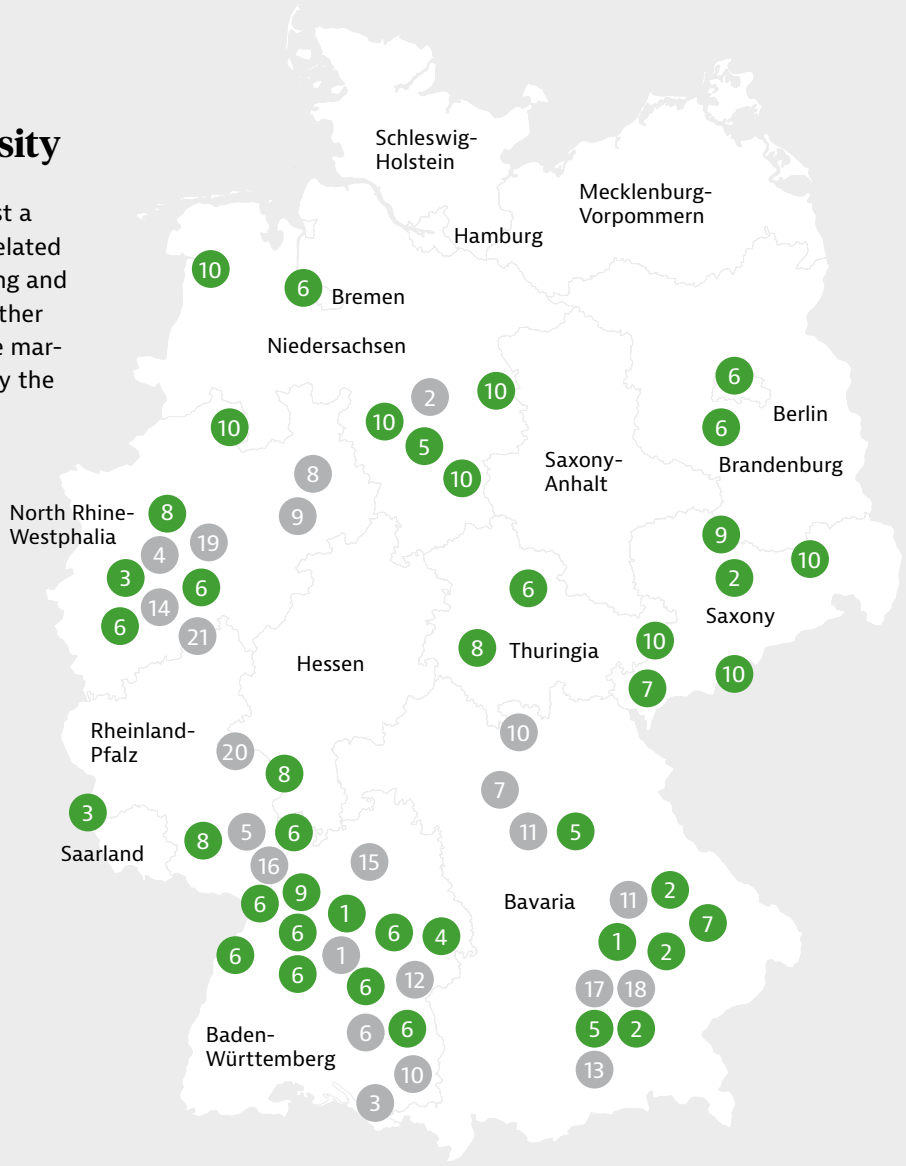
Around 85 percent of auto industry suppliers are medium-sized companies. All of these suppliers provide up to 70 percent of total value added within the domestic auto sector – ensuring that the German automobile industry remains ahead of the competition - at home and abroad.

Changing Automotive Industry Structures
Value added is moving to the supplier side and increasingly to non-auto industry sectors (e.g. the chemical industry in the field of electric mobility). Accordingly, international suppliers are increasingly attracted to Germany as a business location. To date, the world's 10 largest non-German auto industry suppliers have successfully established operations in Germany.

Global OEM Supplier Leader
Germany boasts 15 of the world's top 75 automotive OEM suppliers. Automotive suppliers generated EUR 79.7 billion of total German automotive

German Automotive OEM and Supplier Density

No other country in Europe can boast a comparable concentration of auto-related 10 R&D, design, supply, manufacturing and assembly facilities. Accordingly, no other country in Europe provides the same market opportunities as those offered by the German auto industry.



Source: GTAI 2022

industry turnover in 2021. The German automotive industry recorded total revenue volume of EUR 410.9 billion in 2021 –equivalent to an eight percent increase on 2020 revenue. The domestic market accounted for over EUR 136.9 billion of this sum, with more than EUR 274 billion turnover generated in foreign markets. Looking further afield, OEM exports account for more than 65 percent of generated turnover.

R&D Leadership

Research and development is crucial to maintaining this leading position, as companies strive to stay on top of trends and developments. This explains German OEM R&D spending of almost EUR 28.3 billion in 2021 (more than one third of total global automotive R&D expenditure).

Skilled Labor Force

Central to the successes enjoyed by German OEMs to date are the skilled teams of workers who support ongoing development and production. The German automotive industry employed a workforce of around 786,100 people in 2021. They also serve Europe's largest automotive market, where more than 3.1 million passenger cars were produced in 2021. According to IW Consult, 22 percent of production staff work in conventional powertrain technology, with almost six percent active in electric power train technology and over 67 percent in other systems.

OEMs

1. Audi
2. BMW
3. Ford
4. Iveco
5. MAN
6. Mercedes
7. Neoplan
8. Opel
9. Porsche
10. Volkswagen

Suppliers (only German headquarters)

1. Bosch
2. Continental
3. ZF Friedrichshafen
4. Thyssen Krupp
5. BASF SE
6. Mahle
7. Schaeffler
8. Bentheler Automobiltechnik
9. Hella KGaA
10. Brose Fahrzeugtechnik
11. Draexlmaier
12. Eberspaecher Holding
13. Getrag
14. Leoni
15. KSPG
16. Freudenberg
17. Webasto SE
18. Infineon
19. Leopold Kostal
20. Trelleborg Vibracoustic
21. Kautex Textron

R&D Infrastructure

No other industry invests as much in R&D – almost EUR 28.3 billion in 2021 alone. As such, the auto industry in Germany accounts for more than one third of the country's total R&D expenditure.

Germany has the highest concentration of all European automotive OEM and tier supplier R&D centers. This makes the country the most important automotive development activity location in Europe. Suppliers and service providers located in Germany profit from close client interaction starting from the pre-development stage. They can take advantage of joint research activities with some of the world's leading automotive technology research institutes and universities.

Increasing R&D Investments

More than 134,000 people were engaged in R&D activity in 2020. As well as making provision for internal R&D expenditure of over EUR 24 billion, the German automotive sector spends around EUR 14 billion on external R&D – equivalent to almost half of the country's external R&D investments. Despite record R&D expenditure levels, German companies intend to boost their R&D activities further still. According to the Ernst & Young European Automotive Survey, more than 40 percent of German automotive companies want to increase their R&D investments in the future, while 58 percent will maintain current R&D spending levels.

World Innovation Leader

Auto manufacturers and suppliers located in Germany are among the world's leading patent applicants. Nine out of the country's top ten patent filing companies are predominately active in the automotive industry – proof positive of the country's importance within the world's automotive market and its enormous innovation power. Germany's automotive industry remains the country's leading industry innovator with a significant share of turnover being generated from new product innovations. Almost 70 percent of companies active in the sector introduced new products or processes. Overall investment in innovation, including internal and external R&D expenditures, is constantly increasing. Complete industry value chain presence ensures that new and innovative products are made to the highest possible technological standards. Bosch, the biggest German automotive supplier, alone files around 19 patents per working day on average.

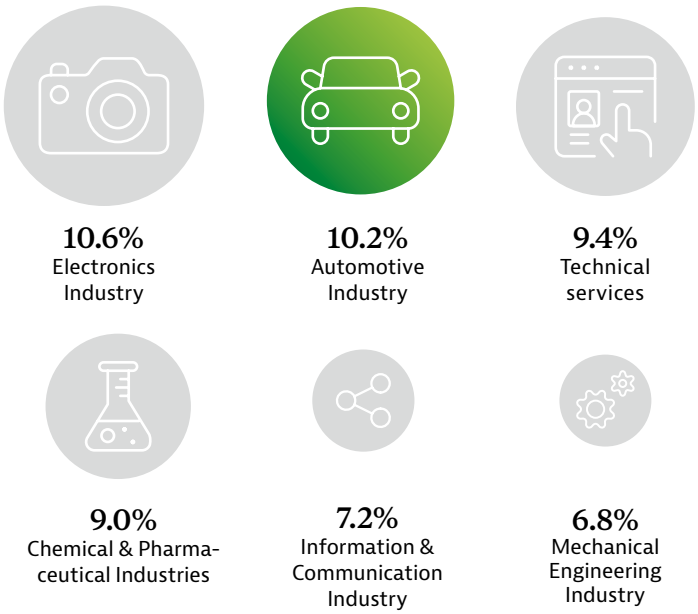
R&D Incentives – High-Tech Strategy

With R&D considered to be among the most important areas for the development of the German economy, industry and the public sector have made a commitment to spend around three percent of national GDP per year on R&D activities. This amounts to approximately EUR 80 billion R&D spending each year. In addition, an unprecedented campaign to foster the advancement of new technologies has been launched by the German government. The High-Tech Strategy represents the first national concept to bring key innovation and technology stakeholders together in a common purpose of advancing new technologies. The initiative combines the resources of all government ministries, setting billions of euros aside annually for the development of cutting- edge technologies (R&D projects can also count on generous financial support in the form of R&D grants).

Automotive Industry Clusters

The decentralized nature of the automotive industry has spurred the development of strong R&D business networks. Non-university research institutes, universities and companies work together in numerous industry and research clusters. By

Innovation Expenditure Share of Industry Turnover 2020



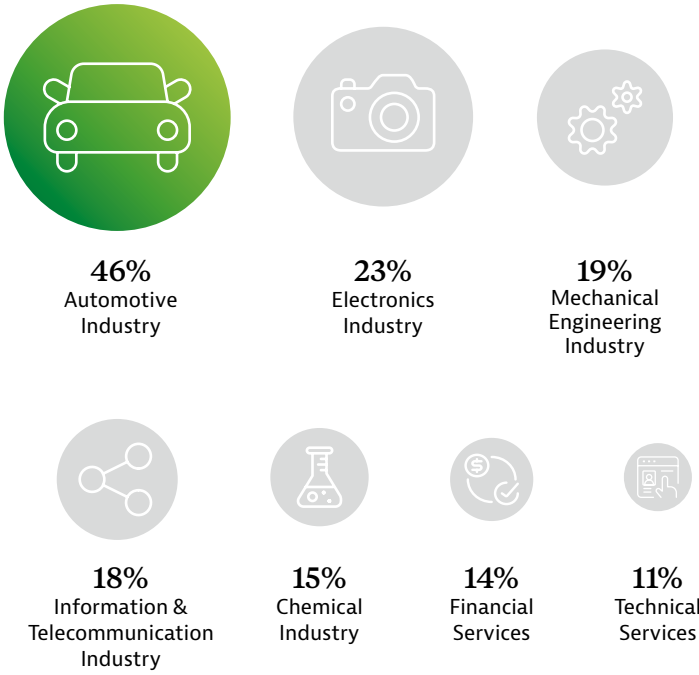
Source: ZEW 2021

connecting individual competencies, major R&D clusters in the automotive industry can be identified. These clusters have gained international recognition by integrating industry, science and education in automotive-related areas including mechatronics, microelectronics, mechanical engineering, manufacturing processes, and material sciences. This has helped the industry to secure an internationally leading position in a number of technology fields and secured its status as the international benchmark.

International Research Partners

Industrial R&D activities in Germany benefit from a broad innovation landscape which is home to a diverse array of potential research cooperation partners. Germany also offers research cooperation opportunities with the more than 250 institutes of the four large research organizations: Fraunhofer-Gesellschaft, Max Planck Society, Helmholtz Association, and Leibniz Association. Their more than 70,000 researchers are globally acknowledged experts in applied and basic sciences and economically successful. The Fraunhofer Institute for Communication Systems ESK, in particular, is developing state-of-the-art vehicle information and communication technologies (ICT). Main competencies lie in the fields of automotive networks, infotainment and driver assistance, and model-driven software.

New Product Turnover Share by Industry 2020



Source: ZEW 2021

New Lightweight Materials for the Automotive Industry

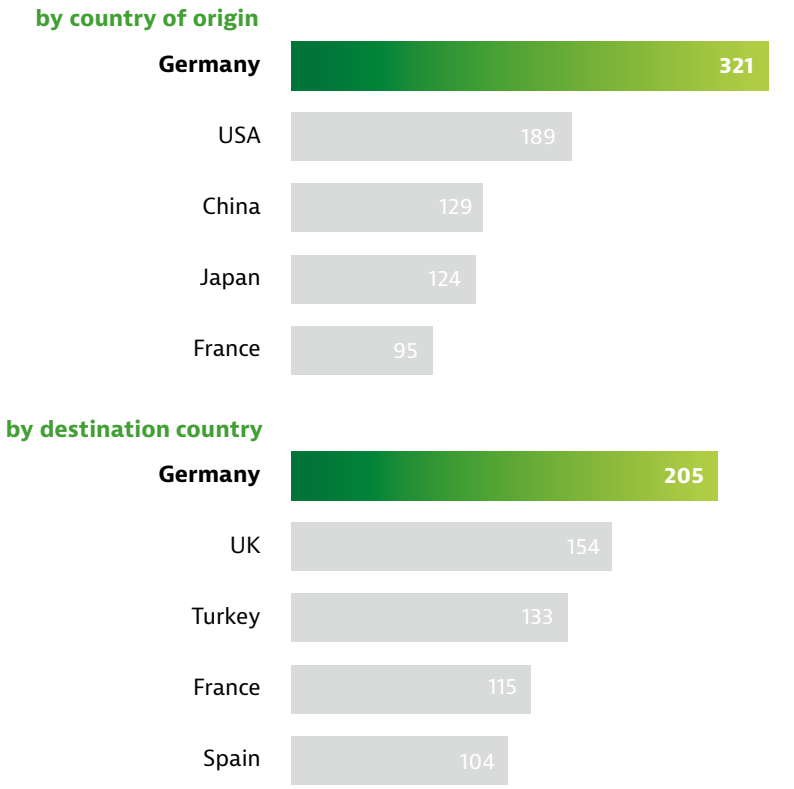
Lightweight construction is a key enabling technology for manufacturing the cars of tomorrow and addressing the challenges of digital transformation, electric mobility and energy and resource efficiency. McKinsey reports that vehicle manufacturers will need to increase lightweight component levels from 30 percent to 70 percent by 2030 in order to compensate for electric drive weight increases, more efficient engine technology and CO2 reduction goals. Germany boasts a lightweight construction cluster network that covers the complete industry value chain. Two exemplary initiatives are the ARENA2036 platform and the Open Hybrid LabFactory. Arena2036 is the largest and leading research platform for mobility in Germany. The entire value chain of tomorrow's fully digitalized vehicles is being rethought and implemented as part of the initiative. The research campus has focused its activities in core projects in four research areas including functional integrated lightweight design. Partner competences are anchored in a variety of disciplines that range from simulation and lightweight construction to production technology and ergonomics. The Open Hybrid LabFactory carries out research into new materials and production techniques to help make serial production of cars more environmentally friendly. Production and production technologies suitable for mass production will be developed for the economically and ecologically sustainable production of hybrid lightweight components using metals, plastics and textile structures.

Europe's Most Attractive Automotive Location

Germany remains an internationally competitive and stable auto hub as it emerges from a coronavirus-enforced production lockdown. The response to the crisis should see carmakers introduce new efficiencies as they switch their focus to electric vehicle production.

The global auto industry is in a period of radical transformation. Demand for electrified power train solutions is giving traction to the electric mobility market in Europe. Further afield, the continent of Asia is fast establishing itself as the world's biggest passenger vehicle market. By pursuing a truly international business model (with R&D and production at home and abroad), Germany's automotive industry is optimally equipped to address these developments. Studies conclude that German auto hubs count amongst the most productive and competitive in the world.

FDI Projects in the Automotive Sector 2017-2021*
total number



*Only greenfield investment projects and expansion projects included
Source: fDi Markets 2022

Growth Markets
The German automotive industry will perform best in the developing world in the years ahead. At home, the sector will consolidate its leading market position, largely as a result of development and growth in the premium market segment. The European share of value added in the premium vehicle segment will be more pronounced than in other regions, where the segment is comparatively small or irrelevant. China will remain a strong performer in the volume segment, with India also recording a significant increase in demand in the small vehicle segment. The US vehicle market is in upturn mode and one of the most important sales markets for German OEMs. In global comparison, Europe is the most promising automotive investment location in value-added terms.

Manufacturing Location
German companies represent 10 percent of European manufacturing companies and generate 27 percent of total EU turnover in this sector. In fact, the manufacturing sector represents more than one fifth of Germany's "value added" – one of the highest shares in Europe. Increasingly more international companies are placing their faith in Germany as a vital production site location, and are benefiting from superior productivity rates and the country's excellent business framework of stable labor costs, excellent production standards, and a highly skilled workforce.

Foreign Direct Investment Magnet
According to a survey of 550 decision-makers, Germany was ranked the highest country of all European Union member states with "the most credible and investment-friendly COVID-19 recovery plans." The European Attractiveness Survey confirms Germany's reputation as one of the most attractive business locations in the world. Germany has caught up with France and the United Kingdom so that the three nations are tied as Europe's best investment destinations. According to preliminary data produced for the Financial Times' fDi Markets database, Germany was Europe's leading – and the world's third leading – FDI project destination location in 2021.

Financing & Incentives in Germany

Incentives programs in Germany are available through different public funding instruments and for different funding purposes. The individual funding requirements may, for example, result from investment projects, research and development activities, personnel recruitment, working capital needs or other specific purposes.

The different incentives instruments including grants, loans and guarantees are generally available for all funding purposes and can ordinarily be combined; thus matching the different business activity needs at different development stages of the company.

Investment Project Financing by Private Equity
Technologically innovative start-ups in particular have to rely solely on financing through equity such as venture capital (VC). In Germany, appropriate VC partners can be found through the Bundesverband Deutscher Kapitalbeteiligungsgesellschaften e.V. (BVK – "German Private Equity and Venture Capital Association"). Special conferences and events like the Deutsches Eigenkapitalforum ("German Equity Forum") provide another opportunity for young enterprises to come into direct contact with potential VC partners. Public institutions such as development banks (publicly owned and organized banks that exist at the national and state level) and public VC companies may also offer partnership programs at this development stage.

Investment Project Financing by Bank Loans
Debt financing is a central financing resource and the classic supplement to equity financing in Germany. It is available to companies with a continuous cash flow. Loans can be provided to finance long-term investments, working capital and operational costs (R&D, personnel) and for bridging temporary financial gaps. Besides offers from commercial banks, investors can access publicly subsidized loan programs in Germany. These programs usually offer loans at attractive interest rates in combination with repayment-free start-up years, particularly for small and medium-sized companies. These loans are provided by the federal development bank KfW and also by regional development banks.

Investment and R&D Incentives
When it comes to setting up production and service facilities, investors can count on a number of different public funding programs. These programs complement investment project financing. Most important are cash incentives provided in the form of non-repayable grants applicable to co-finance investment-related expenditures such as new buildings, equipment and machinery. R&D project funding is made available through a number of different incentives programs targeted at reducing the operating costs of R&D projects. Programs operate at the regional, national, and European level and are wholly independent from investment incentives. At the national level, all R&D project funding has been concentrated in the High-Tech Strategy to push the development of cutting-edge technologies. Substantial annual funding budgets are available for diverse R&D projects.

Labor-related Incentives
After the location-based investment has been initiated or realized, companies can receive further subsidies for building up a workforce or the implementation of R&D projects. Labor-related incentives play a significant role in reducing the operational costs incurred by new businesses. The range of programs offered can be classified into three main groups: programs focusing on recruitment support, training support, and wage subsidies respectively. Labor-related incentives play a significant role in reducing the operational costs incurred by new businesses.

Please visit our website for more incentives information: www.gtai.com/incentives

Incentives in Germany

Funding purposes				
Investments	Working Capital	Research & Development	Specific Purposes	Personnel

Financing supported by any of thefollowing public funding instruments (combinations of instruments usually possible)

Public funding instruments				
Grants	Loans	Guarantees	Equity Capital	Mezzanine Capital

SUCCESS STORY

Best Practice Example: NIO GmbH

Germany Trade & Invest provides a range of inward investment services to international investors. After careful consultation with the individual investor, a support program of consultancy and information services is drawn up to help set the stage for investment success. Chinese electric vehicle start-up NIO Group established its global design center in Munich in 2015. It is here in Bavaria that the premium vehicle provider designs its autonomous and electric vehicles including its EP9 model – currently the fastest e-sports car in the world according to the company. The group has invested EUR 80 million in its NIO GmbH German subsidiary operation to date.

"For research and development, particularly in the automotive industry, Germany is the best location in the world. The country offers top talent and excellent infrastructure. Hardware, industrial infrastructure, the right suppliers: They are all here."

Hui Zhang
Managing Director, NIO Germany GmbH

Company Information
Founded in Shanghai in 2014, NIO is a global start- up that produces high-performance premium electric and autonomous vehicles. NIO investors include Baidu, Lenovo, Tencent, and Sequoia Capital. Demand for battery electric vehicles (BEVs) is growing in China, with Chinese consumers purchasing more than 200,000 BEVs in the first two quarters of 2018. This is best reflected in the increased competition in the premium BEV segment. NIO also currently operates a number of "NIO Houses" – including charge points, workspaces, lecture theatres, and childcare services. The company also foresees the opening of NIO Houses in a number of major world cities, thereby providing customers with international access to services provided. NIO is seeking to grow its number of sales and service outlets (NIO House and NIO Space) to around 200 by the end of 2020. In 2018 the company went public on the New York Stock Exchange as part of its plans to scale up its activities in order consolidate its position in the competitive Chinese market.

Project Information
NIO established its first international operations outside China in Munich in 2015 – just six months after parent group formation. The Munich site serves the dual function of being both the Group's global design center and its vehicle design center. NIO's positioning as a pioneer in the delivery of premium in-car services to create a "mobile living space" is central to the company's ambitious plans to increase its footprint in China's competitive BEV market. Additional services include mobile charging, battery swap, and 24-hour pick-up and drop-off options that make up the USD 2.6 billion in-car services market forecast by NIO for connected and autonomous vehicles. Around EUR 80 million has been invested in the group's global design center in Munich to date.

Location Factors
Germany's longstanding reputation as global auto industry leader and home of the best automotive R&D location in the world was pivotal to NIO's decision to locate its global design center in Munich. This, and access to Bavaria's thriving automotive industry and attendant infrastructure – as well as a highly qualified pool of international labor – proved the decisive factors in the decision to locate to Germany. Innovation in the field of autonomous technology is key to the company's long-term plans to differentiate itself from other BEV manufacturers, with the company holding more than 1,200 battery swapping patents and having contributed to 17 national industry standards for battery swaps. NIO's Chinese name ("Weilai"), means "Blue Sky Coming" and represents the group's commitment to establishing BEVs as the natural vehicle lifestyle choice for a more sustainable future – one being driven by innovation forged in Germany.

Germany Trade & Invest Helps You

Germany Trade & Invest's teams of industry experts will assist you in setting up your operations in Germany. We support your project management activities from the earliest stages of your expansion strategy.

We provide you with all of the industry information you need – covering everything from key markets and related supply and application sectors to the R&D landscape. International companies profit from our experience in identifying the business locations that best meet their specific investment criteria. We help turn your requirements into concrete investment site proposals; providing consulting services to ensure you make the right location decision. We coordinate site visits, meetings with potential partners, universities, and other institutes active in the industry.

Our team of consultants is at hand to provide you with the relevant background information on Germany's tax and legal system, industry regulations, and the domestic labor market. Germany Trade & Invest's experts help you create the appropriate financial package for your investment and put you in contact with suitable financial partners. Our incentives specialists provide you with detailed information about available incentives, support you with the application process, and arrange contacts with local economic development corporations.

All of our investor-related services are treated with the utmost confidentiality and provided free of charge.

Our support services for your investment project

	Strategy		Evaluation	Decision & Investment	
Project management assistance	Business opportunity analysis and market research	Market entry strategy support	Project partner identification and contact	Joint project management with regional development agency	Coordination and support of negotiations with local authorities
Location consulting/Site evaluation	Identification of project-specific location factors	Cost factor analysis	Site preselection	Site visit organization	Final site decision support
Support services	Facts on incorporation	Market intelligence and statistics	Financing & incentives consultancy	Tax and Legal information	Contact to financial partners

Our Expertise Network

Germany Trade & Invest (GTAI) provides direct access to all of the relevant actors in the German economy. As the hub for a far-reaching network at both home and abroad, GTAI maintains close relations with a number of partners important to international investors setting up business in Germany. These include all federal government ministries and the leading associations of the German economy including the Federation of the German Industry (BDI) and the Association of the German Chambers of Industry and Commerce (DIHK). As well as this, GTAI also maintains close ties to important trade and industry associations including the Verband der Automobilindustrie (VDA – "German Association of the Automotive Industry"). Our working partnership with the VDA allows prospective investors to benefit from the association's detailed market analyses and industry structure insights. Together with Germany Trade & Invest's business support services, companies who locate to Germany can do so knowing that the VDA is promoting the interests of the automotive industry both domestically and internationally.

VDA | Verband der Automobilindustrie

The German Association of the Automotive Industry (VDA) nationally and internationally promotes the interests of the entire German automotive industry in all fields of the motor transport sector, for example in international trade and economic, transport and environmental policy, technical legislation, standardizing and quality assurance. To an equal extent, VDA promotes services in standardization, research and quality. It organizes the world's largest trade fair for mobility, the IAA (International Motor Show), as well as other congresses and it regularly publishes on all automotive topics.

The members of the association are companies that operate a plant in the Federal Republic of Germany for the industrial production of motor vehicles and their engines, trailers, special bodies and containers as well as vehicle parts and accessories. The VDA consists of about 600 member companies, who have come together to research and produce clean and safe automobility for the future. In the country that is known for its successful invention of both automobiles and trucks, the VDA represents the automotive manufactures and supply companies to ensure the continued competitive utilization of their experience and skills. The cooperation between manufactures and suppliers in the VDA is unique in the world of motoring.

Since 1946, the VDA has lobbied nationally and internationally for the creation of the best possible automobility. Our goals are safety, quality and sustainability at the highest technical level. As the representative of the key industry in the German economy, the VDA is responsible for more than 750 thousand jobs in Germany and leads a lively dialogue with the industry, the public, politicians, and customers.

From 2021 onward, the IAA (International Motor Show), one of the biggest automotive trade shows in the world, will be held in Munich.

The office of the association is situated in Berlin. The VDA also has an office in Brussels as well as a location of the VDA China (QMC) in Beijing.

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Christoph Mester is the manager responsible for transportation technologies at Germany Trade & Invest. A passionate advocate for future mobility, Christoph supervises large-scale projects along the entire value chain with clients from America, Asia and Europe. Prior to joining GTAI in 2020, he worked as a guest lecturer in economics at Hochschule Osnabrück.

For questions on how to establish your business in Germany please contact Stefan Di Bitonto at **stefan.dibitonto@gtai.com** and Christoph Mester at **christoph.mester@gtai.com**

For more information about the automotive industry in Germany, please visit our website: **www.gtai.com/automotive**

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About Us

Germany Trade & Invest (GTAI) is the economic development agency of the Federal Republic of Germany. The company helps create and secure extra employment opportunities, strengthening Germany as a business location. With more than 50 offices in Germany and abroad and its network of partners throughout the world, GTAI supports German companies setting up in foreign markets, promotes Germany as a business location and assists foreign companies setting up in Germany. All investment services and related publications are free of charge.

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