





# Fifth progress report

## Strategic Dialogue for the Automotive Sector in Baden-Württemberg

 October 2022



 progress report 2022

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# Greeting

Baden-Württemberg has set itself the goal of becoming climate-neutral by 2040 and also the lead market and lead provider of green technologies. This can only be achieved if we step up the development of renewable energy and if ecological solutions become business models and innovation drivers for a climate-friendly future. As one of the most significant industries in the state in economic terms, the Baden-Württemberg automotive industry plays a crucial role in achieving the climate targets. This is where three global megatrends – electrification, digitalization and automation - come together. They are fundamentally changing products and their production processes and pose major challenges for the industry. Politics, industry, academia, and society must join forces and do everything they can to ensure that this change succeeds. On the one hand, to preserve jobs and employment in Baden-Württemberg, the state that is characterized by the automotive industry. On the other, to achieve our climate targets in the transportation sector in the coming years. Electrification of the powertrain, automated driving, new vehicle concepts and new, flexible and multi-modal uses provide us with important tools for this. In addition to the megatrends, the automotive industry continues to be impacted by new and ongoing external shocks this year too. Delivery problems due to material bottlenecks and freight congestion and partly extreme price increases for raw materials, energy and logistics exacerbate the already existing major challenges through the structural change in the sector for our domestic vehicle manufacturers, suppliers and the automotive trade. At the same time, new stakeholders and business models are entering the scene. Successfully shaping the change against the backdrop of these additional changes takes huge efforts. But at the same time, the ecological and digital transformation represents a once-in-a-hundred-years opportunity. I am convinced that the high-tech state of Baden-Württemberg can emerge from the transformation process as a winner - with new, high-quality and climate-friendly products and services. For this reason, I initiated the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) back in 2017 to support the transformation process of the entire automotive industry in the state and to make Baden-Württemberg a pioneer for climate- and environmentally-friendly mobility. Within the framework of the SDA, the state government relies on a constant and intensive dialogue with experts from politics, industry, academia, and civil society. The state government supports this dialogue by funding projects for the research, development, and expansion of important future technologies and by investing in infrastructure measures.

Since the strategy realignment of the SDA at the beginning of 2022, the SDA has been working along the focus topics “Vehicles”, “Data” and “Energy” in structures that are even more agile and powerful. In the second phase of the SDA, we intend to sharpen our focus on digitalization, electrification and climate protection and scale the results of the preceding, practice-oriented research. Our goal with the SDA is to use the concentrated expertise of the Baden-Württemberg automotive industry and its excellent connections with other regions in a way that benefits Baden-Württemberg, Germany and Europe. I am therefore very pleased that, this year, we can put the transformation of the automotive industry in a European context within the framework of our “Brussels Debates on the Strategic Dialogue for the Automotive Sector BW” and also with this year’s annual SDA event. After all, this is where the important framework conditions are set and decisions are made that significantly impact the automotive industry. With this fifth progress report, I am pleased to provide you with another up-to-date overview of the activities of the Strategic Dialogue



for the Automotive Sector in Baden-Württemberg. At the start of the second project phase, it describes the current status of work and discussions of the three SDA focus topics “Vehicles”, “Data” and “Energy” and provides an overview of the initiated and planned projects and measures.

I would like to use this opportunity and encourage innovations for the benefit of our joint efforts to achieve our climate goals. We must act now and make academia and companies in Baden-Württemberg the center of an internationally attractive digital green ecosystem. If we can demonstrate that we can be successful with good working conditions and high-quality and environmentally-friendly product ranges, other companies will follow suit. This is how we can set the standard. Our common goal is therefore nothing short of Baden-Württemberg becoming a pioneer in climate and environmentally-friendly mobility and our companies playing leading roles in the global automotive industry, also in new technologies. We will join our forces to achieve this.

*Winfried Kretschmann*

Winfried Kretschmann

Minister-President of the State of Baden-Württemberg

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# CHAPTER 1: THE FIFTH YEAR OF THE STRATEGIC DIALOGUE FOR THE AUTOMOTIVE SECTOR IN BADEN-WÜRTTEMBERG

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# The Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) – a systemic cooperation format to shape the transformation of the automotive sector in Baden-Württemberg

Initiated by the state government of Baden-Württemberg in May 2017, the **Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA)** uses a systemic and holistic approach to bring together a wide range of stakeholders from politics, industry, academia, employee associations, consumer organizations, environmental associations and civil society. Together, we are working on multiple complex challenges arising from the climate targets, technological innovations, societal changes and the associated comprehensive transformation of the entire automotive industry, including all associated sectors of the economy.

Systematic networking and cooperation across ministries, industries and sectors are our approach in Baden-Württemberg that we have been following for many years in order to lead one of our key industries into a positive future that provides the jobs for and secures the living of many people in the state. The focus is not only on developing and introducing new technologies, products and services, but also on ensuring that the companies in the state adapt to the changing requirements and thus remain competitive at the international scale and fit for the future.

The effects of the Covid pandemic and the war in Ukraine have also clearly shown that an export-oriented sector such as the automotive industry, which generates around three quarters of its revenue in foreign trade, is particularly affected by international developments and vulnerable to crises. For this reason, the existing value creating and supply chain systems within the automotive industry must be continuously adapted and reorganized – especially in regards to the fundamental changes in the course of the transformation.

The Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) has been designed for a period of at least seven years and has, since its launch five years ago, pursued the goal of developing projects, measures and concepts that can be used to successfully shape the transformation process of Baden-Württemberg's automotive industry. The SDA is to ensure that Baden-Württemberg continues to play a leading role in new drive technologies and in the digitalization of mobility, and thus remains a globally important automotive location. At the same time, we want to become a showcase region for climate and environmentally-friendly mobility. Only if both goals are achieved can Baden-Württemberg continue to create value and offer sustainable jobs in the automotive sector in the future too.

With its activities, the SDA aims to

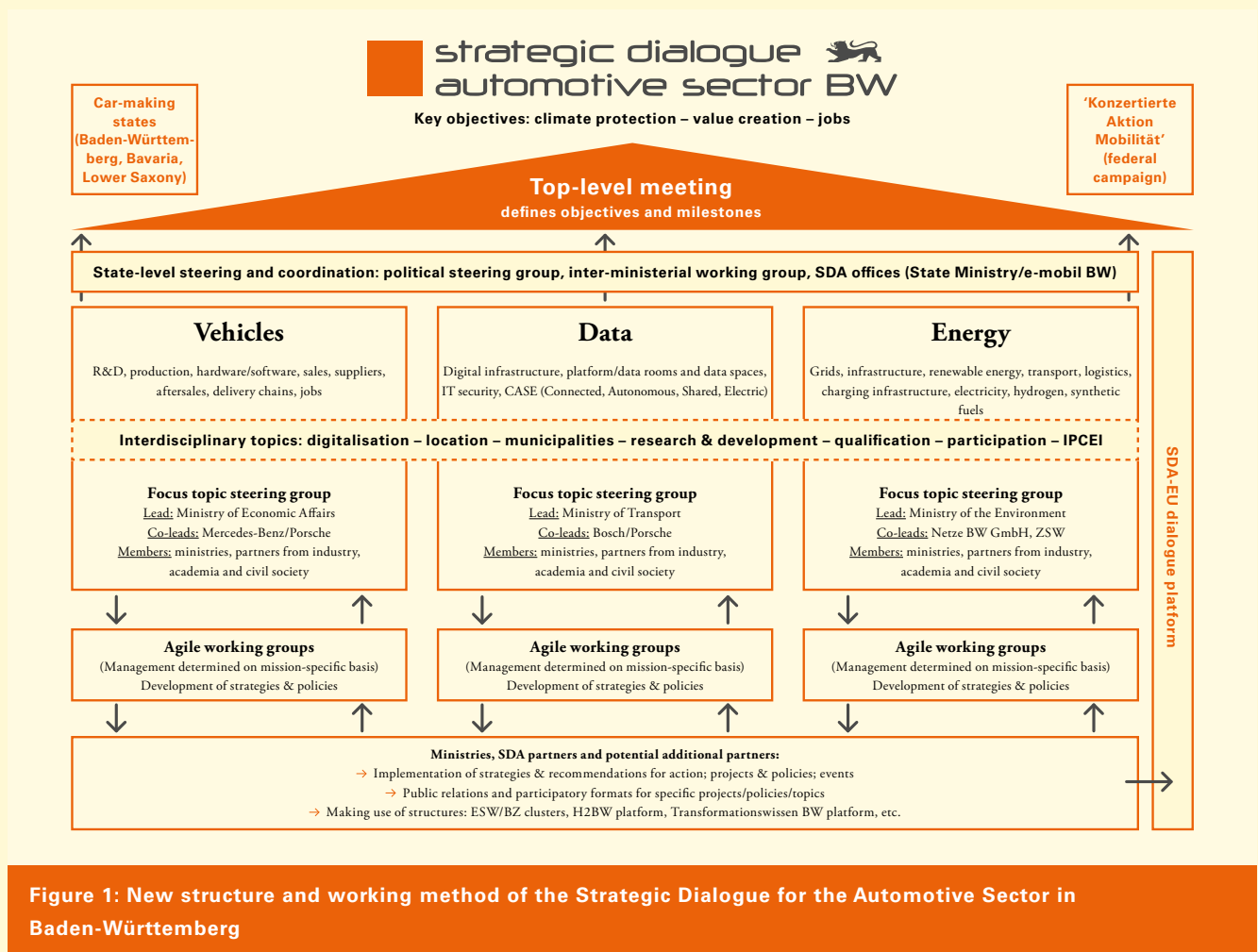
- identify fields of action that are particularly important for the ongoing transformation process from the viewpoint of a federal state as well as the perspective at the national and European level,
- identify instruments that are suitable to support the transformation process of the automotive industry and the shift toward climate-friendly, automated, connected and electric mobility in the future, and
- derive recommendations for politics, industry and other stakeholders.

The collaboration up to the end of the first project phase in fall 2020 covered six strategic topics, which incorporated at the entire value chain (topics I and II within the joint steering group, the Transformation Council) and additionally focused on important framework processes (topics III to VI):

- **Topic I – Research and development, production and suppliers**
- **Topic II – Sales and aftersales**
- **Topic III – Energy**
- **Topic IV – Digitalization**
- **Topic V – Traffic solutions**
- **Topic VI – Research and innovation environment**

The **interdisciplinary topic of society and mobility** related all topics mentioned above. The intention was to involve the citizens as current and future customers or users while addressing socially relevant issues, such as climate, health and environmental protection, and discussing them with the people in the state in suitable formats.

In the course of the 2021 annual SDA event, the strategic realignment along the three **focus topics “Vehicles”, “Data” and “Energy”** was introduced. Following the decision of the Council of Ministers at the end of 2021, the SDA received a new inter-ministerial and more agile format along the lines of these focus topics. The intent behind this more streamlined structure is a stronger focus on the topics, to connect them better where suitable, and manage them more flexibly and dynamically.



**Figure 1: New structure and working method of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg**

The top-level meeting, the political steering group, the interministerial working group (IMA), and the SDA offices at the Ministry of State and at e-mobil BW, the State Agency for New Mobility Solutions and Automotive Baden-Württemberg, continue to be the central bodies. Steering groups were established for each of the three focus topics and objectives and missions were defined. These are to be discussed in a result-oriented manner in ad hoc working groups over fixed periods of time to issue concrete recommendations for actions, projects and measures. Interdisciplinary topics such as digitalization, qualification, research and development will no longer be dealt with as isolated topics, but will be considered in each focus topic and included in the missions. Furthermore, within all three focus topics where transformation issues are relevant to the citizens in the state, civic participation is encouraged.

As the innovation and transformation agency of the state of Baden-Württemberg, e-mobil BW continues to be responsible for coordinating the individual activities of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg and for supporting the State Ministry and the five responsible Ministries of the state government (for the focus topics, these are the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg, the Ministry of Transport Baden-Württemberg and the Ministry for the Environment, Climate Protection and Energy Sector Baden-Württemberg, and, for the interdisciplinary topics, the Ministry of the Interior, Digitalisation and Local Government Baden-Württemberg as well as the Ministry of Science, Research and the Arts

Baden-Württemberg) in shaping the respective areas, focus topics and interdisciplinary topics. Within the framework of the SDA, experts from about 350 companies, organizations and institutions from Baden-Württemberg work together in various formats.

The current second project phase of the SDA, which is scheduled to run until 2024 (for the timeline, see Fig. 2), is to continue the activities that were started in the first phase, to scale them and make the successful transformation process visible for the public.

The strategic framework for the second project phase of the SDA was demonstrated by the “Roadmap for a successful transformation” presented at the 2020 interim conference. The Strategic Dialogue for the Automotive Sector in Baden-Württemberg is determined to continue to pursue the goal of climate-friendly, digitally connected mobility solutions from and for Baden-Württemberg with joint efforts of all stakeholders.

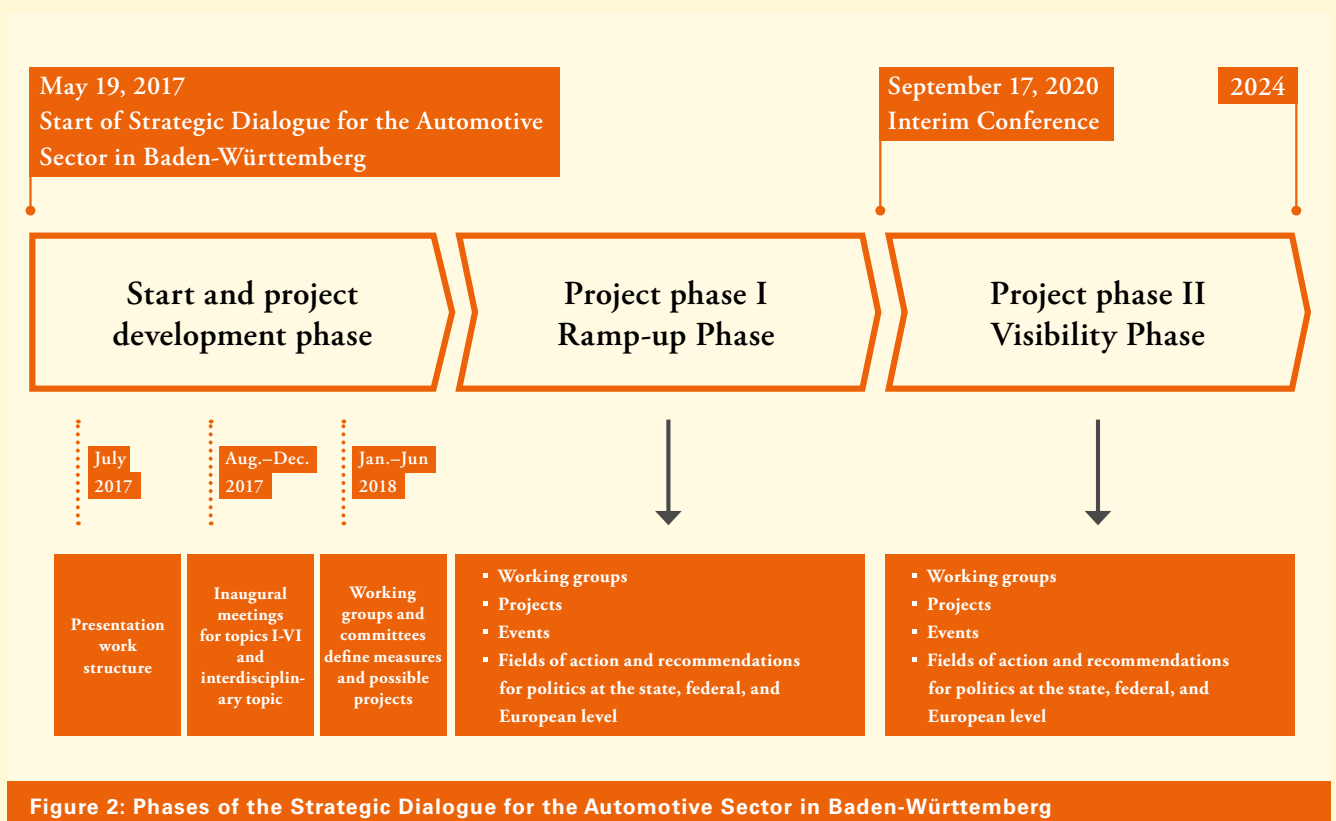


Figure 2: Phases of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg

In this context, the relevant change dynamics, such as the requirements of climate protection and digitalization, as well as a rapidly changing global markets and political landscapes, must be continuously monitored and analyzed. Generally, the intention is to use effective measures to achieve the goal of largely climate-neutral traffic and hence contribute to the general plan to make Baden-Württemberg climate-neutral by 2040. However, the decisions and measures to achieve this goal must be taken in the next few years. For this, technological changes must be taken into account as well as the changing customer behaviors worldwide which will lead to changes in demand (mobility as a service, sharing economy). The demand for intermodal mobility requires smart connections between infrastructure, public transport, and individual transport. Furthermore, the means of energy storage used in the course of the electrification in the transport sector (power, hydrogen, synthetic fuels) require changes in the supply of energy and thus become part of the energy transition. All these elements of change will entail fundamental changes of the transport system and also change the social, cultural and economic aspects of mobility (transport/mobility transition).

For the coming years, the roadmap determines the following goals<sup>1</sup>:

- Promoting electrification – scaling of SDA projects
- Furthering digitalisation as a core aspect of innovation
- Supporting and guiding the transformation process
- Continue to follow the path of dialogue

## A voice in Europe: SDA-EU dialogue platform

The transformation process of Baden-Württemberg's automotive industry does not stop at national borders; rather, it is directly affected by the global market, international climate targets and, in particular, European legislation and the goals pursued at EU level, e.g., as part of the Fit for 55 climate protection program. For this reason, the Baden-Württemberg state government pursues a strategy under the umbrella of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg to contribute to and drive forward important transformation topics through other formats, e. g. an initiative of the three "automobile states" together with Bavaria and Lower Saxony, or through participation in corresponding formats at the federal level.

Within the SDA, the state government has committed itself to ensure that the transformation of the automotive industry is also considered in its European dimension. After the SDA steering group at its meeting in Brussels handed over a first impulse paper to the European Commission in October 2019, the 2020 interim conference found that it was fundamental to establish a dialogue format<sup>2</sup> at the European level in order to guide the transformation as a significant economic process for all of Europe to ensure a bright future and to shape the transformation in a European way. For this reason, an EU dialogue platform was established within

<sup>1</sup> SDA\_Strategiepapier\_Roadmap\_Transformation.pdf (e-mobilbw.de) (see p. 8-11 particularly).

<sup>2</sup> 191016\_EU-Impulspapier\_Strategiedialog\_Automobilwirtschaft\_BW\_final.pdf (baden-wuerttemberg.de)

the framework of the SDA structure: Brussels Debates on the Strategic Dialogue for the Automotive Sector BW that provide a forum in the form of specialist events on specific relevant topics. Baden-Württemberg would like to give impulses and take on the role of an innovator, pioneer and mediator to show that ecology and economy do not contradict each other.

On March 24, 2022, the topic of **“Hydrogen and reFuels as drivers towards climate neutrality – What framework conditions are needed at the European level?”** was addressed as part of the **Brussels Debates on the Strategic Dialogue for the Automotive Sector in Baden-Württemberg**. With this joint event, Minister of the Environment, Climate Protection and the Energy Sector Thekla Walker and Minister of Transport Winfried Hermann opened the new series of the Brussels Debates on the Strategic Dialogue for the Automotive Sector in Baden-Württemberg at the Representation of the State of Baden-Württemberg in Brussels. In discussions with representatives of the European institutions, Minister Walker and Minister Hermann addressed the necessary framework conditions for the development of a successful hydrogen and reFuels economy. This includes, on the one hand, considerable investments in the advancement of technologies and the establishment of new energy partnerships with sun and wind rich regions – also outside Europe. On the other hand, regulatory obstacles must be removed and subsidies for hydrogen and reFuels projects – for example, within the framework of the Important Projects of Common European Interest (IPCEI) – must be approved more quickly by the European Commission. It was particularly important to shape the delegated act under the Renewable Energy Directive (RED II), pending approval, for the certification of green hydrogen with greater flexibility, especially in the market entry phase.

At the invitation of the Baden-Württemberg Ministry of Economic Affairs, the second edition of the **Brussels Debates on the Strategic Dialogue for the Automotive Sector in Baden-Württemberg** on July 11, 2022 focused on the topic of **“The Transformation of the Automotive Industry at a Turning Point – Economic policy automotive forum on European and regional strategies”**. Representatives of EU institutions and companies discussed with Economics Minister Dr. Nicole Hoffmeister-Kraut the question of how value creation is changing as a result of the transformation process in Europe’s automotive industry. According to the Minister, it is the task of the EU to take into account the concerns of small and medium-sized enterprises that are confronted with multiple challenges due to supply bottlenecks and shortages of energy, raw materials and skilled labour while the economic outlook is deteriorating at the same time. Another important topic was the ramp-up of electromobility, especially the development of a comprehensive charging and service network throughout Europe. In addition, Minister Hoffmeister-Kraut called for more technological openness in the planned regulation of heavy commercial vehicles, especially with a view to very different use cases that could not be reduced to one technology.

# Projects and activities at a glance

Researching, developing, mastering, scaling and industrializing new technologies on the basis of clear social and political framework conditions is the key to transforming the automotive industry. It is important to look pragmatically and without technological paradigms for the best solutions for the respective use cases in the mobility system as a whole and then to pursue and scale them as a matter of priority. Therefore, new drive technologies and new vehicle technologies and concepts are in the focus of the SDA.

The new drive technologies include battery technology, fuel cell technology and synthetic fuels, each of which is the subject of various projects and activities within the Strategic Dialogue for the Automotive Sector in Baden-Württemberg. The battery is the central component for the electrification of the powertrain and currently represents the largest share of value creation to electric vehicles. Various beacon projects around the topic of battery technology were initiated in the context of the SDA. In addition, several stakeholders from Baden-Württemberg were successful in **IPCEI** battery activities (Important Projects of Common European Interest): The companies from Baden-Württemberg whose projects were approved by the European Commission represent essential parts of the value chain, from securing raw materials to manufacturing and management of battery cells.

In addition to battery technology, fuel cell technology is the second key technology that needs to be researched, made visible in applications, and scaled up and industrialized in Baden-Württemberg. In order to become a leading location for hydrogen and fuel cells, the state of Baden-Württemberg adopted a hydrogen roadmap at the end of 2020. The implementation, monitoring and further development of the roadmap is carried out by the “**Hydrogen and Fuel Cell – H2BW**” platform, whose office is located at e-mobil BW, the State Agency for New Mobility Solutions and Automotive Baden-Württemberg. A third important technological path in the area of alternative drive technologies is the development and application of synthetic fuels. In this context, important project activities within the framework of the SDA therefore focus, for example, on novel, agile production systems for electric motors, various hybridization concepts or the design of a drive axle that enables largely emission-free driving with a high degree of efficiency and maximum effectiveness and that is suitable for everyday use.

Alongside the electrification of the powertrain, the automation and digitalization of mobility are two global megatrends with a major impact. Together with the corresponding regulatory developments, they shape the transformation of the automotive industry and contribute to the development of vehicle technology in general as well as future vehicle concepts and their central components. In addition, numerous projects on the topic of automated driving are initiated. These include highly innovative projects in the field of vehicle technology, e. g. **U-Shift**, a driverless and electrically powered vehicle concept that allows for modularity and thus intermodality, for new products and business models by separating the driving module from the transport capsule. Furthermore, there are several real laboratories such as the **Test Area Autonomous Driving Baden-Württemberg (TAF BW)**, which is now fully available for use by research institutions and companies after the successful completion of the set-up phase. Last but not least, this also includes projects such as **RABus** and **AMEISE** that provide insights into the necessary framework conditions as well as the new technologies’ impacts on the society and on traffic.

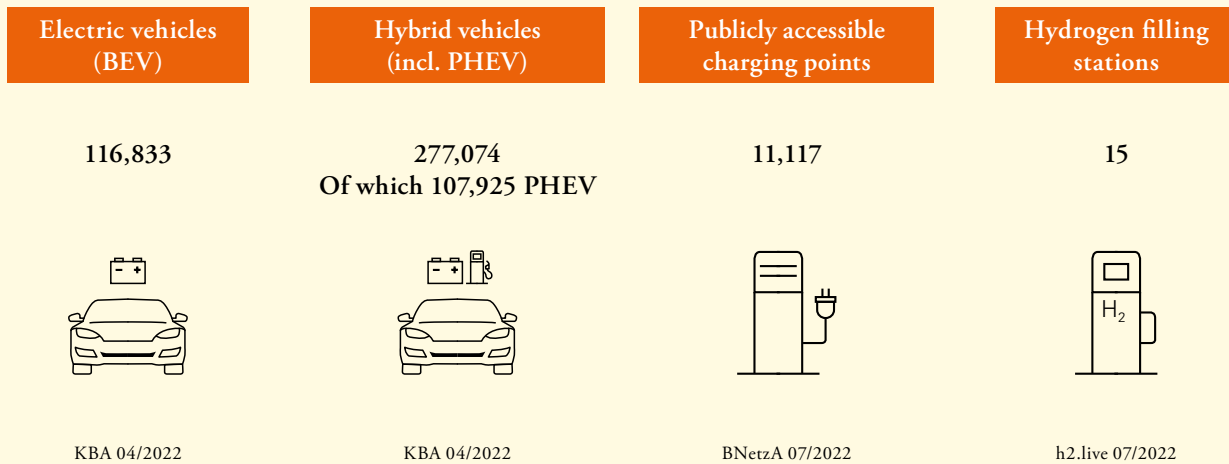


Digitalization is the trend of our time that will have the most profound impact on our mobility and the business models of today's automotive industry. Future innovations in the automotive sector will increasingly be shaped by developments in the software area. The transition to a zonal architecture will open up completely new opportunities, from software maintenance and over-the-air updates to firmware updates or activation of new vehicle functions via cloud connections. The final result will be a vehicle that is fully defined by software and fully exploits the potential of digitalization for mobility. An important factor in this will be the availability of high-quality mobility data. With the Baden-Württemberg **data agenda** that was adopted in 2020, the state aims to exploit the innovation potential of data for the industry, academia, and society and to leverage the existing potential for the automotive industry in particular. The Strategic Dialogue for the Automotive Sector in Baden-Württemberg focuses on various aspects of the digitalization of mobility, e.g., the **InKoMo 4.0** project (**Innovation Partnerships between Municipalities and Mobility Industry 4.0**) focuses on municipalities as key stakeholder in the implementation of digital mobility concepts. The merging and provision of mobility-relevant data is also essential for a flexible, sustainable, and intelligently connected mobility as the basis for achieving the transportation and climate protection goals. In keeping with the open data idea, the state of Baden-Württemberg created **MobiData BW**, a public interest-oriented and non-discriminatory portal that makes mobility data available to citizens, municipalities and the business community via open interfaces. On its way to digitally connect its modes of transportation, the state is working on improving the availability of mobility data and services, for example through a digital traffic sign register. In addition, existing data is to be used for quality assurance in the road network, improving traffic safety, and traffic situation forecasts through merging and the use of artificial intelligence. The state government is also pursuing the clear goal of setting important impulses for the overarching developments in the field of data at European and federal German level, e. g. Gaia-X or Catena-X together with strong stakeholders in the state, and through participation as a shareholder in the Mobility Data Space.

The transformation of mobility also requires new infrastructure and comprehensive measures to strengthen and expand the grids. A market ramp-up of electrically powered vehicles requires a comprehensive network of charging infrastructure and a corresponding filling station infrastructure for hydrogen and, potentially, for synthetic fuels. In July 2022, there were a total of 11,117 publicly accessible charging points and 15 hydrogen filling stations in Baden-Württemberg (see Fig. 3).

In its coalition agreement, the Baden-Württemberg state government set itself the goal of massively expanding the charging infrastructure and networks. For example, fast-charging stations should generally be found within a range of five kilometers in the state. With the **Pilot Charging and Refueling Infrastructure for Long-Distance Trucks (PiLaTes)** project, the state government and its partners from industry and research place their focus on the fundamental issue of the charging and refueling infrastructure for commercial vehicles and have set up first pilot facilities to gather important knowledge for further expansion. In addition to the issue of rolling out charging infrastructure, grid integration has been an important topic in the SDA for years and is advanced primarily within the **INPUT** funding framework, but also by various projects and grid laboratories of NetzeBW. In addition, the technological aspects and continued development of charging methods, such as bidirectional charging or the use of blockchain technology, must also be considered.

## Current numbers for Baden-Württemberg



© own diagram

**Figure 3: Number of vehicles with alternative drives on the road and infrastructure in Baden-Württemberg**

In order to shape the transformation, Baden-Württemberg with its grown and excellent research landscape fulfills an important prerequisite. One strategic centerpiece is the **“Mobility of the Future” innovation campus (ICM)**, which bundles the competencies of the Karlsruhe Institute of Technology (KIT) and the University of Stuttgart in the areas of mobility and production in cooperation with other research partners in Baden-Württemberg. The aim is to jointly develop new mobility products and production technologies and systems for the sustainable and digital mobility of tomorrow across the different disciplines. Research will focus on the following topics:

- highly productive, versatile and flexible production
- software-based, reconfigurable production systems
- zero-emission mobility products with new functions and a higher degree of freedom
- transformation of mobility: autonomous, connected, sustainable, comfortable
- and cost-efficient through dynamically reconfigurable mobility systems.

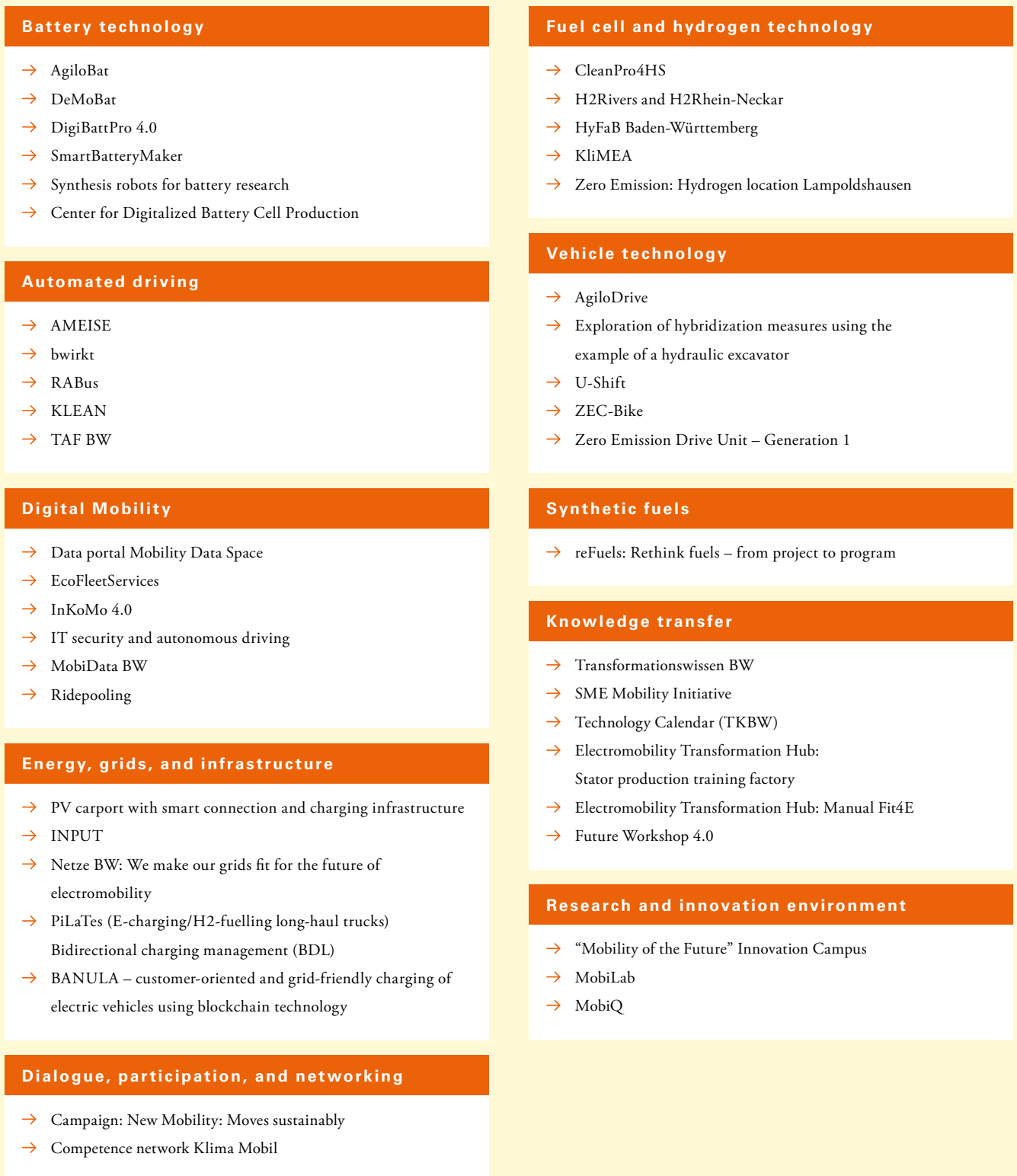
Particularly important for empowering the individual stakeholders in Baden-Württemberg and to help them shape the transformation is the targeted transfer of customized knowledge between research and industry, between large, medium-sized and small companies, and between and within all affected sectors. Initiated primarily by the Baden-Württemberg Ministry of Economic Affairs, the Strategic Dialogue for the Automotive Sector in Baden-Württemberg has committed itself to support small and medium-sized enterprises in Baden-Württemberg through a targeted knowledge transfer, to identify the various aspects of the techno-

logical change and to develop suitable strategies for entrepreneurs and employees to shape the transformation in a positive way. Measures such as the **SME Mobility Initiative (MoM)**, the **Technology Calendar (TKBW)**, the **Electromobility Transformation Hub** and the **Future Workshop 4.0** are important steps toward making Baden-Württemberg's SMEs fit for the transformation. Two key target groups – SMEs in the supplier industries and the automotive trade – are in the focus of the project **Transformationswissen BW**. The task of this advice centre, which was set up at e-mobil BW, the State Agency for New Mobility Solutions and Automotive Baden-Württemberg, is to facilitate access to existing, target-group-specific support services. For this, the advice centre is currently working with 40 partners whose services in the areas of qualification, networking and knowledge transfer are clearly presented at the web platform [www.transformationswissen-bw.de](http://www.transformationswissen-bw.de). In personal meetings, the advice centre team looks at the individual situations of the companies and explains the relevant developments and trends as well as suitable funding options. Events with regional partners as part of the “Automotive in Bewegung” series and the various short studies that are published in the “Wissen Kompakt” series contribute to the building and transfer of knowledge in the industry. The “Transformation Automotive Industry” consulting voucher from the Baden-Württemberg Ministry of Economic Affairs, Labour and Tourism has been available to support companies with additional individual consulting services since January 2021. The voucher program aims to help companies assess their current situation and analyze their next steps in their own transformation processes. Especially SMEs with up to 250 employees have actively used the consulting vouchers. Popular topics currently are strategy decisions, business model development, and the challenges of digitalization for companies.

In view of the complexity of the challenges and changes in the course of the transformation, it is highly important to understand the questions and uncertainties of the many people affected in the state, to actively involve citizens in the processes, projects and plans of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg. It is also important to inform them about and to discuss with them the changes in mobility – up to now bundled in the **interdisciplinary topic of society and mobility** and coordinated by the State Councillor for Civil Society and Civic Participation at the State Ministry of Baden-Württemberg as the central place for participation and dialogue with the public. In the future, the topic of participation will continue to play an important role as an interdisciplinary topic in all three focus topics “**Vehicles**”, “**Data**” and “**Energy**” through appropriate missions. The first missions will be “Industrial locations – support in the participation process” and a dialogue with employees of supplier companies and the automotive trade as part of the focus topic “Vehicles”. In addition, interested citizens can continue to register on the **[participation portal of the state of Baden-Württemberg](#)** and receive information about upcoming events and new activities through the newsletter of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg.

In summary: The transformation of the automotive industry in Baden-Württemberg is in full swing and poses major challenges for all stakeholders involved – technologically, financially and in terms of personnel. First successes in the transformation process are already visible: new production facilities for electric vehicles and central components have been established, manufacturers and suppliers as well as mechanical and plant engineering companies have adapted to the new technological requirements and developments, the necessary infrastructures are already in place or under construction, and many pioneering research projects have been successfully initiated and realized by companies together with Baden-Württemberg's excellent research landscape of universities and research institutions.

The state of Baden-Württemberg has provided funding of more than 390 million euros for the Strategic Dialogue for the Automotive Sector in Baden-Württemberg from 2018 to 2022, and has invested multiples of that amount in measures in order to achieve the SDA goals. Fig. 4 shows an overview of the ongoing projects within the framework of the SDA. Profiles of the individual projects can be found on the newly created e-mobil BW website – e-mobil BW SDA. The projects emerged from the inter-ministerial and intersectoral discussions and activities and show that the participating project partners from business, academia, the municipal sector and society drive the process forward and even contribute significant own funds and personnel themselves. Above all, however, they are taking important measures for their own transformation on a much larger scale by researching and developing new technologies, by finding and training the necessary brains and talents, and by investing in the facilities for the production of new technologies and products and the necessary infrastructure.



**Figure 4: Project topics of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg**

Selection of projects in the context of the SDA; for more information on all projects and missions of the SDA BW, see [www.sda.e-mobilbw.de/en](http://www.sda.e-mobilbw.de/en)

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# CHAPTER 2: FOCUS TOPIC “VEHICLES”

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## Statements



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Nicole Hoffmeister-Kraut,  
Minister of Economic Affairs, Labour and  
Tourism of the State of Baden-Württemberg

The next few years will be decisive in determining whether we can contain climate change, master the sustainable transformation of our economy, make mobility transformation and digitalization a success, and preserve prosperity and jobs in Baden-Württemberg. Even before the Corona pandemic, the challenges posed by the transformation processes in terms of sustainability and digitalization were enormous. Among other things, the pandemic has led to interruptions of the supply chains, production stops and slumps in growth. In addition, there is a war going on in the middle of Europe. The Russian aggression against Ukraine is not only a human tragedy. It also entails economic disruptions that are unprecedented in recent history. In a study, the Bertelsmann Foundation aptly described the situation as the “return of scarcity.” Everything seems to be in short supply: energy, materials, personnel, and ultimately time, as climate change progresses relentlessly. Economics, as a science, is concerned with the efficient distribution of scarce resources. So, we need to think more economically again. That also means that we must set priorities – for example, within the framework of the European Green Deal. The European Parliament counts no fewer than 130 initiatives and bills in this area. Many of them also impose burdens on the economy. In light of the challenges outlined above, we need to think carefully about what we can expect from companies. Which measures or contributions will yield maximum benefits in terms of climate protection while minimizing costs? Increasingly extensive reporting requirements, for example, do not fall into this category in my opinion. We cannot take it for granted that our industrial companies, in particular, will easily master the current challenges! The question is whether and how we can ensure continued value creation in our domestic production industry. This applies not only to the major manufacturers, but also to the numerous regional suppliers and other stakeholders in the automotive industry as a whole. It is the foundation of our prosperity and must be preserved. The transformation of the automotive industry must become a success! And it will only be successful if politics and industry act together as they do in the focus topic “Vehicles” within the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA). The challenges are huge and the stakes are high. That is why the state of Baden-Württemberg and I personally consider it very important to find good solutions together.





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Sabine Kohleisen,  
Member of the Executive Board of  
Mercedes-Benz Group AG Director of  
Human Resources and Labour

All companies in the automotive industry in Baden-Württemberg have set the course towards transformation – and climate change and its implications and the current geopolitical developments clearly demonstrate the urgency of this transformation. At the same time, the crisis-related challenges faced by our industry have multiplied – in a scale that was unimaginable only a short time ago. Now, we must keep at it and not let up in our efforts to shape this transformation in the best possible way for the benefit of society and the economy. We can only achieve this through joint efforts – using a format such as the Strategic Dialogue for the Automotive Industry BW (SDA) that has proven itself over the years and can now play to its strengths. Small and medium-sized companies often need more support in the transfer of knowledge, but very often develop innovative solutions from which large companies can also benefit. Politics shape the framework conditions and impulses from civil society provide new ideas. For us at Mercedes-Benz Group AG, transformation also stands for reliable implementations of agreed levers and thus for shaping the further economic, technological, and digital developments of our locations. In the heart of our Untertürkheim plant, a new competence center for battery technologies is being established: At the Mercedes-Benz eCampus, we are bundling and expanding group-wide research and development activities around the topic of batteries and cells.

However, transformation must be thought of holistically: in addition to decarbonization, digitalization and globalization are forcing us to change our own ways of working and to question familiar patterns of thinking. Everyone involved needs to be willing to change, which is why the continuous qualification of our teams is the key to successfully shaping change.

The dialogue between politics and industry must take all these aspects of the transformation into account. We therefore also welcome the reorganization of the SDA – with targeted missions, we can jointly develop solutions for the pressing issues in Baden-Württemberg.



Andreas Haffner,  
Member of the Executive Board,  
Human Resources and Social Affairs,  
Dr. Ing. h.c. F. Porsche AG

With the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA), we are shaping the future of our state together. As Porsche’s Director of Human Resources, the focus topic “Vehicles” is particularly close to my heart. The state and its economy are in the midst of the greatest transformation since the Second World War. Digitalization, electrification, decarbonization and defossilization go hand in hand with geopolitical tensions and conflicts, and an acute shortage of skilled workers and a demographic change. In addition, the work requirements in the automotive industry are changing fundamentally. The tasks could therefore hardly be more challenging. But the good thing is that this transformation provides us with plenty of opportunities – as long as we understand it as a comprehensive task and approach it together: Politicians, employers, employees, trade unions and society at large. As Porsche, we are happy to take responsibility for this together with our partners in the SDA. We want to drive change together and play an active role in the transformation of the automotive industry. Transformation does not simply happen. But I see the commitment and confidence with which our colleagues at Porsche are currently shaping their very own personal transformation stories. This makes me extremely confident that together we will also succeed on a large scale. An essential key to this is that we need to urgently address the deficits in the STEM professions that already exist today – both in terms of the number of skilled workers but also in terms of the skill profiles. We must manage to successfully implement transfer qualifications. The Institute of the German Economy assumes that we will have a shortage of five million skilled workers by 2030. In 2022 alone, it is expected that 300,000 more people will retire than skilled workers will enter the labour market. We are already feeling this shortage in vocational training. In 2021, 60,000 apprenticeship places in Germany remained open, i. e. twelve percent of all available positions. All of this explains the importance of the focus topic “Vehicles” and the two missions of STEM professions and Transfer qualification and readiness for change in which Porsche is involved. Together, we will succeed in leveraging the great potential that Baden-Württemberg offers as a location. However, we should not waste any time.

# Focus topic “Vehicles”:

## Current status

The transformation tasks are not made any easier by the new challenges – that is the pandemic and the war in Ukraine. The SDA and the **focus topic “Vehicles”** therefore continue to play crucial roles. We achieved a lot in the first phase of the SDA. Technologically, we focused on the battery and, for example, established a beacon project for the whole of Germany with the Center for Digitized Battery Cell Production at the Fraunhofer Institute for Manufacturing Engineering and Automation IPA. Another beacon is the independent point of contact and advice centre for small and medium-sized supplier companies – Transformationswissen BW – which we established as a powerful unit at our state agency e-mobil BW. The complementary consulting program named Transformation Automotive Industry acts as a low-threshold entry point for small and medium-sized enterprises (SMEs) into the strategic transformation processes through external support. The Future Workshop 4.0 was set up to provide targeted support for the automotive industry, acting as an innovation showcase and qualification initiative along the entire customer journey of retail and aftersales. We are also developing and testing new vehicle concepts and business models, for example, the “U-Shift” demonstration project. This beacon project was expanded in the current year to include a transfer phase. The current findings and prototypes are intended to serve as carriers for various open-source transfer technologies. We are approaching the second phase of the SDA with the same commitment. In the focus steering group “Vehicles” – the Transformation Council Automotive Industry BW – we defined seven missions for 2022 and have begun implementing them.

In order to better meet the needs of the industry’s employees and to better integrate their needs into the transformation process, we launched an employee dialogue together with the Civil Society and Civic Participation Unit at the Baden-Württemberg Ministry of State. Transformation often also means company expansions and new industrial locations. In order to assist companies and municipalities in this area, we launched a mission together with the Civil Society and Civic Participation Unit. Two missions under the leadership of the Ministry of Science, Research and the Arts targeted the topics of academic STEM specialists and sustainable digitalized production processes. To be able to assess the transformation process’ effects on employment and on new business models in the retail sector and workshops more profoundly, we launched another mission together with e-mobil BW, the Association of the Automotive Industry, and the metal workers union IG Metall. The ongoing transformation brings with it lasting changes for employees. To be able to master these challenges, all of the industry stakeholders need the willingness to change. The two co-leads, Mercedes-Benz and Porsche, therefore launched a mission.

And finally, the increasing demands resulting from connected and automated vehicles will require new software concepts and IT security expertise in the future. We therefore launched a mission on the focus topic of software in vehicles.

# Mission Reports

## Software in vehicles

The software and electronics architectures in vehicles are becoming increasingly important and complex. The growing demands of electrification, connection and automation require new software and IT security expertise. As part of the federal government-funded SofDCar (software-defined car) project, leading companies and research institutions in the state have already addressed central issues. For the Automotive Cluster in BW, it has been essential that the many medium-sized suppliers can participate in the future value creation potential. Especially these suppliers often find it difficult to develop, scale and industrialize innovations in the new fields of technology such as software, digitalization, AI, sensor and actuator technology on their own. The mission therefore explores the questions: How can small and medium-sized enterprises be integrated in the processes along the supply chains? Which questions are relevant beyond SofDCar regarding future value creation within the state?

### Parties Involved

- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- Audi AG
- DAT Deutsche Automobil Treuhand GmbH
- EDI GmbH
- e-mobil BW GmbH
- FZI Research Center for Information Technology
- IPG Automotive GmbH
- RA Consulting GmbH
- Robert Bosch GmbH
- University of Ulm
- ViGEM GmbH
- ZF Friedrichshafen AG

## Employment effects in the automotive trade in 2030/2040

The study "Employment effects in the Automotive Trade 2030/2040" looks at the effects of vehicle electrification and digitalization and of the redesign of business processes on employment structures in the automotive trade. Changes in sales and after-sales are analyzed, effects on job profiles and employment in Baden-Württemberg are evaluated, and the automotive trade and its stakeholders are supported in finding their places and are enabled to determine appropriate measures through recommendations for actions. The Fraunhofer Institute for Industrial Engineering IAO and the Institut für Automobilwirtschaft ifa (Institute of Automotive Business) are preparing the study on behalf of e-mobil BW. The project is funded by the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg, Verband des Kraftfahrzeuggewerbes Baden-Württemberg e.V. (Association of the Motor Vehicle Trade in Baden-Württemberg), and the Baden-Württemberg metal workers union IG Metall.

### Parties Involved

- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- e-mobil BW GmbH
- Fraunhofer Institute for Industrial Engineering IAO
- IG Metall Baden-Württemberg
- Institut für Automobilwirtschaft ifa
- Verband des Kraftfahrzeuggewerbes Baden-Württemberg e.V.

## Academic STEM professionals –bright new minds for the country

Joint efforts are needed to promote STEM qualifications, to show exciting and versatile job profiles, to emphasize their importance for climate protection and digitalization – and above all, to inspire young people to choose technical study programs. From May 16 to September 30, 2022, the project team conducts an analysis on how universities and partners in business and society can respond to the companies' high demands for skilled employees with transformation-relevant skills profiles

- through advanced academic education,
- through measures to increase the number of first-year students and student success in STEM, and
- through collaborations between universities and companies

and it will derive recommendations for universities, companies, and the academic qualification system.

### Parties Involved

- Ministry of Science, Research and the Arts Baden-Württemberg
- Chamber of Commerce and Industry Baden-Württemberg
- DHBW Baden-Württemberg Cooperative State University
- Federal Employment Agency
- Karlsruhe University of Applied Sciences
- Südwestmetall
- südwissen
- University of Stuttgart
- VDI regional association
- VDMA

## Sustainable digital production in the automotive industry BW

Sustainability and resilient value creation networks are becoming increasingly important in the automotive industry. Major challenges arise from the economic intention to enable the highest possible system effectiveness while providing flexibility in terms of production technology at the same time. The forward-looking paper is to show possible courses of action for resolving these contradictions and achieving the goals regarding emissions/energy/material monitoring. This requires a holistic view of value creation networks and production systems, without overly abstracting the manufacturing technologies. In the mission that is supported by the Ministry of Science, Research and the Arts, academia and industry discuss technologies and ideas and develop a forward-looking white paper for the sustainable, digitalized, and resilient production of the future. Focus topics, innovation drivers, and obstacles to implementation are to be identified for this, among other things.

### Parties Involved

- Ministry of Science, Research and the Arts Baden-Württemberg
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- AUDI AG
- Dr. Ing. h.c. F. Porsche AG
- e-mobil BW GmbH
- Fraunhofer Institute for Industrial Engineering IAO
- Fraunhofer Institute for Systems and Innovation Research ISI
- "Mobility of the Future" Innocation Campus (ICM)
- Mercedes Benz Group AG
- SME

## Pulling together – shaping the transformation together

The digitalization and electrification of vehicles and of production processes are changing the tasks and duties of the more than 150,000 employees working at small and medium-sized suppliers and in the automotive trade. Therefore the crucial question is: How can these companies manage the transformation successfully together with their employees? This crucial question was discussed in-depth as part of the mission "Dialogue with employees to shape a successful transformation". Workshops were held to discuss transformation and communication strategies as well as training opportunities for employees. Executives, works councils, HR managers and employees contributed their different perspectives and experiences. This process resulted in a manual listing success factors, practical examples, tips and advice for successful transformation processes including employee involvement. This will be presented at the annual SDA event in Brussels.

### Parties Involved

- Ministry of State Baden-Württemberg  
– Office of the State Councillor for Civil Society and Civic Participation
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- e-mobil BW GmbH
- IG Metall Baden-Württemberg
- Südwestmetall
- Verband des Kraftfahrzeuggewerbes Baden-Württemberg e. V.

## Dialogue and civic participation in industrial location projects

The transformation of the automotive industry presents companies, research institutions and municipalities with the task of planning, approving, and building new research, industrial and production sites. Baden-Württemberg wants to be at the forefront in this regard and to continue to welcome the most innovative companies and climate-friendly technologies. That is why it is important to implement plans quickly and have communication strategies in place for the construction measures. An important factor here is local societal acceptance. Only through dialogue and the involvement of citizens can such industrial location projects be realized.

As part of the mission "Dialogue and civic participation in industrial location projects", the Baden-Württemberg Ministry of Economic Affairs, Labour and Tourism and the State Councillor for Civil Society and Civic Participation at the Baden-Württemberg Ministry of State support municipalities and companies in their dialogue with citizens and their participation in industrial location projects in the automotive sector. Projects and plans should be explained at a very early stage, participation should be discussed, and the process should be accompanied by communication measures. After all, the transformation of the automotive industry in Baden-Württemberg can only be successful if planning takes place in dialogue with other stakeholders.

## Dialogue format for transfer qualification and readiness for change

With the transformation of the automotive industry, Baden-Württemberg is facing major technological and structural changes that will require major upscaling of qualifications. Building on solid basic qualifications of skilled workers and with suitable qualification concepts, long-term jobs can be developed in future fields of work.

This is supported by the mission “Dialogue format for transfer qualification and readiness for change”, which will create opportunities for companies in the automotive industry to exchange business practices and ideas, especially for SMEs. The dialogue format is being developed in 2022 and will be launched in 2023. It will address qualification concepts, changing job duties and how employees’ readiness for change can be increased. Companies can discuss their experiences, best practices, and lessons learned. The format will be integrated into the advising program Transformationswissen BW.

### Parties Involved

- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- Dr. Ing. h.c. F. Porsche AG
- e-mobil BW GmbH
- Mercedes Benz AG Group

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# CHAPTER 3: FOCUS TOPIC “DATA”

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## Statements



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Winfried Hermann,  
Minister of Transport of the State of  
Baden-Württemberg

Together with Bosch and Porsche, the Ministry of Transport Baden-Württemberg has been responsible for the new focus topic "Data" in the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) since January 2022. Digitalization and data-based networking are central factors for shaping the climate-neutral, attractive, and socially just mobility of the future. At the same time, they open up new business areas for the automotive industry and thus also new opportunities for profit creation. Since 2017, the successful format of the SDA has acted as an incubator for close collaboration to advance the transition of mobility and drivetrains. Together, we have achieved, implemented, and worked on many things since then. But that is not enough for us. We need to become even better, more efficient, and faster. That is why we are massively intensify the dialogue between industry, academia and civil society about key technologies, innovations, and research fields in regards to future value creation, successful transformation, and climate protection. With mobility data, for the first time, the focus is on an area that affects both administration and industry. The Ministry of Transport is making the topics of data and digitalization in transport top priority. For example, the state of Baden-Württemberg not only operates the two-time award-winning MobiDataBW open data platform but has also been a shareholder in Datenraum Mobilität GmbH since this year, which operates the Mobility Data Space, a platform for data exchange that provides full data sovereignty. We have also repositioned ourselves for the tasks ahead. Our new department no. 5, Mobility Center, Connected and Digital Mobility, brings together digitalization topics such as mobility control, traffic management, mobility data, automated driving, and vehicle technology and registration. This bundling makes us even more powerful and shortens decision-making paths. The big questions that guide us in the SDA are: How can we make tomorrow's mobility more digital? How can mobility be social, reliable, safe, and affordable while meeting the climate protection targets at the same time? To find answers to these questions, we need many people who take holistic views of mobility and have the courage to think in new ways and try out new things. Within the SDA, we created a space for this. Now we must make the best possible use of it, expand it, and do it all together!



Lutz Meschke,  
Vice Chairman of the Board and  
Member of the Board of Finance and IT,  
Dr. Ing. h. c. F. Porsche AG

Baden-Württemberg has picked up speed in terms of digitalization – also thanks to the various impulses from the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA). Yet, the Corona pandemic and supply chain problems have ruthlessly revealed that there is still a lot of catching up to do. Consequently, this means that we need massive and quick improvements of our digital infrastructure. We need to massively strengthen our IT and AI competencies. Also, we need to improve the framework conditions for start-ups. Only in this way will it be possible to lift the industry, the economy and the society to the future-capable level 4.0 as quickly as necessary. The race to catch up has begun. Concrete projects have already been defined and Porsche intends to make a major contribution to this together with their partners from politics, industry, municipalities, and society.

Among the planned projects in which Porsche is involved is the AI Innovation Park Baden-Württemberg in Heilbronn. Our goal is to strengthen Baden-Württemberg as a location for AI value creation and to develop the corresponding ecosystem. A second project focuses on scalable digitalization competencies for municipalities. Together with municipalities and the management and IT consulting firm MHP, we intend to drive digitalization across the board - based on common standards. In the process, innovative digital solutions made in Baden-Württemberg are being created. One example is Intelligent City Performance (ICP): It is a digital platform that makes cities, their infrastructure and mobility more sustainable and livable. It digitally connects municipalities and companies and uses data to enable, for example, emissions-based management of mobility or smart solutions for parking and charging vehicles. This can significantly reduce traffic and emissions on site.

The pressure to act is enormous - on the administrative side as well as in industry and society. Therefore, our roadmap is ambitious: We intend to present the first concrete results this year and thus also set new impulses at the European level. Further cooperation partners are welcome at any time. All SDA partners are invited to get involved.



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Dr. Markus Heyn,

Managing Director Robert Bosch GmbH

The Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) has set a new, forward-looking focus on data. Digitalization, automation, and connectivity will revolutionize the automotive world. The vehicle itself will become a “smartphone on wheels” or a “node on the Internet”. When it comes to transformation and digitalization, Bosch is right at the forefront. Our work around automotive software targets a market that is expected to be worth more than 200 billion euros by 2030. We already supply more than 200 million ECUs with proprietary software for vehicles worldwide now. In future electronic architectures, these devices will be open to updates from the cloud. The days when cars were completely finished at their delivery are history. The premier league of digitalization is automated and connected driving. We are aiming high and intend to realize partially and highly automated driving for everyone. We are specifically talking about functions that allow drivers to temporarily take their hands off the steering wheel. In the future, “highway pilots” should be able to take over the drivers’ tasks completely. Everyday automated driving has already begun with driverless parking. Here, Bosch is setting standards together with Mercedes-Benz. Very soon, cars will be able to park in the Stuttgart airport parking garage simply through smartphone commands. In an increasingly connected world, we cannot afford to operate at our usual speed in Europe when it comes to digitalization. We need to step up the pace and join forces of both politics and businesses to build our own independent and collaborative digital infrastructure. The pan-European partner network Catena-X can enable secure, cross-company data exchange between all participants in the automotive value chain. Together, we can become pioneers in terms of data sovereignty and open technologies for an entire industry. The key to success is the greatest possible European leverage in all areas of transformation: powertrain, transport infrastructure, and digitalization. I am therefore very pleased that this year the state government has committed to raising the SDA topics to the European level. This allows us to put the focus on important digital issues in the midst of the implementation of the Green Deal.

# Focus topic “Data”:

## Current status

Global developments (pandemics, war in Ukraine, heat waves) have just demonstrated how important data is – as the basis for democratic decision-making and for political and economic action. It is all the more important to make reliable data – especially on mobility – available to a broad public. The spatial mobility of people is a fundamental right. How can this be achieved in a better, fairer and more climate-friendly way in the future? What is needed for this, when and by whom? What challenges does digitalization pose for administrations and industry alike?

Successfully shaping the digital transformation, which involves the questions of how data standards, data protection and data flows will be regulated in the future, will be essential in the coming decades, especially for Baden-Württemberg as an industry location and its strong automotive industry. The state of Baden-Württemberg intends to make better use of the innovation potential of data for the industry, academia, and society. For research, development and the establishment of new business models, all stakeholders involved in the data economy must work together to fully activate the potential of existing and future mobility data. On the other hand, climate protection is becoming an increasingly urgent issue and we must now reduce CO<sub>2</sub> emissions drastically and quickly if we want to preserve our basis of life. This can only be achieved if the transport and mobility sector make major contributions too.

In the new **focus topic “Data”**, we wish to jointly advance the strategic planning for the digital infrastructure of mobility, automated and connected driving, and the expansion of data platforms, among other things, and to translate these into concrete applications. To this end, clearly defined tasks or projects will be worked on and implemented in smaller agile working groups within defined time frames. Beside the structure of the SDA, the composition and objectives of the various steering groups, working and project groups have also been changed fundamentally for this. The new steering group for the focus topic “Data” met for the first time on May 18, 2022 at the Stuttgart Kursaal. It discussed specific missions and planned projects to coordinate their work and to define the roadmap for the coming months. The committee will meet every six months.

The central points of discussion were, on the one hand, that we generally need to speed up the transformation process, the expansion of the digital infrastructure and digital education. However, on the other hand, in order to create sustainable value from data, cooperation is needed at the European level. Activities should be intensified to this end. The focus should be on data, technology, and infrastructure. The planned missions and projects were presented to the members in the form of a marketplace where posters were presented, jointly discussed, new thoughts added, and initial milestones and participations defined.

# Mission Reports

## Mission 1: Clarification of roles in the area of mobility data

### 1. Possible business models, mobility data, and role clarification

#### State & industry

Currently, different groups in the mobility data ecosystem stand side by side with a lack of understanding on all sides. Therefore, it is necessary to define the roles of the public sector, society, the industry, academia regarding mobility data. In an agile creative process, a common understanding and, based on this, a position paper is to be developed.

### 2. Further development of MobiData BW

MobiData BW is a public data platform for the exchange of relevant mobility data (public transport, parking, mobility services, infrastructure data, traffic information, etc.) that follows the open data approach and liberal provision of data. For further development, it must be clarified which data, information or services not yet available are to be included in MobiData BW from the perspective of external partners. These needs of the industry will be worked out in workshops. For example, the MobiData BW website must be revised and adapted to include the new fields of data.

### 3. Scalable digitalization competence for municipalities

In addition to consulting and support for the digitalization of municipalities, a digital smart city platform is to be developed that links municipalities and companies with their data in order to create value creation for all stakeholders. Aspects to be clarified include questions of data sovereignty, data usage rights, and data monetization.

### 4. Civic and public participation in the SDA

Participatory elements are to be used to actively involve citizens in a multi-stage process by means of concrete and relevant issues. Currently, there are plans for the preparation of a citizens' report, information events together with the industry, citizens forums on mobility data and a series of workshops on various topics. Furthermore, within the framework of the established test areas, on-site surveys are planned.

#### Parties Involved

- Ministry of Transport Baden-Württemberg
- Ministry of State Baden-Württemberg
  - Office of the State Councillor for Civil Society and Civic Participation
- Ministry of the Interior, Digitalisation and Local Government Baden-Württemberg
- Association of Cities Baden-Wuerttemberg
- AUDI AG
- bitcom e. V.
- bridgingIT GmbH
- DEKRA e.V
- e-mobil BW GmbH
- fastahead GmbH & Co. KG
- Fraunhofer Institute for Industrial Engineering IAO
- Fraunhofer Institute for Systems and Innovation Research ISI
- FZI Research Center for Information Technology
- German Association of the Automotive Industry (VDA)
- Karlsruhe Transport Authority (KVV)
- Mercedes Benz Group AG
- MHP Management- und IT-Beratung GmbH
- Nahverkehrsgesellschaft Baden-Württemberg mbH
- PTV Group
- Star Systems GmbH
- VVS public transport association

## Mission 2: Connecting vehicles and road infrastructure

### 1. Digital traffic sign register

The goal is to digitally map all traffic signs required under the StVO (German road traffic regulations) in BW and to transfer them to a central database of the state, as a “digital twin”; all this with the help of a web application that is based on a geographical information system in connection with a fully digital workflow of their positioning under the road traffic regulations. This new database is to support automated and connected driving with official data.

### 2. Combined traffic data collection (“VDE”)

Locations are identified in the network of federal and state roads in BW, at which certain road data can be collected. This data is used to manage traffic, to collect traffic information, for traffic statistics, and for interchange control. At the same time, information is generated for automated and connected driving (e.g. black ice, cross-wind) and platforms such as MobiData BW, Mobilithek and Mobility Data Space are supported.

#### Parties Involved

- Ministry of Transport Baden-Württemberg
- Association of Cities Baden-Wuerttemberg
- Fraunhofer Institute for Industrial Engineering IAO
- German Association of the Automotive Industry (VDA)
- Mercedes-Benz Group AG

## Mission 3: Enhanced efficiency through the use of artificial intelligence

### 1. Creation of a state-wide LSA cloud

Light signal systems are to be integrated into traffic control strategies. The goal is to optimize traffic management through flexible control programs, which can best meet the requirements of the different modes of transport. Central to this is V2X communication, through which motorized traffic can be connected for smooth traffic flows.

### 2. AI Innovation Park Baden-Württemberg in Heilbronn

Following the idea of ecosystems, the innovation park is to attract nationally and internationally established companies, start-ups, stakeholders from the research community, specialists and talents that develop AI-based solutions and set up test areas for automated driving. Specific topics that are introduced by the SDA could, for example, be sustainability, resilient supply chains, and fully automated city logistics.

#### Parties Involved

- Ministry of Transport Baden-Württemberg
- Ministry of the Interior, Digitalisation and Local Government Baden-Württemberg
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- Dr. Ing. h.c. F. Porsche AG
- Fraunhofer Institute for Industrial Engineering IAO
- FZI Research Center for Information Technology
- Karlsruhe Institute of Technology (KIT)

## Mission 4: Vision Zero – road safety

### 1. Data for more road safety

The goal of Vision Zero is: no fatalities or serious injuries on the roads. To achieve this, a safe traffic system must be created. Road safety must be taken to a new level through digital technologies. Vehicle data can be used to assess the infrastructure with regard to accident risks. Deficits in the infrastructure are identified and can be eliminated quickly - before accidents occur.

### 2. Safe infrastructure for automated driving

On the other hand, infrastructure data and data from vehicles can also be used to make mobility safer. Cooperations in the form of real-life laboratories are to advance the development of new infrastructures and focus on data transfer. An exchange of knowledge with existing infrastructures and test areas is encouraged.

#### Parties Involved

- Ministry of Transport Baden-Württemberg
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- Fraunhofer Institute for Industrial Engineering IAO
- German Association of the Automotive Industry (VDA)
- Karlsruhe Institute of Technology (KIT)
- Robert Bosch GmbH

## Mission 5: Digitalization in road freight transport

### 1. Climate-neutral city logistics test area

The digitalization of road freight transport is indispensable for reasons of climate protection. New solutions are to be developed and tested under real-life conditions. For this purpose, a test area along with data and zero-emission zones is being set up to realize climate-neutral city logistics, including opportunities provided by autonomous delivery traffic.

### 2. Innovation corridor for climate-friendly commercial vehicles (INKA)

The INKA project works towards installing a large-scale showcase with focus on the Rhine-Neckar and Rhine-Main regions to enable the broad application of climate-neutral drive technologies in the commercial vehicle sector. In addition to the transition of the drivetrains, digital and data-based future technologies are also to be applied in the project.

#### Parties Involved

- Ministry of Transport Baden-Württemberg
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- Fraunhofer Institute for Industrial Engineering IAO
- FZI Research Center for Information Technology
- IHK Region Stuttgart
- IHK Rhein Neckar
- Karlsruhe Institute of Technology (KIT)
- PTV Group



## **Working group A Carsharing: Business models, data and land use of future mobility**

Carsharing can make an important contribution to achieving the climate protection goals in the area of mobility and transport in Baden-Württemberg. However, for this to happen, carsharing would have to reach a relevant scale. Therefore, the Carsharing working group has addressed the following questions:

- (1) With which business models can carsharing grow and become relevant?
- (2) Which regulatory framework is required for carsharing?
- (3) How can digitalization and charging infrastructure contribute to climate-friendlier carsharing?

The impulses and discussions in the working group from October 2021 to March 2022 culminated in recommendations that were summarized and published in a common paper. It shows the fields of action that are necessary to strengthen, to significantly expand and to change the carsharing services in Baden-Württemberg with regard to their drivetrains.

The paper can be found at [https://vm.baden-wuerttemberg.de/Empfehlungspapier AG A](https://vm.baden-wuerttemberg.de/Empfehlungspapier_AG_A) (PDF).

## **Working group B: Infrastructures for automated and connected driving and traffic management**

The automation of vehicles is increasing continuously. The road to autonomous driving is classified in five degrees of automation. Interaction between vehicles and between vehicles and infrastructure is one of the variables to be addressed. Another one is the interaction between private transport vehicles and freight transport or other modes of transport with the same or lower degrees of automation.

With these premises in mind, the working group first investigated the question: Which infrastructure needs to be provided by road authorities to ensure autonomous driving, including the necessary intermediate steps of automated driving? Subsequently, an attempt was made to clarify the question of how the infrastructure can communicate with automated vehicles and how, based on this, traffic management strategies can be developed, e.g. with regard to route selection (i.e. the vehicle behavior).

The paper can be found at [https://vm.baden-wuerttemberg.de/Empfehlungspapier AG B](https://vm.baden-wuerttemberg.de/Empfehlungspapier_AG_B) (PDF).

## Interministerial working group on autonomous driving

The Autonomous Driving working group published its progress report regarding the state government's strategy paper on automated and connected mobility in July 2022 (Progress Report 9/2020 – 3/2022 baden-wuerttemberg.de). It includes success stories within the framework of the project and the status of the activities initiated in response to the proposed measures in the strategy paper.

Several projects that were recommended in the strategy paper published in 2020 have been launched with funding from the state, e.g. the real-life laboratory projects RA-Bus (22 million euros) and AMEISE (4.2 million euros, co-funded by Verband Region Stuttgart). The joint Smart Mobility funding program (funding 2.2 million euros with 5 research projects) of the Ministry of Science, Research and the Arts Baden-Württemberg and the Ministry of Transport Baden-Württemberg is completed already. In November 2021, the completion of the project for the Test Area Autonomous Driving Baden-Württemberg (TAF BW) in Karlsruhe was celebrated. This project was funded with 2.5 million euros. It is available for operation and use by SMEs and research centers until at least May 2023.

Preparations for the TTaÖV project (technology and transition center for autonomous public transport), which has attracted considerable interest to date, are completed. First applications are expected in August 2022.

The published status report by the Autonomous Driving working group also pays particular attention to the draft ordinance (AFBGV) for the regular operation of autonomous motor vehicles, which is strongly supported by the state of Baden-Württemberg in the Bundesrat, the German Federal Council. It has been in force since the beginning of July 2022. The legal framework has been set and is the first one worldwide. The state actively participates in federal working groups on the implementation of the AFBGV.

### Parties Involved

- Ministry of Transport Baden-Württemberg
- State Ministry Baden-Württemberg
- Ministry of the Interior, Digitalisation and Local Government Baden-Württemberg
- Ministry of Science, Research and the Arts Baden-Württemberg
- Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg
- e-mobil BW GmbH

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# CHAPTER 4: FOCUS TOPIC “ENERGY”

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## Statements



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Thekla Walker,  
 Ministry of the Environment, Climate  
 Protection and the Energy Sector

Over the past two years, electromobility has seen an almost exponential growth in Germany and especially in Baden-Württemberg. Many citizens have made conscious decisions in favor of climate-friendly forms of mobility and therefore turned away from fossil fuels, also in view of the sharp rise in raw material prices. On the one hand, this change, which is necessary for climate protection, poses challenges for the entire automotive industry in terms of the transformation of entire production processes and with regard to building the necessary expertise. On the other hand, however, it also provides opportunities for us to reorganize our value creation chains in Baden-Württemberg to meet future needs and make sure that our domestic economy remains competitive on an international scale. In addition to the automotive industry, the energy sector must also undergo a major transformation process. On the one hand, we need to increase our supply with renewable energies to account for more climate protection and to be less dependent on energy imports. On the other hand, to keep up with the boost of electromobility, the charging infrastructure for electromobility must be built and expanded and the necessary energy management processes must be accelerated significantly. With the initiation of the task force for accelerating the expansion of renewable energies and the restructuring of the Strategic Dialogue for the Automotive Sector BW (SDA), the state government built solid foundations at the end of last year based on which initial steps have already been taken to accelerate the advancement of renewable energies, the connection of plants to the grid to generate renewable energy, and the expansion of the charging infrastructure. Within the restructured SDA, the Ministry of the Environment, Climate Protection and the Energy Sector continues to be the lead agency for the focus topic "Energy". There will be stronger collaborations between the Ministry of the Environment and the Ministry of Transport with regard to grid integration and the development of the charging infrastructure in general. In addition, the focus topic "Energy" also addresses all the other topics relating to the development of an infrastructure for hydrogen mobility and for the introduction of climate-neutral fuels (reFuels). The following pages provide an overview of the key activities in the energy focus topic "Energy".



Dr. Martin Konermann,  
Managing Director Technology,  
Netze BW GmbH

Electromobility continues to gain importance as the rising number of new registrations of electric vehicles and the growing market share clearly show. The expansion of the public and private charging infrastructure is also progressing at a consistently high pace. In the meantime, the focus is not only on passenger cars, but also includes the electrification of trucks. In addition to an increasing number of connection requests, this also results in a further increase of the connected load of the charging infrastructure, which must be generated from renewable sources and supplied via the power grid.

To ensure that our customers can charge reliably, Netze BW has defined relevant, holistic, and future-oriented areas of action: the provision of a customer-centric grid connection, the early detection of grid bottlenecks with the help of digitalization, the intelligent optimization of the existing power grid with grid-serving charging management concepts, and the forward-looking and future-proof grid development.

In addition, the acceleration of approval procedures under the building laws for the grid expansion, the provision of space for charging infrastructure, and mandatory grid resources will be crucial for the decarbonization in the transport sector.

Baden-Württemberg has always played a pioneering role in Germany in this regard, and we continue to expect this from us in the future too. The Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) promotes exchange and cooperation between regional market stakeholders, politicians, and decision-makers. It acts as a think tank and initiator for innovative and pioneering projects. Electromobility must be thought holistically, for the whole of Europe and for all vehicles. The key topics for the second project phase therefore are the promotion of charging points in all European countries and the expansion of the charging infrastructure for e-trucks. With this enhancement of the focus topics, the SDA ensured its important contribution to the success of the mobility transition in Baden-Württemberg and beyond.



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Prof. Dr. Frithjof Staif,  
Executive Member of the Board of the  
Center for Solar Energy and  
Hydrogen Research Baden-Württemberg  
(ZSW)

In recent years, the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) has provided valuable input for the transformation of the automotive industry. What was rather roughly sketched at the beginning has now received clear structures: climate-neutral mobility with batteries, hydrogen, and synthetic fuels - as quickly as possible. This clarity opens up concrete and diverse opportunities for companies to develop new products. With a strong research landscape and numerous demonstration projects, the state took on a pioneering role in the field of hydrogen at an early stage, which is now paying off along the entire value chain: from water electrolysis to the production of synthetic fuels and fuel cells, in which fields Baden-Württemberg has already taken the lead in Europe. Our strength is that these technologies are compatible with the technology-based performance profiles of many companies, and that established supply chains are not only available for use but are already being used. This puts us in an excellent position for the international market. As a research institute with close ties to the industry, we are particularly pleased that ZSW's many years of experience are in high demand by the domestic industry and that we can provide substantial support to companies when they establish new and expand existing business fields. After all, in the global innovation race for hydrogen technologies, the time-to-market now is considered a key success factor. We should build on what we have achieved already and make Baden-Württemberg a lead market. This is not only about products, but about using integrated concepts to show that a green hydrogen economy is not only conceivable, but also feasible and economically successful. Good networking of all stakeholders is needed to accelerate implementation processes and remove obstacles. On-site experiences from real-life laboratories can be incorporated into the developing model regions and, in a further step, the regions across the state can be connected as well. There will be numerous questions concerning the SDA: from the filling station infrastructure to the production of hydrogen, for example for vehicle fleets, or which hydrogen mobility applications make sense where, by when and to what extent, or the optimal dovetailing of activities at the federal and European level.



# Focus topic “Energy”:

## Current status

**In the focus topic “Energy” of the newly structured Strategic Dialogue for the Automotive Sector in BW (SDA), concrete measures, concepts, and projects for building an infrastructure for climate-friendly drive technologies are being developed and rolled out in a scalable manner. Under the leadership of the Ministry of the Environment, Climate Protection and the Energy Sector of Baden-Württemberg and in cooperation with the Ministry of Transport of Baden-Württemberg, its emphasis is on both the further expansion of the grid infrastructure including the supply of green electricity – and directly connected with it, the scaling of charging infrastructure – and the advancement of alternative drive types, e. g. based on hydrogen, or the introduction of climate-neutral fuels.** The first meeting of the energy steering group was held on March 29, 2022. It was chaired by Minister Thekla Walker and the co-chairs were Dr. Martin Konermann (Netze BW GmbH) and Prof. Dr. Frithjof Staiß (Center for Solar Energy and Hydrogen Research Baden-Württemberg). At the meeting, the participants were informed both about current topics regarding the charging infrastructure, hydrogen mobility and the use and introduction of climate-neutral fuels. Furthermore, concrete launch and follow-up missions were discussed, that were initiated after the meeting.

### **The following missions were initiated in the focus topic “Energy”:**

- Mission I: Feasibility study on pilot charging and refueling infrastructures for long-haul trucks – VorPiLaTes
- Mission II: Discussions with grid operators in Baden-Württemberg to work out and arrange for an industry agreement on the connection of the charging infrastructure to the grid
- Mission III: Identification of obstacles with regard to financing and the development and operation of charging infrastructure
- Mission IV: Preparing the expansion of a hydrogen infrastructure in Baden-Württemberg by 2030

Based on the aforementioned missions and tasks, agile working groups started their activities in June 2022. The completion of the missions and the presentation of their concrete results is planned for the sixth annual SDA event at the latest, which will take place in November 2022. Looking out for possible connections and further topics, some follow-up missions were defined after the steering group meeting:

- Mission V: Preparation of hydrogen refueling infrastructure for commercial vehicles
- Mission VI: Acceleration of the implementation of plug & charge
- Mission VII: Development of measures to reduce obstacles with regard to financing and the development and operation of charging infrastructure

Work on Missions V to VII is scheduled to begin in fall 2022 and will again take place within agile working groups.

# Mission Reports

## Mission I: Feasibility study on pilot charging and refueling infrastructures for long-haul trucks – VorPiLaTes

**The objective of the VorPiLaTes mission is the feasibility study for a pilot charging station for high-capacity fast-charging operations as well as for gaseous and liquid refueling of hydrogen for battery electric and fuel cell trucks at a suitable location in Baden-Württemberg.**

The primary goal of the preliminary project is to identify a suitable location for the main project. It will also assess the state of the art and the development of standards as well as the current and future market availability of an infrastructure of high-capacity fast-charging and refueling stations for long-distance trucks. Space requirements will be analyzed, an infrastructure layout created, and capacity requirements defined. In addition, studies will be conducted on the expansion of the infrastructure for climate-friendly trucks in Baden-Württemberg.

### Parties Involved

- Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
- Daimler Truck AG
- EnBW Energy Baden-Württemberg AG
- e-mobil BW GmbH
- Fraunhofer Institute for Industrial Engineering IAO
- Fraunhofer Institute for Solar Energy Systems Research ISE
- Fraunhofer Institute for Systems and Innovation Research ISI
- H2 MOBILITY Germany GmbH & Co. KG
- Netze BW GmbH

## Mission II: Discussions with grid operators in Baden-Württemberg to work out and arrange for an industry agreement on the connection of the charging infrastructure to the grid

**In discussions with grid operators in Baden-Württemberg, the focus of Mission II will be on the grid integration of the charging infrastructure. Based on the current obstacles, an industry agreement is to be developed that will identify concrete approaches for accelerating the process.**

The industry agreement will focus on the charging infrastructure required for the progressive start of electromobility and the associated effects on the grids. For a successful development of the charging infrastructure, it must be integrated into the power grid, and the hurdles in the approval processes of grid connections must be removed. This industry agreement is to serve as a basis, to identify gaps in the charging infrastructure, to establish uniform procedures, and for an exchange of expertise between grid operators.

### Parties Involved

- Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
- Ministry of Transport Baden-Württemberg
- Albwert GmbH & Co. KG
- e-mobil BW GmbH
- EnBW Energy Baden-Württemberg AG
- Nationale Organisation Wasserstoff- und Brennstoffzellentechnologie (NOW) – National Centre for Charging Infrastructure
- Netze BW GmbH
- Stuttgart Netze GmbH
- Verband kommunaler Unternehmen e. V. – Baden-Württemberg section
- VfEW Verband für Energie- und Wasserwirtschaft Baden-Württemberg e. V.

## Mission III: Identification of obstacles with regard to financing and the development and operation of charging infrastructure

**Mission III deals with the identification and recording of obstacles with regard to the financing and the development and operation of electric charging infrastructures.**

The interdisciplinary working groups identifies and classifies existing hurdles in the development of charging infrastructures and jointly develops a paper that will identify the respective responsibilities. Fields of action will be defined for the follow-up mission VII “Development of measures to reduce obstacles with regard to financing and the development and operation of charging infrastructure”. The working group started its activities in June 2022 and will prepare its paper over the summer.

### Parties Involved

- Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
- Ministry of Transport Baden-Württemberg
- e-mobil BW GmbH
- Electrify-BW e. V.
- EnBW Energy Baden-Württemberg AG
- Association of the electrical engineering and information technology industry in Baden-Württemberg
- Handelsverband Baden-Württemberg e. V.
- State capital Stuttgart
- Netze BW GmbH
- Verband baden-württembergischer Wohnungs- und Immobilienunternehmen e. V.
- German Association of the Automotive Industry (VDA)
- Verband der Immobilienverwalter Baden-Württemberg e. V.
- Verband kommunaler Unternehmen e. V. – Baden-Württemberg section
- VfEW Verband für Energie- und Wasserwirtschaft Baden-Württemberg e. V.

## Mission IV: Preparing for the expansion of a hydrogen infrastructure in Baden-Württemberg by 2030

**Providing the necessary infrastructure for the production, storage and transport of hydrogen is a key prerequisite for the development of a hydrogen industry in Baden-Württemberg.** To address this challenge, the necessary steps for the expansion of the hydrogen infrastructure in Baden-Württemberg will be identified by 2030. First of all, the status quo of the hydrogen infrastructure in the state will be determined. The current and planned hydrogen demand in Baden-Württemberg will be estimated and recorded. Within the framework of this mission the construction and expansion of pipelines in the state will be examined and the exchange of information between the relevant stakeholders will be enabled. In addition, stand-alone or cluster solutions are to be included to increase the production capacities of green hydrogen in the state. The goal is to identify concrete and necessary steps to ensure that the required infrastructure will be available to supply the state with hydrogen by 2030.

### Parties Involved

- Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
- Actors of the model region H2GeNeSiS
- e-mobil BW GmbH
- EnBW Energy Baden-Württemberg AG
- Utility companies
- Sponsored stakeholders in the KWH2 programme
- GP JOULE GmbH
- H2 MOBILITY Germany GmbH & Co. KG
- Grid operators (transmission and distribution grids)
- terranets BW GmbH
- TransnetBW GmbH
- Center for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW)

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# CHAPTER 5: OVERVIEW OF INTERDISCIPLINARY TOPICS

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# Interdisciplinary topics in the Strategic Dialogue for the Automotive Sector in Baden-Württemberg

The new structure of the Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) provides for several interdisciplinary topics that play important roles in all three focus topics due to their high significance. The topic of digitalization is a global megatrend with major impact and influence on almost all areas of society and the economy. The transformation of the automotive industry is also strongly influenced by digitalization: software is becoming the determining factor in the automotive industry, the vehicles as such are becoming smartphones on wheels, and production is also changing through automation and the use of artificial intelligence. Mobility itself is also undergoing fundamental changes through the exchange and connection of data in shared data spaces and the increasing automation of vehicles and traffic. Data is a crucial success factor for the future competitiveness of the location. Today's data infrastructure that has developed randomly must be developed further into a future-proof, well-designed data architecture. In this context, disclosure and connection are the key objectives. Only in this way can data from the transport infrastructure and from operations, for example, public transport or rental systems, be utilized better – not only for traffic control by the public sector, but also for private business models. Data protection and data sovereignty must be reconciled with the potential of open data. It is therefore an important concern to include **digitalization as an interdisciplinary topic across the focus topics “Vehicles”, “Data” and “Energy”** – with the involvement of the Ministry of the Interior, Digitalisation and Local Government, which is responsible for the topic of digitalization within the state government.

Following a dual strategy, it is highly important to pursue the topic of innovation in parallel to scaling up already established technologies. Baden-Württemberg has an excellent research landscape, thus academia can and must play a key role in shaping the transformation through researching and developing innovations. For this reason, the **interdisciplinary topic of research and development** should influence all focus topics through the expertise pooled in the previous area of research and innovation environment and through the integration of the Ministry of Science. Experts from science and research should also be involved in the agile working groups for the various missions. The topics of **education, training and qualification** are also of great importance, because transformation requires capable minds that can shape things. The state-run campaign WEITER.MIT.BILDUNG@BW for further education and training is to be incorporated into the new structure so as to link all three focus topics (with regard to vocational and academic education and training in particular). A key factor for a successful transformation is to involve the people in this change process and let them contribute to the shaping of it. **Civic participation** therefore remains a strong interdisciplinary topic in the SDA and will be part of the missions across all three focus topics – starting with two missions in the focus topic “Vehicles”. In the new structure, citizen participation will be more closely aligned with SDA projects and measures. The aim is to involve citizens in the change processes through suitable formats – as employees in the automotive industry or as users and customers. This is to continue the work of the former interdisciplinary topic of Society & Mobility.

# Statements



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Thomas Strobl,  
Deputy Minister-President and  
Minister of the Interior, Digitalisation  
and Local Government of the state of  
Baden-Württemberg

The Corona pandemic and also Russia's aggressive war against Ukraine present unprecedented challenges for many sectors of the economy - especially the automotive and supplier industries: interrupted supply chains, energy bottlenecks and skyrocketing prices.

The Strategic Dialogue for the Automotive Sector in Baden-Württemberg (SDA) is the right platform to determinedly respond to these events. Digitalization is changing the world and is the central driver for the transformation of our economy. That is why we made it an interdisciplinary topic in the SDA – to capitalize on its value creation potential. Smart connections can enormously increase resource efficiency and the flexibility of product cycles while, at the same time, they can significantly reduce large numbers of dependencies.

Baden-Württemberg is a driver of innovations and must also remain the number one innovation region in Europe in the future. With the SDA, we are successfully helping to shape the digital transformation of our automotive industry.



© Sabine Arndt

Theresia Bauer,  
Minister for Science, Research and  
the Arts of the state of Baden-Württemberg

The transformation of the automotive industry is both a challenge and an opportunity for Baden-Württemberg. We can develop from a car making state to a mobility state if we successfully help new, sustainable and innovative mobility technologies “get on the road and on the tracks”. In order to take advantage of this opportunity, we need many bright minds that are willing to commit themselves to working on future-relevant questions in an excellent research environment such as the “Mobility of the Future” innovation campus (ICM).

With the interdisciplinary topics of research & development, we are committed to making engineering programs future-proof, highlighting their relevance for society, and thus motivating many young, committed people to conduct research on transformation-relevant topics. For tomorrow’s climate-friendly mobility, production and manufacturing must always be taken into account too. That is why we are placing another focus in the SDA on sustainable, digitalized production systems that can be used to minimize emissions and the use of resources.





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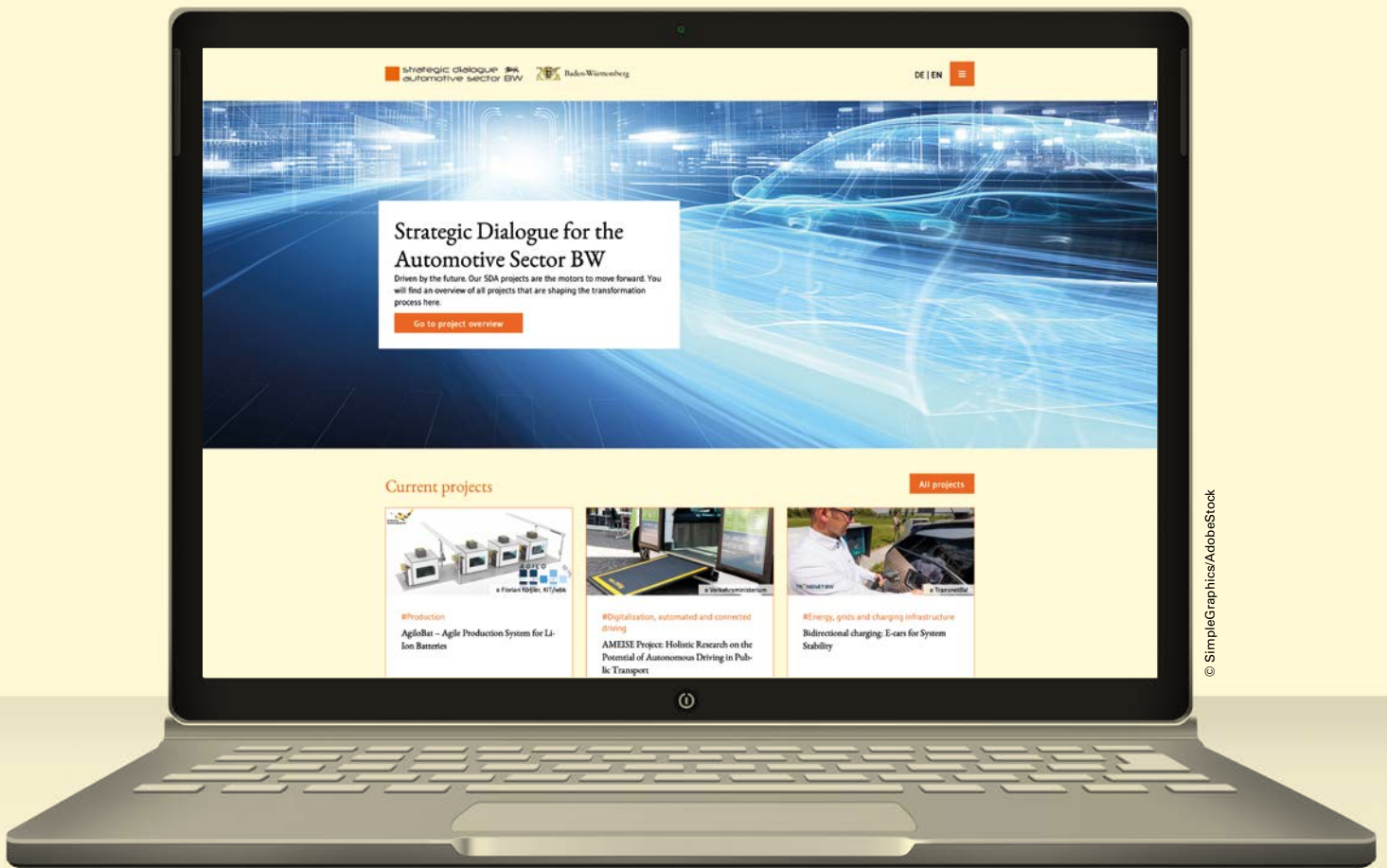
Barbara Bosch,  
State Councillor for Civil Society and  
Civic Participation at the State Ministry (StM)  
Baden-Württemberg

Our automotive industry is facing huge changes. The transformation not only affects the drivetrains, but also many employees. People are worried about losing their jobs or no longer being able to cope with the demands.

If we know what concerns those affected, we can better manage the change. That is why we spoke with employees and published a manual with key findings on how in companies the transformation can be tackled together.

But municipalities also have concerns. Will the population go along with the transformation of our industrial location? Will new production sites be accepted? We support communities in their efforts for civic participation when it comes to finding locations for climate protection technologies.

Through our cooperation with the Ministry of Economic Affairs and the staff unit within the SDA, we are making our state future-proof and at the same time provide for civic participation in central issues.



## Project overview and missions

can be found at [www.sda.e-mobilbw.de/en](http://www.sda.e-mobilbw.de/en)

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