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Regional Transformation Strategy in Baden-Württemberg – Automotive industry in motion

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Summary

The automotive industry is one of the most important sectors for the State of Baden-Württemberg. Due to disruptive changes in the industry, Baden-Württemberg has taken different measures to shape the transformation process towards new mobility solutions for its automotive and mobility industry: with the Cluster Electric Mobility South-West (CESW), Baden-Württemberg pursues the goal of a joint innovation process of actors from research and industry within the framework of a pre-competitive network. With a newly founded "Information centre for the transformation of the automotive sector", the State helps to support especially small and medium sized companies in the transformation process.

Keywords: *policy, strategy, state government, industrialization*

1. The transformation of the automotive sector in the region Baden-Württemberg

The electrification of the drivetrain and the digitalization in mobility solutions are big game changers. These technological changes will bring a profound transformation of the mobility system that comes along with a disruptive change to different branches and stakeholders. Not only the components of the drivetrain but also the architecture of vehicle electrics and electronics as well as the methods of production will change due to new technologies. And through the goals of the European Union's "Fit for 55" package, the end of the combustion engine is foreseen for 2035 [1]. The changes in the transformation process of the automotive industry not only focus on technological aspects but also on structural changes, changes in the energy system and in addition to that in the mobility system. To cope with all these dimensions of change, a combination of different measures is important to transform the regions successfully. Furthermore, the kind of work is changing rapidly and new skills are needed on behalf of the employees: not only in technology like AI, data analytics or high voltage but also in digital and agile working frameworks.

The State of Baden-Württemberg in the south-west of Germany is known as the cradle of the modern automotive industry. Around 470,000 people are employed in the local automotive sector. A lot of companies are already working on innovative and new products for future mobility solutions such as electric or autonomous vehicles,

electric motors, battery components or sensors. Although a high number of companies is still highly reliant on the combustion engine. In this area, many companies are working in the production of the combustion engine and its components but also in service and maintenance of internal combustion engine vehicles. According to a study of the Federal Ministry of Economics [2], 40 regions in Germany will be strongly affected by the transformation due to their strong dependence on the combustion engine. Nine of out these 40 regions are situated in Baden-Württemberg.

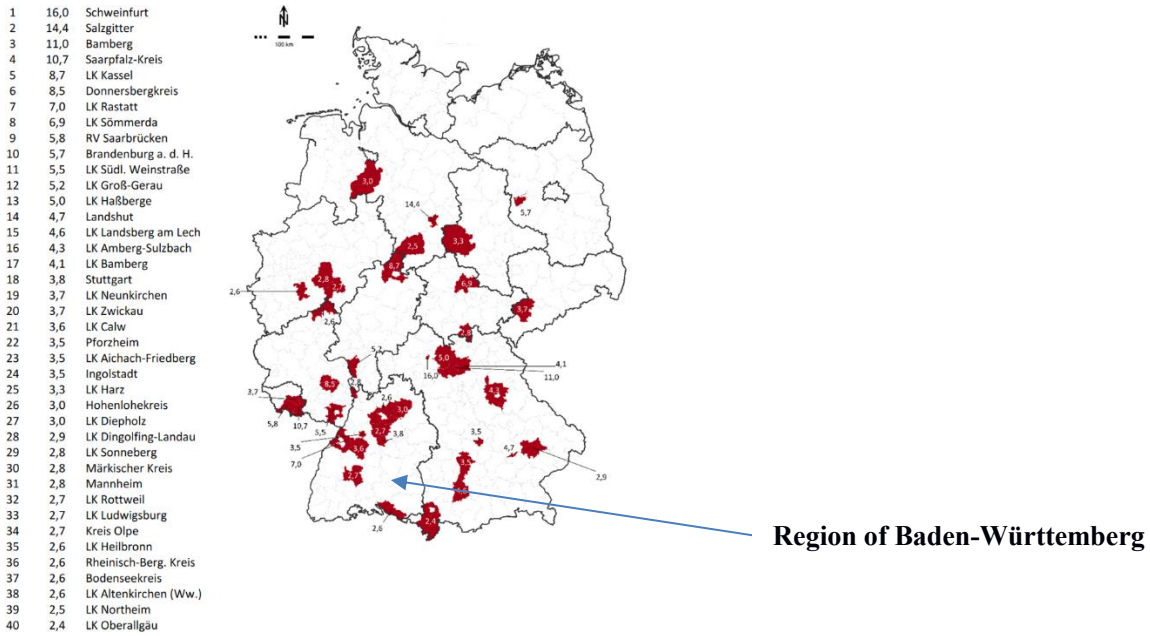

Figure 1: Regions in Germany being reliant on combustion engines.

This fact is challenging for the companies in the region, which must find new business models, make high investments in new machines, production lines and products, make production emission free, have a look on resilient (new) supply chains and also train their employees in the affordable new skills.

To pick one aspect regarding the dimension of qualification: according to the Structural Study BW^{e} mobil, "more than 18,000 employees will have to be trained for new tasks within the company or outside the company. To this end, inter-company training strategies and additional labour-market-policy instruments will be needed […] to prevent a significant percentage of those affected becoming unemployed." [3] Furthermore, a newly published study called "Future Skills" [4] analysed the skills needed in future by employees of the metal and electrical industry. As a result, one million new skills are required in the key industries like Automotive industry and automotive suppliers, manufacturing systems engineering until 2026. The focus lies on software engineering, data management and software-controlled processes.

The State of Baden-Württemberg is aware of its responsibility in this change process and has taken different measures to shape the change towards new mobility solutions and the transformation of its automotive and mobility industry. One was already the foundation of the State Agency for New Mobility Solutions and Automotive Baden-Württemberg (former Electric Mobility and Fuel Cell Technology) in 2010.

Since 2017, the **Strategic Dialogue for the Automotive Sector Baden-Württemberg (SDA BW)** is an approach of political and economic change management. One of the lighthouse projects to support especially small and medium sized enterprises (SMEs) within the change process is the "*Information Centre for the*

transformation of the automotive sector" (TAM BW). Another important instrument of regional development is the cluster initiative "Cluster Electric Mobility South-West (CESW)", which pursues the goal of a joint innovation process of actors from research and industry within the framework of a precompetitive network. Both instruments can be seen in a line: the information centre is dedicated to the companies, which are just starting their transformation process. The measure is supporting companies to raise awareness of the necessity to change and the possible options for transformation. Therefore, the information centre offers support in these early stages. The cluster network is dedicated to those companies and research institutes already working in the fields of new mobility solutions. The network helps to find new contacts, build up R&D cooperation and make the own activities in the field of electric and digital mobility visible. CESW and the information centre are coordinated by the State Agency, e-mobil BW. Of course, both activities should not be seen as single initiatives. Much more they are intertwined and build on each other because they follow the same goal: support an active and successful transformation of the automotive industry. Both instruments will be presented more in details in the following.

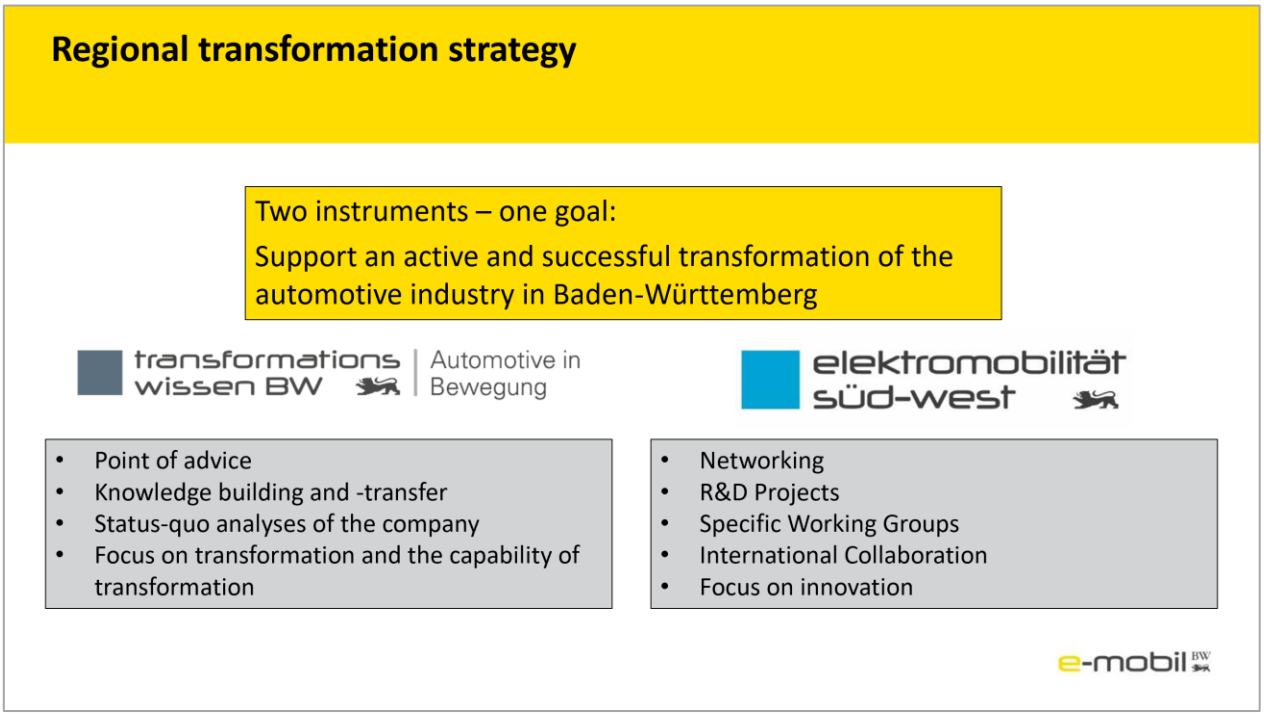

Figure 2: Two instruments of the regional transformation strategy.

2. Knowledge-Transfer as key – Information Centre for the transformation of the automotive sector (TAM BW)

Since 2020, the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg is financing the Information Centre for the transformation of the automotive sector (TAM BW) [5]. It represents a point of contact for automotive suppliers and car dealers for all questions concerning support in the transformation process. And at that time, it was one of the only activities like this in Germany. The target group are companies up to 3,000 employees – the focus is on small and medium sized companies (SMEs) up to 250 employees.

Most SMEs working in the automotive sector are aware of the upcoming changes. But often, there is a lack of knowledge on how to adjust the own business model or the current products. And furthermore, the SMEs often know very well their actual competences, but cannot transfer them to new business offers. In the concept phase of the project TAM BW, it became obvious, that there isn't a general lack of information or offers to SMEs. But the target group is not aware of the programmes and doesn't have the time to search for it.

To handle this uncertainty and to bring more clarity into existing guidance, the aim of TAM BW is on raising awareness, providing first advice on trends and market development, offering support, bringing companies together and matching them to existing networks like the Cluster ESW. In a first step, the employees of TAM BW are available for an initial exchange. Within this talk the company gets a first overview about trends in the branch and about offers of the TAM BW and its partners. Within one and a half years around 170 companies took the opportunity.

Now around 41 partners are working in close collaboration with the information centre. This are education providers, regional economic development organisations, associations or other (regional) networks. All offers of these partners are bundled on the TAM website to improve the visibility of each one. But there are still white spots in offers – and here the team of TAM BW becomes an active role in creating new kind of support.

TAM BW is focussing on four fields:

- Knowledge-building and -transfer
- Guidance through initial talks and consultancy via partners
- Qualification and training
- Offering networking opportunities

As one key instrument in the field of knowledge-building and transfer, the TAM BW publishes an own publication called "Wissen Kompakt" (in English like: knowledge in a nutshell). Within these short publications new fields of application of traditional manufacturing methods like stamping, bending or coating are shown. The transfer of competences in the case of stamping and bending to battery production - in particular to electrical contacting elements to name cell and module level – is possible. Up to now, the TAM BW was able to publish 19 "Wissen Kompakt" and further topics are in preparation.

In addition to the publications, the information centre developed two web tools: one for the supplier, one for the car dealers to bring the knowledge more interactive to the target group. The web tool for suppliers called "Technology calendar structural change automobile BW (TKBW)" based on a project in the Strategic Dialogue from partners as German Aerospace Center, IMU Institute, Karlsruhe Institute of Technology and Center for Solar Energy and Hydrogen Research, ZSW. The webtool shows the main components of electric, fuel cell as well as autonomous and connected vehicles. Furthermore, the webtool gives information on the date when new technologies become market ready or production ready. The webtool is updated and extended regularly in cooperation with the German Aerospace Center.

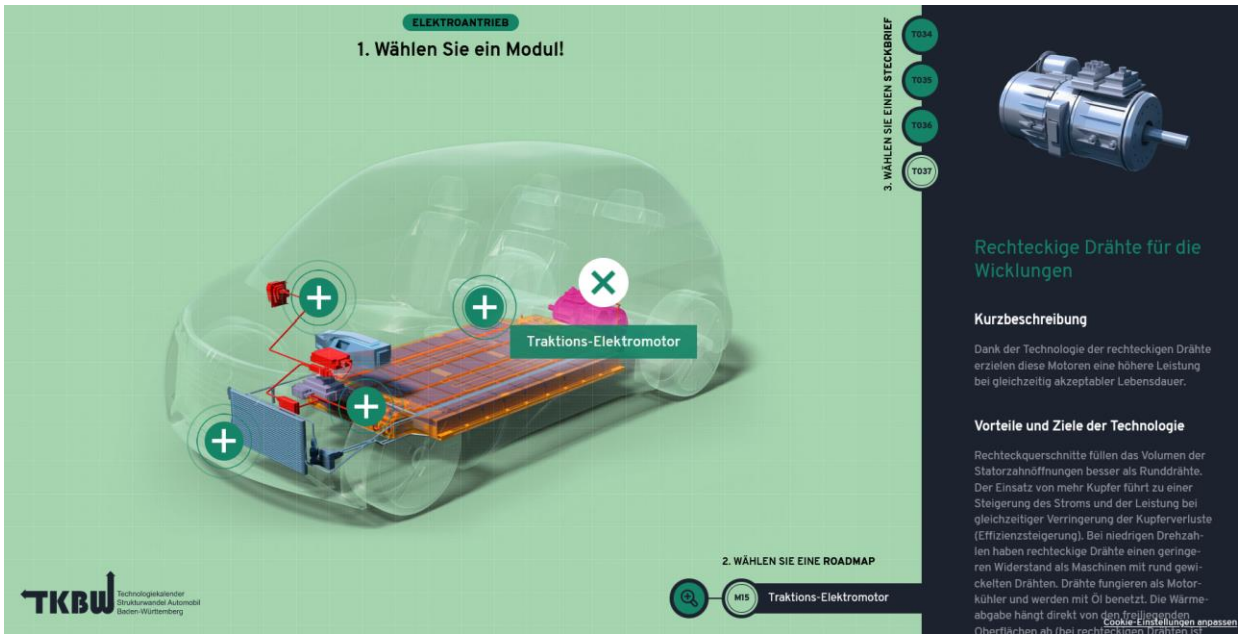

Figure 3: Webtool TKBW for suppliers.

In the next step, companies often need an individual consulting to implement the new knowledge in their own processes and products. Therefore, the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg is offering a voucher to companies up to 3000 employees to get guidance through external consultants. The voucher covers costs up to 80% of ten consultant days (max. daily rate 1250 Euro). This voucher programme is very well received so far. Important topics are especially strategy, product development and diversification. The TAM BW is announcing the voucher and is helping companies to identify topics. To guarantee the quality of consulting, TAM BW is building up a database with consultants having the affordable competences to be involved in the voucher programme. Until today, 280 consultants with residence in Baden-Württemberg became part of the database.

Furthermore, not only finding the right business model for the future itself is a big challenge, but also the fact to qualify the employees for the new tasks. Therefore, the information centre also informs about qualification or training offers, which are already available on the market. Sometimes there is not the right offer for companies to enable their employees to work in the new fields. In this case, the information centre is working together with different partners from the training sector to create new offers.

As soon as the COVID situation allows events in person, the information centre is planning thematical and regional events to get even closer in touch with the target group. Indeed, the pandemic situation since the beginning of the project was a hurdle for networking. But with regard to our existing networks like the Cluster Electric Mobility South-West and the connection to regional networks, a good base for building up a strong network within Baden-Württemberg is established.

3. The age of collaboration - Cluster Electric Mobility South-West (CESW)

In the age of collaboration, the importance of cluster networks is rising. The study of IW Consult and Fraunhofer IAO for the Federal Ministry of Economics [2] also emphasizes that thematically oriented clusters and networks are crucial for the regional development even in times of transformation and change processes. This effect relies on the deepening of the collaboration between local actors. In this way networks and clusters contribute to a

more resilient and more innovative ecosystem. Cooperation especially between smaller and medium sized companies help to making high investments and qualification aspects manageable through synergy effects.

Founded in 2007, the Cluster Electric Mobility South-West [6] brings together more than 190 partners from industry and academia and is one of the largest research networks in Germany for developing the technological solutions for the mobility of the future. The Cluster and its partners stand for cross-border thinking of industries and technologies and work together in four fields of innovation: vehicle, energy, ICT (information and communication technology) and production. High-power automotive manufacturers cooperate in the cluster, as well as worldwide leading system suppliers and numerous renowned small and medium-sized companies together with excellent research institutions and universities.

The objective of the innovation alliance is to promote the industrialization of electric and digital mobility in Germany and to position Baden-Württemberg as a leading supplier of sustainable and smart mobility solutions. Under this main objective the focus of the work lies on the following principals: booster innovation, support scaling up of technologies, cross-border thinking, knowledge transfer, political impulses and create and enable a community.

Since the beginning the R&D focus of the network is crucial for the common work and admission criteria for joining the cluster as new member. Current main topics are the economical and sustainable production of electric motors and batteries (including aspects of circular economy), qualification of employees, automated driving, digital infrastructures and software defined vehicles. Within working groups, common R&D projects and with international exchange and matchmaking, the cluster management is supporting the members in finding innovative ideas, business cases and products. With an own strategic change process, the cluster management is currently transforming itself to cope with recent challenges of the cluster members.

Now, the cluster ESW network is collaborating in six working groups on different topics from electric motor production to qualification to intelligent mobility solutions. In small groups hurdles, trends or legal framework are discussed and common positions are developed. To support the work of the groups and to answer raised questions, the cluster management is also announcing the writings of new studies.

In addition to that, the cluster is providing information to funding programmes, gives advice on how to write an application for support, helps in finding the suitable partner from industry or science for a project. Working together on innovation of future mobility solutions is one of the main targets of the Cluster ESW community. Therefore, the cluster partners are working at the moment on five R&D projects in different innovation fields like connected and autonomous driving, production or vehicle concepts. In addition to that, the cluster management is providing information on new call for proposals from Federal or State level in order to initiate new projects.

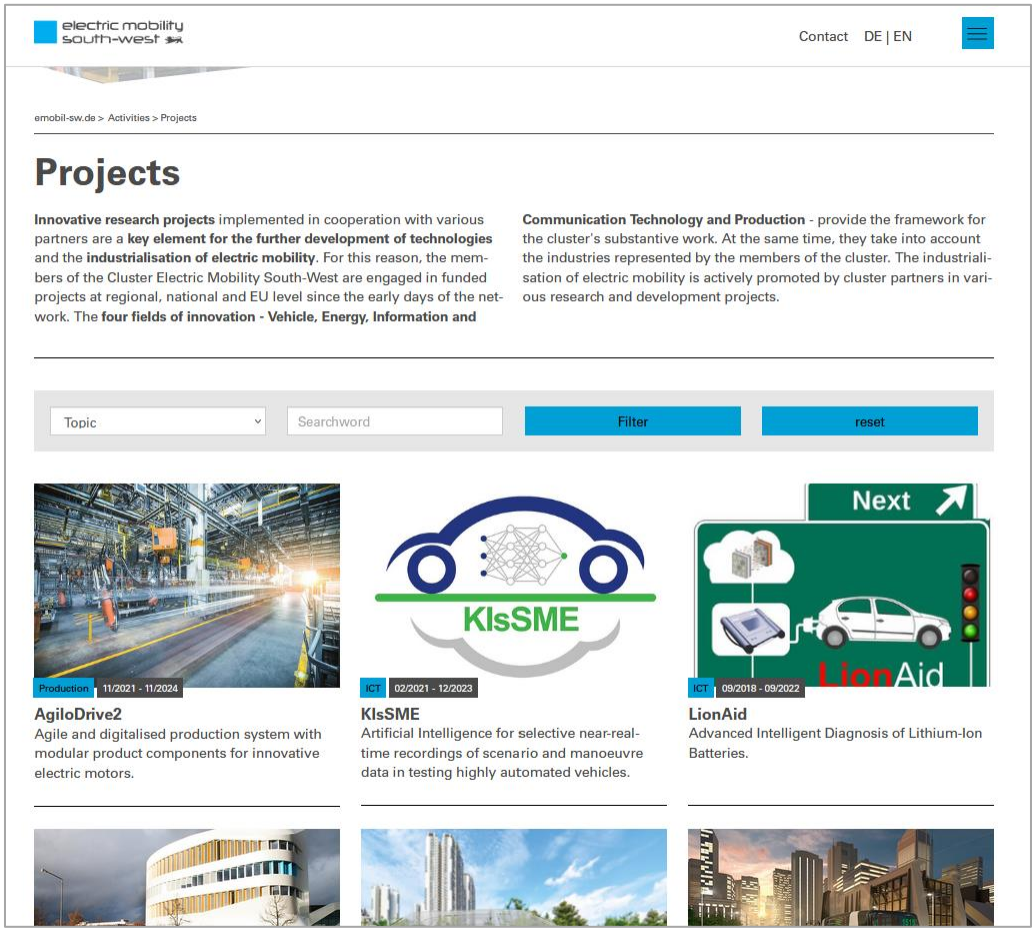

Figure 4: Project overview of the Cluster ESW.

The cluster is actively supporting its members in networking through different measures as events, matchmaking sessions in different topics or with other cluster initiatives, delegation visits or the intern exchange platform with profiles of every member.

The cluster services are related to the needs of the members. Due to COVID pandemic international networking was hardly possible. But the cluster management tried to keep on with international exchange through digital matchmaking options and workshops. As one example can be seen the workshop “Market and Collaboration Chances UK” which took place in April 2022. The aim was to provide the cluster members with sector and industry related news as well as project ideas in the fields of hydrogen, battery technology, digitalization and news from the research landscape in the UK. About 35 attendees took the chance to familiarize themselves with market and research opportunities in the three regions Wales, Scotland and the Midlands.

Furthermore, the cluster management offers the possibility to members to become more visible in the topics of innovative and new mobility technologies. For example, through the presentation in the competence guide [7] or through common activities like pavilions on trade fairs like Hannover Trade Fair. The cluster is also providing information on current projects, new members, thematical events or new publications on LinkedIn.

4. Outlook

In the last two chapters, two strategic instruments of a regional strategy have been described in detail. Of course, both activities are not to be seen as single initiatives. Much more they are intertwined and build on each other. In addition to that, the instruments are part of a broader framework like the Strategic Dialogue for the Automotive Sector Baden-Württemberg. Furthermore, these measures with a perspective on the whole State of Baden-Württemberg can be seen as strong partners for regional networks and initiatives. On the one hand, the regional networks have a very strong relationship with companies and SMEs on site. But on the other hand, there is often a lack of knowledge about actual research results, new funding programmes or partners from other regions already having found a solution for a common problem. For State-wide measures the proximity of regional networks is very helpful to bring knowledge and their offers to the target group of SMEs and companies. Otherwise, regional networks benefit from the broader focus and the insights of State-wide networks. So, the State-wide networks like the Cluster ESW or the Information Centre can create added value through:

- Connecting the regional networks as neutral partner with each other
- Link regional organizations with research institutes or industry from other regions within Baden-Württemberg
- Act as a communicator between regional actors and State Government or Federal Government
- Give information on new funding programmes
- Bring more transparency in actual trends, technological developments or political strategies
- Additional instruments funded on the State level like the voucher for consultancy

As a next step, the German Federal Government is going to finance regional transformation networks in order to support transformation strategies on regional level [8]. The start of the funding is foreseen for summer 2022. e-mobil BW already started an interregional approach to work with the regional transformation networks in Baden-Württemberg within a collaborative framework. The official kick-off event will take place after the starting date of the regional networks. With this action a new dimension of cross-regional collaboration can be reached.

In addition to that, the Strategic Dialogue is also becoming more international through activities on EU level like a conference in Brussels in autumn. So, the exchange between different European regions with similar hurdles can also contribute to a common solution. Only through combination of different instruments and activities (regional, State, national, EU), the transformation process can be approached on different levels. This is relevant to cope the immense challenges coming up with the transformation to an electric and digital mobility.

To sum it up: Baden-Württemberg as an important and traditional automotive region is aware of the profound effects on the mobility and automotive sector, which come along with electrification, digitalization, and automatization. The State government of Baden-Württemberg has implemented different measure like the State Agency e-mobil BW itself, but also the cluster management of Cluster Electric Mobility South-West and the “Information Center” to enable companies in Baden-Württemberg to handle the transformation to new business models and innovative products for new and intelligent mobility solutions.

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Presenter Biography

Katja Gicklhorn studied German Literature, Economics and European Studies at the Universities of Konstanz and Leipzig in Germany and Wroclaw in Poland. In her professional career she dealt with different aspects of electric mobility and new mobility solutions. Since 2015 she is working for the State Agency for New Mobility Solutions and Automotive Baden-Württemberg, e-mobil BW GmbH. On behalf of e-mobil BW, she was responsible for the realisation of EVS30 in Stuttgart. Her actual focus as Director of Industrialisation is on the transformation of the automotive sector, the management of the Cluster Electric Mobility South-West and of the Information Centre for the transformation of the automotive sector in Baden-Württemberg.

Dr. Wolfgang Fischer studied history, rhetoric, political and economic sciences and holds a PhD in History. Since 2011 he works for e-mobil BW - State Agency for New Mobility Solutions and Automotive Baden-Württemberg, an innovation agency and competence center for the transition towards automated, connected and electric mobility in a sustainable energy system. As Divisional Head he is responsible for projects and cluster activities, especially the management of the networks Cluster Electric Mobility South-West and Cluster Fuel Cell BW, but also the close cooperation with municipalities. Especially in recent years, a special focus of his work is the transformation of the automotive industry, especially helping small and medium-sized enterprises to cope with structural change.