

Intersectoral cooperation as a strategic key principle for the transformation of the automotive region Baden- Württemberg

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Executive Summary

The paper focuses on the necessity of different approaches of intersectoral cooperation and networking for the transition towards new mobility solutions and explains how e-mobil BW as State Agency in Baden-Württemberg is handling this with regard to this change process. The paper describes not only the strategy, but also methods and measures in work of e-mobil BW during the last decade and for the following years.

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

1 Electric Mobility in Baden-Württemberg

Electric mobility is much more than the electrification of the powertrain. Rather, the transformation towards electric mobility is a complex process of change that is inextricably linked to a conversion of the energy system to renewable energies, the development of necessary charging infrastructure and a change in the entire mobility system. For a region shaped by the automotive industry such as Baden-Württemberg, the transformation of mobility also means a structural change in a leading economic sector and requires political and economic change management.

As a strategic cornerstone, the state government of Baden-Württemberg has carried out three state electric mobility initiatives with a total of more than 200 million euros in funding. A key part of the first state initiative was the founding of a state agency e-mobil BW which - as an interface between politics, business, science and society - plays a key role in shaping Baden-Württemberg's transition to electric mobility. The strategic approach of e-mobil BW as well as milestones of past and future work will be analyzed and presented in this paper. [1]

2 The three state initiatives for electric mobility

With the three state initiatives for electric mobility and other research and technology measures, the state government of Baden-Württemberg has been pursuing the goal of designing the framework for a transition of the mobility and economic system to electric mobility since 2010. A fourth state initiative for electric mobility is in preparation and will probably be introduced in 2023.

The state initiatives included in detail:

Title	Duration	Funding volume	Priorities
State Initiative for electric mobility I	2010-2014	28.5 million euros	Funding for structural and project measures for the development of alternative drive concepts, establishment of e-mobil BW as state agency for electric mobility and fuel cell technology
State Initiative for electric mobility II	2012-2015	50 million euros	Continuation of the state initiative for electric mobility I with the essential elements: structural change advice, research and transfer funding, procurement initiative, expansion of the hydrogen infrastructure, demonstration projects in rural areas
State Initiative for Electric mobility III	2017-2021	126 million euros	Continuation of the State Initiative for Electric mobility I and II and thus a significant increase in funding of electric mobility (charging infrastructure, vehicles, knowledge transfer)

Fig. 1 Overview State Initiatives for electric mobility [1]

3 Networking and intersectoral cooperation as strategic key elements of e-mobil BW

3.1 Vision

e-mobil BW GmbH was founded in 2010 as the “State Agency for Electric mobility and Fuel Cell Technology Baden-Württemberg”. Following a strategy process and in view of the thematic expansion of the agency's portfolio in the direction of digitalization and transformation, the name was changed to "State Agency for New Mobility Solutions and Automotive Baden-Württemberg" at the beginning of 2018. e-mobil BW sees itself as an innovation agency and independent competence center of the state of Baden-Württemberg for new mobility solutions and automotive. The mission statement of the agency aims to rethink mobility from industrialization to market launch to application and to positively shape the change in the automotive state of Baden-Württemberg: by bundling expert knowledge, bringing together all relevant players in networks and cluster initiatives as well as through initiation and support of projects related to new mobility solutions.

3.2 The intersectoral governance approach

A core of the activities of e-mobil BW are various forms of networks that serve as platforms for information exchange, knowledge transfer and project-related cooperation. The network activities of e-mobil BW have an intersectoral character and involve the functional systems of politics, economy and science, supplemented selectively by actors from civil society.

Intersectoral governance essentially describes social control and coordination involving the sectors of state, economy and civil society, particularly in the case of cross-sectoral issues in the case of sectoral

interdependencies. [2] This is based on the assumption of systems theory that modern societies are functionally differentiated. Each functional system consists of different institutions that follow specific functional logics and are each based on central values. In the model of modern Western democracies, the functional system of the state consists of the institutions of parliament (legislature), administration (executive) and judiciary (judiciary) at different federal levels. These institutions follow the functional logic of hierarchy, legality (law), distribution of resources, binding decisions and monopoly on the use of force and are based on the central values of equality and security. In market economies, the functional system market/economy consists of the institutions company or business and follows the functional logic of exchange via the medium of money (buying/selling) as well as supply and demand, customer orientation and competition. Central values in this case are freedom and profit maximization. The functional system of civil society consists of institutions such as various organizations (welfare, environmental, human rights associations, churches, trade unions, parties, foundations, etc.) or civic associations (clubs, groups, networks, etc.). The functional logic here is voluntary membership, negotiation, trust, advocacy, the core values of solidarity and activity.

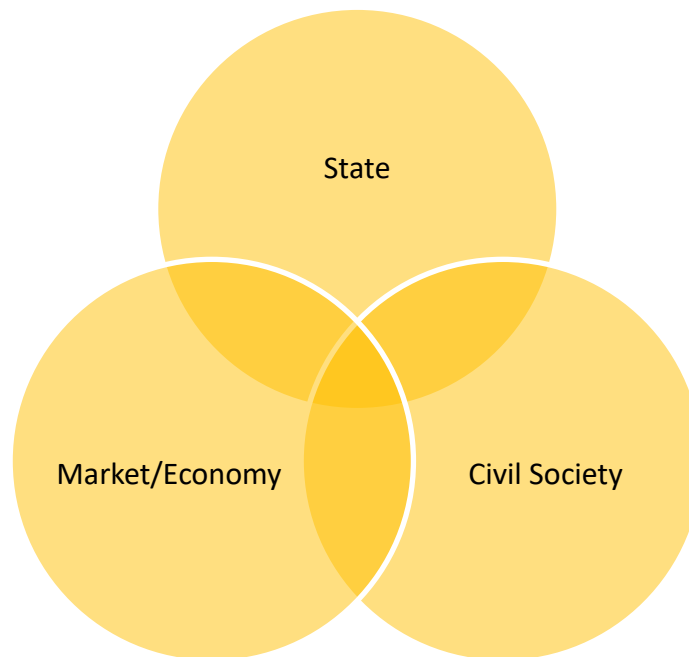


Fig. 2: Functional systems of modern societies (own representation based on Roß (2012): Thinking democracy further, p. 327. [2]

The functional systems of modern societies can also be referred to as sectors. Intersectorality then describes the phenomenon that different functional or action logics interact or interlock. In view of the growing complexity of modern societies, this interaction and interlocking often means that social phenomena can increasingly be perceived as interdependent and reflexive. Global megatrends such as climate change or digitalization are overarching systemic challenges that affect every single actor, regardless of the functional system and logic, that challenge or overwhelm them in their own ability to find solutions and thus bring them into mutual dependence with other actors, often from other functional systems/sectors. Intersectoral governance in the sense of coordinating or controlling a social problem is therefore an absolute necessity for shaping complex challenges.

As a result of the complex world of today, which is characterized by multiperspectivity and non-linearity - often described as the VUCA world as short for the formative elements volatility, ambiguity, complexity and uncertainty - the context of the intersectoral governance, the interaction of the actors across the organizational and sectoral boundaries, is in the foreground. In this sense, the term intersectoral cooperation refers to the concrete interaction process between actors from different sectors, which can take place in a formalized or informal manner and, in addition to cooperative action, can also include conflictual disputes.

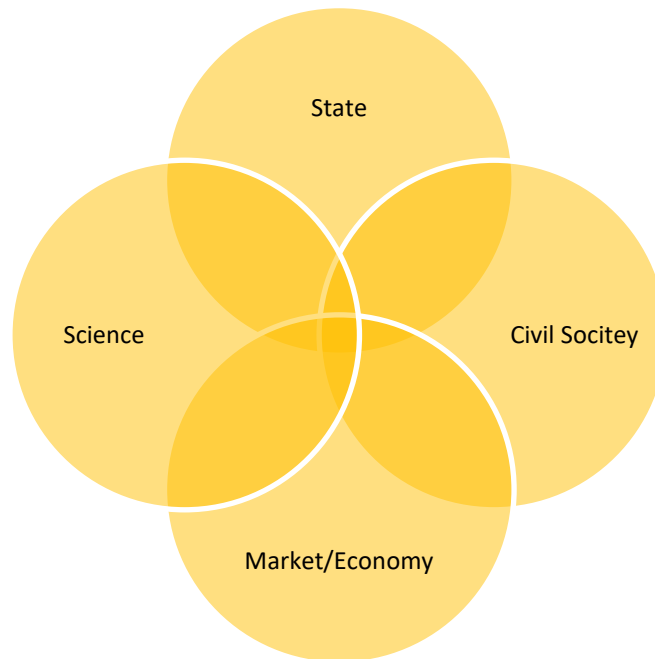


Fig. 3: Functional systems of modern societies (extended own representation based on Fig. 1)

A further aspect arises in the context of the challenges that shape the 21st century: the triad becomes particularly important in the case of global challenges such as climate change or digitalization, in which intersectoral governance or cooperation is more geared towards solutions in the form of different types of innovation from the state, business and civil society, often expanded to include other functional systems, such as science.

In this respect, the different networking activities of e-mobil BW can be seen as a platform for intersectoral cooperation and in consequence the agency itself as an instrument of intersectoral governance to successfully shape a transformation process. The following sections analyze the individual phases of the strategic network work of the state agency e-mobil BW.

3.3 Strategic phases

3.3.1 Phase 1: Establishment of cluster initiatives and regional innovation networks (2010-2017)

The main goal of the first phase was to identify the key players from research and industry. Baden-Württemberg is characterized by a large number of players from the automotive industry and related sectors such as mechanical engineering, the energy or the IT industry and also has a well-developed scientific and research landscape. In his analysis of the competitiveness of companies, Porter pointed out the innovation-promoting effect of regional clusters [3]. For the state of Baden-Württemberg, support for various cluster initiatives to accelerate the innovation process has been an integral part of economic and innovation policy since 2000 [4].

With the Cluster Electric Mobility South-West (since 2007/2010) and the Cluster Fuel Cell BW (since 2013), e-mobil BW is responsible for the management of two pre-competitive cluster initiatives for cooperation between companies and research institutions. A key goal, in addition to knowledge exchange, knowledge transfer and networking, is the initiation and implementation of joint research and development projects, which are mostly funded by the public sector at state, federal or EU level. The Cluster Electric Mobility

South-West was funded from 2012 to 2017 as part of the federal government's high-tech strategy as a leading-edge cluster with around 40 million euros.

The LivingLab BW^e mobil electric mobility showcase (2012-2016) was Baden-Württemberg's contribution to a federal government funding competition, as part of which a regional, temporary innovation network of around 34 interlocking demonstration projects with a total funding of 60 million euros was created. Around 100 partners from industry, research, society and the public sector carried out projects on various application scenarios for electric vehicles (public transport, delivery traffic, car sharing, fleets), charging infrastructure and overarching issues.

3.3.2 Phase 2: Dual mode approach of innovation and scaling up (since 2017)

The phase from 2017 is characterized by a dual strategy of innovation and scaling up. The following lines of action can be distinguished:

Focus on Transformation – create the transition towards new mobility solutions

- In 2017, the **Strategic Dialogue for the Automotive Sector in Baden-Württemberg** was initiated by the state government of Baden-Württemberg as an intersectoral governance and cooperation format with actors from politics, business, civil society and science, in which e-mobil BW acts as one of two offices.[5] Until today, within the Strategic Dialogue more than 70 projects have been initiated. These projects cover aspects like agile production systems for Li-Ion Batteries or for Electric Motors and technologies for series production of H2 tanks. But also intelligent grid connection to parking garages or bidirectional charging or charging of heavy duty vehicles on the road. And also the challenges for car workshops with regard to innovative distribution and aftersales topics are part of the projects. An overview on all the projects of the SDA can be found online. [6] Beside the project perspective, the SDA BW is also an important task in order to bring needs from regional and State level to European level and make aware of current hurdles regarding the frameworks, laws or subsidies.
- With the **Mobility SME Initiative** since 2017 and the **Landeslotsenstelle Transformationswissen BW**, an information center for the transformation of the automotive sector in Baden-Württemberg, established in 2020, e-mobil BW has intensified its activities to support the transformation of SME in the supply industry and the vehicle trade and repair business. Starting point of these activities was the idea to support the target group with special support services. And due to the fact, that a broad number of offer for support were already available, the bundling and the enlargement of the visibility develop into a focus. Furthermore due to bilateral consultations of the target group white spots could be analysed to develop new offers.
- Also the Federal Government of Germany puts transformation aspects on the agenda with regard to public funding programmes. In this context the Federal Government gives money to regional transformation networks which bring together regional economic development agencies, chambers, trade unions, employers associations or educational institutions. These networks offer special trainings, seminars and information to SMEs in their region. e-mobil BW with the instrument of the information center for the transformation of the automotive sector took over **coordination of the regional networks** in Baden-Württemberg. With linking the activities of e-mobil BW closely to regional transition initiatives both sides can profit and lift synergies. e-mobil BW has a broad knowledge of methods and lessons learned from more than two years of working closely with the target group. But the regional institutions have a closer contact to regional partners and a better understanding of their needs.
- Since the beginning of 2023, e-mobil BW also coordinates a project which is called **transformation hub for the electric drivetrain** (project name: scale-up e-drive). This hub is one of 11 hubs in Germany dealing with transformation topics of the automotive industry and being closely linked to the regional transformation networks. The hubs are working on the technological aspects of change

in the automotive sector and transfer these elements to the partners of the regional networks and especially to their SMEs. With this stepstone, e-mobil BW can transfer the successful work on State level to Federal level and strengthen also its own network.

Focus on Scaling up – bring solutions to the people and make solutions visible

- Various topic-specific networks emerged from the **LivingLab BW^e mobil**, such as for municipalities, for charging infrastructure or for zero-emission buses. These formats do not have a fixed group of members, but are aimed at specific groups of actors and offer regular information events and networking meetings.
- In addition, the **start-up collaboration format mobilbees BW** was launched in 2021 as well. There are a dozen of start-up formats already on the market. But the main motivation was, that there is a gap after the pre-seed phase and early start-up foundings. For growing and scaling up, start-ups need strong partners, business contacts and a network. Therefore, e-mobil BW initiated a start-up format in close collaboration with the cluster initiatives. The cluster members act as mentors, sparing-partners and the cluster working group as platform for presenting and networking for the start-ups.

Focus on innovation – (re)think ideas and collaborate to make new ideas work

- **Cluster Electric Mobility South-West** was in a strategic process after the ending of the founding in 2017 by the Federal Government's high-tech strategy. The cluster with strong focus on R&D attached more importance to services for its members like founding radar, special events for networking and knowledge transfer or initiating projects by supporting in finding partners or the right founding programme. Since 2017 the topics electric motor, battery, qualification and circular economy became the most important topics. In addition to that, the international matchmaking and finding partners abroad are key challenges for the Cluster. Today, more than 200 members work together in the cluster network. Apart from electric mobility aspects, the digitalization of processes, mobility and vehicles became an crucial part of the cluster work in the last years.
- The process of pushing new mobility solutions and digital mobility forward was so successful that in 2023 the working group **Intelligent Move** became an own network with the same name. The focus of this young initiative is on digital vehicles, digital infrastructure, digital services and the digital ecosystem as a whole. The digitalization of production technologies is still a relevant factor for the members of the Cluster Electric Mobility South-West and the cluster initiative deals still with these related topics.
- The **Cluster Fuel Cell BW** is growing very fast in the last years and brings together more than 220 partners. The Cluster Fuel Cell BW promotes a wide range of activities for the further development of hydrogen and fuel cell technology in Baden-Württemberg. Research institutes, companies, associations and politicians are working together on the further development of technologies, the expansion of industrialization and the market ramp-up of products and solutions related to the energy source hydrogen in mobile and stationary solutions.
- The **H2BW platform** has been bundling and supporting competencies and activities in the field of hydrogen and fuel cell technology in Baden-Württemberg since 2021. The e-mobil BW as the platform's office is a central point of contact for companies, research institutions and municipalities alike and offers actors from different sectors a common and cross-sectoral umbrella. The platform is also working on the framework to implement hydrogen industry in Baden-Württemberg by discussing relevant legal, technological and demand-driven aspects.



Fig. 4 Instruments of the intersectoral work of e-mobil BW

3.3.3 Analyses of the strategy

The analyses of the different instruments of the intersectoral work of e-mobil BW and their methods illustrated that change processes need different approaches with a broad range of involved partners and perspectives. The intersectoral method is here a key. Only if the understanding from different sectors is approaching and all sides are pushing in the same direction, the outcome is the best. A collaborative approach is only feasible, when facing the big technological, structural, financial and energetical challenges of nowadays. Of course, a lot of interests of companies, institutes, municipalities, regions and institutions have to be bundled but without these efforts change processes with structural dimension is not to be managed.

In order to strengthen innovation and cooperation cluster and network initiatives are crucial frameworks. Knowledge and transfer modules have to be worked out in projects and with academia in a first step in order to make transfer and scaling up to industry.

With this described approach the State of Baden-Württemberg recognised in an early period the challenges and set the course. Due to this acting, the region of Baden-Württemberg, is actively shaping change as one of the regions in Europe and is seen as preceding region. But still the challenges are high and Baden-Württemberg is striking for strong partners in order to bring the change process of industry, energy system and society to a positive ending.

3.4 Skill Set: The team is the key

To succeed in dealing with different partners and different stakeholders, the competences of the coordinating partner is essential.

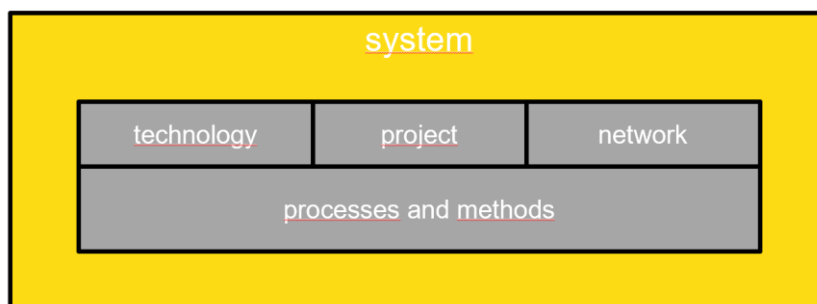


Fig. 5 Core competence fields of e-mobil BW

With a team of 38 people with different professional backgrounds, e-mobil BW uses a set of core competencies to pursue its tasks and goals:

- **Technology:** e-mobil BW has built up a high level of internal competence through continuous processing of the innovative fields of vehicle, energy, information and communication technology (ICT) and production as well as various application fields of the new mobility solutions. e-mobil BW communicates the challenges of technological change to the specialist and general public through target group-oriented public relations work and various methods of knowledge management and knowledge transfer. The activities, results and publications of the state agency and the clusters can be found on the Internet portals operated by e-mobil BW as well as social media channels such as LinkedIn Electromobility South-West and the other network formats spread worldwide.
- **Project Management/Multi-project Management:** As the central point of contact for the state of Baden-Württemberg for questions relating to the electrification and digitalization of mobility, e-mobil BW understands the initiation, implementation and implementation of projects and project groups, such as within the framework of the major research groups Leading-edge Cluster Electric Mobility South-West and LivingLab BW^e mobil. e-mobil BW also fulfills a business-promoting function by constantly monitoring funding opportunities at federal and state level and by initiating targeted projects with the players in the network.
- **Network Management:** e-mobil BW coordinates several different networks with several hundred companies, research institutes and universities as well as other initiatives, associations and actors in the public sector. Through targeted network management, e-mobil BW ensures that the players in the network are linked with each other and thus contributes to using synergy effects in shaping the technological change.
- **Processes and Methods:** As the cluster management of the Cluster Electric Mobility South-West and the Cluster Fuel Cell BW as well as the project control center of the LivingLab BW^e mobil showcase, e-mobil BW has been since it was founded in 2010 the competence center for project controlling in the field of electric mobility and regional project management in matters of electric mobility. Through the coordinating and content-related activities within the framework of the Strategic Dialogue for the Automotive Sector BW as well as the management of a working groups at the federal level, e-mobil BW has also shown the ability to organize discussion and work processes in very heterogeneous groups to moderate and control.
- **Innovation and System:** The e-mobil BW team consists of employees with different professional backgrounds in order to be able to meet the broad systemic challenge of technological, economical, political and cultural change in the course of electrification and digitalization of mobility. Thanks to a wide range of experience and skills, the e-mobil BW team is able to recognize, accompany and drive the far-reaching process of change, both on the organizational level and on the level of society as a whole. [7]

4 Outlook

In the coalition agreement of the Baden-Württemberg state government for 2021, e-mobil BW was mentioned several times. Particularly important is the further development of the state agency as a "transformation agency" until 2030. On March 21, 2023 the Cabinet of the State of Baden-Württemberg decided to finance e-mobil BW as transformation agency until 2030 and to position the agency for the future. Especially in the fields of hydrogen, energy and digitalization new tasks will enlarge the portfolio of the agency. [8]

Thus, in the upcoming year, e-mobil BW will enter a next transformation process in order to come up with the development of the ecosystem of new mobility solutions. One of the aspects will be not only the innovation of new mobility and automotive solutions but furthermore the combination of energy, automotive

and mobility in a holistic approach of transformation. With the additional instruments becoming part of e-mobil BW in since 2021 many small steps are already taken to become a transformation agency. Already today, e-mobil BW is trying to support agencies and actors from other European countries with the method knowledge and the lessons learned from the experience.

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Presenter Biography



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.



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. Her actual focus as Director of Industrialisation is on the transformation of the automotive sector and the management of the Cluster Electric Mobility South-West.