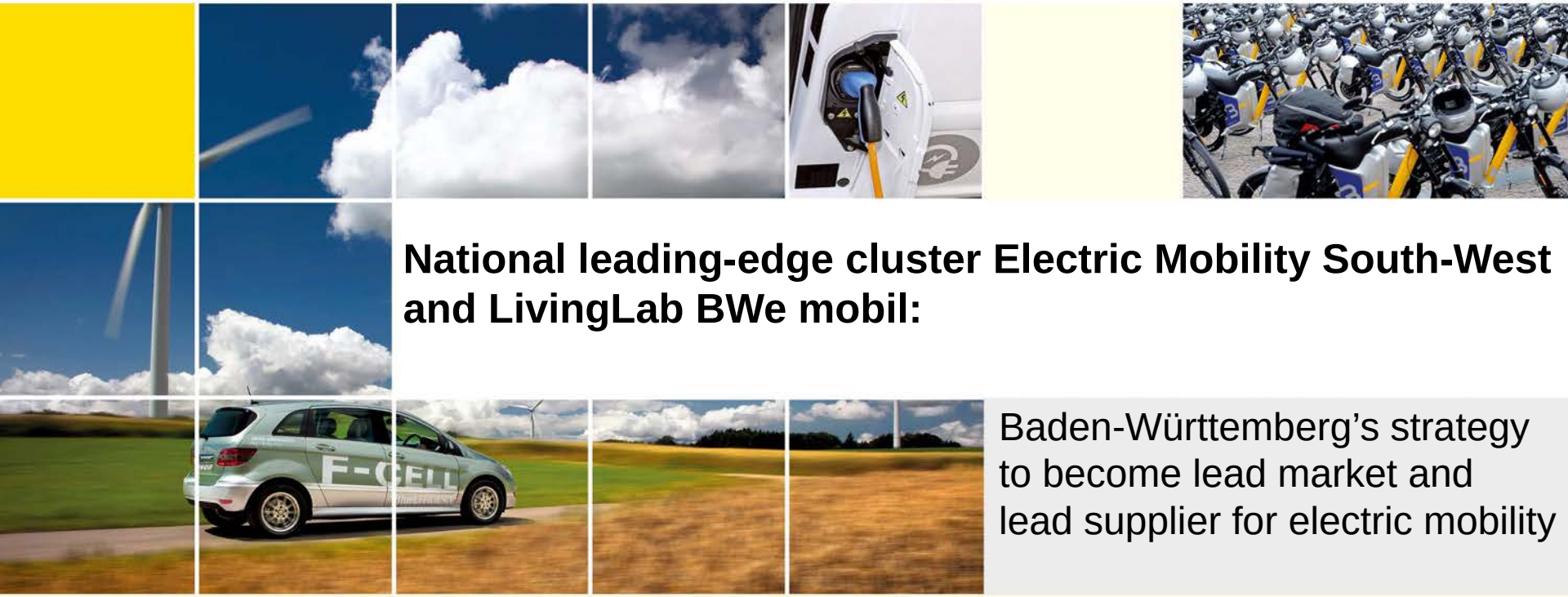
e-mobil BW

Landesagentur für Elektromobilität und Brennstoffzellentechnologie Baden-Württemberg GmbH



National leading-edge cluster Electric Mobility South-West and LivingLab BWe mobil:

Baden-Württemberg's strategy to become lead market and lead supplier for electric mobility

Baden-Württemberg

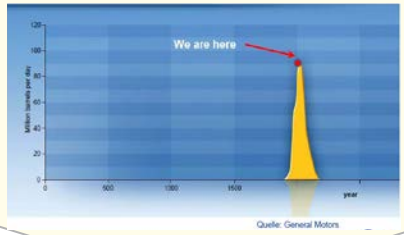
E-Mobile Future – Scenario of an overall development

Environment

climate change and increasing ecological damage

increasing urbanization

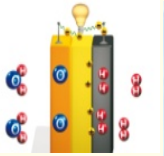
peak oil



Economy + Technology

growth and employment

innovations in
- vehicle construction
- storage technology
- renewable energies
- ICT



Society

increasing ecological awareness

Increasing mobility

increasing individualization

key enabling technology electric mobility

Society: Change of mobility behaviour (usage vs. ownership)

- Decrease in vehicle ownership among younger users in recent years
- Simultaneous significant increase in the use of car sharing schemes

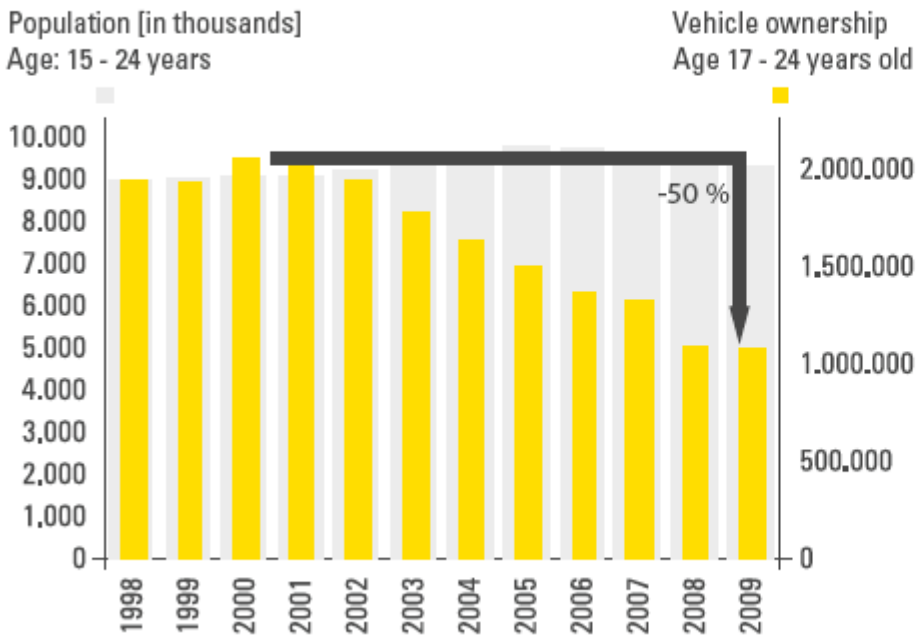
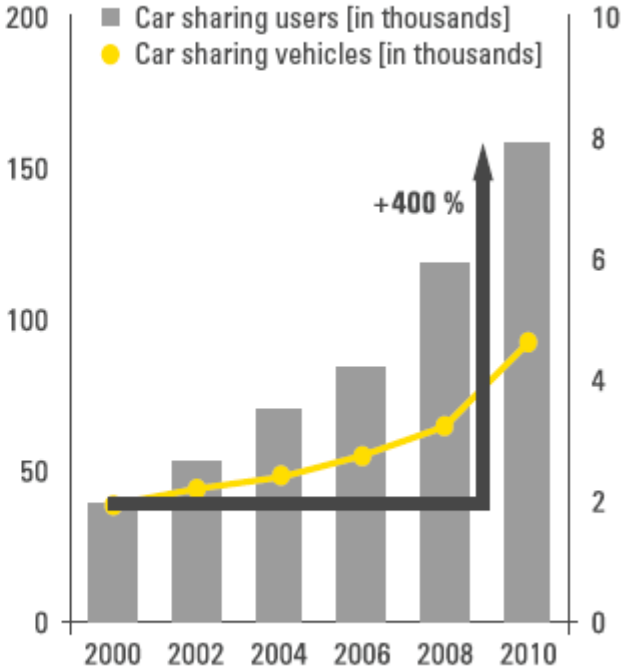
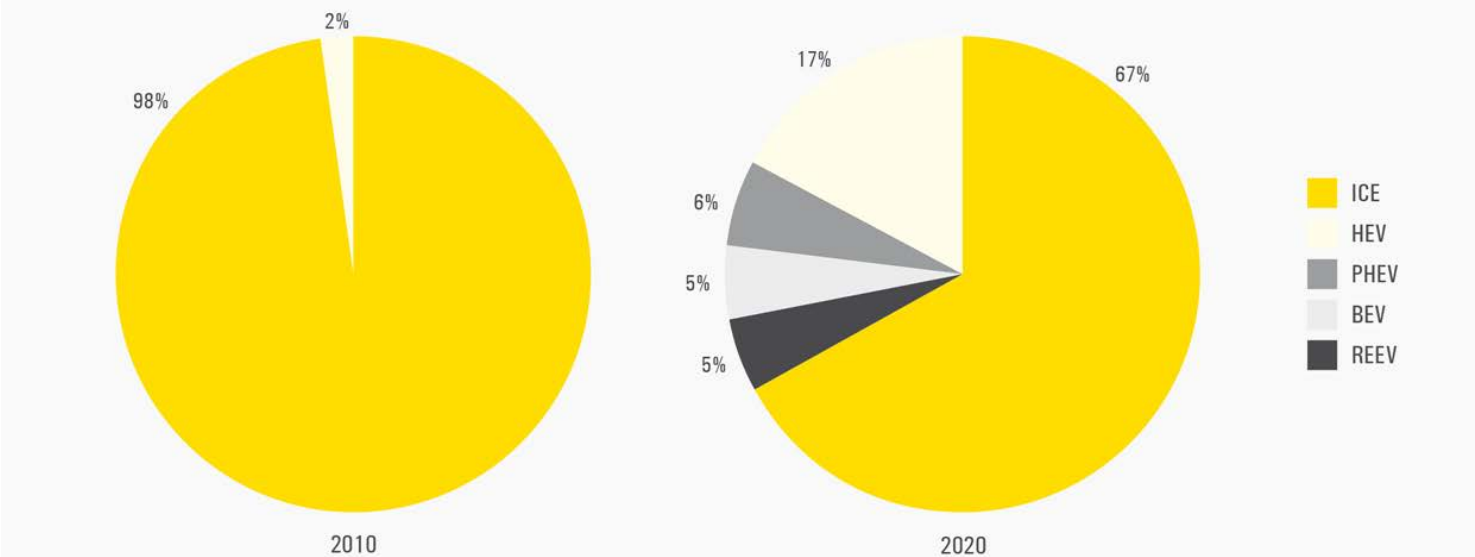


Fig. 27: Changes in vehicle ownership and car sharing use 2000-2010 in Germany



Today´s market situation and scenarios



- Global growth of passenger car market from approx. 60 Mio. (2010) to approx. 87 Mio. (2020) unit sales per year
- Decline of market share of cars with pure internal combustion engine (ICE) from 98 % to approx. 67 % (2020)
- Market share of battery electric vehicles (sales) in 2020: 5%
- The electrification of the powertrain is supposed to increase continuously

Potential job effects by electric mobility in Baden-Württemberg 2020

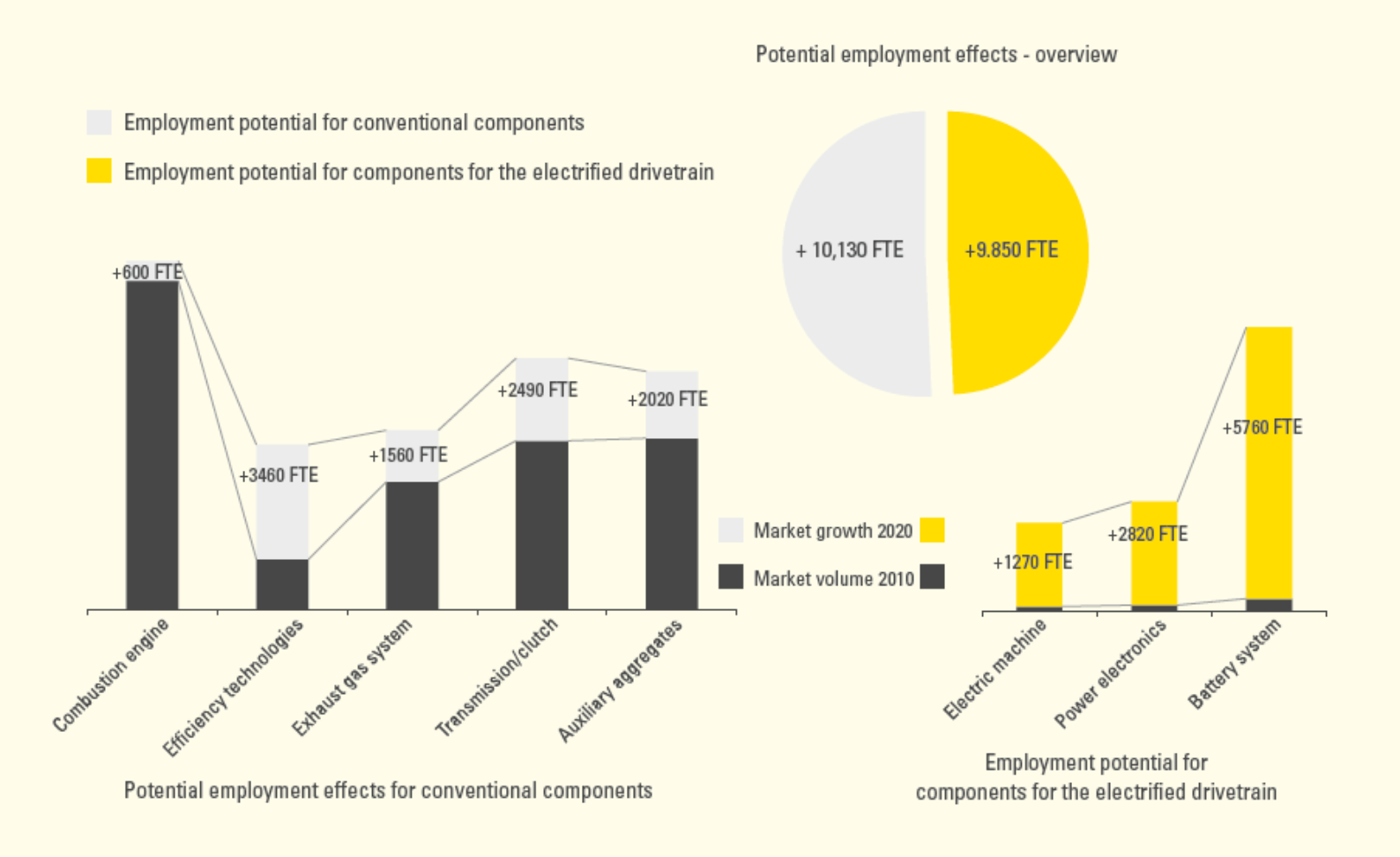


Fig. 38: Potential employment effects in Baden-Württemberg in 2020[49]

How can this potential for new jobs be realized?

- As essential stakeholders in the Baden-Württemberg automotive value creation landscape, small and medium sized enteprises must be actively integrated into the knowledge tranfer processes of large enterprises and resaerch institutes.

- A competitive „electromobile“ value creation structure can only be holostically established in the state through the competencies of medium-sized companies.

Electric mobility: a complex system

Power Generation

Electricity network

- Development
- Smart-Grid

Charging station

Concepts:

- public
- semi-public
- private

Technology:

- conductive/ inductive
- alternating current / co-current flow

Different modes of charging

Users and goods

- smart-phones
- mobility-services

Vehicle – Interfaces

- ICT in vehicles
- charging technol.

City & habitation

- Smart Home
- Smart City
- buffer/storage

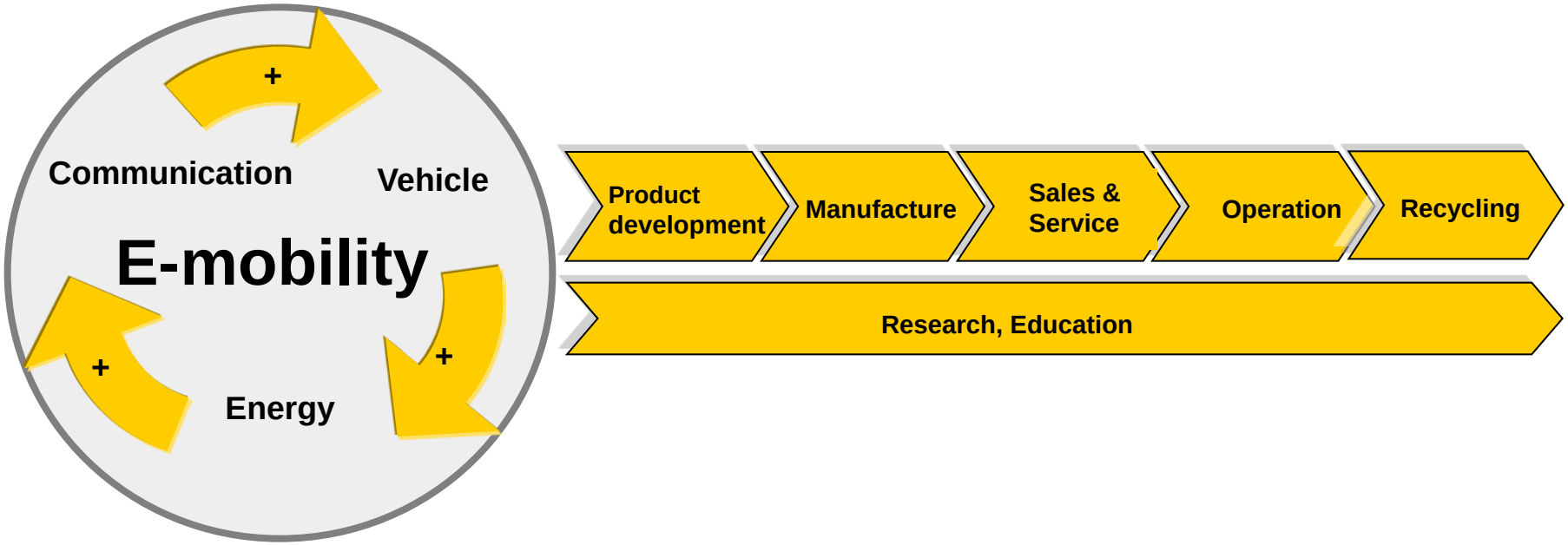
Further vehicles:

- Car-to-Car
- fleet manage-ment/Back-end
- logistics

Modes of transport

- connecting public transport
- intermodality
- services for mobility

E-Mobility is a cross sectoral approach integrating three fields of technologies: Communication – Energy – Vehicle



Cluster Electric Mobility South-West – One of Germany‘s Leading-Edge Clusters

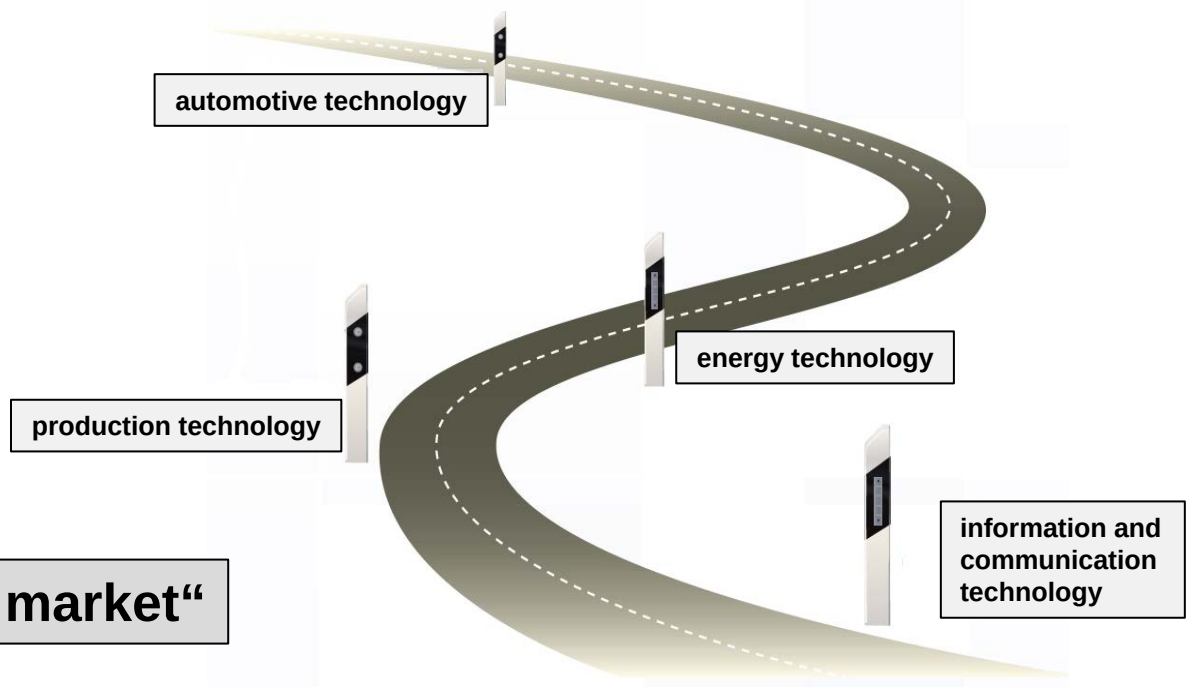
Vision and objectives:

elektromobilität süd-west

Our objectives:

- Realizing a high-capacity, low-emission and market-driven mobility.
- Baden-Württemberg as leading market and supplier for electromobile solutions.
- Strengthening BW‘s economic power (esp. SMEs).
- Linking industry and local research institutions.

Our vision: Developing and producing the most attractive solutions for future mobility and turning Germany into a leading provider and key market for e-mobility.

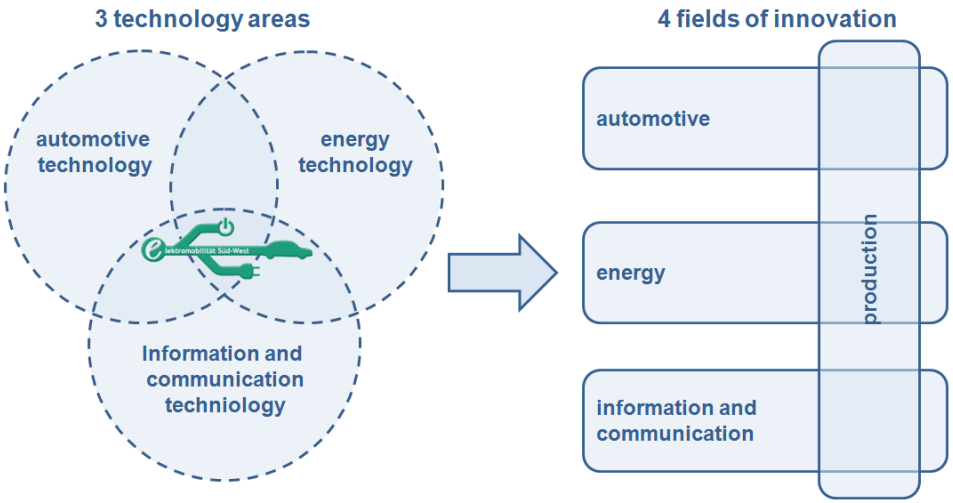


Motto: „road to global market“

Cluster Electric Mobility South-West

elektromobilität süd-west

- Competences:



(list not complete)

By means of a link-up between innovation areas such as automotive, energy, ICT and production the cluster develops a modern, integrated technological competence which makes its structure characteristically near perfect, regionally unique and fully concordant to what is being considered an ideal cluster vision.

LivingLab BW^{e} mobil – Key Data

- Concept of **LivingLab BW^{e} mobil** can be characterized as:

  intermodal,
  international connected,
  citizen centric and
  close to OEMs/industry

- More than **100 partners** in **41 projects with a total volume of 152.6 Mio €**
- More than **3,100 electric vehicles** and **1,000 charging points** until 2014
- **100,000 vehicles in 2020**

LivingLab BW^{e} mobil: project portfolio

1. Intermodality

- Smart Regio Card
- car2go Stuttgart
- e-Flinkster und e-Call a Bike
- Peer2Peer Zweirad-Mobilität E-Mobilität
- E-Mobilität an S-Bahn-Haltestellen
- HyLine-S
- E-Taxi

2. Fleets & Industrial Transports

- Get-E-Ready
- Landesfuhrpark
- RheinMobil
- Logistischer Wirtschatsverkehr
- Campusflotte KIT
- eFleet Flughafen Stuttgart

3. E-Mobility & Tourism

- Region Stuttgart Tourismus elektromobil
- Elektromobilität im Remstal-Tourismus

4. City & Traffic Developement

- Fellbach ZeroPlus
- Wohnen und Elektromobilität am Nordbahnhof
- EMiL 2.0
- M87 Plus Energie Haus
- Ludwigsburg intermodal
- e-carPark Sindelfingen
- e-Verkehrsraum Stuttgart

5. Energy & ICT: infrastructure and grid developement

- Intelligentes Flottenladen
- Ladeinfrastruktur an Werkstandorten

6. Vehicle Technology

- Audi - Stadtprofil Stuttgart, Lieferservice
- Daimler - Range-Extender
- Daimler - Long Range Applikation
- Porsche Panamera Plug-In Hybrid

7. Communication, Publicity & Participation

- Schaufenster-Würfel
- Online-Schaufenster eMobility BW
- Zentrum Elektromobilität 2.0 in Stuttgart
- e-Bürgerbus

8. Education & Qualification

- Mobiles Schulungszentrum Elektromobilität
- Schauwerkstatt und Bildungs-Roadshow
- Regionale Bildungsplattform E-Mobilität BW
- Genius - Elektromobilität in der Schule
- e-Fahrschule

9. Accompanying Research

- Begleitforschung projektübergreifend
- Begleitforschung intermodales Angebot
- Ombudsstelle Sicherheit und Incident Reporting

Road to sustainable mobility in Baden-Württemberg 2020

- **The combination of leading edge cluster** (Lead manufacturer – Industrialization) and **LivingLab** (Lead market – Business models) is a perfect complement and enables an interative, fortifying innovation-process.

elektromobilität süd-west

Innovative Mobility Solutions

Validation of Technologies

livinglab BWemobil

catalytic approach

Lead Manufacturer and Lead Market

TOP Event 2012 – Invitation to all 4M-Regions

3 themes – 1 event – October 8-10, 2012!

Battery+Storage

- International trade fair for battery and energy storage technologies

f-cell

- International conference and trade fair

e-mobil BW –Technologietag (October 10, 2012)

- All sessions with simultaneous translation
- Exhibition

Landesagentur für Elektromobilität und Brennstoffzellentechnologie Baden-Württemberg GmbH

Thank you!

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Portfolio of e-mobil BW

Our primary aim is to support the transformation from conventional fossil fuel based vehicles to electric mobility.

- establishing an efficient network and **cluster management**
- coordinating activities and creating synergies
- centre for consulting and knowledge transfer
- integrating SMEs into the process of innovation
- supporting the creation of an adequate framework in the fields of infrastructure as well as education and training
- promoting Baden-Württemberg as a location for business, science and research as well as the **lead market** and **lead manufacturer** in the areas of e-mobility and fuel-cell-technology (at national and international events)

Ongoing activities in Baden-Württemberg

various e-mobility demonstration projects (national funding):

- E-Mobility Pilot Region Stuttgart (coord. by Stuttgart Region Economic Development Corp.),
  - e.g. Call-a-bike Pedelec Stuttgart, IKONE, Porsche Boxster E
- German-French fleet test CROME (**CRO**ss-boarder **M**obility for **E**Vs)
- MeRegio, MeRegio mobil, Modellstadt Mannheim (e-mobility and smart grid concepts)

collaborative research projects (financed by the State of Baden-Württemberg):

- technical challenges in the automotive sector, bidirectional inductive charging, multimodal transport management

e-mobility research centres:

- Competence E (battery technology and electric power trains at KIT Karlsruhe
- project house e-drive (joint project of Daimler and KIT in the field of electric power trains)
- Research Institute of Automotive Engineering and Vehicle Engines Stuttgart (FKFS)
- Robert Bosch Zentrum für Leistungselektronik (robert Bosch GmbH, University of Stuttgart, Reutlingen University)
- innovation cluster „Regional ECO Mobility 2030 - REM 2030“ (Fraunhofer institutes in Karlsruhe and Freiburg)

battery and fuel cell technology:

- ZSW Centre for Solar Energy and Hydrogen Research Baden-Württemberg
- Kompetenznetzwerk Lithium-Ionen-Batterien (KLIB)
- Helmholtz-Institut Ulm für Elektrochemische Energiespeicherung (HIU) (founded January 2011)
- Elektrochemie Kompetenzverbund Süd (coordinated by KIT Karlsruhe)

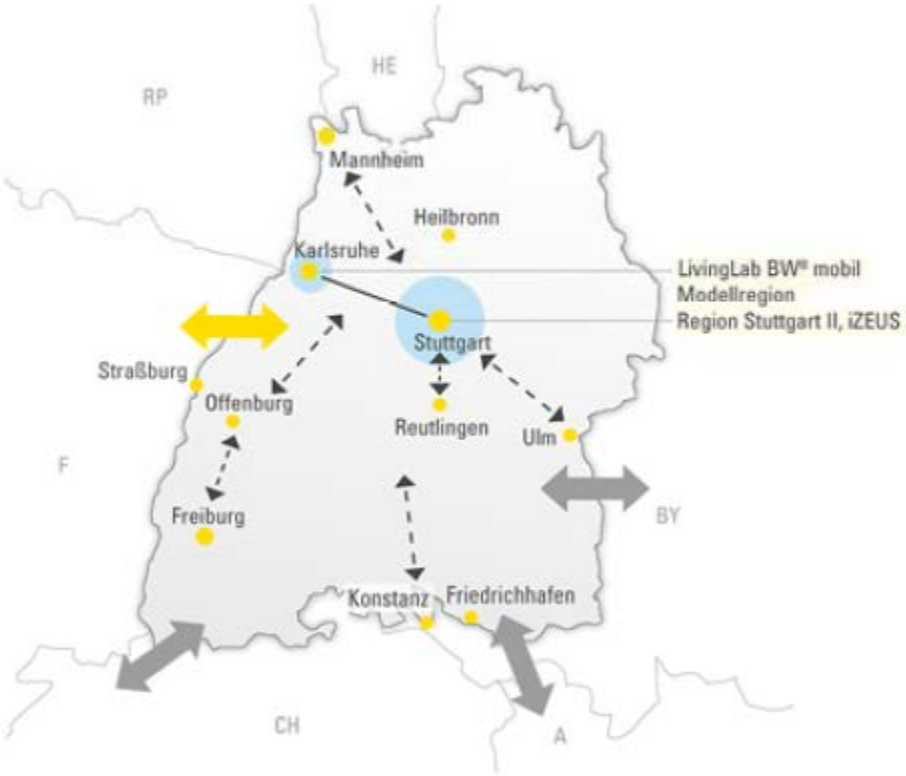
lightweight vehicle construction:

- LBZ-BW Leichtbauzentrum Baden-Württemberg (association of industry and research institutions)
- KITe Hylite Kompetenzzentrum Fahrzeugleichtbau (KIT, DLR, Fraunhofer ICT)

Roadmap towards sustainable mobility in BW: phases I and II

Phase I (until 2012):
Individual projects with specific focus (examples)

Phase II (2012-2015):
Constitution of an integrated system in a well defined pilot area; know-how transfer between LivingLab and research projects



Roadmap towards sustainable mobility in BW: phases III and IV

Phase III (2015-2020):
Extension along axes (Mannheim – Ulm / Mannheim – Offenburg)

Phase VI (2020+):
E-mobility linked all over Baden-Württemberg