



KNOW-ECO

Enhancing Knowledge Collaboration in Eco-Innovation



Action Plan

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Table of contents

| | |
|--|-----------|
| 1. State of play Saxony-Anhalt | 3 |
| <i>Economic and policy background Saxony-Anhalt.....</i> | 3 |
| History - development and characterization | 3 |
| Most important industries..... | 4 |
| Classification of Know-Eco in the context of national and regional policies and the relevant sectors of building and automotive | 6 |
| Strategies of Saxony-Anhalt and future plans | 11 |
| <i>Research landscape in Saxony-Anhalt</i> | 15 |
| Infrastructure..... | 15 |
| Key Areas | 17 |
| <i>Transfer in Saxony-Anhalt</i> | 19 |
| Cooperation and knowledge transfer..... | 19 |
| Financial support | 20 |
| Non-financial support and regulations of transfer | 22 |
| 2. Know-Eco project and results..... | 24 |
| Background Know-Eco Project..... | 24 |
| <i>Transfer process within Know-Eco - concrete activities regarding knowledge transfer and exchange of good practices</i> | 26 |
| Results of a short survey with enterprises from the construction sector | 26 |
| City labs | 27 |
| Summary and results from the other city labs | 29 |
| Starting queries for cooperation for the project-partner regions | 32 |
| Exchange of relevant documents | 32 |
| Public Relations | 33 |
| <i>Identified good practices and regional policies and links between the regions or possibilities for transfer/ implementation</i> | 34 |
| Regional policies | 34 |
| STARK III..... | 34 |
| Integrated municipal climate protection concept (city of Halle)..... | 35 |
| Cluster Chemistry/Plastics..... | 36 |
| Cluster BioEconomy..... | 38 |
| Cluster Mahreg Automotive | 40 |
| Good Practices | 41 |
| Galileo test bed Saxony-Anhalt | 41 |
| Competence centre for optimization of energy efficiency of automated buildings – “KEO” | 42 |
| Michael Antons start-up Interanton: “Clayday” - Humid regulatory objects from clay | 43 |
| Harz.EE Mobility | 44 |
| “Energy Forests” | 45 |
| IKAM | 46 |
| SuperKon | 46 |
| C3House..... | 47 |
| Montanes Green Buildings | 47 |
| 3. Recommendations for Saxony-Anhalt to promote eco-innovations in the field of automotive and construction. | 48 |

| | |
|--|-----------|
| 4. Appendix..... | 59 |
| <i>List of (critical) stakeholders consulted in the region and their work fields</i> | <i>59</i> |
| <i>Innovation networks.....</i> | <i>62</i> |
| <i>Research centres</i> | <i>63</i> |
| <i>Business-oriented research institutions.....</i> | <i>63</i> |
| <i>Technology and start-up centres.....</i> | <i>65</i> |
| <i>Know-Eco Transferability Guide for Saxony-Anhalt.....</i> | <i>66</i> |

List of figures

| | | |
|-----------|--|----|
| Figure 1 | Chemical site Leuna then and now | 4 |
| Figure 2 | Chemical triangle Central Germany | 5 |
| Figure 3 | Sector portfolio Saxony-Anhalt 2011 | 6 |
| Figure 4 | Framework of national policies around resources, energy efficiency and innovation | 7 |
| Figure 5 | Research and Funding in the field of Electro-Mobility (Federal Government and state of Saxony-Anhalt) | 8 |
| Figure 6 | Financing for the construction sector (energetic renovation etc.) (Federal government) | 9 |
| Figure 7 | Financing for construction in Saxony-Anhalt | 10 |
| Figure 8 | Locations of non-university research facilities of major research communities / societies in Saxony-Anhalt | 16 |
| Figure 9 | Control system of transfer in Saxony-Anhalt | 22 |
| Figure 10 | Si.Mo.Ne | |
| Figure 11 | Galileo test bed..... | 42 |
| Figure 12 | Efficiency map | 48 |

1. State of play Saxony-Anhalt

Economic and policy background Saxony-Anhalt

History - development and characterization

Saxony-Anhalt is a young state with a long industrial tradition. Technical innovation and the strategic location in the heart of Europe meant that a centre of industrial progress took shape in this region at the beginning of the 20th Century.

20 years after the reunification, the innovation potential of Saxony-Anhalt becomes again one of the strengths of the country. The basis for this is a well-developed research landscape and the close cooperation between academia and industry.

Numerous prestigious companies (not enough at all) from home and abroad are involved in Saxony-Anhalt. Furthermore, Saxony-Anhalt is economically characterized by the following:
The region around Halle constitutes with Leipzig, which is the biggest city in Saxony nearby Halle, an economic centre – many traffic flows run together in this region. Therefore, the air freight hub at the airport Leipzig-Halle seems to be the most important location.

After the Reunification, Saxony-Anhalt had a lot of problems with restructuring the industrial sector. Only in recent years the process became successful, because of an offensive regional economic policy. The quote of unemployment decreased (although it is still one of the highest in Germany) and the economic dynamic increased. Within the last years, some well-known research institutes have settled down in Saxony-Anhalt. It has become a quite innovative state, especially in some specific branches.

In this region, the area Halle-Leipzig constitutes an economic centre. It is well developed through rail and road and with the airport as an international logistics hub. Due to these facts, this area will be the leading region of competence for traffic and logistics in Central Germany.

The other main area in Saxony-Anhalt is the city of Magdeburg and its surroundings, because of its good geographic location between Hannover and Berlin. Saxony-Anhalt is located in the middle of Germany and has many short distances to a lot of destinations in Europe. Behind this background, it is not surprising, that the state of Saxony-Anhalt is an upcoming transport- and logistics competence region. Furthermore, with the renovation and construction of the new train formation depot/freight yard in Halle, the state of Saxony-Anhalt gets a new location to expand its position in the logistic sector.

This central position at the European internal market, the closeness to the East-European markets and the good transport connections has created favourable conditions of infrastructure and great locational advantages in Saxony-Anhalt.

Most important industries

Across all sectors there were nearly 88.000 active companies in 2009. 99,7% of them have fewer than 250 employees and are therefore considered to MSEs and SMEs. This illustrates the small scaled economic structure of the state. The percentage of large firms (manufacturing, 500 to 999 employees) is only 0.5% among the companies in Saxony-Anhalt (compared to Germany with 1,3%).

Traditionally, there is a focus on chemical industry and oil industry in Saxony-Anhalt. The chemical industry has a long-standing tradition in Saxony-Anhalt and adjacent states. There is the “chemical triangle” in this region consisting of the cities of Halle, Merseburg, Bitterfeld (Saxony-Anhalt) as well as Leipzig and Schkeuditz (Saxony) as well as a bigger one spreading over various states.

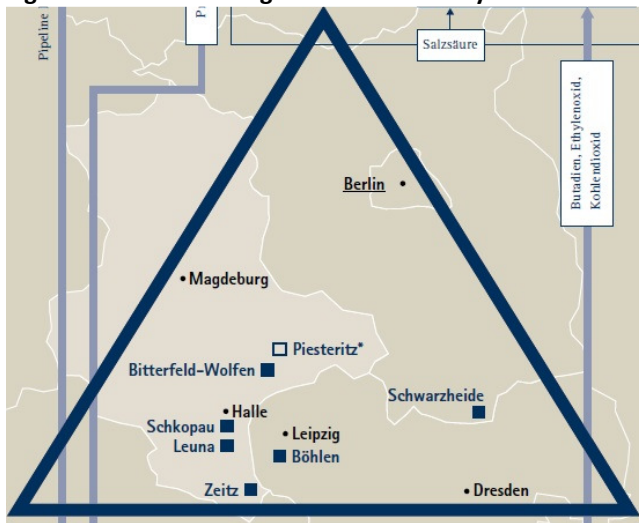
The Central German sites of chemical industry are pioneers in the global restructuring process of the chemical industry. Since the beginning of the 1990s, more than 17 billion Euros have been invested in the renovation and renewal of the infrastructure as well as the production facilities at the big chemical sites in Saxony-Anhalt, Leuna, Bitterfeld-Wolfen, Schkopau and Zeitz as well as Böhlen (Saxony) and in Schwarzheide (Brandenburg).

Figure 1 Chemical site Leuna then and now



The chemical triangle with a chemistry park area of 5.500 hectare has a comprehensive raw material and synergy potential. From the Baltic Sea Harbour in Rostock to the locations Schkopau and Böhlen there are supply pipelines, which guarantee an economic favourable raw material supply.

Figure 2 Chemical triangle Central Germany



The chemical expertise in this region is marked through a specific know-how. Central Germany is the most important “birthplace” of the chemical park concept. Chemical park companies and enterprises make sure, that with their experiences, services and products, new settlers at the site can concentrate immediately on the efficient production of innovative products.

In the year 2003, the cluster Chemistry/Plastics Central Germany was established. The cluster is initiated by the economy and is a platform of transnational cooperation between Saxony-Anhalt, Brandenburg, Saxony and Thuringia. It is a collaboration of enterprises (large, medium-sized and small), associations, educational and research institutions, service providers, management and policy. The future cluster is built on established partnerships and network structures. One of the work fields of the cluster is to develop value chains. Due to the project “Know-Eco” it can be said, that the range and the diversity of the product developments underway in this cluster will impact both the construction and the mobility sector.

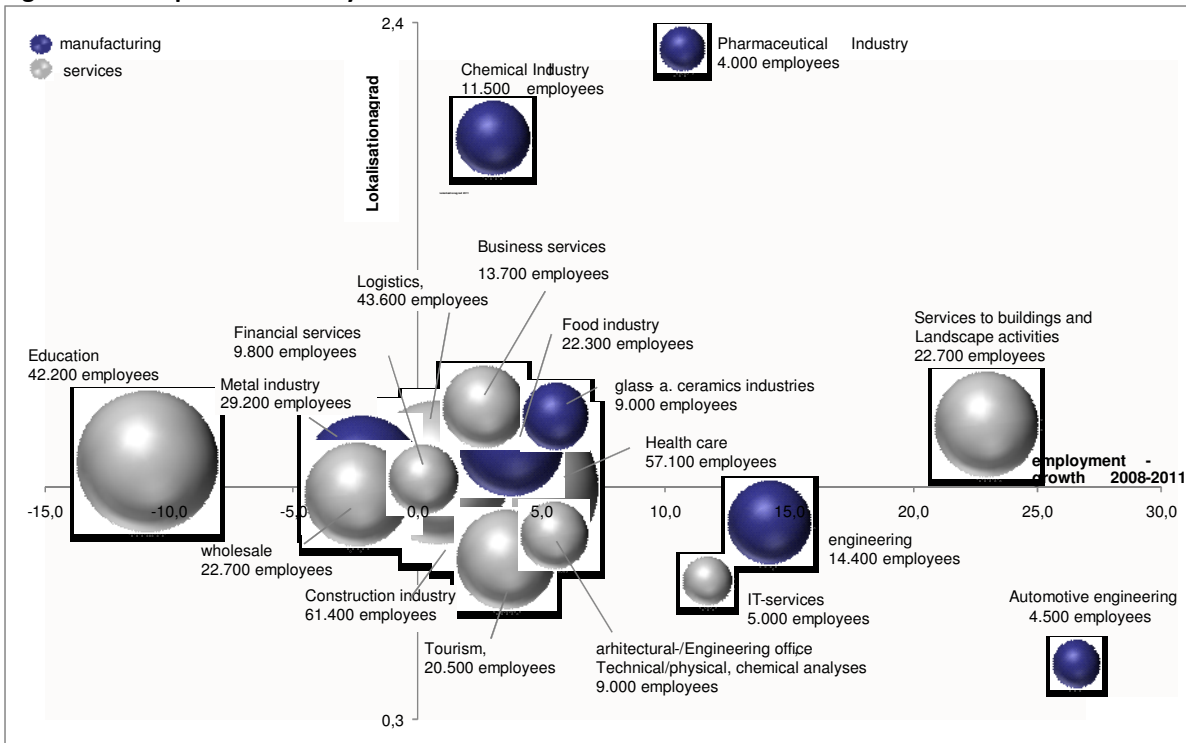
For more information about the cluster, please read under “regional policy”.

The most important industries in Saxony-Anhalt are:

- Automotive
- Chemistry/ Plastics
- Service sector
- Renewable energies
- Glass industry
- Creative economy
- Life sciences
- Logistics
- Mechanical and plant engineering
- Food
- Paper industry

The industry portfolio represents those industries, where Saxony-Anhalt has a surface compared to the Eastern countries on average specialization (degree of localization), strong growth momentum and / or a high employment level.

Figure 3 Sector portfolio Saxony-Anhalt 2011



Quelle: Bundesagentur für Arbeit; Berechnung Prognos AG

Classification of Know-Eco in the context of national and regional policies and the relevant sectors of building and automotive

To be able to classify the project “Know-Eco” it could be useful to have a look at the different policy areas and funding areas, which are relevant in the project context of “Know-Eco”. Therefore, you will find a quick overview of the different policies as well as some funding opportunities offered by the federal government or the state government of Saxony-Anhalt. The overview does not claim to be complete, it shall only give an impression, of what policy and funding is focused on at the moment.

In the following you will see some figures providing an overview on the above said. Some of the policy fields or funding are not focused on one concrete field (construction or automotive), but are more like a headline, for example the “climate protection initiative”. This initiative is open to several actions. You will find projects like a funding programme for hybrid buses, an impulse programme for mini-combined heat and power systems or funding for single innovative climate protection programmes. Other policies are focused on only one theme, like electro mobility.

You will also see that the federal government occupies nearly all areas of policy or funding. The state government has often merely additional functions or tries to focus on special fields respectively, where the state can represent itself as an expert. Under this point of view and with the background for example that Saxony-Anhalt does not have a very big building sector, but a big automotive industry instead, especially a big supply industry, it does not come as a surprise, that Saxony-Anhalt has concrete research and funding programmes in the automotive sector (electro mobility, material design...), but not for the building sector.

Figure 4 Framework of national policies around resources, energy efficiency and innovation

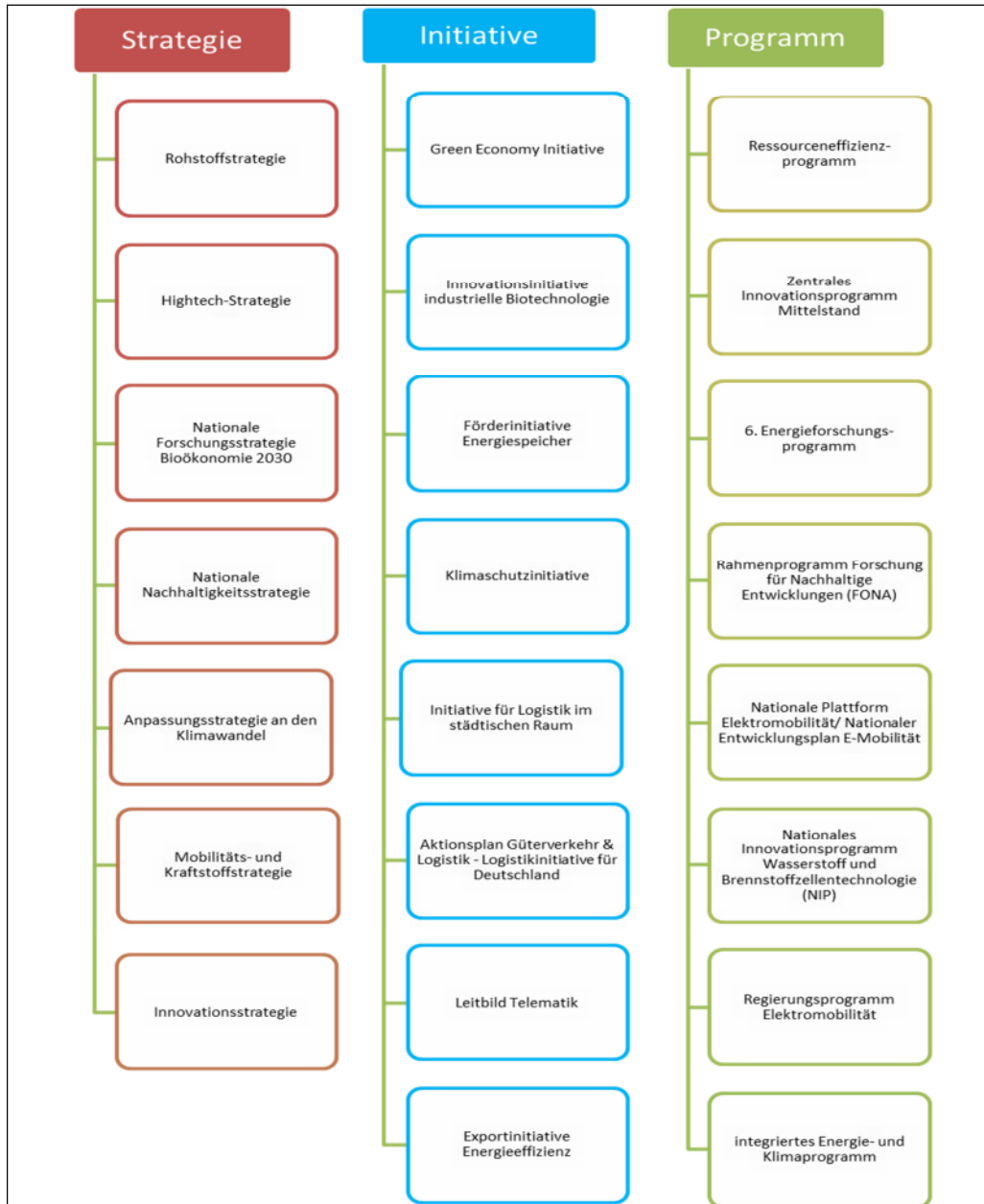


Figure 5 Research and Funding in the field of Electro-Mobility (Federal Government and state of Saxony-Anhalt)

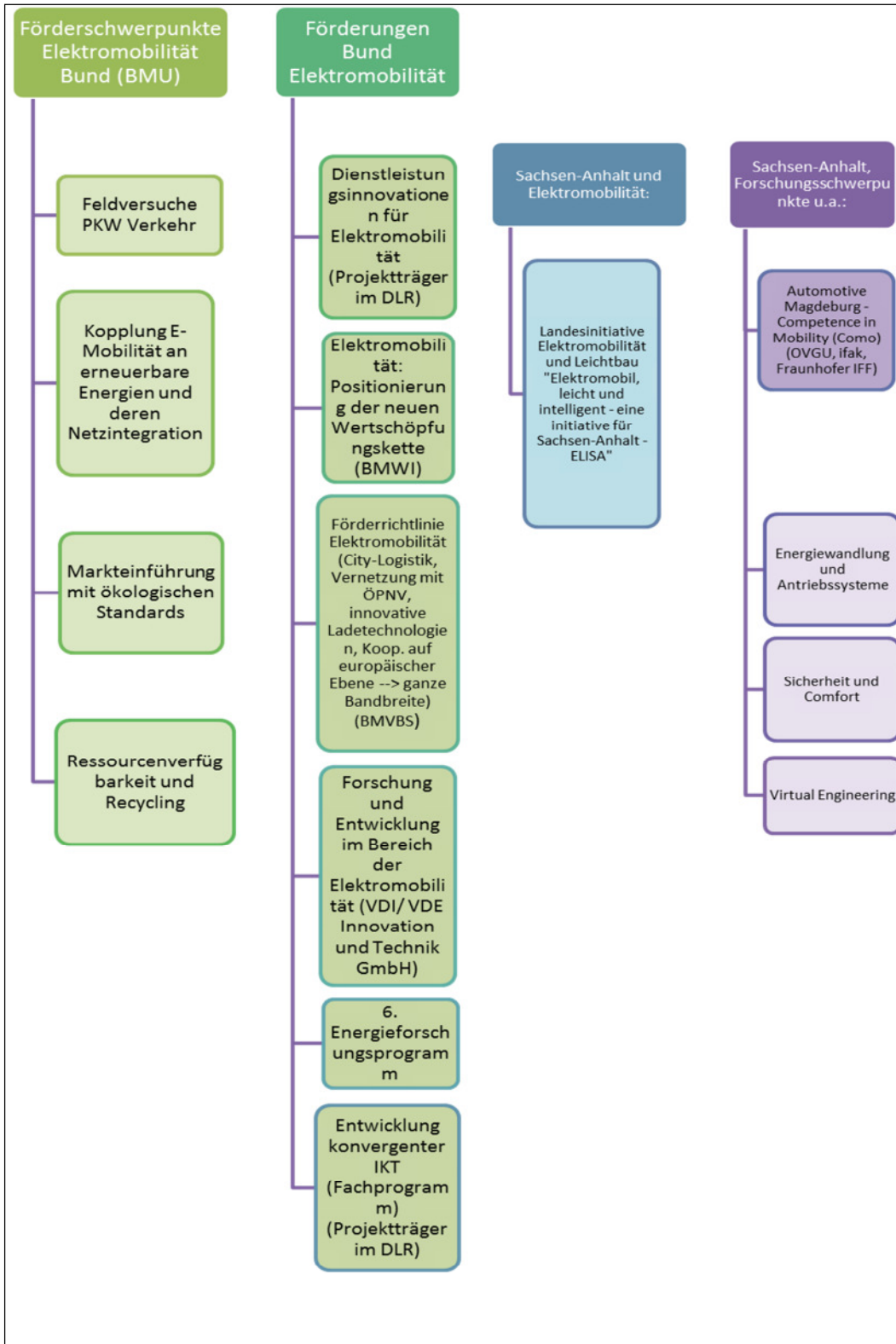


Figure 6 Financing for the construction sector (energetic renovation etc.) (Federal government)



There are two relevant funding/financing programmes for the building sector in Saxony-Anhalt. The first one is settled at the investment bank of Saxony-Anhalt and is a loan/credit in cooperation with the KfW bank. The programme is called “Saxony-Anhalt modern” and has three different action areas. The first two are relevant in case of energetic renovation or in case of eco-innovations in the construction sector respectively.

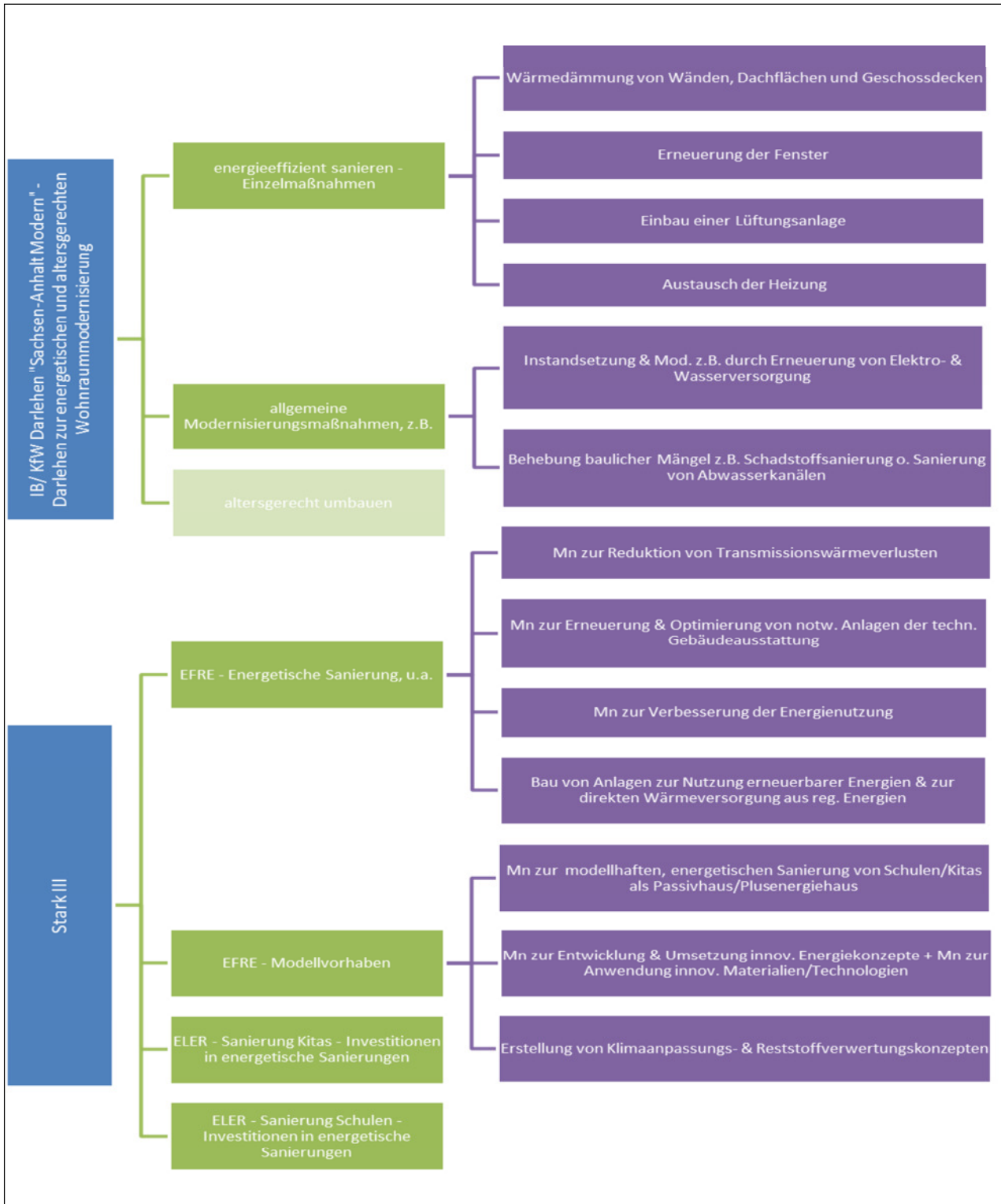
If you are going to renovate your home for example and make it more energy efficient, through the renewal of windows or heater or insulation of walls, you can apply for a credit with special conditions at the investment bank Saxony-Anhalt. It shall motivate people to renovate their homes and make them more energy efficient.

The question is, whether the renovation in itself can be seen as an eco-innovation.

Besides the above explained credit-programme, the newest and most important funding programme available is the so-called STARK III. You will get more details about this funding and investment programme under point 2. It has been chosen as good practice (regional policy) and will be explained in more detail under another point.

As a quick launch, STARK III has four action areas. Two of them are ERDF funded and they focus on energetic renovation and pilot projects with schools and day care centres, the others are EAFRD funded with focus on investments for energetic renovations in schools and day care centres in rural areas.

Figure 7 Financing for construction in Saxony-Anhalt



In addition, there are various grants for both businesses and private households in the field of energy consulting.

In the section below (relevant funding) you will find more information about funding for innovation, research and development as well as transfer between science and economy in contrast to the above named funding opportunities in the two relevant sectors construction and automotive. This shall give an impression of the diversity and the wide range of this subject. In case of the implementation of eco-innovations in the two sectors, there is a variety of options, which have to be thought about.

Strategies of Saxony-Anhalt and future plans

Innovation Policy

To get a wider view of the economic development in Saxony-Anhalt, you have to take a look at other policy areas with regard to the economic sector. One of these fields is the innovation policy of the state.

The innovation strategy 2013 of the state explains cluster potentials and strategic guidelines of the innovation strategy for Saxony-Anhalt. It is said, that existent innovation key areas have to expand and new themes have to be picked up.

Close to the important industries of Saxony-Anhalt, the innovation focus is on the following sectors:

- Chemical/ plastics; mechanical and plant engineering; automotive and supplier industry; biotechnology and pharmaceutical industry; renewable energies and medical technology/ health economy.

Other technologies with a cross-section character were supported across these areas. These are: information and communication technologies; micro systems and nanotechnology/ new materials.

Furthermore, a realized cluster potential analysis names fields with a special focus and differentiated pronounced development potentials. These fields are: food industry, creative economy and logistics.

Up to date, the innovation strategy is in revision or is rather in new creation. With the realignment of the innovation strategy, the theme of smart specialisation is more in focus. To the market and technology segments, which will have advantages in specialisation for Saxony-Anhalt, belong besides other integrative system solutions with renewable energies, intelligent grids/ smart energy or resource and lifecycle economy. All these fields require a well-developed research infrastructure in the field of ICT as well as a well-developed logistics sector.

For the development of the new or the further development of the previous innovation strategy of the state respectively, the public was involved through a questionnaire tool and one public consultation took place. Both were entitled under the motto, how Saxony-Anhalt can reach sustainable growth and an increasing employment. All actors and stakeholders, such as researchers, scientists and entrepreneurs as well as new business founders, who are involved in the innovation processes, were asked to complete the questionnaire. At the same time, foundations for the new EU funding period from 2014 to 2020 were set with the creation of the new innovation strategy. Therefore, suggestions and ideas shall be gathered with the help of the public consultations, which projects, activities and measures are eligible, in order to develop sustainable growth, an increase in employment and the innovation location Saxony-Anhalt as a whole.

Traffic Policy

Concerning the **logistics sector**, it is also interesting to look at what policy is interested in the traffic sector. As part of the FOPS program of the Federal Ministry of Transport, Building and Urban Development (programme for the improvement of the traffic conditions in the communities) and with financial support from

the state of Saxony-Anhalt, a contribution to the improvement of the inner-city traffic situation shall be made.

For the development of city-logistics respectively, for the optimization of the freight traffic in the cities as well as outside the cities, the development of an intelligent traffic system would be moreover necessary. In particular logistics and freight traffic need up-to-date traffic data and profit from an efficient intermodal traffic management.

Therefore, architecture of intelligent traffic systems (ITS) creates the technical and organisational conditions. For the coordinated implementation and use of ITS in road traffic and public transport, the state of Saxony-Anhalt, as plan for the regional development of the state, wanted to present an “ITS- framework” in 2012.

Furthermore, the state government of Saxony-Anhalt has formulated practical actions due to the climate protection with the energy concept 2007-2020 and the climate protection programme 2020. With the inclusion of the theme “green logistics” the state has set one more new focus.

This underlines the growing importance of logistics for the transport sector. Logistics will be more demanded in the future regarding energy-efficient orientation of transport in case of increasing shortages of resources and the need for increasing efficiency. Within this ambitious objective target it has to be successful, to set the focus on the development and provision of economically and climate friendly vehicles, infrastructure and traffic managing systems.

Electro mobility

With regard to the last two points – climate friendly vehicles and infrastructure – the state initiative “Elektromobilität und Leichtbau” (electro mobility and light weight) has to be named. The official name of the state initiative is “Electro mobile, Light and Intelligent – an initiative for Saxony-Anhalt – ELISA”. The aim of the initiative is that the state government, economy and research shall bundle and force their activities in the field of electro mobility and stimulate new activities. Under the specific relevance of the automotive supply industry in Saxony-Anhalt, this sector should try to ensure its place in the future market of electro mobility. Strengths in Saxony-Anhalt are in the fields of materials, light weight construction and energy storages. The coordination of the state initiative will be made through the branch office of the Saxony-Anhalt automotive registered association. They also have analysed the potentials for the electro mobility sector in Saxony-Anhalt. As most promising they have identified:

- New components with materials/ light weight, motor/driver and power electronics
- Energy storages with the focus on fuel cells and battery testing systems
- Information and communication technology with mobile data services, e-energy and smart grid
- Power supply and
- Further training and qualification.

It is necessary that Saxony-Anhalt still builds structures in future-relevant sectors like electro-mobility, because themes like energy efficiency, electro-mobility as well as new materials or lightweight will play an important role during the next European Funding Period.

The same is valid for the building sector.

Buildings

The building sector is given special significance within the energy concept of the federal government from September 2010 and the decisions made concerning the acceleration of energy transformation from November 2011. Until mid-century, a largely climate-neutral building stock shall be realized. In order to

achieve these goals, the federal government strives to double the energetic rehabilitation rate as well as the continuous significant increase of energy efficiency in existing and new buildings.

„For the area of energy efficiency or energy saving respectively, the following concrete national goals were formulated in the energy concept:

- Reduction of the primary energy consumption by 20% until 2020 and 50 % until 2050 compared to 2008
- Increase in energy production by on average 2,1 % per year until 2050, in regards to the primary energy consumption
- Decrease in electricity consumption until 2020, by 10 % until 2020 and by 25 % until 2050
- Reduction of heat demand in the building stock by 20 % until 2020 and reduction of the primary energy demand by 80 % until 2050 with the aim to have a nearly climate-neutral building stock in 2050
- Reduction of heat demand requires a doubling of the rehabilitation rate for buildings from currently less than 1 % to 2 % of the entire building stock (...).“¹

With the implementation of the EU-goals and national goals onto a state level, the state government of Saxony-Anhalt aims, among others, for the following goals via their “climate protection program 2020”:

- “With the consistent implementation of the energy concept, the state government is going to contribute to reaching the goals of the energy-and climate-political specifications on a European and national level.
- For the development of the enormous and cost-efficient potential of energy savings and efficiency improvement, the state government will create incentives, besides the consistent implementation of the existing legal framework and the energy concept, such as:
 - Energetic optimization of demands in the building sector (residential buildings as well as commercial and public buildings) particularly in the building stock for instance via heat insulation of the building envelope, modernization of heating units and cooling, building equipment and other equipment towards low energy – and up to passive house standard.
 - Support of industry and business with the increase of energy efficiency in all process chains particularly within the framework of the environment alliance, (...)
 - Development and implementation of a consultation- and information concept for the improvement of energy efficiency in households and SMEs,
 - Support with the step-by-step introduction of intelligent electricity meters, as also in connection with so-called smart-grids (electronic power line systems, which contribute to the improvement of absorption of distribution networks for the supply of electric energy from decentralized generators; communication of generators with consumers for the steering of consumption behaviour),
 - Increase of the share of KWK in the generation of electricity up to 25 % until 2020 (...).
- The state government aims to increase the share of renewable energies in energy consumption from 13,2 % in 2007 to 20 % by 2020
- The state government along with other stakeholders of the state will develop a management for the knowledge transfer within the framework of the implementation of the climate protection program 2020, which will take on a pilot function in the realization of the development plan. “²

¹ <http://www.bmwi.de/English/Redaktion/Pdf/zweiter-nationaler-energieeffizienz-aktionsplan-der-brd,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf>

² http://www.sachsen-anhalt.de/fileadmin/Elementbibliothek/Master-Bibliothek/Landwirtschaft_und_Umwelt/K/Klimaschutz/Klimaschutzprogramm_2020/Klimaschutzprogramm2020.pdf

Beside the “big” strategic/structural state guidelines concerning energy efficiency and climate protection with regard to the building sector, there are a lot of “smaller” initiatives and future plans like the integrated municipal climate protection concepts (more information about it please see below under the point “regional policies”) or a range of pilot projects concerning energy efficiency in buildings at various size-scales (single building, district, city, region). Such a pilot project for instance can be a plan for a strategic district development (city level) as one component of an integrated urban development. The network “City development in Halle” for example is discussing a concept of such a strategic district development with specific focus on an energetic renewal of a whole district. A district level is a good starting point for a bigger development project, because at this level efficient energy structures and measurable CO2 savings can be more meaningfully and more easily established.

The above named municipal concept can be a good framework to give some future oriented guidelines at a smaller level than the state level, where development should take place.

Research landscape in Saxony-Anhalt³

One key element of the strategy EUROPE 2020 is the improvement of the requirements for research and development. Therefore, within the strategy the quantitative aim is determined to increase the share of **R&D-expenditures** of the national gross domestic product (GDP) to 3 percent. Thereby, the public expenditures as well as expenditures of the business sector ought to be considered.

On average in the federal republic at large, this target value was almost achieved with 2,8 % per year in 2009. For 2010 a similar level is expected.

In Saxony-Anhalt, a significantly lower share with 1,3 % of the GDP for research and development and therewith as input for development of innovations was spent, as this is the case in Germany as also in EU27 (2,0 %). Amongst the federal states, the lowest R&D-expenditures in relation to the GDP are shown in Saxony-Anhalt as well as Brandenburg, Schleswig-Holstein and Saarland. In order to achieve the EUROPE 2020 aim in terms of the indicator "R&D expenditures", the expenditures would have to more than double in Saxony-Anhalt (2009: approx. 660 million €) over the next years.

Viewed in absolute terms, the R&D expenditures in Saxony-Anhalt increased since 2003 from 527 million € to approx. 662 million € in 2009. The observed increase of the share of expenditures in R&D of the GDP by 0,18 percentage points from 2003 to 2009 is due to the continuous increase of R&D-expenditures in the business sector and public sector in Saxony-Anhalt. Therefore, the R&D expenditures in the business sector have grown by nearly two thirds within the total time period from 2003 to 2009. In 2009, the R&D expenditures within the public sector were approx. one third above the level from 2003. Only in the university sector the R&D expenditures fell below the expenditure volume of 2003. The significant increase of R&D expenditures in the business sector is generally positive, but at the same time assessed as indispensable, since the shortfall in the business sector is the greatest opposed to Germany overall. Regardless of the improvements of R&D activities, the business sector reached only 22,5 % of the national standard in Saxony-Anhalt in 2009. Besides the industry-specific aspects (below average number of innovation-intensive industries), enterprise-specific structures have an impact as well. Therefore, larger enterprises are more often located together with their production plants, but not with their research- and development departments. Furthermore, lesser financial resources for research-and development activities of SMEs play a role as well. Overall it shows, that the catching-up process in the corporate field is still at the beginning in Saxony-Anhalt. For the guarantee of competitive structures, a continuous upward tendency of investments of enterprises in research-and development activities is also necessary in the coming years.

Other structures and developments are shown in the public and university sector. In the public sector the share of R&D expenditures of the GDP exceeds consistently the German standard. In the university sector the ratio has changed over the course of time from an above-average expenditure level in Saxony-Anhalt to currently a below-average level opposed to Germany.

Infrastructure

A series of **publicly financed research institutions** are located in the state of Saxony-Anhalt. Besides the long-established Martin-Luther-University Halle-Wittenberg and the still relatively young Otto-von-Guericke-University Magdeburg, the state features an art academy Halle Burg Giebichenstein, the university Anhalt (with locations in Dessau, Bernburg and Köthen), the university Harz (with locations in Wernigerode and Halberstadt), the university Magdeburg-Stendal as well as the university Merseburg.

³ http://www.sachsen-anhalt.de/fileadmin/Elementbibliothek/Bibliothek_Politik_und_Verwaltung/Bibliothek_Europa/Publikationen_Berichte/Berichte/S%C3%96A.pdf

Furthermore, multiple **non-university research institutions** of large research companies (Fraunhofer Company, Leibniz-Alliance, Max-Planck-Company, Helmholtz-Alliance) are located in Saxony-Anhalt. Nearly half of the non-university research institutions have a natural scientific or medical focus, approx. one fourth have an engineering-scientific focus.

Figure 8 Locations of non-university research facilities of major research communities / societies in Saxony-Anhalt



Besides the big public research actors, there are a series of specialized technological and economically-oriented R&D institutions and R&D infrastructures at the interface between science and economy. Parts of it are e.g. the Institute for Competence in Auto-Mobility (IKAM) with locations in Magdeburg and Barleben, the Development Laboratory and Test Field for Locating, Navigation and Communication in Transport and Logistic (Galileo Test Field Saxony-Anhalt), the Demonstration Laboratory for Aluminium Casting in the Creativity- and Competence Centre Harzgerode (CCC), the Clean Rooms at the TGZ Halle or IGZ Magdeburg respectively as well as the Animal Laboratory at the Centre for Neuro-Scientific Innovation and Technology (ZENIT) in Magdeburg.

Moreover, there is a range of networks in which transfer happens. Technology oriented networks in Saxony-Anhalt are among others:

- ACOD – Automotive Cluster East Germany (automotive engineering)
- CEESA – Cluster for renewable energies in Saxony-Anhalt
- MAHREG Automotive (automotive engineering) or the
- Future Cluster Chemistry/Plastics Central Germany.

More technology-oriented co-operations and networks for supporting the technology transfer in traffic and logistics are:

- The transnational cooperation between Saxony-Anhalt and Thuringia in the field of electro mobility, which is for both sides an economic and transport political key theme with an enormous innovation potential for the industrial and technology location of Central Germany,
- The transnational cooperation between the ITS-actors in Saxony-Anhalt and Saxony for an inter-modal traffic management in Central Germany as well as
- The multidisciplinary competence-network of economy, science and public authorities within the implementation/ realization of the state initiative „applied traffic research/ Galileo- transport Saxony-Anhalt and the ITS-framework Saxony-Anhalt.

Key Areas

The scientific community of Saxony-Anhalt has developed different focuses of research for itself^{4,5}. In the region of Magdeburg medical and engineering-scientific research topics dominate in the area of medicine, particularly micro-biology, virology and immunology (including molecular medicine of infections) as basis for the active ingredient-and vaccine research as well as the neurosciences.

Special impact unfolds the research and development at the interface of micro-systems technology and medicine (intelligent catheters and telemedicine). In engineering sciences the focus lies mostly on mechanical engineering (incl. automotive), transport- and logistics research as well as process engineering and chemical engineering. As interface between mechanical engineering or transport and informatics respectively, the research focuses on locating, navigation, communication, automation and virtual reality, are to be highlighted. The Galileo Test Field Saxony-Anhalt shall be developed as central integration platform and demonstrator for electro mobility based on the good assessment of the joint proposal of Saxony-Anhalt and Thuringia “Electro Mobility Central Germany”.

In the region of Halle, biology as well as chemistry and physics belong to the strong research themes. Within the framework of bio-chemistry/ bio-technology, in particular the protein research and plant sciences (incl. plant genetics) are of high significance. In the field of medical research the topic of “Molecular Medicine and Cancer Research” are to be named. In the fields of chemistry and physics, the polymer research and physics of condensed materials as fundamental aspect of material sciences are particularly in focus. To be highlighted is the excellence network “Nano structural Materials” with the research areas of oxide boundary surfaces, nano-structural polymers (materials), and photovoltaic/ regenerative energies. These research core areas support the chemicals-and plastics industry located in Bitterfeld-Wolfen as well as the photovoltaic companies of Solar Valley.

To be highlighted as well is the participation of research institutions and enterprises of Saxony-Anhalt in the top clusters “BioEconomy” and “Solar Valley Central Germany”. Aim of the top cluster “BioEconomy” is to bring forward innovations for the material-chemical utilization of biomass. In regards to content, the focus of the top cluster “Solar Valley” lies on the optimization of products and technologies of photovoltaics with a special concentration on crystalline and thin-film silicon solar modules.

⁴ Deutsche Forschungsgemeinschaft (2012): Förderatlas 2012 - Kennzahlen zur öffentlich finanzierten Forschung in Deutschland.

⁵ Ministerium für Wirtschaft und Arbeit des Landes Sachsen-Anhalt (2008): Innovationsstrategie Sachsen-Anhalt 2013.



European Union
European Regional Development Fund

Beyond that, it is to be referred to innovation potentials in the fields of intelligent transport systems (ITS) in Germany or Saxony-Anhalt respectively. With respect to innovations for securing mobility, Germany takes on a leading position on a world scale in the areas of ITS and modern transport technologies. Saxony-Anhalt has earned a good position on a national scale through in such areas actively working research institutions, enterprises and co operations as well as the public authorities (federal government, states, municipalities as public easement body of ITS infrastructure and body of an intelligent transport management), which are supported by the state initiative applied transport research/ Galileo transport. The within the framework of the state initiative “Applied Transport Research/ Galileo- Transport Saxony-Anhalt” started development of a transport research infrastructure in Saxony-Anhalt shall be implemented and systematically continued with the ITS framework plan and the fixed package of measures for the promotion of research and innovation in transport and mobility.

The selection of winners of the third round of the excellence initiative shows, that Saxony-Anhalt could not assert oneself with its proposals of regional research focal points in national comparison. None of the proposals of Saxony-Anhalt will be funded within the framework of the third round of the excellence initiative. The results show how strong the competition is alone amongst the R&D institutions in Germany. To reach and also to occupy the challenges, top positions and specific research- and innovation themes with a national visibility are to that effect high.

Transfer in Saxony-Anhalt

Cooperation and knowledge transfer

Science-business cooperation

Saxony-Anhalt is an innovative business centre. This is rooted in its internationally recognised, differentiated system of state [universities and universities of applied sciences](#) and other research institutions, as well as in a dynamic, committed body of entrepreneurs collaborating closely with the world of science.

The establishment of modern research institutions and the intensification of cooperation between business and science have meant, that individual industries now have access to an enormous research and development potential, which in turn drives economic growth and employment yet further. That is why strengthening this potential is a central pillar of the state governments' strategically scientific and economic policies.

Knowledge transfer

Knowledge transfer is a difficult field in every region. There are a lot of projects to optimize or to push the knowledge transfer between academia and economy, but nevertheless both sides always say, that there is not enough transfer between both.

The established networks, research centres or the technology and start-up centres are good examples for "places" of knowledge transfer. You can find a list of these institutions in Saxony-Anhalt in the appendix or on the web pages of the state government of Saxony-Anhalt.

Despite the existing infrastructures and networks, the R&D tendency of the corporate sector as well as the start-up intensity in Saxony-Anhalt is below-average so far. The intensification of technology transfer and the initiation of co-operations and concrete projects between science and economy are getting more important in the near future. Up to now, efforts came across several challenges due to the sector- and enterprise-size structure in Saxony-Anhalt, which is characterized by many SMEs and few large scale enterprises:

- Lack of relevant economic structures/ markets for the application of specific research results,
- Lack of qualified personnel and own research and development capacities in enterprises,
- Low financial and institutional resources in the SME characterized enterprise structure,
- Lacking risk-tolerance or fears of contacts between research and SMEs respectively as well as
- Lacking public relation strategies and marketing strategies of universities and research institutions with regard to their transfer potential.⁶

Beside the already named networks and with regard to the above named challenges of the lacking visibility of the transfer potentials, in their efforts towards an improvement of transfer, the universities of applied sciences have founded the competence network for applied and transfer-oriented research (KAT or CAT). The CAT takes over all relevant functions of the knowledge and technology transfer and fosters project-related an extremely close contact to the enterprises. The CAT sees itself as link between the universities of the state and the regional economy. The enterprises of the region, and especially the SMEs, shall be given fast access to the resources of the university-system/ infrastructure. Therefore, it is necessary to work closely with the chambers and transfer institutions. "It is the advised primary aim of CAT to provide a contribution to strengthening the competitiveness of the enterprises in the region. An innovation CATalyst is

⁶ Wissenschaftszentrum Sachsen-Anhalt; Kooperation von Wirtschaft und Wissenschaft in Sachsen-Anhalt 2010; Schriftenreihe WZW Nr. 01

built through the demand-oriented approach of CAT, which serves the finding of individual solutions to problems of the regional economy and society.⁷”

Tightly linked with the CAT is another element in the area of knowledge- and technology transfer – the platform „Research Portal Saxony-Anhalt“⁸. The research portal offers its users a variety of possibilities of interaction. Besides the search for suitable experts for research work, it offers an overview on events, lists publications and serves as platform for the research landscape of Saxony-Anhalt. So far the research portal Saxony-Anhalt was unable to exhibit the desired and expected usage. Why that is, cannot be said. So far transfer requests came mostly from the economy side. Conversely this process (from university to economy) would also not have worked to date, since too few enterprises are active on the research portal. Besides a revision of the website and a therewith connected stronger alignment on interests of economy, a higher significance is brought to the chambers of industry and commerce, of whom a greater commitment is demanded.

In order to advance innovations in the state and therewith establish corporate and economic structures, it is necessary to directly target the named challenges in the future.

Despite all efforts, one of the biggest problems is the lack of knowledge about each others’ side, their requests and needs as well as a lack of money.

To face these problems, there is some financial support, which you can see below.

Financial support

In case of the invention, development and implementation of new/ innovative products/ processes etc., besides the scientific and economic aspects, the financial aspect is of substantial importance.

For this reason, a small overview shall be provided, how Saxony-Anhalt supports and sponsors such processes financially.

Transfer vouchers

As a special low-threshold instrument for the promotion of transfer evolution between university and the economy of Saxony-Anhalt, the federal state government has distributed 650 so called transfer vouchers to the universities of the state to date.

The transfer vouchers shall be a preferably non-bureaucratic measure, with which a targeted knowledge- and technology transfer is initialized, skilled workers are bound and co operations between economy and university are initiated via student projects in enterprises of the state.

In the current version, there are neither industry classifications nor an alignment of the project with specific content-wise research institutions specified. The only requirement is that enterprises and professors clearly define the aim for the student project and that it is completed and documented after 6 months the latest. Project work as also final assignments can be facilitated. The financing amounts to currently 400 Euro and is paid out after successful finalization.

The aim is to provide students with the opportunity to make contact with the regional economy and to gain occupational experiences with concrete practical tasks. On the other hand, it shall provide enterprises with the opportunity to be able to access the knowledge of universities and to transfer into corporate solutions.

⁷ http://www.kat-netzwerk.de/index.php?article_id=16

⁸ <http://www.forschung-sachsen-anhalt.de/>

Innovation assistant

The advancement follows the aim to increase the innovation ability of small and medium-sized enterprises of the industrial economy. Thereby, the employment of university graduates (university or technical university) in SMEs as innovation assistant can be promoted. The graduates shall have a degree in engineering, natural science or economics. Innovation assistants work on projects and fulfil tasks with challenging and scientific content with the option to further develop such when becoming permanently employed at a later point in time.

The employment shall preferably be effected in the following areas:

- a) Research and development,
- b) Innovation-, production-, quality-, or environment management,
- c) Production development including production preparation and design,
- d) Business management,
- e) Modern personnel management,
- f) Marketing.

Research and development

Within the framework of the R&D guidelines, subsidies to the expenditures for measures, which are focused on product- and process innovations as well as the retention of efficient research potentials, are fostered at the IB Saxony-Anhalt.

Amongst such fall individual projects as also joint projects of multiple enterprises and joint research projects between enterprises and universities.

With the subsidy the state Saxony-Anhalt wants to especially promote the development of the competitive ability of small and medium-sized enterprises of the state. Innovative products and processes are an important requirement for the operational growth and the future competitive ability. The potential of small and medium-sized enterprises, which are important mediums of innovative processes, shall therewith be supported. Aim of the subsidy is also the cooperation of small and medium-sized enterprises with research departments from enterprises, non-university economically oriented research institutions, institutes and research groups of universities and advanced technical colleges, to improve the industrial research and experimental development plans.

Object of the subsidy is thereby the project facilitation with innovative technological content, which serves the development of new products and processes in the field of the industrial research and experimental development. Fostered are e.g. instruments and equipment or contract research.

Knowledge and technology transfer

The aim of this stipulation is to improve the technology transfer between innovation agents and technology users (particularly SMEs) and to reduce their economic and technological risks. The hereby named innovation agents are institutions of the knowledge- and technology transfer, who offer or also carry out consultations in this segment. Via the promotion of performance, which is provided by these innovation agents, SMEs shall be helped with the lacking dissemination of information and missing coordination. At the same time, SMEs shall be encouraged to increasingly utilize such services and therewith heighten the demand for offers of the knowledge and technology transfer via innovation agents.

Object of the subsidy are the following consulting services or innovation-supporting services for SMEs:

Innovation consulting services

- Technical support;
- Technology transfer services;
- Protection of intellectual property and trade with respective rights and license contracts;
- Consultation with the utilization of standards.

Innovation-supporting services:

- Data bases;
- Specialized libraries;
- Market research;
- Utilization of laboratories;
- Quality marks, test and certification

Besides the state-specific subsidy, various additional funding possibilities exist parallel on a federal and EU level. Particularly SMEs often have a hard time to gain an overview over all possibilities and to develop a certain level of transparency. Especially the East-German states, and therefore also Saxony-Anhalt, which still significantly lies behind the old federal states in regards to their research-and development activities, demands a well-developed and transparent information and consultation structure.

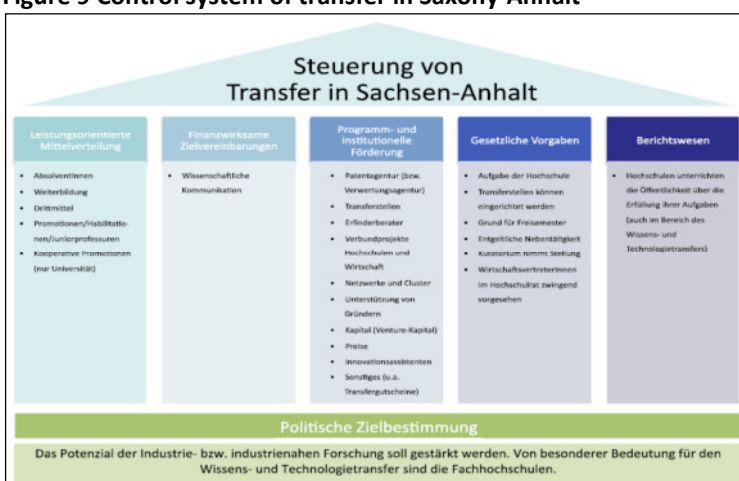
Non-financial support and regulations of transfer

With a variety of assistance possibilities for SMEs and universities available it begs the question, as to how far the state Saxony-Anhalt steers the processes or which goals are actually followed by the state in terms of transfer and its optimization respectively.

First and foremost, Saxony-Anhalt wants to strengthen the potential of the industry –or industry-oriented research respectively. In regards to the knowledge-and technology transfer the universities of applied sciences in particular have a special responsibility. The state law on education regulates the knowledge transfer and technology transfer as task of universities. Such a statutory rule is unique nationwide.

Political main focus is the strengthening of the industry-oriented and therewith the technology-intensive research. Thereto there are different steering elements in the state, amongst others a performance-oriented distribution of means, which orients itself on the number of graduates or the raising of third-party funding. Beyond that, there are statutory provisions, a defined reporting, effective financial target agreements as well as program and institutional assistance, to which the above named advancements of innovation assistants or the transfer vouchers belong to as well.

Figure 9 Control system of transfer in Saxony-Anhalt



source: Institut für Hochschulforschung (HoF); König/ Koglin/ Preische/ Quaißer; Transfer steuern – Eine Analyse wissenschaftspolitischer Instrumente in sechzehn Bundesländern; Halle-Wittenberg, 2012

Even though, it is defined by the state law on education that the knowledge-and technology transfer is task of the universities, they are generally not provided with respective financial means for its implementation. Especially for the establishment of platforms (KAT and research portal) this could be constructive, since the transfer business is time-consuming and the capacities of scientific staff in this area are already limited. So far, the funding distributions to universities is carried out based on criteria, such as first-year students, share of women or raising of third-party funding. Allocations for transfer activities are not explicitly foreseen.

At the same time ought to be considered, that enterprises, as it also occurs within the framework of KAT, must be actively addressed and that exclusively passive information sources are not constructive in terms of the transfer assistance. "This applies in particular, when enterprises shall be involved in innovation processes."⁹ With sufficient financial support, universities are able to establish an extensive regional knowledge management and therewith the promotion of transfer. Besides the financial means, universities nonetheless must show a stronger interest in regional economic developments. In turn, universities as well as enterprises in the regions benefit from the generated information flow and a broader human capital basis.¹⁰

Universities alone cannot achieve this. Supports for the increase of innovativeness could be:

- More efficient infrastructure of transfer institutions e.g. via the reduction of the bureaucratic effort for the initiation of co operations, development of personnel capacities in transfer institutions, providing universities with internal concepts concerning the transfer evolution, which maps the cross-sectional tasks of such an appointment accordingly.
- In order to take the economy and its interests more into consideration, transfer institutions shall work more public-oriented – this would also cause a restructuring of technology transfer centres, since a single (administration) location with few employees are hardly able to market highly complex and specific research results or technologies respectively, adequately in public
- Besides the already existing goal of universities, that they are responsible for the transfer, complementary goals for transfer services could be agreed upon, which is also reflected in the granting of funds for universities, and
- In order to increase the access for employees of SMEs to universities or to relevant research facilities respectively, it demands a greater transparency of universities and their work – the transfer facilities shall work towards reducing the complexity of the various research areas and creating easy access for interested parties.¹¹

Besides the optimization potentials in the field of knowledge transfer between universities and economy as well as the further establishment and development of (existing) enterprise networks/ clusters, it is essential to involve the local economic framework conditions. Therewith, the knowledge transfer gains importance not only state-wide, but also regionally. Regional business developments as also institutions of the city marketing can within the framework work toward a holistic urban/ regional concept in terms of location development on to the targeted industrial location of enterprises, research institutions or with the promotion for location as good centre of life e.g. long-term for academics onto the regional innovation- and transfer development.

⁹ Pasternack; *Stabilisierungsfaktoren und Innovationsagenturen*, Die ostdeutschen Hochschulen und die zweite Phase des Aufbau Ost; 2007; S: 435

¹⁰ Höhne/ Pasternack/ Zierold; Ein Jahrzehnt Hochschule-und-Region-Gutachten für den Aufbau Ost (2000-2010); HoF Arbeitsberichte; Halle-Wittenberg; 2012, S. 29

¹¹ Ebd. S. 32

2. Know-Eco project and results

Background Know-Eco Project

Aims

The Know-Eco sub-project focuses on enhancing the uptake of eco-innovation in enterprises within the construction and mobility sector and the transnational transfer of knowledge, tools and methodologies for linking knowledge providers with enterprises to increase the development or uptake of eco-innovation products and services. Addressing these issues in the Know-Eco partner regions is particularly important, given the synergy of these activities to existing and planned policy measures and the sustainable growth strategy for Europe 2020.



Partners

Lead Partner: **Coventry University Enterprises** is part of the Coventry University Group. It delivers business development support and consultancy on a local, regional and international basis and is the lead organisation in the delivery of the Midlands Enterprise Europe Network.

Coventry University has a particular applied research focus on low carbon vehicles and low impact buildings. It is specifically working to test, evaluate and design the vehicles and associated systems needed to establish low carbon vehicles as viable alternatives to traditional modes of transport. Its work in low impact buildings is focussing on the delivery of practical solutions, knowledge and innovation to industry and the public sector in the field of low carbon construction.

The **Lower Silesian Regional Development Agency** was established in 1991, with the objective of providing support for the social and economic transformation and restructuring of economy and the development of businesses. Since 2009 it has been managing the Lower Silesian Technology Park (T-Park). T-Park task is to create favourable conditions for the implementation of manufacturing and services projects based on highly advanced production technology, while guaranteeing the safety of the natural environment, highly innovative products, unique solutions and products which are attractive to industry. T-Park gives preference to the following sectors: the automobile industry; the construction and construction materials industry; information technology; electronics; telecommunications; health resort medicine. As the partner organization of the Enterprise Europe Network belongs to the sector group "Environment", which makes eco-innovation visible, attractive and available to all industries.

The **Foundation for Research and Innovation** joined the project team for city lab 2. The foundation is a private non-profit research organisation, whose founding members are the University of Florence and the Province of Florence. The foundation provides an institutional interface for research groups from the University of Florence. It promotes technological transfer from these research groups into society, specifically the companies and public bodies of Tuscany and in particular with the institutions of Florence, Prato e Pistoia. The main activities of the Foundation are:



This sub-project is co-financed by the European Regional Development Fund and made possible by the INTERREG IVC Programme.

- funding research and implementation of programs for the development of research on issues that have resonance with the social and productive vocations of the territory;
- Supporting scientific and cultural cooperation; the implementation of strategic projects and the organization, transfer and exploitation of research resulting in collaboration with the territory.
- The transfer of knowledge and competences from the University of Florence into local and national enterprises.
- Promotion and implementation of events, particularly involving the valuation of research results and methods for entrepreneurial and social applications.

The foundation is the leader of the Tuscan cluster for the sustainable city called Polis. There are more than 300 companies involved in the cluster, plus research centres and public bodies, which help to promote innovation in cultural heritage, mobility and energy. Specialized personnel, called technological agents, are involved in Polis to understand companies' needs and objectives, and to promote the development of research projects between companies and university.

The **isw Institute for Structural Policy and Economic Development** is a non-profit research institute and was established in 1991. The working focus lies on interdisciplinary and application-oriented economic, educational and technological research. The isw has extensive experience in economic promotion and has worked together with all major industrial branches and important companies in Saxony-Anhalt. One example to be named is the mediating function of the isw institute between the automobile and the plastic industry for the development of hybrid parts. Furthermore, the isw institute supports the urban planning process and cooperates with many companies in the housing and construction sector. Besides these regional projects, the isw institute is participating in several EU projects. The isw institute was involved in the various INTERREG projects, such as DISTRICT+, YURA, RUBIRES and ChemLog. One of the latest projects of the isw has been the project “smart energy for smart people”, which supports SMEs in sustainably increasing their energy efficiency.

Design of the project

The objectives of the project will be achieved by exchange, sharing and transfer of policy experience, knowledge, tools and methodologies for linking knowledge providers with enterprises at a transnational level. This will be mainly achieved through the delivery of the 'implementation labs' in each region, which will explore the local policy context and include transnational partners in working sessions.

Furthermore, the transfer took place via the dissemination of project newsletters, press releases, a final dissemination event as well as a series of other interregional events with a range of different stakeholders.

Transfer process within Know-Eco - concrete activities regarding knowledge transfer and exchange of good practices

Results of a short survey with enterprises from the construction sector

In a relatively early stage of the project, the isw institute planned a short survey with enterprises from the construction sector, which participated at the fair “Saalebau”. The fair “Saalebau” is a regional fair, at which enterprises from the construction sector present themselves and their products.

Following this fair 20 enterprises were selected from the exhibition catalogue, which coincide with the content of Know-Eco. These enterprises received a questionnaire, which contained 14 questions.

The questionnaire had questions to the following topics:

- The perception of the political strategy of the state or the federal government respectively and if the theme of energetic renovation is adequately supported by them
- Control and restraints for the implementation of new products
- The development of demand for energetic renovation and the reasons for it
- The future potential for enterprises, in which market they envision their best chances
- State of knowledge of the customers on specific themes and which need for advice results out of it
- In which areas is more transparency requested
- Which areas of action do they see for the policy makers in Saxony-Anhalt.

Although only five enterprises took part, the results are nevertheless interesting.

The results of the survey are:

- It is perceived by enterprises, that neither from the federal government nor from the state of Saxony-Anhalt, energetic renovation or construction is adequately politically supported.
- 80% of the enterprises say that the implementation of new products is controlled through the demand of customers
- The enterprises named several problems with the implementation of new products like:
 - High prices due to the small production output
 - Normally there is no product „to touch“
 - You have no planning certainty or too high investment costs
 - Or like one formulated: Innovation and architecture – innovation and solidity – innovation and 30 years guarantee – innovation and favourable prices – it all doesn't work together
- 60% of the enterprises said, that the development of demand for new products for energetic renovation or construction has increased.
- 40% of the enterprises believe that this is caused by a changed awareness in the population and by no means of political nature.
- 80% of the enterprises see their customer potential for the next years on private owners, 60% on commercial facilities and 40% on public facilities.

For the state of knowledge from the customers and correspondingly their need for advice, the results are summarized for the categories “hardly any knowledge” and “basic knowledge”.

The enterprises assessed the following themes as followed:

- 80% of the customers have hardly and/or basic knowledge on building materials and their characteristics and therefore special need for advice
- 100% have hardly and/or basic knowledge on the effect of different restorations
- 80% have hardly and/or basic knowledge on the efficiency standards like passive house
- 100% have hardly and/or basic knowledge on funding possibilities and
- 100% have hardly and/or basic knowledge on energy performance certificates.

→ There is a high need for advice

Areas in which **more transparency** is requested:

- Political strategies and objectives regarding the energetic renovation or energy efficient new construction from the federal government and the state of Saxony-Anhalt respectively, is requested from all enterprises
- More transparency on subsidies or financing options is requested by 75% of the enterprises
- More transparency on political activities or the support for the implementation of new products is requested by 50%

Concerning the open question as to where the enterprises see areas of action for the policy makers in Saxony-Anhalt, the following answers were received:

- Simple subsidies/ grants
- More expertise and professional knowledge in the field of construction planning (ministries and urban development planners)
- Examples like eco-settlements
- Greater support of eco-building projects
- Public buildings as pioneers.

Even if the answers are not representative for the whole enterprise landscape in Saxony-Anhalt, they reflect the atmosphere and opinion of other experts we talked with as well as the appraisals of the Know-Eco project partners based on their discussions with relevant actors. Therefore, it is possible to derive some recommendations (see at the end).

City labs

The main transfer process took place during the various city labs. During these events the project team members were faced with a range of good practices in different ways. Beside presentations from each partner about identified good practices from their region, the partners attended study visits and met a lot of experts.

The third in a series of city labs was held in Saxony-Anhalt (Germany) from the 9-11th May, 2012.

The city labs have been an essential element of the „Know-Eco“ project.

The project had the aim to enhance the local take-up of eco-innovations by drawing on a range of best practices demonstrated by partners across four regions: West-Midlands (UK); Lower Silesia (Poland); Saxony-Anhalt (Germany) and Tuscany (Italy).

City lab 3 – Halle, Germany

In this city lab the focus was on the strengths of the regions chemical, plastics and polymer cluster. The series of study trips covered product manufacture, materials testing and up-scaling from laboratory to pilot plant testing and discussions on how this regional strength is integrated and supported with skills development through vocational education and advanced training. The range and diversity of product developments underway in this cluster will impact upon both the con-



struction and mobility sector and it resonated well with developments underway in the other partner regions.

As one key element of this project, the group talked about the problems of policy and praxis (federal government, state government, EU government) in the region and how greater collaboration between partners could help to ensure that good practices were transferred.

The project partners received information from a range of experts, specifically informing and discussing chemical industry parks in Saxony-Anhalt and their history, how they operate regionally and the links between research/knowledge, the economy and the processes of production. Additionally, project partners were informed about District+ and how it specifically relates to strategy developments in Saxony-Anhalt, for example the Regional Innovation Strategy and its relationship to Horizon 2020, specifically the challenges this poses.

We also heard something about the cluster management in the sector of the chemical industry and its relevance to the region. Specific features of the cluster Chemistry/ Plastics Central Germany include:

- Pioneer in the worldwide structural change of the chemical industry.
- Cross-national with enterprises and networks from Saxony, Saxony-Anhalt, Thuringia and Brandenburg
- Cross-industrial integration of networks in the chemical industry and polymer processing
- Strategy dialogues including federal state government
- International setup with active participation in the European Chemical Regions Network ([ECRN](#))
 - Project ChemLog – Chemical Logistics
 - Project ChemClust – Innovation & Chemical Industry Cluster.

The project team started a series of study trips after the expert round table.



The first study trip was to the [Süddeutsches Kunststoff-Zentrum](#) (SKZ Halle) where **Thoralf Krause** talked about the work undertaken at SKZ, its importance to the sector, the region and its links to education and training. The focus was specifically on:

- Fibre composite plastics in architecture and the building sector as well as in the automotive sector
- Welding, adherence and composites in vessel and apparatus construction
- Bonding technology

New materials development, supporting developments in energy and resource efficient construction are projects currently underway, many of which will have applications in the mobility sector. One example given of the work undertaken was fault detection and repair for Eurocopter or Deutsche Bahn. The SKZ has a number of joint projects with the Martin-Luther-University Halle-Wittenberg and other universities looking at **new or improved** polymers formulations and building materials from renewable raw materials. (See for example: [C3House](#))

The second study trip was to the [Fraunhofer pilot plant centre](#) (PAZ) Schkopau where **Patrick Zierdt** gave us a tour of the facilities. Of particular interest was the work on upgrading conventional solar panels and designs for new polymer based solar panels. A tour of the pilot plant demonstrated how the facility enables manufactures **to test new** polymer compositions for large scale manufacturing.

The link between the sector and education in the region was clearly demonstrated in a [third study trip University of Applied Sciences Merseburg](#). Presentations and a tour of the technical facilities demonstrated how students are educated for work in the sector through close links between education and industry. The Polymer Competence Centre at Halle-Merseburg provides technical and practical education for students wishing to work in the sector.

The **final study trip** was to the [Fraunhofer Institute for Mechanics and Materials \(IWM\)](#) where Andreas Kromholz and Sven Wüstenhagen talked about the role of the centre and gave a tour of its facilities. The Fraunhofer IWM in Halle concentrates on the automotive electronics, microelectronics, microsystems technology, photovoltaic, polymer processing and application for the aircraft industry.

Of particular relevance was the work being undertaken in polymer applications; the testing and development of biological and macromolecular materials; microelectronics and microsystems technology components and the Fraunhofer Centre for Silicon Photovoltaics (CSP).

For more information see: <http://www.en.iwm.fraunhofer.de/business-units/>

Beside the visits of the different facilities and the impressions of the range of innovations (processes, products, who is involved, which steps to take, etc.) the project team was able to make a lot of contacts for further collaborations.

Summary and results from the other city labs

During the city labs in Poland, Italy and Great Britain we attended various study visits, where met a lot of experts. Please see below a table with experts we met and projects visited during each city lab, to get an impression of the range of knowledge exchange during these city labs.

Poland (February 2012)¹²:

| Experts (name/surname) | position/ work focus |
|------------------------|--|
| Slawomir Hunek | Chairman of the board of the Lower Silesian Regional Development Agency (DARR) |
| Agata Zemska | Deputy Director in Economy Division of the Department of the Regional Economic Development (Lower Silesian Marshall's Office) |
| Justyna Lasak | Head of the Unit for the Innovation and Competitiveness in the Lower Silesia Marshall's Office |
| Artur Sawrycz | Deputy Chairman of the Board (DARR) |
| Wojciech Blazejewski | Ph. D. Eng. Faculty of Mechanical Engineering, Institute of Materials Science and Applied Mechanics (Wroclaw University of Technology) |
| Mateusz Zajac | PhD Eng/Assistant professor, Faculty of Mechanics, Institute of Machines Design and Operation, Division of Logistics and Transportation Systems (Wroclaw University of Technology) |
| Ryszard Michałowski | Director of the Polish Oil and Gas Company (PGNiG S.A.) |
| Aleksandra Wilczyńska | Technical Service Manager Govecs Poland Sp. Z o.o. |
| Nicholas Holdcraft | Chief Technical Officer Govecs Poland Sp. Z o.o. |
| Krzysztof Brzozowski | Member of the Lower Silesian Cluster of Renewable Energy |

¹² The list of polish experts is not concluding – there were some more experts without having a presentation

| | |
|----------------------------|---|
| Magdalena Baborska-Narozny | PhD Eng Arch, Assistant professor at Faculty of Architecture (Wroclaw University of Technology) |
| Maria Kostka | Research didactic assistant at Faculty of Environmental Engineering (Wroclaw University of Technology) |
| Jacek Duskocz | PhD Eng, Department of Excited State Spectroscopy Institute of low temperature and structure research, Polish Academy of Science |
| Moritz Reichert | creator of the ecological house of clay and straw |
| Study trip | |
| | Energy Technology Centre in Świdnica |
| Krzysztof Brzozowski | http://www.cte.fea.pl/Centrum/O-nas/Czym-jest-Centrum-Technologii-Energetycznych |

Italy (July 2012):

| expert | position/ work focus | study trip |
|----------------------|--|--|
| Laura Righi | EU Project Manager, Tuscany Region | |
| Vanessa Visentin | Tuscany Region, Interreg IVC district+ Lead Partner, responsible for finances | |
| Rainer Toshikazu | Architect | Abitare Mediterraneo; Dissemination and Training Technological Centre Lucca |
| Prof. Marco Bellandi | Deputy Rector for Technology Transfer and Relations with Territorial Systems | |
| Giovanni Polidori | Coordinator and project leader of Technological Centre Lucca | Technological Center Lucca |
| Stefan Guerra | Coordinator of Lucense, for the project CEDM (Centre for Eco-Friendly City Freight Distribution) | Lucence (Lucca), Dissemination and Training Technological Centre - Luccaport |
| Andrea Rindi | Researcher at the University of Florence in the fields: mechanical engineering, manufacturing technology and physics | Mechatronic and Transports Dynamics Joint laboratory |
| Jurgen Assfalg | Manager of office information systems, Province of Florence | Traffic Supervisor as part of Si.Mo.Ne |
| Marco Barone | Architect of Casa Spa (company who deal with the public residential building legacy in Florence) | |
| Enrico Marmonti | Temporary Research Fellow, University of Florence | Test Cell and Solar Power Plant |
| Gabriele Chiani | Temporary Research Fellow, University of Florence | Test Cell and Solar Power Plant |

Great Britain (October 2012):

| expert | position/ work focus | study trip |
|---------------|--|------------|
| Martin Reeves | Chief Executive, Coventry City Council | |
| Alex Dickson | Projects and Sector Development Manager, Coventry City Council | |

| | | |
|--------------------|---|--|
| Robert Bent | Projects and Sector Development Officer, Coventry City Council | |
| Bernard Porter | Director of Low Carbon Vehicle programme, Coventry University | Micro Cab |
| Mark Gaterell | Prof. Of Sustainable Construction, Coventry University | |
| Prof George Martin | Prof. Of Low Impact and Sustainable Buildings, Coventry University | |
| John Barham | Head of Sustainable Investment, Orbit Heart of England | Sampson Close, Orbit Heart of England |
| Imran Karjkar | Project Engineer, Advanced Hybrids Teams, Jaguar & Landrover | Jaguar LandRover, Castle Bromwich |
| Wiktor Kurzeja | Commercial Manager, Sustainable Building Futures | |
| Gideon Howell | Environmental Technologies Business Manager, Sustainable Building Futures | Guided tour/ Campus Tour: Computing and Engineering Building, The Hub, Vehicle Plug-in Points, Library |

After each City Lab and especially after finishing the last one, the project partners started the next level of the transfer process. Each partner picked some of its good practices and produced a template. They were sent to the district+ Lead Partner Tuscany Region.

Furthermore, each partner evaluated, which of the identified good practices from the other regions could possibly be transferred, or parts of it, in their own region.

The Dissemination and Training Technological Centre in Lucca is a good example of this. Each region thought, that it is a good idea and probably can be transferred in the own region, because there seems to be a need for such “visual” projects. The UK partner already has such a model, or a project which is similar to the Italian one, but the Polish and the German partner tried to find out, if such a project could work in Lower Silesia or Saxony-Anhalt respectively.

Besides this, each project partner started several contacts and discussions with experts from their own region – to evaluate regional needs - as well as from the partner regions – to get more information about the good practices.

Beside this, one main part of the isw transfer work after the city labs has been that we have started several cooperation or research queries for our partners or their partners respectively.

Poland



Italy



Great Britain



Starting queries for cooperation for the project-partner regions

The isw Institute as project partner posted some research/ cooperation queries for the Polish and the Italian project partner on the research portal of the state of Saxony-Anhalt.

They can be viewed under the following links:

- http://www.forschung-sachsen-anhalt.de/index.php3?option=tr_anfrage_show&aid=41&antw=1&lang=1
- http://www.forschung-sachsen-anhalt.de/index.php3?option=tr_anfrage_show&aid=42&antw=
- http://www.forschung-sachsen-anhalt.de/index.php3?option=tr_anfrage_show&aid=43&antw=&lang=1

Furthermore, the isw Institute helped the Italian partner to find some partners from Saxony-Anhalt for an application under FP 7 – the framework programme for research of the European Union. The call was EeB.NMP.2013-4: Integrated control systems and methodologies to monitor and improve building energy performance. The research focus was on developing methodologies and tools to monitor and assess real building energy performance, including user behaviour, energy systems performance and climate conditions.

The Fraunhofer PAZ and the company C3 House from Saxony-Anhalt showed interest in a cooperation within such a project. Under project- or FP 7-funding-specific conditions (too many partners from the same regions) the Foundation for Innovation and Research was unable to submit the application.

The Fraunhofer Institute for Factory Operation and Automation IFF showed interest in one of the above shown cooperation queries. Meanwhile, the Italian project partner started a concrete request for cooperation and it will not be the last one.

Furthermore, the Italian Partner asked us to cooperate in another IEE project. It appears as if subsequently to Know-Eco, a good transnational cooperation may be possible in the future.

Besides the above named inquiries, we communicated interested contacts or suitable projects to the Know-Eco partners, if we knew that they are working in these fields or have specific interests in certain themes.

Finally, we offered all partners, an enterprise from our Polish partner in particular, to start a research/ cooperation query in the newsletter of the representation of our state at the EU. Currently we are awaiting a decision.

Exchange of relevant documents

All Partners of the project produced a series of good practice examples. We therefore used a template of INTERREG IVC. Some of these examples you can find on the INTERREG website under the point “good practice database”.

Furthermore, the partners each produced two case studies for one good practice from the building sector and one from the automotive sector. These case studies will form a transferability handbook and will be published by the end of the project.

All contacts we made during our city labs and the regional work were communicated to all partners. Each partner had access to the internet platform drop box, where the project shared all its documents with each partner so that the whole working process of the project should be transparent.

isw Institut für Strukturpolitik und Wirtschaftsförderung gemeinnützige Gesellschaft mbH

After each city lab, all presentations were shared amongst all project partners, as well as information material about the projects we learned about.

In addition, the news and newsletters, which we were produced after each city lab, were shared as well. Each region has adapted the newsletter to their audience. The list of websites or contacts, who received the news and newsletters, were also shared.

Public Relations

Public Relations of the project have been the same for all partners. After each city lab we had to produce some news or press releases and a newsletter.

Beside a mailing list of stakeholders, the isw Institute published its news and newsletters on the research portal Saxony-Anhalt (in German and English).

You find the newsletters under the following links:

- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2011/1483200.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2012/1483447.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2012/1483448.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2012/1483751.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2012/1483753.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2013/1484934.pdf>
- <http://www.forschung-sachsen-anhalt.de/publikationen/volltext/2013/1484933.pdf>

Identified good practices and regional policies and links between the regions or possibilities for transfer/ implementation

Regional policies

The following description of regional policies shows some examples of policies we addressed during our project (for example the integrated municipal climate protection concept), we got an impression of (for example the Cluster Chemistry/Plastics) or we picked as good practice (Stark III).

At this point the regional policies selected gave an impression of the range of policies, structures and working fields in Saxony-Anhalt in connection with the Know-Eco project.

They may help to sort out, which good practices would be feasible to be implemented concerning the strategies and projects Saxony-Anhalt is pursuing. Furthermore, they help to understand where Saxony-Anhalt is situated in comparison with the other Know-Eco project regions. Therewith possible links or similarities with the other regions are also shown, which might be useful for future projects and co-operations. The chosen regional policies and good practices demonstrate how Know-Eco refers to the district+ policy areas, for example “Clustering Strategies” and “Eco-Innovation in High-Tech Firms”.

An additional overview of transfer opportunities between Saxony-Anhalt and the other regions can be found in the appendix. (Transferability Guide)

STARK III

STARK III is an innovation and investment programme for the energetic renovation of day-care centres and schools in Saxony-Anhalt. Therefore, it supports inter alia regional SMEs, renewable energies, energy efficiency, demographic change, a sustainable public building stock and innovations in the building sector.

With regard to the public housing stock or public facilities, it also cannot be underestimated that the operation of the facilities is connected with considerable annual running costs for municipalities, counties and cities as well as independent associations. This becomes even more important, given the tight financial margins in which public budget manoeuvres. However, the education quality should not suffer from it. Through the funding of STARK III, local authorities have the opportunity to perform the necessary investments and support innovations. The following measures should be promoted during implementation: reduction and prevention of transmission heat losses to existing buildings; replacement construction, when the renovation is not economically feasible; renovation and optimization of technical systems through intelligent building planning; improvement of energy use (e.g. heat recovery); use of renewable energy sources and construction of facilities for direct heat supply from renewable energies; protection of natural resources (e.g. reduction of water consumption); sustainable use of building materials and technologies; use of renewable raw materials as well as accounting for the building materials used. In addition, pilot projects with low-energy standard, passive-house standard, zero energy standard or plus energy standard shall be promoted. Furthermore, the regional and local introduction and application of new sustainable materials and innovative technologies shall be promoted.

With contribution to the objectives of Europe 2020, Saxony-Anhalt will make a first big step with the energetic construction or renovation of existing buildings to lead to a reduction of the energy consumption (primary/ final energy) and the CO₂ emissions. It will have locational advantages through the maintenance and optimization of a good educational infrastructure. It provides a good opportunity to realize the transfer of innovation in enterprises and the construction sector respectively, and helps for the creation of future-oriented energy supply structures and technologies. Furthermore, it provides support to regional economics with the engagement of the building projects and it encourages further innovation.

Stark III can be seen as a regional policy, because it is a policy-driven project to open up EU-funding to achieve the goals of Europe 2020. The focus in this special case lies on schools and day care centres (public buildings in a sense).

During the project we found out that energy efficient renovation or new buildings plays an important role in all of our four regions. During our city labs we saw a lot of (mostly public in a sense) new or renovated buildings with energy efficient standards. Additionally, we learnt that each region works more or less in the field of test institutions/ test centres or something like it to optimize energy efficient buildings. Also every region works with different criteria for energy efficiency in buildings and the measurement of usage data. It seems that public buildings (with different uses) are a kind of a test bed for future developments. Therefore, maybe not the financing of Stark III but the idea behind it can be linked to all of the Know-Eco partner regions. In Italy there is a project called “Teenergy Schools” (<http://teenergy.compla.com/>) which has interesting links to Stark III. Information about it was passed on and maybe a future knowledge transfer will take place.

Integrated municipal climate protection concept (city of Halle)

Municipalities are required to carry out activities for CO₂ reduction at a regional and local level. Therefore, e.g. climate protection concepts have been and still were compiled, which shall sustainably reduce greenhouse gases and energy consumption. Within these concepts the respective communal starting situation is analysed, and subsequently the technically and economically realizable potentials for the CO₂ reduction are compiled and transferred into fields of action. The range of issues is diverse: climate adaption strategies, integrated energy recovery, mobility and others. To tap further potential for climate protection, the city Halle has also developed a municipal integrated climate protection concept, which was published in 2012.

Based on climate policy objective targets in Germany as well as reached decisions, objective targets, activities and experiences of the city of Halle so far, the project was commissioned to develop a climate protection concept. Contents of the climate protection concept are among others basics like the creation of an energy and CO₂ balance for the city as well as a potential analysis of CO₂ reduction. Thereby the already completed as well as the current activities of the city play a role. This follows a catalogue with different climate protection measures, which targets energy saving, energy efficiency and the expansion of renewable energies and how these aims can be achieved.

The compiled catalogue of measures covers 36 single measures and is associated to seven fields of actions. They are listed with exemplary single measures below¹³:

- Generally
 - Internet page „Climate Protection and Energy“
 - Atlas „Renewable Energies in Halle“
 - Coordinated public relations concerning climate protection in Halle
- City development
 - Climate protection and climate adaption in quarters and building areas
 - Halle (Saale) counsels on building and renovation
- Private households
 - Show flat energy efficient living

¹³ Stadt Halle (Saale); Integriertes Kommunales Klimaschutzkonzept; Februar 2013
(http://www.halle.de/VeroeffentlichungenBinaries/581/681/klimaschutzkonzept_halle.pdf)

- Competition energy saving
- Industry and commerce
 - Showroom City – Energy technique in Halle (Saale)
 - Energy contracting for enterprises in Halle (Saale)
- Community facilities
 - User behaviour in administrative bodies, schools and day care centres
 - Energy efficient traffic lights, street lighting, procurement
- Energy supply
 - Energy concepts for the quarter
 - Storage of district heating
 - The Saale delivers electricity
- Traffic
 - Priority for bus and tram – prioritization of public transport
 - Alternative mobility (especially E-Mobility).

The suggested measures take up both already existing and new developed ideas. Also in light of the difficult financial situation of the city of Halle (like other communities), the focus is on already existing activities and networks within the city.

One main aspect of the implementation or realization should be, that the measures will have a high publicity and consciousness-raising effect, as this creates further acceptance and will have a positive effect on the achievement of the objectives.

The integrated municipal climate protection concept is spatially one of the lowest levels of regional policies addressed. In achieving the climate protection goals of the state as well as of the federal government, the climate protection concept is an important instrument for achieving these goals, because the objective target as well as its review is easier and more efficient to handle at a smaller level as this would be possible at the state or even the federal government-level. Thus, regionalized approaches are very important in the field of climate protection.

The Know-Eco regions of Italy and Poland have similar concepts like the municipal climate protection programme. None are strict acts of law, but strategic papers or concepts with recommendations. This shows that the European idea, its aims and achieving such has prevailed Europe-wide. Every region more or less tries to follow these ideas and to achieve the aims with the same instruments. The comparison of the success of these instruments could give hints to optimize them in one or another region. It is useful to put regional development under a concept to create therewith transparency for activities and needs.

Cluster Chemistry/Plastics¹⁴

The cluster Chemistry-Plastics is a merger of big, small and medium-sized enterprises, their associations, education and research institutions, service providers as well as policy and administration. They merged to make the region and its industry future-proof. Relevant themes within this venture are innovation and sustainability. Please see below for some information out of the Cluster Atlas with regard to these themes. In

¹⁴ <http://www.cluster-chemie-kunststoffe.de/>

addition, please have a look at the following two boxes, which show the link between the two Know-Eco relevant branches and the Cluster Chemistry/Plastics.

“The high added value aimed at can only be achieved if the customers’ demands will be met and to make them benefit from innovation. Particularly the worldwide financial crisis demonstrated that only those businesses’ prospects are good, whose innovations are part of new development directly at their customers. Current chemical products and plastics are applied in almost all branches to establish new products. Especially the challenge of climate protection requires specific developments. Lightweight construction, thermal insulation, electro mobility, wind energy – and solar engineering: none of those technologies can be translated into practice without chemical products and plastics. Therefore, cooperating with other Central German clusters of other branches is essential. On their part, further requests on chemistry and plastics will be made. This cooperation will be implemented by conducting workshops, innovation panels and symposia. In doing so it is essential to involve Central Germany’s academic and non-academic research institutions. About it the cluster and its networks will offer and test new forms of project organization. So the cluster recommends a so-called voucher system allowing small and medium-sized businesses to overcome access barriers to development cooperation. By the EU project “Chemclust”, the development of European cooperation is supported. About it access to projects promoted by the European Union shall be eased. (...)

The Central German chemical industry promotes sustainability: the chemical parks are going to establish a site-embracing management of sustainability. This way a new quality of site development as well as a higher competitiveness shall be gained. Resource management and a sustainable public acceptance are the fundamental elements about it. For that reason, companies have to be motivated to shift their main research to the Central German chemical triangle and to strengthen the existing research. Companies, scientists and start-ups can reckon upon broad and intensive support. There is a wealth of supporting programmes that aim at creating and developing innovations. During the worldwide financial crisis it has been shown, that innovative firms can react better on business fluctuations or crises than firms that are not yet on a corresponding innovation level.”¹⁵

Automotive

“Tomorrow’s sustainable products are characterized by stewardship of the world’s available resources. Future automobiles have to be more lightweight, safer, more efficient, more comfortable and ecologically sensitive at the same time – and all that at global competitiveness and optimal added value. Also various emotional and social-dynamic aspects become increasingly important. Therefore, the trend toward lightweight-customized multi-material-design is set. The plastics branch is challenged to apply “customized” materials for that. Caused by the complex technical problems in automotive engineering, a fierce competition between the numerous materials and technologies is to be seen. That is a driving force for innovative solutions according to custom-designed materials and processes. Concerning material, mixes in accordance with resistance and recycling potential are worth aspiring to. So plastics and composites as well as sandwich - and polymer-metal-hybrid composites are used in innovative lightweight constructions. Together with the Lightweight-Centre Saxony GmbH and the Li-Tec Battery GmbH, Kamenz, the TU Dresden Institute of Lightweight Structures and Polymer Technology focuses electro mobility and the related field of ultra-lightweight design. The success of the “Saxon rocket” eWolf E1 and the communal automotive Multicar Fumo E1, both markets by the e-Wolf GmbH, demonstrate the innovation potential of electro mobility in Central Germany. In both research and industrial realization, relevant know how had been purchased during the last years.”¹⁶

¹⁵ http://www.cluster-chemie-kunststoffe.de/Clusterboard/2008_3_14_1205505007/CA_engl_web.pdf

¹⁶ Ebd.

Construction / Furniture Industry

“The new commodity of wood-plastics compounds (WPC) became established among high-quality products within a short period of time. It is an answer to the fact that the “principle of growth” is limited due to the increasing commercial utilisation of natural resources. By analysing the material properties and process chains it can be verified that material substitution offers neither economically nor ecologically great advantage nor hardly any sustainability. By developing a compound material of a petrochemical matrix (e.g. PP, PE, or PVC) and a carbon neutral, renewable component, with WPC a material is produced that – due to its special properties – offers fabricators and its industrial appliance novel capabilities of design. To finally achieve a constantly reliable product quality standard, that defines the material’s application-relevant properties and a sustainable production of timber. Innovative design with wood-plastics-compound opens up many possibilities; new design and material in familiar look-and-feel are tested at Fraunhofer Institute for Mechanics of Materials. Industrial designers take the “resources turnaround” as an opportunity to rethink processes and products. In the product line “Extruso” of the Halle start-up “Mehrwerk Designlabor” the free shaping with WPC is systematically used for lightweight structures. Binders for example allow a construction of loose configured racks without any hard rear panel. During the manufacturing process the extruded profiles can be dyed to reach a typical wooden appearance. The hollow chamber frame profiles can be used not only for lightweight construction but also for electrification, air-conditioning and illumination.”¹⁷

The chemical sites in Central Germany are now in a new development stage. Due to the increasing trend of high performance and innovative products for specific fields of application, the cooperation between producers, processors and research institutions has strongly gained in importance. This interface between economy and science represents an important contribution, in order to improve the research infrastructure for the whole Central German chemical region. Every site in this network strives for its own setting of priorities in the field of research and development. Therefore, settlers find extensive capacities by the Fraunhofer Institute for polymer- synthesis and mechanics of materials or for the applied research in the field of Silicium-Photovoltaics e.g. at the Dow ValuePark.

The given links do also count for the following clusters “BioEconomy” and “Mahreg Automotive”. There are clusters in the other regions, for example the “Wood Building Cluster” or “Eco-energetic Cluster” of Lower Silesia and they all are built, because they were facing the same problems and were willing to find solutions to push their regions forward. A next step would be not only to combine regional enterprises and institutions, but to combine clusters from different regions, if they work on the same topics.

All clusters are similar in regards to their aims, but maybe different in their structures. They all are looking for partners for the cluster as a whole and for partners, who are already involved in the cluster to push them forward. Every region has a lot of single partners or complete clusters, which could be of interest for other regions. This should be the next step, not within Know-Eco, but for the clusters and regional developers/ business developments to get them networked.

Cluster BioEconomy¹⁸

Vision and strategy

The lead vision of strategy implementation is it to achieve the worldwide exemplary realization of BioEconomy on the scale of an entire region. In connection to this, the strategy implementation aims to push the economic development of the regions in terms of BioEconomy and to generate new growth impulses. Existing enterprises ought to be strengthened, new enterprises to be established, skilled worker pool of the region in terms of the BioEconomy to be further developed, skilled workers to be attracted and the competitive position of the Central German region to be strengthened long-term. This shall also lead to valorization of the worldwide industrial competitive position in the region, Germany and Europe.

¹⁷ Ebd.

¹⁸ Homepage: http://bioeconomy.de/?lang=de_de

Competency and industry profile

The top cluster „BioEconomy“ connects the relevant industrial sectors in Central Germany. The core industries integrated in the top cluster are the lumber industry/-processing/-logistic, mechanical- (particularly process technology) and plant engineering, chemical- and plastics industry, plastics-processing industry, paper- and cellulose industry and bio-energy economy.

These industries are well represented in the region of Central Germany. The integration of the named core industries is promoted and additional industrial sectors are going to be integrated, in order to heighten the added-value potential and to establish new, competitive and sustainable industry structures of BioEconomy.

Core competency of the top cluster is thereby the development, scaling and application of innovative technical processes for the sustainable utilization of bio-based, renewable raw materials from the non-food sector (particularly from wood) for the production of valuable products for the various industrial sectors in connection with the energetic utilization of recyclables over the entire value-added chain.

Goals

1. Sustainable maximization of added value of non-food biomass with focus on wood via combined production and cascade usage for the production of chemicals, new materials, raw materials and energy.
2. Acceleration of innovation via the integrated, spatial and time-wise balanced scaling of processes and facilities reaching from laboratory to demonstration scale.

Strategy

The fundamental goals of the top cluster „BioEconomy“ are specified by the European and national strategies and programs for the development of an economy, such as “Europe 2020” or “BioEconomy 2030”, whereby their raw material base for the extraction of energy and chemical products will not be exclusively fossil anymore, but increasingly build on biomass.

The top cluster „BioEconomy“ develops its profile through the implementation of parts of such BioEconomy. Part of that is an international pioneering task in the production of chemical basic materials and plastics based on non-food biomass (preferably wood). The top cluster has a clear focus on biomass-based processes on a pilot scale up to a demonstration scale, on plant engineering and process development, on the lumber industry via new logistic-and wood processing concepts. These show a new way of utilizing the over-aged European forests.

The full utilization and integration of material flow from non-food biomass within the processing cascade of the composite is part of the holistic approach of the cluster. Furthermore, the supply of the cluster energizes itself from the utilization of renewable-based recyclables – energy sources, which are integrated variably according to requirements of the production process.

Links can especially be seen to the cluster Wood Building from Lower Silesia or the Wood Building project from Tuscany, which aims to strengthen the wood industry in the region.

Cluster Mahreg Automotive¹⁹

Motivation and aim of the Cluster Mahreg Automotive is first and foremost to gain a competitive advantage for the participating partners, which ought to be reached via the targeted exchange of information as well as co-operations in research and production.

Thereby the cluster started as network. Today, under the umbrella of MAHREG Automotive, numerous enterprises and scientific institutions bundle and complement their achievements and potentials and try to successfully implement joint innovations on the international automotive market with MAHREG's active support. This concentration of competencies and resources within the cluster develops a high attractiveness for additional partners and creates numerous synergy effects as well as disproportionately high growth.

Mission statement and vision

The strengthening of innovation and performance of regional automotive suppliers is the central task of the cluster. Through information and cooperation to more innovations is the function and aim of MAHREG Automotive, which is implemented via an intensive knowledge- and technology transfer between science, service providers and manufacturers. The potentials of the suppliers in Saxony-Anhalt and the corresponding special purpose machinery manufacture are focused on the future topics of automotive engineering: LIGHTER, MORE ECONOMICAL, SAFER and MORE COMPETENT.

Saxony-Anhalt shall become the centre for the development and production of light vehicle components for alternative, energy-efficient power engines.

Projects

MAHREG Automotive is an innovation cluster. Only with innovations the mostly small and medium-sized suppliers of Saxony-Anhalt will be able to compete and develop their market position further within global competition. Particularly SME's are often missing their own adequate R&D capacities as well as the connection to competent partners from science and the references for the access to development divisions of OEM (Original Equipment Manufacturer).

MAHREG Automotive supports their partners with:

- Identification of new projects,
- Search for suitable project partners in economy and science,
- Securing the potential public support and
- Implementation in the market

¹⁹ <http://www.mahreg.de/cluster/>

Good Practices

At the beginning of the project the project team created a criteria list for the selection of good practices, which should help to identify some good practices and also possible constraints during implementation.

The list contained the following:

The following criteria (in no particular order) were used for selecting best practices namely:

- **Integration:** is it an integrated practice i.e. is it part of other solutions
- **Knowledge:** is there a sound knowledge basis for this best practice in the region
- **Knowledge creation:** will this lead to new knowledge created
- **Financial:** will this best practice lead to cost savings
- **Resources:** will there be a positive impact on natural resources
- **Control:** can it be controlled and /managed
- **Sustainability:** will the best practice be sustainable over time
- **Trends:** is this best practice based on a critical trend
- **Cooperation:** will this encourage new types of cooperation between SMEs and research institutes
- **Commercialisation:** can it lead to optimization of commercialization of new innovative technologies

POSSIBLE CONSTRAINTS

The following constraints might influence the formulation of recommendations:

- **Historical environment:** changes cannot be made to for example buildings
- **Cultural dynamics:** not all solutions might be accepted by different cultures
- **Economy:** low level of growth and scepticism might influence acceptance and support of new ideas
- **Funding:** lack of funding can prevent implementation of new ideas
- **Disasters:** man-made and natural disasters might influence implementation of solutions
- **Political decisions:** political influences might lead to an over-reliance on short-term solutions
- **Compliance:** complicated administrative procedures
- **Infrastructure:** poor state of infrastructure
- **Demographic changes:** changes leading to different behaviours

Following these criteria we identified the following good practices for Saxony-Anhalt:

Galileo test bed Saxony-Anhalt

The main focuses of the Galileo test bed in Saxony-Anhalt lies on traffic and logistics. In connection to this, main focuses and fields of action are: integration of economic transport and logistics in an intermodal traffic management network; investigation of interfaces for the cooperative operation of the fleet and traffic management systems; test of systems and applications (software) for the detailed vehicle tracing and tracking in the inner-city area (city logistics); development and testing of systems for the communication of goods, vehicles and infrastructure; evaluation of the co-operation of vehicle-based telematics systems with self-sufficient radio-based systems for tracking of goods; testing and certification of technical components for the satellite-based location and communication.

The Galileo test bed has different fields of application. To provide some examples one has to name: "intelligent" swap containers; development and implementation of traffic information systems; warning services or driver assistance systems; car-to-car and car-to-infrastructure communication or mobility services for mobile terminals; systems for urban traffic management systems and many more. Relevant influential fac-

tors and parameters, such as radio range, data throughput, availability, reliability and insensitivity for radio interferences or the security against data manipulation, can be tested under reproducible laboratory and test conditions at the Galileo test bed Saxony-Anhalt.

Such a test bed gives a lot of impulses for the connection between research and application and can be seen as applied innovation. This is reinforced by the test bed being available to research and development institutions from all over Europe. Furthermore, first results are available, such as e.g. tracking and tracing via RFID used by a well-known fashion label or the public transport traffic management system in Halle. In order to handle the increasing traffic streams and to adopt transport systems to increasing demands as a result of demographic change, tightened aims concerning transport security, environment and climate protection as well as efficient transport structure, it is necessary to promote such an institution like the Galileo test bed.

To get more information about the Galileo test bed, you can take a look at the case study as part of the transferability handbook produced within the Know-Eco Project.

Furthermore, the test bed is one of the leading institutions working in these fields in Europe. Within the Know-Eco project a link to the Italian project “Si.Mo.Ne” can be made. They are more focused on the inner-city traffic situations and optimizations of traffic flows as well as developing client friendly applications in terms of public transport.

By comparison of these two projects, the Galileo test bed has more applicabilities than Si.Mo.Ne, but Galileo is a test bed while Si.Mo.Ne is running as practice.

Nevertheless, there could be opportunities for co-operations or knowledge transfers to learn from each other.

Contacts between these two projects have already been made.

Figure 10 Si.Mo.Ne

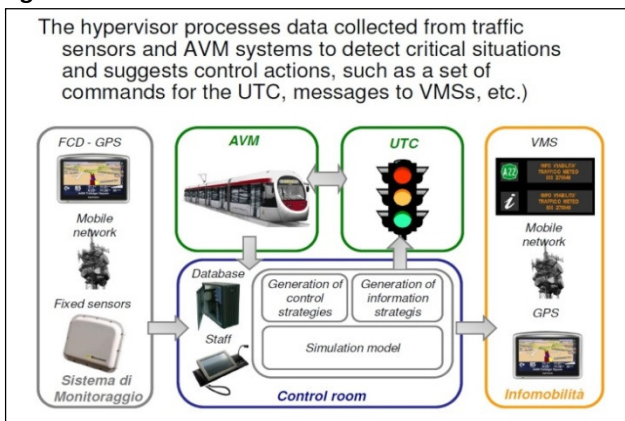
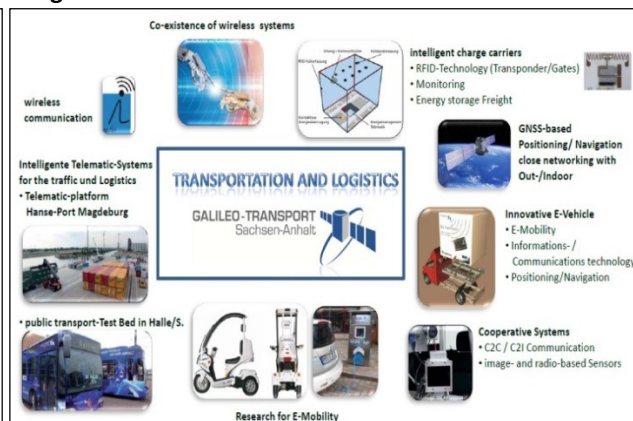


Figure 11 Galileo test bed



Competence centre for optimization of energy efficiency of automated buildings – “KEO”

Quoted²⁰:

“Based on experiences, at start of operations of new or modernized buildings with building automation systems, optimization of statistics such as control parameters, building time constants, heating curves, etc., is limited. Adjustments to changes of the environmental conditions over the course of a year or changing user behaviour are only rarely made. Here lie great potentials to decrease operating expenses and CO2 emission, but most operators of new and modernized buildings need competent support. That is the start-

²⁰ <http://www.kat-kompetenznetzwerk.de/files/kat-newsletters3.pdf>

ing point of the KEO, which was initiated at the university Merseburg in cooperation with the Spicher GmbH in Halle. In projects „Smart Energy with Smart People“, „Energieeffizienzuntersuchungen für Landesimmobilien“, as well as other projects, based on an holistic analysis, students from the university Merseburg work out a proposal for solutions on efficient energy use. Thereby, students are supervised by staff members of the Spicher GmbH and professors of the university. Based on on-site inspections, energetic use of the analysed building automation systems are comprised via an on-line connection to the energy management system in KEO, which offers numerous possibilities for remote access to the systems. Based on the data analysis, optimization measures ought to be derived and jointly implemented with the building operator. For an interactive discovery- and shopping centre covering a total area of 120.000 m², savings of up to 39% were demonstrated via an improved parameterization concerning the automation of ventilation and air conditioning facilities. In addition, recommendations for further significant optimization possibilities were worked out, e.g. via a qualification of the automation structure, the integration of free over-night cooling, and the installation of energy-recovery systems. In a land-marked building (built in 1891), savings in total energy costs of 15 % were reached via optimizations.”

The construction, control and monitoring of low carbon (social) housing is emerging as a common thread. Carbon reduction strategies were being utilised and their impact monitored across various projects we visited in Poland, Germany and in the UK,. It is evident that many common strategies and technologies are being deployed in the development of these buildings, but what is less evident is the way in which the data is gathered, analysed, evaluated and compared, to see if knowledge and experience can be shared to support best practice going forward.

Related to some of the visited projects, but fewer tangles in some respect, is the gathering of data related to building use. Many of the housing projects monitor and manage every physical aspect of housing performance, but what is becoming more evident is the impact of behaviour on performance; that is how people live and work in these spaces. User interaction with the building, in both the private and public spaces, is being seen as a key factor of performance.

Know-Eco discovered, that every region is working in the field of data monitoring and user behaviour. It could be useful, if there is a wider experience exchange within the different projects, which may lead to a data or experience sharing across all our partner regions. Links can be seen especially to the following projects/experts of the partner regions:

- Orbit Heart of England (UK)
- Houses Xxi (House Lumina) (PL)
- Mark Gaterell (UK)
- Energy Technology Centre in Świdnica (PL)
- Abitare Mediterraneo; Dissemination and Training Technological Centre Lucca (IT)

Michael Antons start-up Interanton: “Clayday” - Humid regulatory objects from clay²¹

It is a newly founded enterprise (micro business) with relevance to topics like saving energy, increase energy efficiency, renewable resources or innovative use of materials. Michael Antons is an interior designer graduate and a skilled cabinetmaker. The focus of his work is humid regulatory objects from clay.

Michael Antons has set up a company named "Interanton -room, climate, design" in 2011. One of his focuses is the work with clay as building material to use its humid regulatory functions. Humid regulatory objects from clay range from partially plastered mud wall of functional elements to large scale installations

²¹ <http://www.interanton.de/>

and objects from clay. Already 1-2 cm thick plaster works miracles on room climate. The aesthetic effect of material, depth, warmth and comfort is heightened in the context of a modern living environment. As an interior designer, the use of clay in contrast to innovative materials and clean lines rather excites him. Michael Antons is inspired by clay as a traditional building material and he is pursuing a revitalization of it in a modern context. The creative potential of objects of clay is manifold: as a surface or partial wall plaster, ornamental structure, relief-like, figurative, as a wall or free-standing object, untreated, coloured or pigmented with greenery.

The company's goal is to bring clay from the niche of the monument conservation and to establish it in the future-oriented housing market. The target groups here are design-oriented, energy-conscious homeowners, as well as companies such as restaurants, banks and service providers, who want to enrich their lobby/ foyer with the clay objects. And there are also considerations to other implementations. This applies to the extended, technical area, e.g. as the combination of clay and high tech. There are considerations and approaches to cooperate with the Fraunhofer Institute or aquatechnik Berechnungsanlagen. Implementations could be such as panel heating or spraying devices with sensor technology. This example suggests, which positive effects can be achieved through using clay as a building material not only for objects but also for whole buildings.



Even if it is just clay and no innovative building material in any real sense, the idea or the rediscovery of the physical properties and optimal use of resources through clay construction is extremely innovative. The advantages of the construction physics are enormous: clay preserves wood, regulates humidity, retains heat, saves energy in the production, reduces pollution and prevents pollutants. Clay is widely available, inexpensive, 100% waste free in processing and at any time and endlessly recyclable. Measurements showed that the relative humidity in the home is on average 50% over the year if you are using clay. This constant humidity produces an extremely pleasant and healthy living environment. It prevents drying of the mucous membranes, reduces fine dust and thus acts preventively against colds.

Using new or “old” but sustainable building materials is on the top of the agenda in every region. For most of the other regions you can find similar projects or you can suggest that such a project can be of interest in one special region. Therefore, links can be seen with:

- Moritz Reichert, creator of the ecological house of clay and straw (PL)
- In general the region of Tuscany; due to their strict building guidelines and historical or cultural heritage, clay is one option for sustainable buildings in the Tuscan region

Harz.EE Mobility

Wind, solar and other alternative energy sources already contribute more than 50% of the power generated in the Harz district. As a result, the power grid is often glutted. The idea is not to prevent an overload through switching off wind turbines for example, but use the electric vehicles as mobile energy storage units. Electric cars would recharge their batteries whenever winds are strong, esp. at night - conversely, during calm periods they could feed electricity back into the grid. To make this possible - power generation, power distribution and vehicles have to be intelligently coordinated with one another. The project would

show how vehicle range can be extended through the smart and strategic placement of charging stations. The ICT-based system will help drivers to plan their driving routes in accordance with the state of charge of their vehicle batteries and to make optimal use of the charging stations available along the way. The aim of Harz.EE Mobility was to find out, how that works in practice.

This project is considered as good practice, because it combines different aspects of eco-innovative, energy-efficient and sustainable ideas/practices. First, it uses electric vehicles (less CO₂), second, these vehicles use electricity from renewable energies (further less CO₂), third, the vehicles can be used as storage units/batteries so that no produced energy goes to waste; fourth, it provides the users a comfortable way of using the vehicles in respect of the imponderables related to electric mobility these days.

Although the evolution of the electric vehicle is still relatively embryonic, the development of electric vehicle charging points is nevertheless well underway. The “Plugged in Places” project, supported by the Office for Low Emission Vehicles in the UK, has resulted in the “Plugged in Midlands” projects, which reflect the regions strategic position, its knowledge and capabilities with respect to the electrification of road transport.

Harz.EE Mobility was a similar project that focuses on electric vehicle charging and the communication between the vehicle and the power grid. This project utilizes a range of alternative energy sources, such as wind and solar, to generate power and aims to evaluate how they can be effectively used and managed in real applications.

The projects share similar aims, like to test the infrastructure and different approaches in view of that the outcome should inform the development of national charging infrastructures for electric vehicles as the technology develops.

Beside the “Plugged in Places” or the “Plugged in Midlands” project respectively, another link can be observed to the Italian project “Luccaport”.

“Energy Forests”

The Stadtwirtschaft GmbH Halle in cooperation with the GWG developed an innovative concept to create a short rotation plantation with fast growing balsam poplars on the 0.8 hectare demolition area Lüneburger Bogen. This is an area, where, with regard to the demographic change of the city of Halle, unused buildings were demolished. The motive of the Stadtwirtschaft was the retrieval of marketable fuel from accumulated lop. And besides the production of biogenous and CO₂ neutral fuel, a short rotation plantation in this form can have additional advantages on devastated, inner-city grounds: an improvement of the micro-climate - increase of the dust collection potential, transpiration and condensation of the plants, oxygen production, possibly wind protection on exposed areas; significant improvement of the residential environment within the framework of urban restructuring, temporarily an "urban forest" arises, which can be used by the residents; an energy wood production on demolition sites is not in competition with the food production on farmland. The whole description of the project shows, why this practice is considered as good. Additionally, it can be said, that such a short rotation plantation helps to reduce or to improve the CO₂ balance of a city (see micro climate) and it also helps to reduce costs for the city, which cares about free and unused areas in a city. The city does not have to pay for the care of green areas and the regional energy supplier can benefit to test or develop a new product/ project.



IKAM

Companies from the automotive and automotive supply industry together with academic experts at the IKAM are researching and developing the cars of tomorrow. The results of their research and development enter into new components as efficient systems and innovative manufacturing technologies. The IKAM specializes in: green drive systems, electric mobility, high performance materials, lightweight construction, inspection and testing systems and industrial engineering. The IKAM provides numerous opportunities to research, develop and employ products, manufacturing technologies and services through their: contract research, research services, collaborative R&D, R&D management, development of research projects concepts e.g. in funded programs, professional support and management of development consortia, technology validation, technology transfer management and services including testing and inspection strategies. The strategic work of the IKAM is to generate specialised innovations for new products, processes or services in the automotive sector. Therewith, a sustainable strengthening of the entrepreneurial region and an improvement of the attractiveness of the academic and innovation region shall be achieved. The IKAM is an open institution, which can be used by interested parties from all over Europe. The IKAM combines scientific research and economic interests and therefore help to promote innovations.

From IKAM there are links possible to all projects with regard to mobility, because IKAM has such a wide range/ application that each of the other projects could be interested in working together with the IKAM or the other way round.

But one special link should be made to Govecs from Poland. They have specific interest in co-operations or research partners in the near future. Contacts between Govecs and the IKAM have already been made.

SuperKon

The topic of the “SuperKon” project is the storage of electrical energy in novel thin film devices. It involves the development of a super capacitor module as an effective, flexible, ecological and safe system for storing energy.

According to the aims of the energy policy of the German government, the share of renewable energies in the total energy consumption should considerably increase in the next years. However, the problems of renewable energies related to their generation, utilization and their feeding into the public electricity grid, are very diverse. Due to the lack of efficient energy storage devices, only a part of the available potential of sustainable energies can be exploited. The idea of SuperKon energy storage devices was born as an answer to these requirements. Technological: it is based on physical storage of electric energy in thin film components. For the aim of the project, they will develop a novel innovative capacitor module, which initially targets to local market requirements. This new capacitor will be an efficient, flexible, ecological and safe system for energy storage with a special focus on renewable energies (wind, photovoltaic, energy harvesting). Operational areas of this capacitor will be: photovoltaic, mobile electronic or electro mobility.

The project is one elementary step on the way to the new infrastructure, which is based on renewable energies, in the future. On the one hand, it helps in the important field of energy storage from renewables, where a lot of questions are still unanswered. On the other hand, it helps to promote electro mobility, where also the question of storing energy is still not answered and therefore fields of utilization and range of vehicles is tangent as well.

SuperKon can build links to several projects from both sectors, because the storage of energy is relevant for both, automotive (electro mobility) and building (photovoltaic). From the Polish good practice “Govecs” we know that they are specifically searching for partners in the field of energy storage. Maybe there can be a future collaboration, a for instance Govecs for practical tests with the new super capacitor.

C3House

C3 house is a young company with an innovative idea and concept for new building materials, which was founded in 2010. The unique approach of C3 House is the use of natural and local available indigenous materials for manufacturing of natural composite panels. C3 house is the combination of innovative and high-tech composite materials with intelligent architectural concepts and technical solutions to create attractive, safe, sustainable and cost-effective building solutions. C3 House provides state-of-the-art eco building solutions made from high-tech material based on natural resources. Natural composite panels can be used for various architectural applications: affordable, healthy and energy-saving eco-houses; refurbishment of existing houses with improved eco-standard incl. adding storeys to existing houses by light-weight technology constructing state-of-the-art penthouse solutions in urban living environment; internal wall systems; facade systems; building of "impact-resistance buildings" against severe storms, earthquake, flooding; houses suitable for flood prone areas. Furthermore, C3 House Technologies has developed a composite housing calculation tool for simplifying the building design process according to static, insulation and commercial requirements.

This practice can be considered as good for different reasons. One is that it uses natural materials for developing new building materials, which leads to a reduction of CO₂. Furthermore, it leads to a radical reduction of energy consumption and therewith CO₂ in erecting and operation of houses.

C3 House could be interesting for all building-projects. One definite link was already made to our Italian partner, who was interested in a cooperation for a project within the IEE (Intelligent Energy Europe) framework. So, each project which is dealing with sustainable building materials could be interested in products from C3 House.

Montanes Green Buildings

The Montanes Green Building GmbH is an innovative enterprise in Saxony-Anhalt. It is specialised in energy-autarkic building concepts, especially on building-envelope temperature control with 100% renewable energies for residential buildings, industrial/ commercial buildings and municipal buildings as new buildings and energy-related renovations. Montanes Green Buildings GmbH offers their clients an interesting concept to heat and air-condition in their single-family homes or apartment buildings for the whole year without follow-up costs. This happens through the free use of the solar radiation as well as the near-surface geothermal energy. Heating a building through the warming of air is physically the worst system. The most comfortable and economical heat can be provided through the temperature control of the building envelope. Therefore, Montanes has fully developed concepts to renovate big parts of the existing building stock in an energy efficient way and shift them to 100% renewable energies.

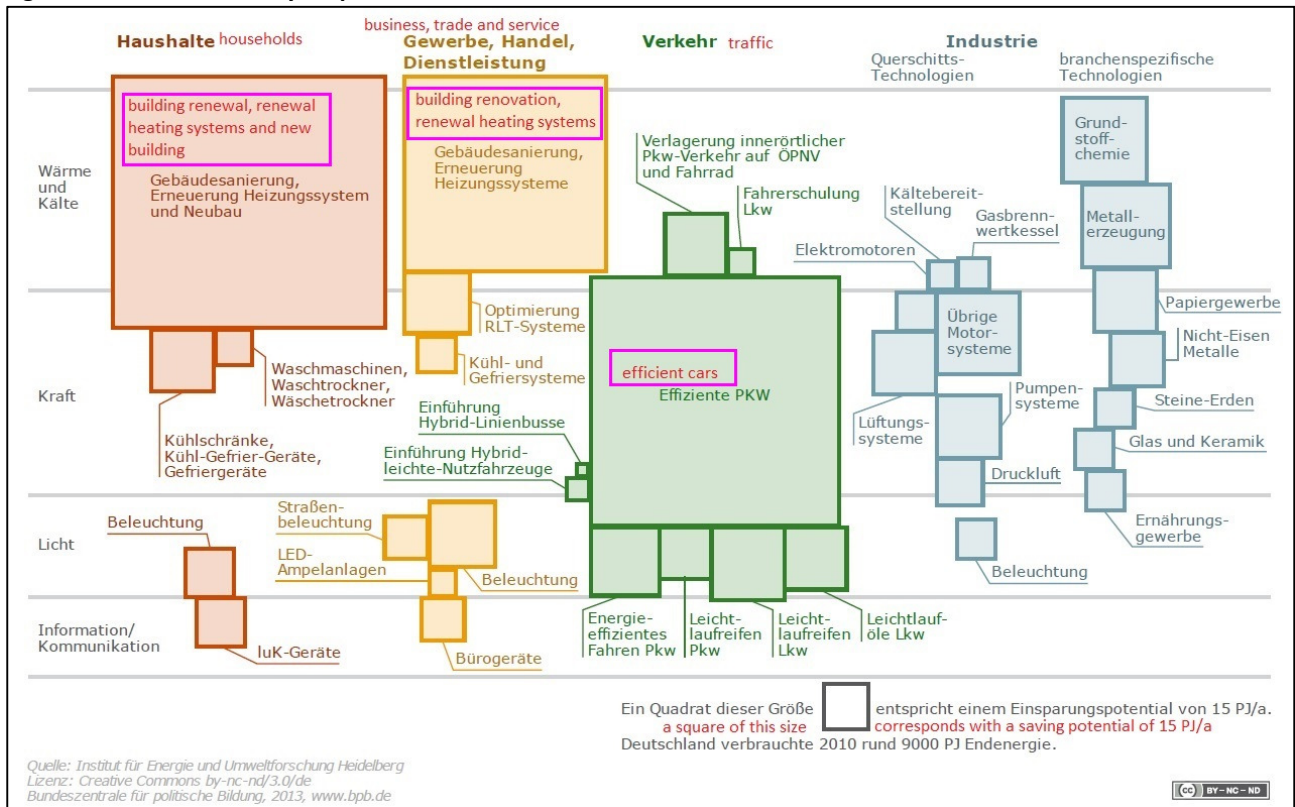
The advantages of a building-envelope temperature control with solar heat and seasonal geothermal energy storage are obvious. With the concept of Montanes, the usual costs for a house entry pipe (as for gas), a tank storage room (as for oil) as well as the natural follow-up costs for the purchase of oil, gas, coal or wood, will be omitted. As a heating distiller is also not necessary anymore, you won't have costs for maintenance or renewals. Furthermore, and the most important fact is, that the house will not produce CO₂ anymore. All these facts are arguments for an innovation with high energy efficiency potentials.

3. Recommendations for Saxony-Anhalt to promote eco-innovations in the field of automotive and construction

The below shown graphic (efficiency map) illustrates, that the two for this project chosen sectors– automotive and building – will have the biggest impact in reducing energy consumption or increasing energy efficiency.

That is why there are also a lot of opportunities and reasons to support the implementation and the uptake of eco-innovations in the two sectors in Saxony-Anhalt²².

Figure 12 Efficiency map



As can be seen in the chapter about the research landscape in Saxony-Anhalt, there are a lot of chemical parks, technology and business incubators or research institutes, in which innovations were developed and tested.

At the same time, R&D expenditures in Saxony-Anhalt are mostly executed by the public authorities. This is especially caused by the economic structure of the state comprised of a lot of small enterprises with corresponding limited research capacities and a lack of researching large scale enterprises. Measures to compensate these effects or to change them are for example an integrated settlement, investment and innovation policy in order to settle enterprises, which have own research capacities and use more international partnerships and networks to achieve their aims. On the other side, measures of low-threshold technology

²² More specific results and recommendations for the automotive sector can be taken from the study “Studie zur Verbesserung der Kooperation zwischen Automobilzulieferern und diese Branche unterstützende Einrichtungen“ (http://www.igz-md.de/tl_files/pdf/STEP%20SP1%20Questioning%20report%20Deutsch.pdf) which was developed under the district+ sub project STEP

transfer – „innovations from below“ – shall ensure, that also small and medium-sized enterprises lose their threshold-fears and invest more in research and development. Approaches of the low-threshold field are the above named research/information portals or the transfer voucher. Which optimization potentials they have too, can be seen in the next paragraphs.

Beside the already described negative sides of the innovation support, like enterprise and research infrastructure and the therewith related low financial extent of R&D grants in Saxony-Anhalt, there are other aspects – related to the two relevant branches in this case –which the state can only partially influence. The strict guidelines and rules for the approval of new building materials can be named as an example for the building sector. Thus, the whole process from the development of an innovation up to its approval for the market is getting stalled and thereby the innovation process thwarted. The state of Saxony-Anhalt has in regards to this no chances to change these guidelines. The only way for the state as well as for the local affairs to receive support concerning energy efficiency, are guidelines or requirements via the urban land-use planning in municipalities (have a look at the measurement catalogue of the climate protection concept of the city of Halle) or the state building laws, respectively. For the automotive sector it must be stated, that the research competencies lie more with research institutions like the ifak or the IKAM than with vehicle manufacturers. Nevertheless, in the field of automotive, Saxony-Anhalt has a large market of suppliers, from whom a lot of fundamental innovations emanate. Therewith, there is a high innovation potential especially for this sector in Saxony-Anhalt.

Altogether it can be said, that Saxony-Anhalt is now pursuing a number of good approaches to strengthen the innovation potential of the state or expand it respectively (see, e.g., the innovation strategy or the research support of the state). Nevertheless there is need for improvements.

For the provided recommendations we approach from the European level via concrete examples of innovation support to concrete examples from the two branches.

International projects/ international co-operation

As written in the socio-economic analyses for Saxony-Anhalt for the next period of structural funds, Saxony-Anhalt benefits from international projects like Know-Eco, which work on knowledge and experience exchange. The state (ministries), enterprises and research institutions should be anxious to strengthen the participation in such programmes/ projects and therewith to support the transnational knowledge transfer. On the European/ international level an opening for European/ foreign investors can take place, interest can be awoken and most of all the strengths of Saxony-Anhalt get a wider perception via such projects.

In the socio-economic analysis you can read the following:

“Due to global cross-border networking of value chains, through global challenges and constraints, for example in terms of climate change or environmental protection, or by a competition for the best minds and most favourable locations, internationalisation plays a key role for the further development of Saxony-Anhalt in many areas. This counts both for the knowledge transfer and the active behaviour in trans-regional nets and for the representation of own interests in the concert of like-minded at the European and international level. (...)

(...) the state chancellery and the government departments of the state government together with partners outside the state administration have tied a dense network within the frame of several EU projects over the last years, e.g. INTERREG. By integration in European networks, the establishment of specific international and interregional co-operations, development of international partnerships of communities and schools, creation of contacts between cultural institutions, universities and research institutions as well as export

activities of the companies of the state, reliable partners are available abroad with which mutually beneficial co-operations will also be possible in future.”²³

In the past, Saxony-Anhalt participated in EU programs on the promotion of interregional co-operations only to a very small extent.²⁴ At the same time, Saxony-Anhalt and other European regions unite the situation related to the objectives of Europe 2020 that they face similar challenges and that a closer interregional cooperation may contribute to the development of solutions.

“Many of the thematic objectives defined by EU cohesion politics are excellently suited for the cooperation of players of Saxony-Anhalt with partners in other EU member states. All in all, there exist varied approaches for future activities. For participation in EU programs on promotion of interregional cooperation, a considerable development potential still exists.”²⁵

With respect to the experience gained so far, international projects, which were successfully conducted or are still on-going as well as challenges and requirements of the years to come, it is becoming clear that Saxony-Anhalt has to sharpen its European/international profile and to exploit the full potential of such projects even more than before.

Apart from the state ministries, universities, research institutions, chambers of commerce and chambers of trades are needed in order to prepare academics as well as companies for the European market and to open up new potentials.

Moreover, we need to aim more towards the European 2020 strategy and take a look in the near future at the next European funding period from 2014 to 2020. The EU points the way, which also applies to Saxony-Anhalt and moreover, coincides with the recommendations given in this chapter.

From the position paper of the commission services on the development of partnership agreement and programs in Germany for the period 2014-2020, it can also be extracted, where main research focuses will be in the future. They are consistent with the statements we made. One priority should be the enhancing of business innovation (incl. eco-innovation) and competitiveness. “Support from CSF funds should become more targeted, stimulating investment in innovation, focusing on SMEs – the main source of employment creation in the German economy. (...) The DSF funds should invest in eco-innovation, new types of business organizations and greening the economy and resource and energy efficiency, e.g. by putting incentives in place that stimulate companies to measure, benchmark and improve their resource efficiency systematically. It should be ensured that advice and support is available to help SMEs to exploit their potentials for energy savings and efficiency and sustainable use of raw materials”²⁶

Under the point “supporting transformation of the energy system and strengthening sustainable use of natural resources” it is said, that “the CSF funds should concentrate their investments on support for research and development, demonstration projects etc. on energy storage and flexible generation capacities and the co-financing of pilot projects on smart distribution grids as well as innovative renewable energy technologies. (...) Increasing energy efficiency (in public buildings) and energy saving efforts is particularly important, as it contributes to achieving the climate and renewable energy targets while reducing energy consumption, reinforcing the security of supply and creating local jobs. While Germany is already active in this area and has already substantial national/ regional programmes, the existing scope for increasing energy efficiency needs to be further exploited, developing also integrated solutions for sustainable energy

²³ Sachsen-Anhalt; Sozioökonomische Analyse inkl. SWOT für den EFRE, den ESF und den ELER Sachsen-Anhalt 2014-2020; 2012

²⁴ IPP Benchmark Report 1st Benchmark Report, 06/2011

²⁵ Sachsen-Anhalt; Sozioökonomische Analyse inkl. SWOT für den EFRE, den ESF und den ELER Sachsen-Anhalt 2014-2020; 2012

²⁶ Position of the Commission Services on the development of Partnership Agreement and programmes in Germany for the period 2014-2020

communities and cities in line with the Smart Cities and Communities – European Innovation Partnership.”²⁷

Under the thematic objective “protecting the environment and promoting resource efficiency” there are also objectives or priorities of sustainable integrated urban development. There you can read:

„Develop integrated urban strategies that support initiatives leading to CO₂ reduction, increased energy efficiency and adaption to climate change (...). Furthermore, better urban planning, construction and use of buildings could substantially reduce energy consumption, greenhouse gas emissions, extracted materials and the use of water. Investments are needed in new and participative forms in urban renewal and development applying the life-cycle approach, aiming at zero-energy and high material efficiency for at least new buildings. (...) Promote sustainable urban mobility within integrated urban development strategies. Develop sustainable mobility concepts at peri-urban, urban and metropolitan level.”²⁸

Regional co-operations and knowledge transfer

Besides the “more abstract” European level, it is therefore necessary to increase and improve the local cooperation of science and economy. Here, greater incentives have to be provided for scientific institutions in order to implement joint projects with SMEs. Many SMEs of the state can secure comparative advantages by improving the transfer of knowledge.

Possible approaches for such an optimization will also be provided by updating and implementing the new innovation strategy as frame for coordination of the state’s research and innovation policy. This may also possibly include the implementation of the ITS frame plan of Saxony-Anhalt in the fields of promotion of research and innovation in traffic.

Another element, which is regarded as having potential for the optimization of the state’s innovation policy, is the transfer voucher described above. The transfer voucher is an interesting approach, even if it is insufficient in its current form. Furthermore, it provides the following recommendation: to create attractive cooperation programs for greater involvement of the company sector in R&D activities targeting product and process developments. From expert discussions, proposals for improvement of quality of the funded projects can be obtained.

Overall, the transfer voucher can be considered as a successful initiative, which is a manageable control instrument in the transfer process particularly for the universities. Even if there are no formal criteria for its use, the voucher can be used both for bachelor/master theses and projects. It is, however, recommended to concentrate the promotion on short-term projects. It is being further considered to raise the funding amount, which would represent another incentive for the users. In view of the quality of funded projects, the request was made to deploy the voucher more target-oriented. That means that not every single project should be funded. The use of the voucher should comply with the requirements of the state and, thus, enhancing the transfer of technology and knowledge and the development of products and process innovations. It is clearly demanded, that the transfer voucher shall mostly be used in technology transfer or for projects of high quality in the future.

Granting of transfer vouchers shall be bound to requirements, which have to be met by the users, thus guaranteeing that the intended support and promotion of the regional economy will be achieved. Submission of a bachelor/master or project thesis can be one criterion for the successful application of the transfer

²⁷ Ebd.

²⁸ Ebd.

voucher. Additional statements of the companies involved can further be used to show the positive effects of the transfer vouchers on the side of the companies.

At the same time, SMEs need support for the implementation of ideas and research projects or the implementation of research results in marketable products and services respectively. This includes, among other things, the provision of a consulting offer for SMEs as well as for research institutions and universities to lead to common R&D themes and projects. Thereby, it shall take into account, that there is a transparent and easy accessible network of support arising. As for the already existing landscape of technology transfer locations, it has to be considered that there is complexity to some extent. Here too, the argument applies, that many SMEs barely have capacities besides for their original activities to burden themselves with such activities. That is why, enterprises often do not prioritize activities concerning the “fight through the jungle” of funding and support and the transfer landscape.

A third good approach is the already existing research portal of Saxony-Anhalt as well as the KAT (competency network for applied and transfer oriented research). These are platforms, which can be used for the transfer of knowledge. However, the use of the research portal and the striven for interactivity are reasonable so far. Thus, the research portal is going to be restructured these days. The internet presence should be more focused on the economy and their interests. The presentation of the enterprises (sponsors) should also be revised and therewith their sponsoring more respected. But given appraisals to needs for improvements are very diverse. Concerning the use of the portals, there is possibly a North-South slope in Saxony-Anhalt.

For the North of Saxony-Anhalt it is said, that transfer requests came more so from the business-side, as there are too few enterprises listed on the research portal. Whereas it is said for the South of Saxony-Anhalt, that there are transfer requests from both sides – enterprises and research institutions - and that they refer to existing networks and junctions. On the one hand it has been stated, that the chambers of commerce and trade and the chambers of handicraft should be more engaged, concerning contents and finance, as there is barely a support provided from the state. On the other hand it has been said, that the two chambers are already integrated and that there is a good relationship of cooperation, podiums and events were used from enterprises, which are organised within the two chambers. For the moment, the conclusion from these two different points of view can only be that the research portal, KAT and the two chambers should start a discussion on how they can optimise their cooperation and how to sustain it.

To strengthen the transfer of knowledge and therewith the implementation of new products/ processes in the field of (eco-) innovations, the research portal needs more support – both, financially and (inherent) materially. As for the predominant limited capacities of the scientific staff maybe some transfer activities go lost or get failed. For the state of Saxony-Anhalt as well as the beneficiaries of the research portal, there should be a higher financial involvement. This means too, that more enterprises, besides the existing sponsoring, should offer financial engagement – this could lead to a win-win situation for all involved parties.

All in all, there is a need for more transparency of the innovation activities of the state. Here again the existing portals provide first starting points. At the same time, it must take into consideration that a lot of micro, small and medium-sized enterprises have a need for support in terms of such publicity activities, provided that such activities are aspired (with regard to patent rights). Only the existence of these portals is not enough to establish a lively culture of transfer. At the end such portals live from the involved actors, their actions and activity. Especially the many micro, small and medium-sized enterprises at the state have, if they practise R&D at all, barely capacities for the “care” of their public relations or the use of such portals respectively. Here again the chambers of commerce, trade and handicraft could provide first starting points for the support and optimization.

Building sector

For the time being, the focus shall lie again on the survey of enterprises from the construction sector.

The following recommendations from the survey are of interest:

Concerning one open question as to where the enterprises see areas of action for the policy makers in Saxony-Anhalt, the following answers were received:

- Simple subsidies/ grants
- More expertise and professional knowledge in the field of construction planning
- Examples like eco-settlements
- More support of eco-building-projects and
- Public buildings as pioneers.

The recommendations, which can be derived from it, have been partially put into practice. One derived recommendation could be for instance the strengthening of the integration of enterprises e.g. with the development of new strategies or the consideration of specific topics. With the consultancy for the development of the new innovation strategy, this step is already done.

Another recommendation would be to establish clearly defined funding structures (loans/ grants). There could be a greater purchase to the needs of the enterprises (for example support of transfer and therewith connected activities) as well as the aims of the state (funding/ support as controlling instrument).

Another recommendation is that the population should be better informed about the topic of energy efficiency in connection with buildings.

Out of the results it became clear, that potential customers normally have a considerable need for consultation. This coincides with the statement from the integrated municipal climate protection concept of Halle, which states: „as part of the discussion of climate protection measures it has turned out that an early consultation of building owners in case of new building and renovation is needed, to advise them how they can consider aspects of climate protection at the planning process and the realization of their project in an extensive and cost-saving way.“²⁹

Out of this it can be concluded, that a customer and user oriented consulting offer should be established or, if they even exist, to communicate them in a better way, make them more transparent and increase their use.

The simultaneous support of innovations and pilot projects in the field of energetic renovation in the building sector would have the effect, that a wide public gets informed about the possibilities of energetic renovation. Furthermore, via more frequent renovations/ constructions, the demand for environmentally friendly building materials increases, which eases the implementation of innovations in the market. In turn, a reduction of costs for such building materials can be achieved.

One essential step for achieving the energy-saving goals can already be made from policy on a local scale (municipality). Through the urban land-use planning, a municipality can support the energy efficient building and the use of renewable energies or low-emission energy sources (district heating). Development plans or urban land-use planning respectively, can thereby include the following aspects: compact design/ construction, orientation of the building, roof pitch, greening of roofs and facades, degree of sealing, low-energy construction and others.³⁰

²⁹ IKK Halle (Saale) 2012; http://www.halle.de/VeroeffentlichungenBinaries/581/681/klimaschutzkonzept_halle.pdf

³⁰ IKK Halle (Saale) 2012; Maßnahmekatalog

Within the framework of the development of the integrated municipal climate protection concept of the city Halle, especially considering the delicate budgetary situation of the city, a measurement catalogue with a lot of low-investment measures has been developed. This includes among others a “show room ‘city’ for energy technologies” or an “atlas renewable energies”. Therewith, the focus lies definitely on raising consciousness and consultation. Complementary to the consulting and information offer it can be extended by another element, which we were informed about at one of our study visits during the Italian city lab – the “Centro di divulgazione”. This is a there developed **permanent exhibition** of innovative components for sustainable building/ construction. Providers/ suppliers of the region (Tuscany) have been selected as exhibitors. There they can show various building materials and construction methods. Interested people (customers, architects...) can get an impression of the texture/ consistency and quality of materials, possible uses and performance data like energy efficiency levels. Based on this information they can make a decision for their future building plans.³¹



The centre has the aim to exploit the knowledge about energy-saving technologies and therewith to contribute to the spreading of a new building culture – therefore the focus of the exhibited products lies on best practices in the field of energy-saving. This exhibition is therefore a reproducible model and transferable to other regions. The exhibition area of about 600 square meters is divided into two areas. The “macro components” area includes vertical facades, load bearing walls, floors/ coverings, pitched roofs, windows and screens. The “macro systems” area covers solar, wind and heat.

The products of the exhibition were always replaced with new or improved elements and the exhibition is open to everyone.

Besides the aspect of knowledge transfer, the promotion effect for the exhibiting enterprises is not to be underestimated and can be seen as another positive effect, which influences the regional added value.

Concerning the contents, such an exhibition room could be linked with the showroom for energy technology, which was suggested in the integrated municipal climate protection concept Halle.

More information about the “Centro di divulgazione” is provided in the transferability handbook or the case study of our Italian partner.

As part of raising consciousness, consulting and information, such an exhibition model is imaginable in Saxony-Anhalt too. Here again, the cooperation with the chambers of commerce, trade and handicraft has to be sought.

Following discussions held with the chamber of handicraft in Halle it can be stated, that in principle such an approach is perceived as good and that there have already been thoughts about such a project for some time now. At the same time, it is plead to drop the exclusive regional approach and favour a model like the Potsdam competence centre for efficient energy use or the associated “Practice House” respectively.³²

The chamber estimates that there is a demand given for products, technologies, building automation, functions, information about consumer data etc. Therefore, such a project would be accepted.

One problem, which can be seen as the biggest obstacle at the moment is that you have to find someone, who would organise such a project in a leading role, develops a cost-benefit analysis, develops a management concept and most of all ensures financing in the long term.

³¹ http://www.abitaremediterraneo.eu/index.php?option=com_content&view=article&id=67:centro-di-divulgazione&catid=41&Itemid=75

³² <http://www.energie-kompetenz.eu/9,381,657.html>

Besides the necessary space (building) one requires enterprises, which are interested in such a project and want to participate as well as experts, who will be available for training courses/ guided tours/ consulting etc.

Due to the fact that the topic of energy efficiency is on the agenda of the chamber of handicraft, the chamber would support such a project in principle and would furthermore take part at the occurrence and its upkeep. Thereby, this should not be limited to regional enterprises/ producers but an opening towards the market.

The chamber of industry and commerce Halle/ Dessau argues in a similar way. For now, they have too few members from the building industry (producers) in Saxony-Anhalt. Therefore, the chamber is unable to support such a project (competence centre) financially in the described way at this point in time. There is no need – with regard to the small number of enterprises from the building sector – to support such a competence centre. Nevertheless, they do not state, that there is no need in general. They do have the topic on their agenda and are not averted in principal. The topic of new building materials is in focus and gains increasing importance. The chamber of industry and commerce would support such a project at this point in time via public relations, advertisement or things alike. Furthermore, the chamber of industry and commerce starts another member-survey concerning the economic situation and development of the enterprises in Saxony-Anhalt during the second half of this year. One theme of the survey will be expectations, regulations, applications or market developments in terms of new products in the building sector. Therefore, the topic of innovations in the building sector and their implementation will be pursued further.

The state of Saxony-Anhalt should think about, how it can and would like to support such a concept or project, which doubtlessly can have positive spill-over effects beyond regional borders (see the example of the Potsdam competence centre) –also behind the background that Saxony-Anhalt already claims to be the „energy state“today. The completion of such a project could be quite meaningful. There are a lot of enterprises and research institutions in the state, who can become active with their engagement and their competencies, for example the SKZ Halle or the competence centre for optimization of energy efficiency of automated buildings (KEO) of the applied university Merseburg. Such a project could possibly be integrated in already existing structures/ funding in a useful way.

That such a project could be very well received in the state, can also be derived from the position paper of the Construction Industry Association Saxony/ Saxony-Anhalt with regards to the next EU period of structural funds.

„ In the future the research and development of innovative building materials becomes more important to build/ construct in a resource-saving and low-emission way. It is important that civil engineers and natural scientists network their knowledge and dedicate to common questions for which there is no solution today. The demand for ecological buildings will increase constantly. (...)

The building and construction is responsible for a huge part of the energy consumption and emissions until today. For this reason building materials play an important role, which contribute to the climate, environment protection or to energy-saving. In the public there are mainly discussions about questions of energy-saving potentials. Normally the discussion focuses on the energy-saving potentials of built-up houses. The trick of energy efficient and sustainable construction lies in the detail and the on-going improvement of building products and building processes. (...)

The local building industry in Saxony-Anhalt is especially characterised by small and medium-sized enterprises (SMEs). These enterprises are almost too small to have an own research department. Weak points have to be analysed and innovative ideas need to be picked up by external knowledge carriers like public and private research institutions and to supervise them until their market implementation. Publicly funded

research can help the building industry to compensate lacking research and development capacities of the enterprises. The network of the building industry and science is becoming more and more important.³³

Traffic/ mobility/ automotive

By realizing the logistics concept Saxony-Anhalt, the state of Saxony-Anhalt is already pursuing productive strategies. Consequently, it is recommended to realize the concept, in particular in regards to the promotion of environmentally friendly means of transport in combined traffics, improvement of traffic logistics and green logistics. Considering the examples as described in the paragraph covering good practice, the state of Saxony-Anhalt has already taken considerable steps.

Apart from development and deployment of environmentally and climate friendly traffic systems, to the field of eco-innovations belongs, inter alia the development of environmentally friendly traffic systems within the frame of a sustainable integrated urban development as well as the development and realization of innovative traffic concepts and measures of intelligent traffic management.

Besides research, approaches within the frame of urban development are of relevance, especially those related to optimization of local public transport in order to make it more attractive for a larger number of people. Examples are structural and organizational measures to give right-of-way to bus and tram, in order to increase their speed and therewith to shorten travel times. Especially in urban traffic, these measures may increase the attraction of local public transport. This would lead, on the one hand, to a higher utilization of existing routes of local public transport and therewith to a more efficient and more eco-friendly use. On the other hand, less car traffic will lead to fewer CO₂ emissions. Measures for optimization of public local transport can be: a well-developed infrastructure (route network, but also devices necessary for use of public transport such as ticket machines etc.), separate routes, priority circuit for traffic signals, traffic management and customer-friendly offers for use of local public transport (apps, ticket sales, timetable information etc.).

In the automotive sector, Saxony-Anhalt is well represented in research, amongst others with the Galileo test field, ifak, IKAM or Fraunhofer IFF.

Furthermore, single model projects or model regions (Harz) show that Saxony-Anhalt moves with the times in the field of electro mobility and tackles relevant questions of future traffic.

Also in the city of Halle, mostly pushed by EVH (municipal energy supplier), we had and still have individual projects in the area of electro mobility such as the free use of e-bikes, enlarging the own company fleet by electric vehicles or the operation of two solar service stations. Furthermore, the switch to natural-gas driven vehicles plays an important role for EVH, which further contributes to a significant reduction of CO₂ emissions. Nevertheless, it has to be seen that all these actions taken are only regionally limited and therewith fragmented measures or projects. Due to the unfortunate elimination from the competition "shop window electro mobility" no further state-wide project promoting electro mobility could be initiated. As a consequence, only individual projects will play a role for the time being.

Compared to other regions it can be stated, that the development in view of technology of vehicles, from the single battery up to battery-charging-infrastructure can be compared to those of other states of the German Federal Republic or the European Union. However, it can be foreseen that the combustion engine will be the leading drive technology until 2020. However, in city or distribution traffic, gas-driven or e-

³³ „Innovation und Interregionale Zusammenarbeit für Wachstum und Entwicklung in Sachsen-Anhalt 2014-2020“; Statement zur Auftaktveranstaltung Zukunftsdialoge – eine Strategie für mein Land vom Bauindustrieverband Sachsen-Sachsen-Anhalt e.V.

vehicles can find a niche³⁴. Current e-car models can only be regarded as bridge technology. It is expected that in the near future plug-in-hybrid models will find a greater interest. They can eliminate customers' doubts in view of the range capacity and lead to a familiarization with electro mobility. At the same time, a battery-charging infrastructure can be built up, which does not exist at present, but will be needed for the use of pure e-vehicles. Currently, the major deficiencies in view of electro mobility are the short range capacity and the high prices of the cars which will not be changed in the near future due to missing offers on the market. Tax-saving models for such cars seem to be the only incentive to create a demand at present. It can be assumed, that due to the reasons and circumstances described before, electro mobility will hardly be established on a larger scale before 2020.

However, there are hints as to what interests the research activities are currently focusing on or will focus on in the near future (e.g. swap containers for small-volume transports up to 3.5 t; Fraunhofer IFF or within the frame of MD-E4), showing links to this effect to other European regions. Within the Know-Eco partnership reference shall be made to the Niche Vehicle Network in UK, which is a cluster or network of companies that exclusively work in the field of vehicles for market niches (<http://www.nichevehiclenetwork.co.uk/>).

Small transporters for the inner-city transport of goods, including logistics, belong to niche vehicles as well. Therefore, it could be a next step in the development to establish such a battery-charging infrastructure in only small areas, e.g. in cities, and not across the entire state.

With the entry into market niches and parallel specialization in defined sectors, advantages in competition and economic success can be generated at the same time. Such models will further contribute to the long-term acceptance of e-vehicles.

Moreover, by creating the ITS framework (Intelligent Traffic Systems) basic framework conditions will be defined for the future traffic development in Saxony-Anhalt. It will additionally be the basis for further research projects within the frame of the state development.

In connection therewith, also the topic of the future development of the logistics sector of Saxony-Anhalt has to be addressed. By paying attention to the "Green Logistics" topic, considering the favourable starting situation and realizing the topic consequently, Saxony-Anhalt can become a pioneer also in this branch.

Completing the aforementioned, the issues of city logistics and general urban development have to be raised. As seen before, a large number of good projects in city logistics have been realized following general development trends and setting new trends.

Knowledge about planning or realization of projects in other regions, such as the Know-Eco partner regions, is also of great value. The knowledge about similar activities or core themes might be the basis for possible joint projects or some other kind of cooperation in the future. The Galileo test field and the Italian Si.Mo.Ne project could become one of these joint projects.

For urban development in general it has to be noted, that topics of traffic development and mobility should be given greater consideration than before. Requirements of the Europe 2020 project, the demographic change, the sustainable development of cities, but also the changed environmental awareness of the people and increasing urbanization will lead to the situation that the topic of mobility in cities has to be more strongly considered in the future.

³⁴ Integriertes Kommunales Klimaschutzkonzept der Stadt Halle (Saale) (IKK); Oktober 2012

To establish model regions like the Harz or projects such as Harz.EE Mobility, it should be striven for to develop more research competencies in the automotive sector (with specializations), in order to remain competitive on a regional, national and international level, to establish existing competencies and to master future challenges. At this point, reference is made to (green) logistics.

Following the general recommendations to optimize the transfer of know-how and economy, it can further be added that universities/research institutions should intensify their efforts to acquire both SMEs of the region and raise funds (federal, EU) as well to develop a more positive and stronger brilliance via their work and results. This effect can also help to strengthen the regional economy in the automotive sector.

In general

For the field of electro mobility as well as for the energetic renovation, there is a range of uncoordinated single and model projects, which do not refer to a wider framework or concept. Therefore, the impression of arbitrariness is given at some point. For this reason, the different state hierarchies (state, municipalities, cities) should lay down concrete objectives within their strategies and concepts and therewith develop a thematic framework for future developments. This would also help enterprises and research institutions to steer their activities accordingly and to operate in more relevant action fields, if necessary.

Furthermore, it is becoming clearer, that smaller local levels like cities, municipalities or regions have a great importance for developments, because far-reaching changes emanate out of them. Structural changes are easier to implement at smaller local areas, for example the establishment of a charging infrastructure for e-vehicles in a city vs. in a federal state. Therefore, future developments should be based on a supervisory framework (predefined by the state), follow the bottom-up principle and move little by little further into the field.

In the future, one essential point will also be the exchange of good practices on both a national and an international level. As many regions have different preconditions they are all faced with the same challenges (Europe 2020). The exchange of experiences could help to promote some developments faster and more efficiently, because they already have been made by others.

In addition, especially international/ transnational cooperation helps to achieve the Europe 2020 objectives, because the consciousness of several international partners for relevant themes is therewith tackled and they work together to achieve solutions.

4. Appendix

List of (critical) stakeholders consulted in the region and their work fields

| Stakeholder/ partner/ contacts | Field of work | webpage |
|---|---|--|
| Andre Raphtel | Contact person at the Fraunhofer IWM in Halle (Institute for mechanics and material) in the field of composite materials from renewable resources | http://www.en.iwm.fraunhofer.de/profile/iwm-sites/halle-facilities/ |
| Andreas Dockhorn / Basus | Cluster management for the Cluster Chemistry/Plastics | http://www.cluster-chemie-kunststoffe.de/ |
| Andreas Krombholz | Contact person at the Fraunhofer Institute for mechanics and materials Halle (IWM) and for the Cluster BioEconomy | http://www.en.iwm.fraunhofer.de/profile/iwm-sites/halle-facilities/ ; http://bioeconomy.de/ |
| Andreas Müller | Coordinator for the project Galileo test-field - the Galileo test field is a test field for applications from telematics & logistics; communication & transport and navigation & transport | http://www.galileo.ovgu.de/galileo_transport.html |
| ARC Magdeburg | Firm of architects | http://www.architekturconzept.de/ |
| C3 House | Realizes the combination of high-tech materials, consisting of renewable and locally available raw materials, with innovative architectural and technological solutions. | http://c3house.com/en/ |
| Dr. Busch; Fraunhofer IWM Halle | Cutting-edge research in material and component behaviour | http://www.en.iwm.fraunhofer.de/profile/iwm-sites/halle-facilities/ |
| Dr. Gerth; KAT Ingenieurwissenschaften/ nachwachsende Rohstoffe | Spokesman of the KAT competence centre for engineering and renewable raw materials | https://www.hs-magdeburg.de/forschung/iwnr |

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| | | |
| Dr. Silvia Springer | Development and support of the research portal Saxony-Anhalt and director of the technology transfer centre in Magdeburg | http://www.forschung-sachsen-anhalt.de/index.php3?option=projektleiter_detail&pid=4566&reset=empty |
| Dr.-Ing. Matthias Zaha | Contact person for: KAT competence centre for natural sciences/ chemistry, plastics; knowledge and technology transfer at the university of applied sciences Merseburg | http://www.hs-merseburg.de/ |
| HWK Halle (Herr Detelf Polzin) | Chamber of crafts | http://www.hwkhalle.de/internet_nt/cms_de.nsf/index.htm?ReadForm&p=hwk-halle |
| IGZ Magdeburg | Innovation and start-up centre | http://www.igz-md.de/ |
| IHK Halle Dessau (Frau Silva Preuss) | Chamber of industry and commerce | http://www.halle.ihk.de/ |
| M. Antons | Entrepreneur in the field of architecture/ (interior) design – humid regulatory objects from clay; independent energy advisor; humid regulatory objects from clay range from partially plastered mud wall of functional elements to large-scale installations and objects from clay | http://www.interanton.de/index.php?/raum--klima-gestaltung/000/ |
| Ministerium für Wissenschaft und Wirtschaft | Different contact persons at the Ministry of Science and Economic Affairs | http://www.sachsen-anhalt.de/index.php?id=31 |
| MITZ Merseburg | Centre for innovation and technology | http://www.mitz-merseburg.de/ |
| Patrick Zierdt | Works at the Fraunhofer PAZ in Schkopau; the PAZ (pilot plant centre for polymer synthesis and polymer processing) – they work out answers for questions con- | http://www.polymer-pilotplants.com/ |

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|--|---|---|
| | cerning the optimisation of the process chain, for raw materials for synthesis or custom-made finished components. | |
| Prof. Kirbs; HS Merseburg | Rector of the university of applied sciences Merseburg | http://www.hs-merseburg.de/ |
| Prof. Sackmann | Prorector for research, knowledge transfer and start-ups at the university of applied sciences Merseburg | http://www.hs-merseburg.de/ |
| Sven Wüstenhagen | Contact person at the Fraunhofer Institute for mechanics and materials Halle (IWM) and for industrial design | http://www.en.iwm.fraunhofer.de/profile/iwm-sites/halle-facilities/ |
| Thoralf Krause | Director of the location of the SKZ in Halle; the focus of the SKZ in Halle lies on: welding in vessel and apparatus construction; buried plastic piping construction; fibre composite plastics and bonding technology (interesting theme: plastics and composites in architecture) | http://www.skz.de/en/company/locations/hallepeinestuttgart/1093.Halle.html |
| Umweltallianz | | |
| Wirtschaftsförderung Halle (Herr Daniel Zwick) | Department of the Business Development of the City of Halle | http://www.wirtschaft-halle.de/index.php?id=8&L=1&tx_ttnews[tt_news]= |
| IMG Investment and Marketing Corporation Saxony-Anhalt | | http://www.invest-in-saxony-anhalt.com/Land-Sachsen-Anhalt-Investit.29.0.html? |

Innovation networks

The innovation networks of Saxony-Anhalt are evolving increasingly into skills centres, and thereby into an engine for growth and employment in the state. By clustering and networking business and science in innovation networks, the typical disadvantages suffered by small and medium-sized enterprises are offset, and at the same time it becomes possible to pool different capacities in one innovation field. Such networks offer science an opportunity to put ideas into practice at the highest level.

The creation of innovation networks is well advanced in Saxony-Anhalt, as demonstrated by the fact that no fewer than five of the 19 prize-winning regions at the InnoRegio national competition came from Saxony-Anhalt:

- [InnoPlanta](#) - plant biotechnology, northern Harz/Börde
- [REPHYNA](#) (German Website) - phytopharmaceuticals / food supplements, Börde
- [NinA](#) - Natural Materials Innovation Network, Altmark
- [MAHREG-Automotive](#) - automotive suppliers, Magdeburg, Altmark, Harz
- [INNOMED](#) - Regional Network for Neuromedical Technology, Saxony-Anhalt, Magdeburg

The Funktionelle Schichten network (Functional Coatings network) also competed successfully.

Moreover, to date five 'innovative regional growth cores' have become firmly established in Saxony-Anhalt as part of the 'Entrepreneurial Regions' innovation initiative for the new federal states, which was launched by the Federal Ministry of Education and Research:

- PharmaMD: Pharmaceuticals from Magdeburg - Tradition and Future
- Industrial production of therapeutic recombinant proteins, Halle
- Reactive WetCoating – functional wet coating, Bitterfeld – Wolfen
- AL-CAST: aluminium perfection from the Harz region
- ALFA- Fibre Alliance, Haldensleben: Customised composite products for mass markets from the Ohrekreis district
- AL-CAST: aluminium perfection from the Harz region
- ALFA- Fibre Alliance, Haldensleben: Customised composite products for mass markets from the Ohrekreis district

Research centres

In Saxony-Anhalt non-university research is conducted primarily at the state's research centres.

- The **Centre for Neuroscientific Innovation and Technology (ZENIT)** has the remit of exploiting the neuro-scientific expertise based in Magdeburg to transfer theoretical knowledge into utilisable product development.
[Information/Contact](#)
- The **Centre for Product, Production and Process Innovation (Experimental Factory, Magdeburg)** is a research and transfer centre for application-oriented research and development in the field of product, production and process innovation for industrial companies and the essential institutions.
[Information/Contact](#)
- **Halle Biocentre** is active in the following areas, amongst others: research in the field of "molecular cell biology and biotechnology", assistance in establishing and supporting associated institutes and companies, provision of research facilities and specialised laboratories, coaching for new start-ups and spin-off companies.
[Information/Contact*](#)
- The objectives of the **Centre for Applied Medicine, Halle (ZAMED)** are to research, develop, produce and market innovative products, methods, treatment processes and services in the field of applied medicine and human biology.
[Information/Contact*](#)

Business-oriented research institutions

Eight research companies have established themselves on the market as commercial service providers for research and development in Saxony-Anhalt:

- the **FEW Forschungs- und Entwicklungsgesellschaft mbH** (Research and Development company), Wolfen, whose fields of business include functional coatings and organic fine synthesis and dyes:
[Information/Contact](#)
- the research and development service provider **FER Ingenieurgesellschaft für Automatisierung** in Barleben: [Information/Contact](#)
- the **Institut für Automation und Kommunikation e.V.** (ifak) in Magdeburg, which researches, develops and tests a wide variety of application areas for intelligent systems in the three fields of automation, communication and sensor technology: [Information/Contact](#)
- the **Institut für Lacke und Farben e.V.** (Institute for Varnishes and Paints), Magdeburg, whose services include the analysis of coatings, emission measurements and assessments of contaminated waste sites: [Information/Contact](#)
- **ÖHMI Forschungs- und Ingenieurtechnik GmbH**, Magdeburg, specialising in the key areas of analysis, research and consulting as well as engineering and plant construction: [Information/Contact](#)

isw Institut für Strukturpolitik und Wirtschaftsförderung gemeinnützige Gesellschaft mbH

- the **SLV Schweißtechnische Lehr- und Versuchsanstalt Halle GmbH** (Welding Engineering Teaching and Experimental Centre), whose remit includes basic and advanced training, research and development in the field of welding engineering: [Information/Contact*](#)
- the **WTZ für Motoren- und Maschinenforschung gGmbH** (Scientific and Technical Centre for Engine and Machine Research), Rosslau, whose fields of business are engines and power technology and mechanical engineering: [Information/Contact](#)
- the **MINAKEM Leuna mbH** (Company for Chemistry and Technology), whose range of products includes waxes for the cosmetics industry based on natural oils, process materials for pesticides and wood varnishes: [Information/Contact](#)

These research-intensive institutes are complemented by a number of innovative companies which also carry out their own R & D, such as DOW Chemical - BSL Schkopau, FAM Magdeburg, SKET Magdeburg, IFA Haldensleben, Rautenbach Guss Wernigerode, Metallwerke Harzgerode, Laukötter Dessau and medium-sized companies with relatively few staff (for instance, in the state's technology and start-up centres).

* German Website

Technology and start-up centres

Technology and start-up centres (TGZ) are breeding grounds for young, innovative companies. About 300 companies with approx. 1,300 employees have set up a business in Saxony-Anhalt at more than ten TGZs on a rented workspace covering approx. 50,000 m². They are nurtured, supported and advised, not only when they set up a business, but also during the consolidation phase. The TGZs provide an opportunity for those starting up a business and who have the germ of a good idea, but not sufficient capital to develop it yet. TGZs bring the worlds of business and science face to face and provide for an effective transfer of technology.

Further links:

- [Technologie- und Gründerzentrum Halle](#) (Technology and Start-Up Centre Halle)
- [mitz Merseburger Innovations- und Technologiezentrum GmbH](#) (Merseburg Innovation and Technology Centre)
- [Bio-Zentrum Halle GmbH](#)
- [Biotech-Gründerzentrum Gatersleben GmbH*](#) (Gatersleben Biotech Start-Up Centre)
- [Creativitäts- und Kompetenz-Centrum Harzgerode*](#) (Harzgerode Creativity and Skills Centre)
- [Technologie- und Gründerzentrum Bitterfeld-Wolfen GmbH](#) (Bitterfeld-Wolfen Technology and Start-Up Centre)
- [Innovations- und Gründerzentrum Kompetenzzentrum Fügetechnik*](#) (Innovation and Start-Up Centre, Skills Centre for Jointing Technology)
- [Innovations- und Gründerzentrum Magdeburg GmbH*](#) (Magdeburg Innovation and Start-Up Centre)
- [Innovations- und Gründerzentrum BIC Altmark GmbH*](#) (BIC Altmark Innovation and Start-Up Centre; Start-Up and Technology Transfer Centre for Handicrafts)
- [Gründungs- und Technologietransferzentrum Handwerk mbH*](#) (Start-Up and Technology Transfer Centre for Handicrafts)
- [Technologie- und Gründerzentrum Jerichower Land GmbH*](#) (Jerichower Land Technology and Start-Up Centre)
- [Technologie- und Gründerzentrum Mansfelder Land GmbH*](#) (Mansfelder Land Technology and Start-Up Centre) [Gesellschaft für Innovation und Förderung für Wirtschaft im Landkreis Wernigerode mbH*](#) (Company for Innovation and Business Promotion in the District of Wernigerode)

You can find other TGZs and specialised transfer centres and agencies [here*](#).

* German Website

Know-Eco Transferability Guide for Saxony-Anhalt

| Good practises from Tuscany (Italy) | | |
|---|--|---|
| Good Practice | Topic of the practise | Transferability to Saxony-Anhalt - potential opportunities |
| <p>GREEN AND ENERGY EFFICIENT BUILDINGS</p> <p>Abitare Mediterraneo project</p> | <p>Abitare Mediterraneo project achieves a strong synergy between local Tuscan companies and four departments of the University of Florence in order to develop industrial research and pre-competitive development of an open system, in which technological innovation and architectural quality find application on different levels of the building process by incorporating environmentally sustainable design. The main objective is the promotion of qualified development in terms of energy efficiency in the construction sector, with special focus on restoration in existing buildings. In support of that initiative, it has set up a permanent exhibition of innovative components within the Technological Centre of Lucca. At the same time Abitare Mediterraneo project offers another services such as "Test Cells", it is a laboratory to evaluate thermal physical properties of new building components.</p> | <p>Potential opportunities to transfer exist, especially for some aspects of this practice – the exhibition of innovative components.</p> <p>Direct transfer is not possible at the moment, but interests and needs are preexisting.</p> <p>Firstly, concrete aspects like enterprise support, costs, operator model, type of exhibition etc. have to be evaluated.</p> <p>The idea has already been proposed at the chamber of commerce and the chamber of handicraft.</p> |
| <p>GREEN AND ENERGY EFFICIENT BUILDINGS</p> <p>TEENERGY SCHOOLS</p> | <p>The main objective of the best practice is promoting energy efficiency in existing secondary school buildings developing a common Strategy based on the 3 typical climatic and architectural models that characterize the MED area: coast, mountain and city.</p> <p>The TEENERGY SCHOOLS project has successfully implemented a Multi-Issues Platform as an interactive network for the gathering of a common data base and the dissemination of best practices regarding energy efficient retrofitting and new building of secondary schools in the Mediterranean climate context.</p> | <p>Similar project is taking place within Saxony-Anhalt</p> <p>→ STARK III</p> |
| <p>GREEN AND ENERGY EFFICIENT BUILDINGS</p> | <p>The main objective is the diffusion of this technology using the local resources (it</p> | <p>There are potential opportunities to transfer, but only partially, because the</p> |

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| <p>CIENT BUILDINGS</p> <p>x-lam wood system</p> | <p>allows the use of local trees: pine, fir, douglasie) and applying local enterprises in the new building market. Following the project object-tives, a day care centre was built using x-lam wood system, the entire building was planned in order to respect the parameters requested for it. It was the first example in the Tuscan region and it is even more relevant for the fact that the social housing company of the city of Florence was the main sponsor and actuator of the project. The advantages of the x-lam wood systems such as quickness of construction (the building was completed in 1 year) and the use of energy efficiency strategies. The total energy consumption of a building is lower than 10 kWh/mc per year, so the building achieves an Energy Efficiency Class A rating.</p> | <p>aspect which makes this practice a good one is the regional focus (resources) and short distribution channels for wood in Tuscany.</p> <p>In addition, the wood industry is not a big one in Saxony-Anhalt. Saxony-Anhalt has relatively low forest coverage of 24.1%. In comparison to the other states, Saxony-Anhalt is one of the states with the lowest sales. The three most recurrent trees in Saxony-Anhalt are pine, spruce and oak. Their potential for buildings has to be taken into account.</p> <p>In recent past a state advisory council for wood has been created in Saxony-Anhalt. One of the aims is to support the use of home-grown wood. A project like this good practice could be part of the work of this council.</p> |
| <p>ELECTRIC CITY LOGISTICS</p> <p>Lucca City logistics systems</p> | <p>Lucca City logistics systems, the CEDM (Centre for Eco-Friendly City Freight Distribution) project aims at implementing and pilot an integrated innovative approach to city logistics strongly oriented to cooperation among the different actors involved in the logistics chains – long-/mid-range freight transport operators, city distribution fleets, Local Authorities, shops and retail system, hotels, citizens and travelers, etc. – and to the adoption of several innovative city distribution schemes and integrated measures, which will contribute to reducing the negative effects of current logistics processes.</p> | <p>Similar project is taking place within Saxony-Anhalt</p> <ul style="list-style-type: none"> → Mini-Distribution Center, Galileo test bed, Fraunhofer swap container |
| <p>MOBILITY AND TRAFFIC SUPERVISOR</p> <p>S.I.Mo.Ne Project</p> | <p>The Province of Florence and the Municipality of Florence jointly developed an innovative system, “The traffic Supervisor”, for the mobility within “S.I.Mo.Ne” project, funded by the Tuscan Region, the Province of Florence and the Italian Transport Ministry.</p> <p>The project aims at creating a system which allows the collection of data from different sub-systems and at different levels (urban and extra-urban road systems</p> | <p>Similar project is taking place within Saxony-Anhalt</p> <ul style="list-style-type: none"> → e.g. the Mosaique test bed in Halle (integrated in the Galileo test bed) |

| | | |
|--|---|--|
| | and public rail/road transport), such as: <ul style="list-style-type: none"> • traffic light control; traffic survey; variable message board; detection of meteorological and chemical environmental parameters, etc. | |
| V.I.P. – Innovative Multi-purpose Vehicle | <p>The practice is an example of technology transfer where four SMEs of the Province of Pistoia have developed an innovative electric vehicle gathering key-technologies from the railway sector, in order to develop a minivan suitable for car-sharing policies, public and touristic uses. The minivan is equipped with solar panels while the braking system is able to recharge the battery during its operation. Batteries allow from 150 to 200 km of range, with a maximum speed of 70 km/h and the vehicle, while driving, is controlled by the GPS technology.</p> <p>http://www.eurotech.com/DLA/Library/cs/Euro-tech_Cabel_Italian_urban_transport_cs.pdf</p> | <p>Projects like this are transferable in every region – but as a finished product, not only the idea, therefore it is too complex. The project/idea was not forwarded in Saxony-Anhalt up to now, because you have to open up markets for the use of such a vehicle. The Know-Eco project was not able to work in these fields.</p> <p>Result: not transferable within Know-Eco working period but opportunities for a longer period.</p> |

Good practises from the West Midlands (UK)

| Good Practice | Topic of the practise | Transferability to Saxony-Anhalt – potential opportunities |
|--|---|--|
| Modernisation of older buildings to reduce energy consumption | <p>Coventry University’s campus is made up of 80% post-war buildings which are inefficient in terms of energy usage and do not provide users of these buildings with any level of occupant control to improve their comfort. In October/ November 2010, a series of feasibility studies were carried out to determine the energy saving technology available and its application to campus buildings. The studies showed the buildings which were the highest priority and where the biggest energy savings could be made. The project was designed to provide a 3-year payback.</p> <p>The aim of the modernisation project is to reduce the University’s carbon foot-print as part of its Carbon Management Plan, increase comfort and level of control for users and reduce expenditure on energy.</p> | <p>Projects of modernisation of older buildings to reduce (their) energy consumption are taking place in every region, in Saxony-Anhalt as well.</p> <p>There is no specific aspect of this Good Practice for which transferability can be seen.</p> |

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| | Works include window sealing, pipe and valve insulation, voltage optimisation and lighting controls. | |
| Sustainable Building Futures (SBF) | The Sustainable Building Futures project is a unique venture that engages with eligible small to medium sized enterprises (SMEs) in the collaborative development, assessment, and implementation of innovative environmental technology products and services for use in sustainable construction | <p>Similar projects are taking place within Saxony-Anhalt</p> <ul style="list-style-type: none"> → Energiegemeinschaft Halle e.V. → Cluster Chemistry/Plastics → Cluster BioEconomy <p>With the specific focus on buildings it could be part of an exhibition or competence centre which was already discussed with the chamber of commerce and the chamber of handicraft.</p> |
| West Midlands Centre for Constructing Excellence (WMCCE) | The West Midlands Centre for Constructing Excellence (WMCCE) is one of several centres in the UK that drive Best Practice in construction by providing ways for businesses, clients and society to learn, share and improve their construction knowledge and practices through information sharing and industry support | This practice has connections to the Sustainable Building Futures and could, as said above, be part of a competence centre. |

Good practises from Lower Silesia (Poland)

| Good Practice | Topic of the practise | Transferability to Saxony-Anhalt – potential opportunities |
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| Centre for Energy Technologies | <p>The building is a research and development experiment whose practical purpose is to demonstrate how even small service facilities may use technologies designed to reduce energy consumption and those generating energy based on its renewable sources in an economically sound manner.</p> <p>The objective of the Centre will be the verification and testing of technologies followed by presentation of the results obtained in a manner ensuring that investors can consciously choose comprehensive energy solutions. The Centre will contribute to development of brand new technologies in the most problematic fields of energy efficiency, including the construction sector, industry and means of transport.</p> | <p>This practice is similar to the Italian exhibition/ competence centre and therefore also interesting to transfer. The idea of such a competence centre was forwarded to the chamber of commerce and the chamber of handicraft.</p> <p>Now it has to be evaluated in which way it could be transferred, not only the idea, and how such a competence centre could look like in Saxony-Anhalt.</p> |
| URBAN E-MOBILITY | The GOVECS GO S2.4 Scooter is an electric alternative to widely used petrol scooters which is emission free, reliable and cheap | <p>Scooters like that are transferable in every region.</p> <p>But, Know-Eco is not responsible for</p> |

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| | <p>when it comes to maintenance and service. Due to its lithium batteries, it is very light and offers a high range. The sophisticated drive train creates low un-sprung and rotating masses which lead to a much smoother handling experience.</p> | <p>advertisement. Beside this, the isw offered Govecs the opportunity to look for research partners in Saxony-Anhalt and therefore to start a knowledge transfer for future projects.</p> |
| <p>Lower Silesian Renewable Energy Cluster (DKEO)</p> | <p>On March 3rd, 2008 the Lower Silesian Renewable Energy Cluster (DKEO) was established in Swidnica as a voluntary agreement of enterprises, research and development centres, communes, organizations and institutions supporting development of renewable energy sources, promoting the idea of energy and operating on the territory of Lower Silesia.</p> <p>The cluster focuses its activity on the territory of Lower Silesia and is open to all entities operating in the same or similar fields of interest and interested in cooperation within this type of organization.</p> <p>The scope of activity of the cluster includes the following fields:</p> <ul style="list-style-type: none"> • renewable energy sources, • environment protection, • rational energy use, • financing of projects in the area of renewable energy | <p>Similar projects are taking place within Saxony-Anhalt</p> <ul style="list-style-type: none"> → Cluster CEESA, Cluster for renewable energies Saxony-Anhalt → Cluster BioEconomy → Cluster Chemistry/Plastics → State Association Renewable Energies Saxony-Anhalt → Centre for regenerative energies Saxony-Anhalt → Energy agency Saxony-Anhalt → (under construction: state energy agency Saxony-Anhalt) |
| <p>CNG for motor vehicles</p> | <p>Motor vehicles are one of the largest emitters of CO₂. Independent analyses have shown that the natural gas already meets all of the current and future worldwide emission standards of toxic engine substances. In addition to natural gas being a safe and reliable energy source, there are numerous environmental advantages to using natural gas. Natural gas emits fewer harmful pollutants into the environment compared to the emissions of other fossil fuels. Natural gas emissions do not significantly contribute to environmental concerns such as smog, poor air quality, or acid rain. It has also become one of the cheapest fuels. This leads to both economic and environmental benefits. These benefits have been recognized by the Polish Oil & Gas Company PGNiG S.A. that is the largest supplier of natural gas in Poland. In the Lower Silesian region, there are three</p> | <p>Similar projects are taking place within Saxony-Anhalt</p> <ul style="list-style-type: none"> → Cars driven with CNG are as popular as in the other regions of the Know-Eco project → Infrastructure: you can find a list with CNG filling stations in Saxony-Anhalt http://erdgasfahrzeuge.harzenegie.de/content.aspx?mpid=100&phic=EgtBrd&egtbrdc=EgtBrdBIRes&sr=Sachsen-Anhalt |

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| | CNG stations: Walbrzych, Dzierzoniow and Wroclaw | |
| LUMINA HOUSE/HOUSES XXI | <p>ARCHIPELAG is open for people and surrounding world. That is why the company has started a project called HOUSES XXI - proposing new qualities in living solutions. HOUSES XXI is a collection of 21 modern houses and an educational programme, enabling to build a house with the high standard of XXI century. An example for their investors would be a realisation of innovative project called LUMINA HOUSE, which is going to be built in Poland (Długołęka, near Wrocław). LUMINA HOUSE is a project of a functional single family house, which aims to make the best use of natural light and create the setting for good life. It has been thought as an approach towards housing sustainability. The first house would be arranged as an information centre about contemporary solutions and trends in single-family housing. A model building, certified by experts of the Polish National Agency of Saving Energy, is going to be open for visitors interested in issues of high living comfort, functionality and environmentally friendly way of living nowadays.</p> | <p>There are links to the exhibition/ competence centre (see above) as well. This is one of the aspects it has to think about – what such a competence centre should look like in Saxony-Anhalt.</p> <p>There is a competence centre in the German federal state of Brandenburg, which combines several ideas (exhibition and testing for producers, architects, customers etc., education for pupils, customers, craftsmen, etc.; building aspects like single home, office buildings etc.)</p> |