



Where cosmetics are made from wood and sneakers from algae

Home to a thriving bioeconomy and rapid advances in green hydrogen, Saxony-Anhalt is showing the world what true sustainability looks like

The German state of Saxony-Anhalt is well and truly becoming a beacon of sustainable commerce. And there are many reasons for this, not least the unique base from which future technologies can build. There is a chemical industry that stretches back over a 100 years, agricultural resources, well-developed plants for generating the renewable electricity that accounts for around 60% of the state's energy mix, and a unique concentration of universities and research institutions. Last but not least, the phasing out of coal and the structural changes in central Germany make it possible to think modern, to implement innovation in the state, and to generate sustainable economic growth.

Prime conditions for innovation

One of the economies already developed is the bioeconomy - in which Saxony-Anhalt is the top of all federal states with 16.4% of industrial turnover generated by the sector "Saxony-Anhalt is reinventing itself and the bioeconomy plays a major role in this, because it can build on the state's optimal framework for innovation," says Thomas Einsfelder, Managing Director of Investment and Marketing Corporation Saxony-Anhalt mbH (IMG) - the agency responsible for promoting business in the state. The agriculture sector contributes significantly to the state's bioeconomy, the soil is extremely fertile, and agricultural research facilities are trying out new crop management methods. In addition, several companies are developing herbal medicines and future foods, as well as manufacturing innovative products that replace fossil resources. For example, in Leuna in the south of Saxony-Anhalt, the Bioeconomy Cluster together with the Fraunhofer Center for Chemical-Biotechnological Processes CBP has launched the BioEconomy Hub, a technology and service centre that will accompany young startups on their journey from idea to a market-ready product.

Making the value chain sustainable right from the start

IMG is especially proud that in 2020 Finnish group UPM established a base in the Leuna Chemical Park. The company is investing €550m in a biorefinery in which 220,000 tonnes of biochemicals will be produced annually from sustainably harvested wood. Their products are used for plastics, cosmetics, detergents, or rubber and replace substances produced using fossil resources. In particular, UPM was keen to capitalise on the sales opportunities that will arise from Saxony-Anhalt's established chemical industry, and also the potential of being powered by green electricity in the region. For companies already present in Saxony-Anhalt, UPM offers an opportunity to make their products sustainable right from the start of the value chain.

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Green hydrogen as a key technology

An important element to creating the sustainable business destinations of tomorrow is the potential to produce green hydrogen. As Dr Christof Günther, Managing Director of the infrastructure company InfraLeuna GmbH, explains: "Supplying the second longest hydrogen-pipeline system in Central Europe, Leuna is the centre of hydrogen production in the region. Our customer Linde GmbH will commission the world's largest PEM electrolyser for the production of green hydrogen this summer. In addition, the Fraunhofer-Gesellschaft operates its 'green hydrogen lab' on site and is going to concentrate its hydrogen competencies here in Leuna. With a new 45 MW solar energy plant, InfraLeuna will provide green electricity for further growth in green hydrogen. Our customers already have big plans."

Green understanding

Completely different, but also green, is algae. A worldclass competence centre is located in the Anhalt University of Applied Sciences in Köthen, where a group led by Prof. Dr. Carola Griehl has been involved in biotech research on various types of algae for over 20 years. "We want to obtain active ingredients for nutrition, medicine and cosmetics and also explore its versatility as renewable energy sources," she says. The variety of possible products is huge, and the first sneakers made of algae plastic are already on the market. Networking with partners in the region is essential to Griehl, for example with the newly created centre for natural-substance-based therapeutics at the university. There is also a cooperation with Roquette Klötze in the Altmark to cultivate vitamin-rich chlorella microalgae in industrial size photobioreactors – the eventual product is a popular and nutritious food supplement. The unique selling point of algae research at the Anhalt University of Applied Sciences is on the brink of attracting the first overseas company to Saxony-Anhalt, AlgaeCytes Ltd. from the UK, which has plans to set up in Dessau where the world's first algae biorefinery plant is to be built. As part of a worldwide search for a location, Dessau prevailed because microalgae technology is an important part of the state's regional innovation strategy. Also, the excellent infrastructure guaranteed proximity to R&D was a huge attraction. These, and many more besides, are examples of the research institutions, startups and international companies that come together in Saxony-Anhalt to pioneer a new sustainable future for Germany, Europe and the world.

Further information:

<u>Bioeconomy in Saxony-Anhalt (invest-in-saxony-anhalt.com)</u> <u>Biorefinery (invest-in-saxony-anhalt.com)</u>

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The drivers of E-mobility: Saxony-Anhalt offers a modern value chain for electric car batteries

As the market for electric vehicles grows, so does the production of batteries. In this innovative field, Saxony-Anhalt is establishing an entire value chain that extends from battery chemistry and material production to battery development, all the way to the test bench.

Batteries are a key component in electric mobility. According to the European Battery Alliance, in future batteries will be produced for eight million electric cars a year in Europe. Saxony-Anhalt has positioned itself well in this market. Here, the successful development and production of high-performance materials for European battery factories is based on more than 100 years of expertise, for Bitterfeld-Wolfen was the cradle of electrochemistry. Today, the region boasts accumulated know-how and excellent skilled workers, plus experience in silicon photovoltaics. All this is giving rise to innovative ideas – such as equipping future generations of batteries with low-cost silicon electrodes, for example.

The lithium-ion batteries that dominate the market also have an environmentally acceptable footprint. From Bitterfeld-Wolfen, the European battery industry is supplied with a huge range of innovative materials from companies such as AMG Lithium, IBU-tec advanced materials, Black Magic and LANXESS. "We want to construct an entire value chain, from the development and production of new battery materials to their eventual recycling, here at this historic site," says **Patrice Heine, Managing Director of the Bitterfeld-Wolfen Chemical Park (CPG)**. He flags up the CPG's position at the heart of a densely woven network of scientific and research institutions and of companies ranging from startups to global players.

Increasing life span and performance

Until now, the downside of lithium-ion batteries was that they overheated when charged quickly, which reduced both their life span and their performance. Researchers from the Martin Luther University Halle-Wittenberg are developing self-healing polymers to increase the storage capacity of lithium-ion batteries while also extending their useful life. The Weinberg Campus in Halle (Saale), the second largest technology park in eastern Germany, is home to budding university spin-offs and innovative startups that are building prototypes for innovative energy storage systems and developing new technology. The Institute for Competence in AutoMobility - IKAM in Magdeburg is researching the life of battery cells. Other players in this field of research are the Fraunhofer Institute for Factory Operation and Automation IFF and the Anhalt and Harz Universities of Applied Sciences. But no matter how long a battery lasts, we still have to think about its recycling. At the Otto von Guericke University Magdeburg, research is being conducted on how to bring electric car batteries into a sustainable circular economy - by using them as stationary energy storage units on wind and solar farms, for example.

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Even during battery production, the focus is not just on optimizing their life, but also on sustainability and their environmental impact. DENKweit GmbH in Halle is developing innovative test sensors linked to an artificial intelligence system to monitor batteries down to each individual cell, both during production and later on in the vehicle.

The world's largest development and test center for high-voltage batteries

In Barleben near Magdeburg, HORIBA FuelCon GmbH is pushing ahead with development of an "e-mobility campus". For over 20 years, this battery and fuel cell specialist has been building test benches for car batteries and, with its accumulated expertise, is itself a driver of e-mobility.

In Sandersdorf-Brehna, FEV eDLP has created the world's largest development and testing center for high-voltage batteries. "Our durability test center also intends to become an innovation center for green energy," says **CEO Hans-Dieter Sonntag** of the sustainably run new test facility, which is now powered exclusively by renewable energy.

Further information:

https://www.investieren-in-sachsen-anhalt.de/nachhaltigkeit https://www.investieren-in-sachsen-anhalt.de/new-mobility

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Off to the country: In Saxony-Anhalt, creative ideas fall on fertile ground

Saxony-Anhalt is forging ahead with the sustainable development of its rural areas. The region has a lot of space for creative ideas, and many people use it to get innovative projects growing.

From green hydrogen to smart energy concepts, from circular economy expertise to mobility pioneers and soft tourism: Saxony-Anhalt is filling its Sustainability Strategy 2030 with life in numerous and diverse ways. And that's why the region has also taken up the cause of sustainable development in rural areas. The transformation is in full swing. What in the past was referred to rather disparagingly as a province is evolving into a smart region that is also home to social innovations.

"Many places outside the major cities have huge potential in Saxony-Anhalt, that it's worth tapping into," says Tobias Kremkau from CoWorkLand eG, which is engaged in setting up coworking sites all over Germany. The Magdeburg-born founder of the German Coworking Federation (GCF, Bundesverband Coworking Deutschland) knows what he's talking about. At the beginning of this year, he moved from the regional capital to Stendal in the Altmark region. For him, this was only logical: "Coworking only proves its social relevance in rural areas," the 36-year-old asserts.

EVA brings the tech industry into the country

Sebastian Rumberg, who moved into a 270-year-old farm in Mosigkau with his family, has a similar perspective. An entrepreneur who is active in the IT sector and the global startup scene, five years ago he swapped the hustle and bustle of Berlin for the suburban idyll of Dessau-Roßlau. There, he is expanding the farm, looks after the animals, plays with the children and manages projects such as "Entrepreneurs across Villages in Anhalt", or EVA for short. With EVA, the 35-year-old founder wants to attract successful startup founders, companies and employees from the tech industry and their families to the region and turn it into an important IT and digital location. "Digital workers don't need much. As long as there's fast internet, the right real estate and a functioning infrastructure, they can move to the countryside," says Rumberg, knowingly. "And in return, they can enjoy country life and the peace and quiet of nature to the full."

In Saxony-Anhalt, this entrepreneur is not alone in his lasting commitment to rural areas. A growing multitude of 'rural pioneers' are settling in the countryside, bringing ideas and projects and devoting themselves to topics such as e-Government and smart cities. They arrive with the intention to stay, and breathe new life into almost forgotten places.

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"Get creative in the country" allows innovative projects to bloom

To bundle these projects and improve their visibility, the Investment and Marketing Corporation Saxony-Anhalt (IMG) has launched "Kreativorte im Grünen" (Get creative in the country) together with the Economic Development Agency Berlin-Brandenburg and the Altmark Regional Marketing and Tourism Association. In this sustainable project the Altmark, with its wide-open spaces, is a model region demonstrating all the things that can be set in motion in the countryside. And it's an awful lot, as Tobias Kremkau points out. "Other regions are following the Altmark and Brandenburg's pioneering example. Empty houses, factories, farms and commercial buildings are being taken over for innovative projects."

Saxony-Anhalt's "Get creative in the country" proves in various ways just what happens when there is room for creative ideas. For example, on the outskirts of Zeitz in the Burgenlandkreis district, the Kloster Posa Cultural and Educational Center is converting the grounds of the former monastery into a place to live, work and create. Project Manager Ina Tuscher says the association is building bridges: "We involve local residents and also demonstrate, with our outside perspective, that the town has lasting potential if space is used."

Further information:

- <u>www.kreativorte-im-gruenen.de</u>
- <u>https://www.altmark.de</u>
- https://www.wfbb.de
- https://zukunftsorte.land
- https://coworkland.de/de
- https://www.kosa21.de
- <u>https://www.sebastianrumberg.de</u>
- <u>https://www.echtzeit-sachsen-anhalt.de/wegbereiter/aus-der-metropole-nach-mosigkau</u>
- <u>https://kloster-posa.de</u>

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Industrial location with a green footprint: Companies from Saxony-Anhalt save resources and CO₂

Environmentally friendly business and economic growth are not mutually exclusive, as proven by the state of Saxony-Anhalt. Here, companies, institutes and universities are showing that a sustainable economy can open up new, modern areas of business. We see the development of highly efficient industries with a green ecological footprint.

Many companies in Saxony-Anhalt are facing the challenge of reconciling profitable growth with social responsibility. They have embedded environmental protection firmly in their corporate philosophy and subscribe to the innovative idea of the circular economy. In this resource-efficient approach, they see an opportunity to secure competitive advantages and new sources of income, and to increase their resilience to external factors.

The innovative circular economy approach

Progroup AG is a company offering a prime example of sustainability in the paper and packaging industry. With a circulating water treatment plant that is currently unique, this corrugated cardboard producer has attracted worldwide attention.

Other examples of best practice can be found in the recycling and processing of plastic to create products with completely new properties. As the first step, companies work with tech partners to create systems and processes for separating and recycling different types of plastic waste. Next, they search for pioneering solutions to current problems – such as the processing of glass-fiber-reinforced plastic from wind turbine rotor blades into an environmentally friendly building material or recovering the raw mineral phosphorus from sewage sludge.

Ideally, recyclable materials shouldn't even end up in waste – this is the entrepreneurial approach of the IT4Trade GmbH company. Its four IT experts are pioneers in an innovative field of business, making decommissioned IT hardware usable again and providing the infrastructure for a circular economy for IT equipment.

Electricity from regional energy parks is a key part of green business models

"Our customers want our centrifugal pumps to use as little energy as possible, to minimize running costs and CO_2 emissions. At the same time, the pumps need to satisfy stringent technical requirements over the long term. And that is precisely what highly efficient, long-lasting KSB products are known and prized for around the world," says Philip Storch, Vice President and Manager of the Sales Management Water department at KSB in Halle. The pump and valve manufacturer is one of Saxony-Anhalt's global industrial players.

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Indeed, this region's internationally active companies are generally aware of their position as sustainability role models. They invest in intelligent materials and equipment and in resource-efficient techniques, to make production processes faster and more efficient and cut CO₂. Using electricity from renewable sources is part of this approach. GETEC green energy GmbH is launching the "Mitteldeutsche Energieverbund Zukunft" (the central German future energy network), which uses key state-of-the-art technologies to generate sustainable energy from solar and wind power, biomass, geothermal heat, hydropower and hydrogen. "Many companies want to play their part in the energy transition. Electricity from regional energy parks is a key part of their green business models," says GETEC green energy CEO Chris Döring.

Sustainability embedded in teaching

Saxony-Anhalt is also attractive to young skilled workers. As the decisionmakers of tomorrow, students are already preparing to take on their social responsibility. Universities of applied sciences and universities in general have incorporated subjects such as renewable raw materials, the circular economy and energy-flexible processes firmly in their teaching. This means that graduates are also empowered to put the complete circular economy into practice in their chosen profession, and to work towards the goal of zero waste in the future.

Further information:

https://www.investieren-in-sachsen-anhalt.de/nachhaltigkeit

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