



Region highlights

Germany will **phase out** coal-fired electricity generation **by 2038.**

Over the next two decades, the German government and federal states will provide €17 billion to Lusatia for structural support.

As part of the **WindNODE** project, consortium partners in Lusatia are developing **blueprints** for the second phase of the **energy transition**.

\perp Interesting fact



Lusatia was selected as one of nine 'hydrogen regions' in Germany, winning funds to develop innovative ideas for regional hydrogen production, storage, and use.

Keywords:

Lausitzrunde, Strukturstärkungsgesetz, Lusatian Lake District, hydrogen region, bioeconomy, WindNODE, reality lab, Zukunftswerkstatt Lausitz, mine reclamation

Lusatia in transition: key events in the coal phase-out



The German region of Lusatia (German: Lausitz) cover parts of the federal states of Saxony and Brandenburg in eastern Germany, as well as a small area bordering western Poland. Between 1949 and 1990, Lusatia was part of the German Democratic Republic (GDR). Today, the region continues to suffer from the effects of economic turmoil following German reunification in 1989.¹

Lusatia is a rural area with a population density below the German national average.² The region's largest city and economic centre is Cottbus, with around 100,000 inhabitants.³ The area is home to the Sorbs, an ethnic minority that settled in the region as early as the sixth century. The Sorbic community has its own culture and language and is protected by the Saxon and Brandenburg state constitutions.⁴

Since German reunification, the population size and demographic structure of the area have changed significantly. Between 1995 and 2015, Lusatia's population fell by roughly 18%,⁵ and recent projections anticipate a further decline of 17% by 2030.⁶ This trend has contributed to a persistent reduction in the labour force, which is exacerbated by the region's aging population. The average age in the area, which was already as high as 48 in 2015, is expected to rise to 53 by 2030.⁷ Estimates suggest that the regional labour force will fall to 393,000 by 2035, far below the 605,100 employed in 2012.⁸ The area is below the national average for regional per-capita GDP and for disposable income.⁹ Although the unemployment rate is above the national average, it is currently declining, largely due to emigration and retirement.¹⁰

Since the mid-19th century, the region's economy has relied heavily on lignite mining and processing industries.¹¹ The region played a crucial economic role in the GDR as a centre for lignite mining and energy production.¹² In 1989, Lusatia's coal industry employed approximately 80,000 people.¹³ Even after the economic upheaval following German reunification, the region maintained a focus on lignite, despite the closure of two power plants and several lignite mines. Today, Lusatia's economic and industrial structure remains largely dependent on the energy and mining sectors. As of January 2020, approximately 8,000 people were directly employed in the coal and energy industry.¹

In addition to its mining and energy industry, Lusatia has recently expanded other industrial sectors: the chemical, plastics, food, metal, and mechanical engineering industries accounted for nearly half of all industrial employees in 2013.¹⁵ Overall, roughly 23% of the region's employees work in the industrial sector, which contributes 30% to the regional GDP.¹⁶

The German energy transition (*Ener-giewende*), and especially the recent coal phase-out agreement, pose major challenges for Lusatia, where the coal industry's decline threatens economic development, employment, and regional identity. The success of a regional energy transition is hampered by structural problems, such as the area's weak infrastructure, low research intensity, few large employers, and limited labour force participation.¹⁷

Coal production in Lusatia

The history of lignite mining in Lusatia dates back nearly 200 years. Even prior to the Industrial Revolution, lignite was extracted in several local pits and used by nearby communities for domestic





heating and fertiliser.¹⁸ The first lignite shaft in Lusatia was installed in 1815. In 1860, several small-scale underground mines began operations to keep pace with the increasing fuel demand from cloth and glass factories during the Industrial Revolution.¹⁹

As lignite mining became more institutionalised around 1900, extraction commenced at the region's first large-scale surface mines.²⁰ Important events in the further expansion of Lusatia's mining activities include the opening of Europe's first lignite briquette factory in 1882, the construction of the first large-scale coal power plant in Germany in 1911, and the deployment of the world's first conveyor bridge for surface mining in 1924.²¹

In the following years, key infrastructure projects were implemented to achieve cost-effective transport between mines, factories, and consumers, leading to an increase in the number of required employees and the construction of new settlement structures.²² Since 1924, at least 128 local villages have vanished – especially in Sorbic communities – due to the expansion of coal mines.²³



Mining became fully mechanised with the invention of the conveyor bridge in 1924.

Lignite-based fuel production processes accelerated under the Nazi regime.²⁴ Although the industry suffered damage during World War II, extraction resumed in the mid-1960s.²⁵ As the only domestic energy source available in the GDR, lignite from Lusatia and the Central German mining district was crucial for the GDR's energy supply.²⁶ In 1989, coal production in the GDR accounted for over 1/6 of global lignite coal extraction.²⁷ Massive growth in regional lignite production, and the associated employment boom, caused the population of the city of Hoyerswerda to swell from 10,000 in the 1960s to over 70,000 in the late 1980s.²⁸

German reunification in 1989 sent shock waves through many industrial sectors of the former GDR, including Lusatia's coal industry.²⁹ Unable to compete with energy producers from western Germany, large parts of the region's coal industry shut down.³⁰ In the years immediately following reunification, Lusatia struggled with an extremely high unemployment rate and population decline, particularly as young people left the region for job opportunities elsewhere.³¹ Since the early 2000s, lignite production and coal-industry employment in Lusatia have remained relatively stable.³² Today, Lausitz Energie Bergbau AG (LEAG) operates four open-cast mines and three lignite-fired power plants.³³ In Cottbus, the municipal utility provider plans to convert an additional thermal coal power plant to a gasfired thermal power plant by 2022.³⁴

Lusatia is currently the second-largest coal mining region in Germany after the Ruhr region in North-Rhine-Westphalia.³⁵ As of late 2018, the total mined area in Lusatia was approximately 890 km².³⁶ Ninety-three percent of the extracted lignite is used for combustion in local power plants.³⁷ Because the lignite and energy industry remains the cornerstone of the regional economy, the German coal phase-out announced in January 2019 promises to have significant socio-economic consequences for the area.

Energy-transition opportunities and challenges

Since German reunification, Lusatia has implemented various strategies to support regional economic development and facilitate necessary structural change. Many of these measures have focused on diversifying the economy. The region has cultivated a strong tourism industry by promoting local attractions, including the Spreewald Biosphere Reserve and, more recently, the Lusatian Lake District, a chain of artificial lakes extending across 140 km² of former open-cast mines.³⁸ Lusatia has also established an institute for entrepreneurship in Cottbus and an innovation centre in Senftenberg to attract biotechnology and medical engineering start-ups to the region.³⁹

In 2017, the German Federal Ministry of Education and Research launched the programme Innovation and Structural Transformation / WIR! to facilitate



Lusatia has boosted regional tourism by drawing visitors to the network of navigable canals in the Spreewald Biosphere Reserve.

sustainable transition in regions with structural deficiencies. The funding programme facilitates collaborations between regional actors to encourage innovative ideas for the regional transition.⁴⁰ The Lusatian initiative Land-Innovation-Lausitz, one of the selected projects, aims to establish Lusatia as a model region for bioeconomy.⁴¹

Faced with multiple challenges related to structural change, Lusatia is building on its long tradition as an energy region and on the related know-how of regional research institutions and



A €2.2 billion mine-reclamation programme is financing construction of 24 artificial lakes on former lignite surface mines, connected by 70 km of canals.

Source: LMBV.

business actors.⁴² In 2000, wind-park construction began on post-mining land in Lusatia and, in 2011, Solarpark Senftenberg/Schipkau began operations on a former coal mine.⁴³ In 2016, the largest thermal solar plant in Germany was installed in the city of Senftenberg.⁴⁴ Today, the region is home to solar and wind parks and a factory for wind turbine blades.⁴⁵

Since 2017, Lusatia has participated in the four-year project WindNODE



Wind park in Lusatia.

- Showcasing Smart Energy Systems from North-eastern Germany, which is funded by the German Federal Ministry for Economic Affairs and Energy. A regulatory experimentation clause permits WindNODE project partners to create a 'reality lab', in which they can experiment with new technologies and business models without the financial losses that might otherwise be sustained under the current regulatory regime.⁴⁶ In addition, the project promotes new participation formats and a positive transition narrative.⁴⁷ WindNODE partners in Lusatia are developing and demonstrating solutions for the transition to a renewable, smart energy system.

Since 2019, Lusatia has received funding from the German Federal Ministry of Transport and Digital Infrastructure through the programme HyLand – Hydrogen Regions in Germany. The initiative supports the development of a

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regional strategy and network for the production, storage, and use of hydrogen from renewable energy sources.⁴⁸ Also in 2019, two projects in Lusatia were selected by the German government to receive funding as 'reality labs' for innovative energy projects.⁴⁹

In recent years, the regional transition has gained support from various actors and newly established institutions at all levels. The Lausitzrunde, a non-partisan alliance of elected mayors and other municipal officials, currently serves as a liaison between the people of Lusatia and the federal states (*Länder*). The mayors' primary goal is to obtain special status for Lusatia as a European model region for structural change.⁵⁰

Innovationsregion Lausitz was formed in response to the 2016 release of federal plans to shut down older coal power plants.⁵¹ Since then, the collaboration between regional business actors and the university BTU Cottbus-Senftenberg has yielded new, innovative ideas for companies faced with transition challenges. The project Zukunftswerkstatt Lausitz, managed by the Wirtschaftsregion Lausitz GmbH, has brought together all of Lusatia's municipalities to develop ideas for a post-lignite future. Participants will release a regional development strategy by the end of 2020.52

The governments of Saxony and Brandenburg recently declared structural change in Lusatia a top priority and installed regional commissioners at state chancelleries to serve as direct contacts for Lusatia. The commissioners negotiate structural support conditions at an operational level with the German government and the EU.⁵³

Brandenburg and Saxony also receive European-level support for low-carbon economic development as pilot regions for the European Commission's Platform of Coal Regions in Transition. In September 2019, 20 mayors from Lusatia signed the Declaration of Mayors on Just Transition to show their support for a just transition to a postcoal era, demand appropriate support mechanisms, and stress the importance social dialogue and consultation with local governments. The declaration is a result of the second Just Transition Forum of Mayors held in Lusatia and was signed by 41 mayors from 10 coal regions in 9 European countries.⁵⁴

German coal phase-out

Germany's recent agreement to phase out coal gave rise to a variety of transition proposals for Lusatia. In January 2019, the German multi-stakeholder coal commission (official title: Commission on Growth, Structural Change and Employment) provided an extensive report to the German government, recommending a gradual exit from coal-fired electricity generation by 2038.⁵⁵ The report lays out various strategies for economic development in Lusatia and other affected coal regions and proposes a financial support package. One year later, a shutdown schedule for coal-fired power plants was adopted with the passage of the coal exit law.⁵⁶

The proposed funding package for coal regions will be implemented under the Strukturstärkungsgesetz for coal regions.⁵⁷ The German government, Länder, and affected regions agreed on a funding distribution plan in mid-2019.⁵⁸ The federal government, together with the Länder, plans to spend €40 billion for the coal phaseout transition initiatives, providing extensive regional resources for the next 20 years and beyond.⁵⁹ Over the next two decades, the government will allocate €17 billion to Lusatia for structural support.⁶⁰ One third of the funding will be available to Saxony and Brandenburg; the remainder is earmarked for regional investments by federal ministries in affected areas.⁶¹ Of the structural support funds, €104 million will be spent immediately on new infrastructure projects, including an expansion of the broadband network and new clusters for research, universities, and agencies.⁶²

The draft of the *Strukturstärkungsgesetz* identifies a broad spectrum of potential priority areas for Lusatia. These include energy and hydrogen; mobility and digital infrastructures; health; research and development; and the establishment or expansion of institutions, agencies, and research institutes.⁶³



South of Spremberg, the proximity of solar parks to a coal power plant and industrial park throw the region's energy past and future into stark relief. <u>Source</u>: Gunter Tschuch, CC BY-SA 4.0.

Best practices for a just transition

The Institute for Climate Protection, Energy and Mobility (IKEM) is currently researching transition processes in coal-intensive regions around the world to develop a roadmap for the energy transition in eastern Germany and a toolbox with best practices to promote a just transition in coal-intensive regions. Insights from a broad range of stakeholders are crucial to our research in case study regions, which include Nord-Pas de-Calais, France; Western Macedonia, Greece; Southwestern Pennsylvania and Colorado, USA; and Lusatia, Germany. This 'Just Transition Study' is part of the broader WindNODE project and is sponsored by the German Ministry for Economic Affairs and Energy (BMWi) through the programme 'SINTEG – Smart Energy Showcases'.

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