

Lower Silesia, Poland

GENERAL INFORMATION

Country: Poland

Region Name: Lower Silesia

Region NUTS2 code: PL51 Dolnośląskie

Region NUTS3 code: PL517 Wałbrzyski subregion

Main urban centres in the region¹:

Wrocław (674,312)

Wałbrzych county (618,485)

Legnica (433,710)

**NUTS: Nomenclature of Territorial Units for Statistics*



1. Editorial Board of Statistics Poland, Demographic Yearbook of Poland, 2022. <https://stat.gov.pl/en/topics/statistical-yearbooks/statistical-yearbooks/demographic-yearbook-of-poland-2022,3,16.html>

Regional socio-economic profile

General description of the socio-economic profile of the region

Lower Silesia region is located in the southwestern part of Poland, bordering Germany and Czechia. The Lower Silesian Coal Basin covers 11 municipalities, of which five are in Wałbrzych sub-region. Although extraction of the hard coal in Lower Silesia ended in late 1990s, there is one lignite mine still in operation – Turów – which is the western part of the region, directly at the border with Czechia.

While Lower Silesia is the second wealthiest region in Poland, it is characterised by within-regional economic

disparities. Rapid and unorganised hard coal phase-out in the 1990s led to a drastic increase of unemployment and poverty in Wałbrzych sub-region. The negative consequences of this transition are felt to this day: GDP per capita in the Wałbrzych sub-region is at 51% of the EU average and at 73% of the national average.³ Over the past two decades the sub-region has suffered from acute problems of depopulation and high levels of social exclusion. Compared to 2019, forecasts suggest that additional 50,000 people will leave the subregion by 2030. Although not as high as in the first years after mining activities ended in the Lower Silesian Coal Basin, the unemployment rate in the Wałbrzych sub-region is still the highest in Lower Silesia (7.4% compared to 4.4% for the region)⁴.

Regional coal industry profile			
Coal mining			
Type of coal	Hard coal (no longer being extracted) Lignite		
Type of coal extraction	Open pit (lignite)		
Number of operating coal mines	1		
Production of coal [Mt annual]	8,8 Mt	Year of prod. Data:	2021 ⁵
Main coal mining enterprises			
Name	Ownership	Number of employees	Year of employee data
Turów	Public - PGE Polska Grupa Energetyczna – Capital Group	2,190 ⁶	2021
Total level of employment in coal mining (in the region)		2,190	2021

Regional coal power plant profile		
Coal power plants		Year of data
Number of coal power plants	3	2021-2023
Installed capacity [MW]		
1. Turów power plant	1 798 MW	2021 ⁶
2. Wrocław CHP plant	263 MW	2023 ⁷
3. Siechnice (Czechnica) CHP plant	132 MW	2022 ⁸
Share of coal in national power generation mix [%]	69.21%	2022 ⁹

3. Territorial Just Transition Plan for Lower Silesia 2021-2030 Wałbrzyski sub-region. 2022. https://umwd.dolnyslask.pl/fileadmin/user_upload/FST/TPST_Walbrzych_4.0.pdf

4. GUS <https://stat.gov.pl/obszary-tematyczne/rynek-pracy/bezrobocie-rejestrowane/bezrobotni-zarejestrowani-i-stopa-bezrobocia-stan-w-koncu-listopada-2022-r-2,124.html>

5. <https://instrat.pl/ranking-wydobycia-z-polskich-kopaln-baza-danych/>

6. <https://instrat.pl/ranking-wydobycia-z-polskich-kopaln-baza-danych/>

7. https://www.gem.wiki/Wroclaw_power_station

8. https://www.gem.wiki/Wroclaw_power_station

9. Poland electricity generation by source. 2022. <https://ember-climate.org/countries-and-regions/regions/europe/>

Main coal power plant operators			
Name	Ownership	Number of employees	Year of employee data
Turów power plant	PGE Polska Grupa Energetyczna (public)	1,250	2021
Wrocław CHP plant		N/A	N/A
Siechnice (Czechnica) CHP plant		N/A	N/A
Total level of employment in coal power plants (in the region)		N/A	N/A

Regional and local transition strategies and plans

Status and timeline of coal transition / phase-out

In 1990, 18,000 people were employed in four hard coal mines in Lower Silesia.¹⁰ However, poor economic viability and technical conditions of the mines, together with the political and economic transformation taking place in Poland since the early 1990s, resulted in cessation of hard coal mining activities during the 1990s. This had a devastating impact on the economic, social and environmental situation in the sub-region. Closure of the Turów lignite mine is currently scheduled for 2044 when its reserves are expected to be exhausted.

In terms of power generation, the Lower Silesia region has one coal power plant and two CHP plants still in operation. Decommissioning of Turów Power Plant is expected in 2044 to coincide with the phase out of lignite mining. Wrocław CHP plant is foreseen to be decommissioned in 2030, whereas the coal generating unit in Czechnica CHP plant is planned to operate until 2024, when it will be replaced by a newly constructed gas CHP plant.

In 2020, local government officials of the Wałbrzych sub-region signed a commitment “Dekarbonizacja 2030” to phase out coal in the power and heating sector by 2030¹¹. The Wałbrzych sub-region plans to reduce CO₂ emissions by 55% by 2030 and to achieve climate neutrality by 2040, ahead of the EU and the regional climate neutrality target set for 2050.

Current regional strategies and plans for transition (including for economic development, diversification, and decarbonisation)

The primary focus of the **Territorial Just Transition Plan (TJTP) for Wałbrzyski sub-region** (2022) is to stimulate the economy by developing renewable energy sources (RES) and investing in energy efficiency. The plan also aims to provide grant support for small and medium-sized enterprises (SMEs) to invest in activities that create new jobs, reduce greenhouse gas emissions, promote decarbonisation, implement circular economy practices, and reduce energy consumption. It also seeks to retrain workers for new RES and energy efficiency-based professions. Additionally, according to the TJTP, the sub-region aims to establish technology hubs, competency centres, and business incubators, invest in the business infrastructure of heating companies, reclaim and repurpose post-industrial and degraded areas, revitalise urban and rural areas, and promote electric, railway, and zero-emission bus transportation based on alternative fuels. The program also provides measures to support individuals who are excluded or at risk of exclusion from the job market, to counteract energy poverty, and to promote the establishment of energy communities.

As stated in the **Lower Silesia Energy Strategy** (2022), the strategic objective for Lower Silesia is to become a climate-neutral region by 2050. The main means for reaching this objective is to decarbonise and digitalise the energy sector, with a multi-sector and multi-dimensional strategy. The region also plans to become self-sufficient in terms of energy production by 2050. This implies shifting away from the usage of fossil fuels in electricity production, heating, and cooling systems, and a reduction of GHG emissions by 80-95% compared to the emission levels in the 1990s. The Strategy seeks to achieve a 70% share of RES in overall energy production and 97% share of RES in electricity production. Additionally, it aims at improving the energy efficiency of buildings, transport and energy sectors, and electrification of the transport sector. Finally, it aims at reaching the 13-14% share of “green” hydrogen, in accordance with the Hydrogen Strategy for Climate Neutral Europe.

10. Social Just Transitional Plan for Wałbrzych subregion. 2021. https://um.walbrzych.pl/sites/default/files/attachment/plan_stpst_subregion_walbrzyski_-czesc_i_plan.pdf

11. CEE Bankwatch & Polish Green Network. 2021. Territorial Just Transition Plans for Polish Coal Regions https://bankwatch.org/wp-content/uploads/2021/10/2021-10-20_TJTP_Poland.pdf

The **Development Strategy for Lower Silesia 2030** (2018) aims to transform the region into a modern, creative, and innovative community with strong presence in Wrocław and significant regional centres. To achieve this transformation, the Strategy proposes various interventions focused on revitalising marginalised communities, municipalities, and counties, as well as leveraging subregional specialisations to enhance competitiveness and innovation. Human and social capacity development, as well as the formation of local identity, are also crucial goals of the strategy. To support transition, the Lower Silesia Voivodship plans to strengthen institutional capacity at the regional and subregional levels, particularly in areas such as public services, regional transportation networks, and research and development subregional networks. Additionally, the strategy emphasises the importance of cohesion policy and a territorial approach to economic, social, and spatial development, as these are linked to the strengthening of municipal financial instruments.

The regional authorities are concerned that without the above-mentioned instruments and tools, the development of the region will mainly be focused on the Wrocław metropolitan area and a few more local centres. This would lead to further marginalisation of other centres, such as the Wałbrzych subregion, which has the lowest GDP per capita and the lowest economic growth in the region. To address this risk, the Strategy sets out several operational objectives for the Wałbrzych subregion, including supporting endogenous economic potential, strengthening local competitiveness, revitalising urban and rural areas, improving public services, rationalising the use of environmental assets and resources, and promoting renewable energy production and energy security.

The **Regional Innovation Strategy until 2030** (2021) recognises that, although its economic performance is relatively high compared to other Polish regions, Lower Silesia remains a moderate innovator compared to other EU regions. The main sources of innovations are in automotive (largely located in Wałbrzyskie Special Economic Zone) and home appliances, together with IT (especially software houses, and outsourcing companies). New priorities for the region are the development of low- and zero-emission land, water and aerial vehicles, and three horizontal specialisations based around the European Green Deal, Industry 4.0, and life supported by technology.

The **Development Strategy Sudety 2030** (2018) assesses the demographic, urban, infrastructure, social, and economic situations of the Wałbrzych and Jelenia Góra subregions and their potential for development. The Strategy focuses on community problem solving, particularly in addressing issues such as depopulation, transport exclusion, air pollution, and revitalisation of local resources. It also proposes a place-based approach to policy implementation, built on strengthening and leveraging the diverse and growing social and human

capital of the area. The strategy objectives are broad and include closer citizen engagement, and more environmentally friendly territory.

The **Wałbrzych Green City Action Plan** (2022) developed for a period of 10-15 years, presents the desired direction of the city's development, and serves as the foundation for setting development goals and directions for the Wałbrzych sub-region. The Plan's vision assumes transforming Wałbrzych into a zero-emission city that is attractive for the citizens (in term of work, life, and leisure conditions), with natural and cultural assets, achieved through the implementation of blue and green infrastructure.

Other relevant strategies and plans:

- City climate adaptation plan for Wałbrzych
- Development Strategy of Wałbrzych Agglomeration to 2030
- Low emission economy plan for 2014-2020 with a perspective to 2030 for 15 communities of Wałbrzych Agglomeration
- Subregion Development Strategy for the Jaworzyna Śląska Commune for 2021-2030

Principal actors in development and implementation of transition strategies and plans

At national level: the Ministry of Climate and Environment, the Ministry of Development Funds and Regional Policy, The Ministry of Family, Labour and Social Policy and the relevant state agencies

At regional level:

- Regional government: Marshal's Office of the Lower Silesian Voivodeship
- Sub-regional government: Wałbrzych Powiat (county)
- Local government (municipalities): Mieroszów, Boguszów Gorce, Stare Bogaczowice, Czarny Bór, Jaworzyna Śląska, Nowa Ruda
- Lower Silesian Agency of Regional Development in Wałbrzych (DARR)
- Energy clusters: Zklaster – Zgorzelec Energy Cluster, Wklaster – Wałbrzych Energy and Hydrogen Cluster
- Companies: Hydrogen Utopia International / Hydropolis United sp z.o.o.
- NGOs and think tanks: The Ecological Association "EKO-UNIA"

Regional and local transition projects and initiatives

Notable ongoing and recent transition-related initiatives and projects

Hydropolis United sp z.o.o., a Polish subsidiary wholly owned by Hydrogen Utopia International (HUI), has signed a letter of intent (LOI) with the City of Wałbrzych that outlines plans to develop a new HUI facility in the municipality. HUI is focused on becoming a leading European company specialising in the conversion of non-recyclable mixed waste plastic into hydrogen, as well as other carbon-free fuels, new materials, or renewable heat. The proposed HUI facility will use non-recyclable mixed waste plastic as its primary feedstock, with the ability to produce syngas that can be used to create a range of new products and energy¹².

The Pocket parks project in Wałbrzych plans the construction of a pocket park subsidised by the “Green backyards – pocket parks in the old districts” project prepared by the Municipal Management of Buildings. The latter project was awarded the 2021 “City with climate – green and blue infrastructure” competition organized by the National Fund for Environmental Protection and Water Management under the auspices of the Ministry of Climate and Environment¹³.

Before the end of 2025, twenty hydrogen-powered buses will run on the streets of Wałbrzych thanks to a combination of funding and a loan from the National Fund for Environmental Protection and Water Management¹⁴.

Notable planned transition-related initiatives and projects

Under the **Wałbrzych Green City Action Plan**, the following activities and initiatives are envisaged:

1. “Construction of infrastructure for the generation and storage of energy derived from solar radiation and biogas in the area of the Wałbrzych Energy Cluster and partner municipalities”. The project will be implemented in 6 municipalities: Jedlina-Zdrój, Głuszyca, Stare Bogaczowice, Szczawno-Zdrój, Walim and Wałbrzych. It involves the construction of photovoltaic farms with a total capacity of approximately 14 MW, the construction of energy storage facilities with a total capacity of approximately 4 MW, the construction of a biogas plant with a capacity of approx. 1MW, as well as modernisation of the street lighting system. The

project should be implemented by the third quarter of 2026, at an estimated project value of PLN 90 million.

2. Implementation of investments aimed at the construction of photovoltaic and wind farms in the city, with a total capacity of minimum 20 MW.
3. Update of the “Gas supply plan for the city of Wałbrzych” with the development of local heat sources based on RES, including the expansion and modernisation of the district heating system and moving away from coal as a fuel used for heat energy production.
4. Modernisation of the existing electricity grid to increase its efficiency and capacity and ability to a connection of new RES capacities by a minimum of 40 MW.

Moreover, Wałbrzych is currently preparing an Investment Concept as part of the programme **“Decarbonisation of buildings and municipal infrastructure in the municipalities of the Wałbrzych Agglomeration”** for the development of energy audits as well as the “Warmer Dwelling” programme, which involves the replacement of energy inefficient and fossil fuel based heat sources and thermo-modernisation of residential buildings.

Regional and local transition challenges and opportunities

Nature and scale of key transition challenges

After the unsuccessful past transition from coal and the resulting unemployment and poverty, overcoming an overall lack of trust in the transition process is a major challenge for the Wałbrzych subregion. Furthermore, lack of investments in post-decommissioned coke-oven assets has led to land abandonment and degradation. Meanwhile the negative demographic tendency in the region requires a strong support for the communities to redevelop the region¹⁵. Other challenges highlighted in the Social Just Transitional Plan for Wałbrzych subregion (2021) are: old housing stock requiring thermal modernisation and liquidation of coal-fired furnaces, poor air quality, numerous degraded post-industrial areas, low entrepreneurship rate as compared to the regional average, higher than regional average poverty and social exclusion rates, and low employment rates.

12. <https://www.proactiveinvestors.co.uk/companies/news/1004027/hydrogen-utopia-international-unit-inks-letter-of-intent-with-walbrzych-in-poland-to-develop-an-hui-facility-in-the-city-1004027.html>

13. <https://walbrzych.naszemiasto.pl/walbrzych-parki-kieszonkowe-na-podgorzu-oficjalnie-otwarte/ar/c9-8860741>

14. <https://www.gov.pl/web/klimat/walbrzych-czeka-na-wodorowa-rewolucje>

15. START application Wklaster

Nature and scale of key transition opportunities

Despite numerous challenges in the Wałbrzych subregion, there is a social transformation underway, as the subregion is transitioning from the mining communities to energy communities. The subregion has also significant potential for tourism development based on green energy and circular economy practices. This presents an opportunity to not only generate economic benefits but also to promote sustainability and raise awareness of sustainable and circular practices. Additionally, abandoned post-mining

areas can be repurposed for renewable energy production or recreational areas to benefit local communities. In this way, communities can see economic and social benefits while also contributing to the broader goal of the transition.

Other opportunities highlighted in the Social Just Transitional Plan for Wałbrzych subregion (2021) include benefiting from new EU and national support programmes; increased cooperation between science and research sector together with business and local government; and the development of prosumer solutions for balancing and accounting of energy demand in municipalities.

Sources

- Territorial Just Transition Plan for Lower Silesia 2021-2030 Wałbrzyski sub-region (2022) https://umwd.dolnyslask.pl/fileadmin/user_upload/FST/TPST_Walbrzych_4.0.pdf
- Institute for Territorial Development (2022) Lower Silesia Energy Strategy – directions of support for the energy sector https://umwd.dolnyslask.pl/fileadmin/user_upload/Gospodarka/SEWD/1_Strategia_Energetyczna_Dolnego_Slaska_-_wersja_do_pobrania.pdf
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- Social Just Transitional Plan for Wałbrzych subregion (2021) https://um.walbrzych.pl/sites/default/files/attachment/plan_stpst_subregion_walbrzyski_czesc_i_plan.pdf
- Status Report of Lower Silesian Voivodeship. https://projects2014-2020.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1580812010.pdf

Initiative for coal regions in transition

The Initiative for coal regions in transition is led by the European Commission.

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