



# TRANSFORMATION OF THE LOWER SILESIA COAL BASIN – A FAILED EXPERIMENT

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**Abstract.** The old 19th century industrial districts and basins played an essential role in shaping the growth processes in individual national economies of European countries as early as the beginning of the second half of the 20th century. The formation of the foundations of the new economy, in which knowledge begins to play the fundamental role, and the innovation closely related to it, at a fairly rapid pace, causes these areas to lose their importance. A large population with a predominance of traditional education, outdated and often worn-out infrastructure are the sources of their socio-economic problems. This situation also applied to the Lower Silesian Coal Basin, which operated in the vicinity of Wałbrzych and Nowa Ruda. The basin was characterised not only by obsolete and decapitalised components of fixed assets but also to its disadvantage was the peripheral location and an underdeveloped production and technological chain. In addition, the lack of an effective connection with the country (which, unfortunately, still applies today) and the borderland, as well as the location in a mountainous area, negatively affected the economic efficiency of this area. Even in the 1980s, a failed attempt was made to save the hard coal mining sector by merging the mines and the costly construction of the Copernicus collecting shaft. Along with the political and systemic transformation, a decision was automatically made to close the basin, and this process was euphemistically called restructuring. But in practice, it was reduced to the closure of mines and most of the coking plants (one is still operating today), which resulted in the collapse of many companies that operated for the mining industry. In mid-1998, coal mining was stopped, and in the following year, the mines located in the Lower Silesia Coal Basin were finally closed. It was the first closure of such a large area of economic activity in the realities of Polish economy. The activities that were undertaken during the closure of the basin were characterised by low effectiveness, fragmentation, and high variability of activities (even chaotic). After the closure, the area was left to fend for itself with overwhelming problems across all socio-economic dimensions. Currently, after more than thirty years, when characterising the effects of these activities, they should be clearly assessed as even tragic, in terms of society (enormous unemployment, pauperisation, community regression – this is where old coal pits were created on a massive scale), environment (secondary emission and spontaneous combustion of heaps, rising water levels or the penetration of gases from workings into basements of buildings) and economy (low entrepreneurship rate, an outflow of people to other cities, low level of productivity of the subregion, etc.). In recent years, positive phenomena have been observed in the region. However, both the pace and the scale are small, and, more importantly, their location is punctual and primarily concerns Wałbrzych. They are endogenous in nature, which indicates that with external help, it is possible to reverse negative trends. The aim of this paper is to assess the transformations that took place in the Wałbrzych subregion and were triggered by the liquidation of the Lower Silesian Coal Basin.

**Keywords:** closure, coal basin, restructuring, Wałbrzych subregion.

## Introduction

The transformations that occurred in the economies of highly developed countries in the second half of the 20th century resulted in intensive changes in the energy industry. Coal, which had hitherto been the primary energy resource, began to be replaced by other, more efficient and less costly raw materials and sources. As a result, as early as the 1950s, the process of decarbonisation of the Western European economies began slowly and with much resistance. One of the reasons for this was the establishment of the European Coal and Steel Community in 1951, which was initially intended to regulate the market for coal, steel and iron, and which eventually gave rise to the European Union (EU). The negative phenomena associated with these transformations showed strong spatial differentiation. To a lesser extent, they affected large economically diversified cities with a preponderance of modern sectors and industries. In contrast, regions developing on classic industrial bases were particularly negatively affected (Kilch, 2001). At the same time, it should be remembered that these were areas where economic activity had previously been concentrated that was far above the average, normal intensity characteristic of a given economy or country. As a result, the magnitude of the problem was even greater, both in this region and in the national economy as a whole. An important fact is that such a region was also characterised by a high population density, an above-average urbanisation rate, extensive infrastructure, etc. Areas with such characteristics were previously often referred to as industrial regions or districts (often of a mono-functional nature). They covered significant areas, often identified with an administrative region, which in many cases was created precisely to efficiently manage such spatial units. Due to the nature and formation of phenomena on their territory, they came to be referred to as depressed regions.

The negative development of socio-economic phenomena in these areas translated into unfavourable trends growing in the whole country's economy. For these reasons, individual governments, first in highly developed countries and then in less developed countries, were faced with the necessity of halting these unfavourable phenomena. Measures began to be taken to restructure, or reconvert, these areas. Such measures, as practice has shown, are very complicated, long-term and costly undertakings. In many cases, despite this, it was not possible to stop the adverse socio-economic developments, and the element that ultimately determined their course was the market mechanism. The effects that occurred in these areas will continue to affect the course of processes throughout the national economy for a long time to come and will undoubtedly also affect future generations. A phenomenon accompanying these transformations is the reallocation of economic activity in space and the declining importance of traditional territorial associations. As a result, depressed areas are exposed to the phenomenon of regressive localism manifested in the adoption of conservative attitudes, withdrawal and apathy, involving the consolidation of dysfunctional structures on a local scale, which ultimately leads to the peripheralisation of the unit.

The aim of this paper is to assess the transformations that took place in the Wałbrzych sub-region and were triggered by the liquidation of the Lower Silesian Coal Basin. In order to achieve such a goal, the literature on the subject, existing data (especially information from the Central Statistical Office) and knowledge acquired by the authors, who are often participants in the analysed processes, were used. The paper uses a descriptive method, a critical analysis of the literature on the subject and source documents, as well as simple statistical methods related to the processing of source data.

The Wałbrzych subregion was established by means of the Regulation of the Council of Ministers of 14 November 2007 on the introduction of the Nomenclature of Territorial Units for statistical purposes (Dz.U. z 2007 r., Nr 214, poz. 1573) by dividing the former Jeleniogórsko-Wałbrzyski subregion. It overlaps with the territory of the former wałbrzyskie voivodeship liquidated on the beginning of January 1999. As of January 2008, it covers the southern part of the Lower Silesian region. The study area consists of urban (13), urban-rural (17), rural (14) communes and a city with poviat rights (1).

## Restructuring processes in selected Western European countries

The late 1950s in Western Europe was a period of growing problems in coal mining. This was due to the fact that this raw material began to be replaced by oil, natural gas and nuclear power. For this reason, individual governments took the difficult decision to put the exploration areas of this raw material under a lengthy and complicated restructuring process. This was also linked to the start of a slow process of decarbonisation of individual economies. The most well-known areas of restructuring concerning the coal mining industry in the second half of the 20th century in Western Europe are the region of Scotland and North Wales, the English region of Hull, the West Midlands, the German Ruhr region, the Saarland, the French department of East Lorraine or the Nord-Pas de Calais region, among others. Today, after more than fifty years and despite the energy crisis caused by Russia's aggression against Ukraine, the Western European region is becoming an area of declining indigenous coal mining, and the economy is undergoing significant changes as part of the intensification of the decarbonisation process.

Analysing the restructuring processes in individual countries, it can be concluded (of course, generalising the conclusions to a certain extent for the purposes of this paper) that these were long-lasting undertakings aimed at large-scale social assistance and activities aimed at transforming the socio-economic structure of a given region. In addition, there were actions subordinated to efficiency and economic calculation involving the rapid closure of mines. The first path is identified primarily in France, Belgium or Germany. The second path was pursued in the United Kingdom. Irrespective of the time of transition adopted, these measures were multi-level, ranging from the involvement of local communities and institutions across regional and national dimensions to transnational approaches (such as the European Coal and Steel Community or the EU). Particularly notable is the case of the transnational dimension of this phenomenon involving a chain of traditional heavy industry basins located in the border areas of France, Belgium, Luxembourg and Germany. The reconversion of the economy of this transnational area involved many different actors: transnational companies, national governments and regional administrations, intergovernmental bodies and EU institutions, as well as representatives of the local and regional population. As a result, the effects of the transformation become apparent in structural changes at different levels: local, regional and macro-regional – but it should be stressed with great emphasis that it is the nation-states that have dominated and continue to play a significant leading role (Leboutte, 2009).

In France, for example, restructuring activities were carried out by the state organisation *Charbonnages de France* – CdF (set up as early as 1946) supported by the French state through budget subsidies – which enabled comprehensive economic revitalisation of the basin areas. In 1962, the CdF signed an agreement with the trade unions to implement a retraining programme

for miners. The basis for the entire restructuring process was the adoption of a long-term strategy in relation to mine closures with significant job cuts. This forward-looking approach ensured that it was possible, firstly, to plan realistically for specific solutions (such as attracting new investors), secondly, to plan for liabilities (including short-term costs for training programmes), and thirdly, to deal with the long-term impacts associated with early retirement benefits. These measures enabled the continuity of long-term employment, e.g. through the possibility of transferring employees from closing mines to another state-owned CdF company. As a result, 24,000 jobs were created in former coalfields between 1984 and 1989. The social protection programme financed measures such as the costs of early retirement for employees who had reached the age of 45 and had worked for at least 25 years, transfers of employees within the CdF concern, adaptation leave for employees who did not like the employment proposals offered by the concern. The last La Houve deep mine in Lorraine closed in 2004 (CHM, 2022).

In Germany, on the other hand, restructuring processes have primarily involved the Ruhr (where the last mine closed 2018) and the Saarland. In the former case, the structural policy programme 'Ruhr Development Programme', worth 17 billion German marks at the time, was adopted in 1968 with the aim of attracting new companies from other industries. Initial measures did not have the desired effect, and unemployment rose significantly, from 12,000 people in 1970 to almost 100,000 in 1976. An important project that stabilised and boosted restructuring in the long term was the establishment of RAG AG (*Ruhrkohle AG*) by the federal government in 1969. This was an organisation of 27 mining companies, which implemented the distribution of public subsidies and ensured an outlet for the coal produced. Between 1980 and 1984, the structural policy programme 'Action Program Ruhr' was implemented with the aim of strengthening and intensifying the economic reorientation of the Ruhr district and establishing new industries. During this period, among other things, a Commission for Coal and Steel Regions (*Kommission Montanregionen*) was set up to involve regional stakeholders in the strategy development process (Hospers, 2004). In 1987, the DM 2 billion (EUR 1.0 billion) 'Future Initiative for Coal and Steel Regions' (*Zukunftsinitiative Montanregionen*) programme was launched. As part of this programme, funding was directed towards innovation, workforce training, modern infrastructure and environmental improvements, as well as energy issues. It also included the establishment of the Land Development Society (*Landesentwicklungsgesellschaft*) and the Ruhr Asset Fund for the purchase and rehabilitation of former industrial sites. In the case of the Saarland, on the other hand, the 'Saarland Structural Programme' was implemented with the aim of achieving full employment through the creation of 50,000 jobs and overcoming the gap between regional and federal economic development. This programme (later transformed into the 'Saarland-Westpfalz Action Programme') was planned for the period 1972-1989 and had a budget of EUR 700 million. The Saarland granted tax breaks, low interest rates and bonuses to companies. Due to these advantages and the close proximity to car manufacturers in southern Germany, suppliers and manufacturers set up their headquarters in the Saarland. Already in the initial period (1960-1972), around 140 companies established themselves in the Saarland. In total, around 40,000 new jobs were created, 25,000 of which were in newly established companies.

In assessing the German case, it should be emphasised that most of the subsidies for the Ruhr and Saarland were financed from the national budget. Nevertheless, the *Länder* and mining companies contributed to the costs. As a founding signatory to the ECSC (European Coal and Steel Community) Treaty, Germany also benefited from the long-term advantages of ECSC funding, particularly with regard to the effects of employment restructuring in the coal industry. In addition,

both the Ruhr and Saarland benefited from the European Community's regional and social development funds. For example, the Ruhr district received approximately EUR 1 billion from the EC regional and social development fund between 1989 and 2013 and the Saarland received EUR 328 million between 2000 and 2013, respectively (Dahlbeck et al., 2021).

An interesting example of the implementation of restructuring (the implementation period is eight years) is the United Kingdom, where from 1947, the mines were nationalised and subsidised from the state budget under the National Coal Board corporation, established in 1946 (Flexner, 1950). In the early 1980s, Prime Minister Margaret Thatcher decided to carry out a radical process of reducing production and employment in English mines. The National Coal Board was headed by Ian McGregor, an advocate of bringing economic efficiency to mining (more information: Beyotn, 1984). Initially, the 20 most unprofitable mines were to be closed down and 70 others further down the line (out of 170 operating at the time). The mining unions' response was a strike that lasted more than six months, with violent riots and demonstrations. British police had to fight regular battles with union militias. However, the Iron Lady stood her ground, the mines were closed. By 1990, Margaret Thatcher's government had closed 115 mines. Her successor, Prime Minister John Major, completed the job by closing a further 55 mines leaving only a dozen or so with the highest profitability. In 1994 the entire mining sector was privatised by creating UK Coal and allowed to operate on a commercial basis. State aid to the mining industry during the restructuring period between 1986 and 1994 amounted to around ECU 14 billion. It was directed at reducing mining capacity, covering operating losses of mines, social protection benefits for reduced employment and removing the effects of mining operations. The social protection programme allowed for the financing of loans for former workers to create jobs, support for local enterprise agencies, assistance in finding new jobs and training carried out for new qualifications by workers laid off from mines. A worker leaving a mine received a severance payment of three weeks' earnings for each year worked, up to a maximum of 30 years of service.

Analysing the restructuring processes presented above, it is important to point out that in all of them, national governments played a leading role, and large social security funds were allocated. An important element is the creation or transfer of competences to a public institution responsible for the transformation process. At the same time, efforts were made to transform former coalfields into areas with a modern economic structure.

## **The origin and causes of the decline of the Lower Silesian Coal Basin**

The origins of coal mining in the Lower Silesian Coal Basin date back to the 15th century (there are records of the start of mining as early as 1366), however, the dominant economic activity at that time was the production of linen. The oldest records of coal mines in Wałbrzych date back to 1536. In 1767 there were 18 mines of various sizes, most of them underground. In addition to mining, the development of the associated industrial and residential infrastructure was also associated with coal mining. At the beginning of the 19th century, as a result of the Napoleonic wars and competition from cheap English and Dutch industry, linen production throughout Lower Silesia collapsed dramatically. However, coal mining was not abandoned in the Wałbrzych region, although more attention was paid to silver mining (the town of Gorce and the nearby village of Jabłów where uranium was exploited in later times). In 1851, with the arrival of the railway,

the depletion of the silver deposits and the widespread use of the steam engine, coal mining began to determine the shape of the industrial structure of the Wałbrzych region. Thanks to these transformations, at the end of the 19th century a spatially compact production complex, technologically related to coal (called the Lower Silesian or Wałbrzych Coal Basin), was established in the vicinity of Wałbrzych. The coke industry developed particularly quickly. On the other hand, in spite of attempts (construction of an ironworks in 1857 and its short operation, liquidation in 1882), the industry producing means of production did not take shape. This was due, among other things, to the lack of iron ore deposits and the remoteness from the sources of obtaining these raw materials (which entailed high transport costs). As a result of such circumstances, the structure of the newly forming industrial district was not complete and did not correspond to the classic models of the era (e.g. the Upper Silesian Industrial District or the Ruhrgebiet). The Lower Silesian district was of a typical raw material character (the raw materials obtained were mostly exported and not processed locally), which is seen as the original source of the socio-economic crisis in the subregion. The location of hard coal seams in the basin is illustrated in Figure 1.



**Figure 1.** Coal deposits in the Lower Silesian Coal Basin  
Source: Ptak (2021).

The industrial character of the Wałbrzych subregion continued over the following years until the last decade of the 20th century. At the end of the 19th century, with the establishment of coking plants, the gas industry developed intensively – gas was exported to most cities in Lower Silesia (Stein, 1925). It should be mentioned that the extraction of coal in this basin was still fraught with problems, which were related to the fact that the terrain in which the mines operated was shaped by volcanic activity and tectonic forces – the coal seams were mostly sloping and often crossed by faults, and were characterised by thin seams (the thickness of coal layers ranged from a few centimetres and rarely reached 1.5 metres). In addition, after the Second World War, pressure built up for the extraction of seams in the protective pillars – both of the mines themselves, the railways and the urban development. In the last years of the mines' operation, these activities were intensified, resulting in a temporary increase in mining efficiency but also in increasing mining damage. Such mining conditions meant that the productivity achieved in the Wałbrzych mines was 5-8 times lower than in the Upper Silesian mines, and production costs were 3-5 times

higher (Lesiw-Głowacka, Skoczeń, Molecki, Kasprzak & Krahl, 2021). Mining, along with the depletion of available seams, was accompanied by poor and constantly deteriorating working conditions at the bottom (mining-geological conditions). At the same time, there was a high gas hazard in the mines (accumulation of carbon dioxide and methane), resulting in ejections of released gases, combined with the crushing and carrying of masses of coal and other rock into the workings. For example, the largest documented disasters occurred on 9 July 1930 in the Wenceslaus (Wenceslas) mine, where an ejection occurred and 151 people died and on 10 May 1941 in the Ruben mine (later the Nowa Ruda Piast field mine), where 187 miners died. As a result, the Wałbrzych mines were characterised by the most difficult and dangerous working conditions compared to other mines in both Poland and Germany. At the turn of the 1970s and 1980s, attempts were made to restructure the mines by merging the three Wałbrzych mines and building the costly Kopernik mining and processing complex. These measures, despite the huge outlays associated with the construction of the central shaft, did not yield the expected results and were abandoned in 1989.

## Decommissioning of the basin through the chaos and its consequences

In characterising the situation in the basin after the end of the 1980s, it should be pointed out that the assets in industry were mostly decapitalised and obsolete (the rate of wear and tear on fixed assets was 55.1% here, compared with 44.1% in the country). The technical equipment of work was 1.6 times lower in the basin than in the country, indicating its technological backwardness. Therefore, in addition to the decapitalisation of assets, the basin's industry in this period was characterised by a low degree of production processing and low modernity of products, outdated technology, a high absorption of energy and water factors, as well as robbery of resources and considerable aggressiveness towards the environment (Korenik, 1994, p. 133). On the scale of the entire subregion, the most troublesome units were coal mines and coking plants, as well as chemical plants and glassworks. At the same time, coal mining gradually declined, for example, in 1938 12,371 t/d of coal was mined, and in 1950 – 8 822 t/d, at its peak in 1955 around 10 000 t/d, in 1960. – 6 961 t/d and in 1988 only 5537 t/d, this trend was accompanied by an increase in costs in all sections (Korenik, 1994, p. 134).

As a result of the political changes taking place in Poland and the poor economic condition of the analysed area, the Minister of Industry, by Order No. 433/432/430/Org/90 of 29.11.1990, put into liquidation as of the beginning of the year 1991 KWK Wałbrzych, KWK Victoria and KWK Thorez (it should be mentioned that this was the third attempt to liquidate these mines, the first one was made in the 1930s and the next one was considered in the 1950s, in both cases the liquidation was abandoned mainly for political reasons). In July 1991, these mines completed and presented a plan to operate until the end of their existence. In contrast, the last mine, KWK Nowa Ruda, did not go into liquidation until April 1992. There were two reasons for such a long delay – firstly, this mine was performing at its best economically and there was a plan to make a recovery to enable it to operate. The second reason was that 70% of the employees in the town of Nowa Ruda worked at the mine, so it was a typical industrial monoculture.

The government's decision itself to close the mines in the Wałbrzych region caused 'shock' and disbelief among the residents, which was compounded by symptoms of economic depression

occurring throughout the country's economy and the progressive spatial divergence of the country's economy. The economic recession in the Wałbrzych Voivodeship, in addition to the factors already described, was decisively influenced by the lack of experience of both government and local government administrations in dealing with this type of problem. The restructuring concepts developed were general, fragmentary and, in addition, contradictory, and additional chaos was introduced by the activity of the French government's mission (Korenik, 1994). As M. Opałło (1993) points out, the costs of expert assistance from France were very high. A day of expert work cost 8,000 French francs at the time. Over the course of the cooperation, 3.6 million francs were spent. The result of the work was a fragmentary description of the existing condition of little use in the re-development process. In addition, the lack of conception of the previous governments in terms of general assumptions in regional policy and the paucity of legal settlements on these issues also contributed to the failure.

In the end, coal mining was definitively terminated in June 1998. The mines left behind large areas, spoil heaps, crowds of miners and unemployed people from the cooperating companies. The community in the basin adopted a passive attitude, waiting for the decision-makers to act, which in practice either resulted in negative consequences or simply did not exist. These dramatic (even traumatic) processes aggravated the pauperisation of the basin community and were accompanied by a rapid exodus of highly qualified staff, general stagnation and the adoption of passive attitudes. In addition, these negative phenomena were reinforced by the liquidation of the Wałbrzych Voivodeship as part of the local government reform of 1999 and the incomprehensible and very harmful deprivation of Wałbrzych as a city with powiat rights for 11 years (2002-2013). As a result, in a short period of time, the hitherto intensive economic activity area was degraded to the role of a peripheral area, where negative manifestations became visible in all areas of social and economic life – which in turn resulted in a progressive process of marginalisation. This can be seen in the growing distance from the surrounding area as well as from the national economy as a whole (in 2004, the subregion produced 18.9% of the voivodeship's GDP, in 2010 – 15.7% and in 2017 – only 15%). The difficult situation was exacerbated by the lack of convenient transport links with the rest of the country (this situation is still unresolved) and the border location in a mountainous area. The existing internal resources were shaped around a nearly 500-year process of mining and processing of coal, in addition, most of their elements were characterised by significant wear and tear, both technical and technological obsolescence. The actions taken by local representatives were insufficient and often characterised by particularism turning into egoism.

It was only in 2017, on the initiative of the Mayor of Wałbrzych, that 107 local government units located in the south of the province (counties and municipalities) signed an agreement. This agreement, in the form of a self-government initiative, is a unique example of creating the foundations of cooperation between individual units on such a large scale. The reason for these actions was the fact that the Lower Silesian Voivodeship, as one of two voivodeships in the new programming period (2021-2027), was considered a transitional region, as it reached 75% of the average GDP per inhabitant of the EU in PPS (Purchasing Power Standard), which resulted in a reduction in the pool of funds for the Lower Silesian Regional Operational Programme. At the same time, a clear division between rapidly developing subregions (the northern part) and those with slower growth rates and weaker macroeconomic indicators (Korenik, 2017), including the area of the Wałbrzych subregion, becomes apparent in the voivodeship.

## Current socio-economic characteristics of the Wałbrzych subregion

The Wałbrzych subregion is the largest in terms of population and the third, after Wrocław and Jelenia Góra, in terms of the Lower Silesia region area. It covers an area of 4,179 km<sup>2</sup> and was inhabited by 641,391 people in 2020, constituting 20.95% and 22.18% of the category value for the region, respectively.

The area is primarily located in the mountain range of the Sudetes. The Table 1 presents the basic data characterising the subregion in terms of dynamics concerning 2010 and the dynamics of the entire Lower Silesian Voivodeship.

**Table 1.** Data on the Wałbrzych subregion in 2010 and 2022

Category	Wałbrzych subregion – as of the day 31.12.		The dynamics of changes in the Wałbrzych subregion (year 2010 = 100)	Dynamics of changes in the Lower Silesia region (2010 = 100)
	2010	2020		
Population	685 606	641 391	93.55	99.11
Working age population <sup>a</sup>	470 612	394 170	83.76	88.68
Ageing rate (number of people aged 65+ per 100 people aged 0-15)	107.2	164.6	153.54	140.80
Economic entities	72 570	77 223	106.41	119.56
Entrepreneurship (number of natural persons running a business per 1,000 inhabitants)	70	76	108.57	111.11
Number of employed	184 090	191 903	104.24	117.44
GDP of the subregion	19 250	27 690 <sup>c</sup>	143.84 <sup>d</sup>	153.71 <sup>d</sup>
Productivity (GDP/number of employed) <sup>e</sup>	0.10	0.14 <sup>f</sup>	136.66 <sup>d</sup>	131.33 <sup>d</sup>

<sup>a</sup> 15-59 years old women, 15-64 years old men.

<sup>b</sup> measurement unit – PLN million, current prices.

<sup>c</sup> data for the year 2019.

<sup>d</sup> the dynamics of changes was calculated based on data from 2019.

<sup>e</sup> productivity calculated as GDP / number of employed people.

<sup>f</sup> due to the unavailability of data for GDP for the subregion for 2020, the indicator was calculated for 2019.

Source: own study based on BDL (2021).

While actual tangible protests against the President and governmental institutions were not frequent in the western regions, the decline in the level of support was accompanied by increased emigration sentiment, vulnerability to media manipulation (in the West in 2015-2016, only a year after the election, just 15.8% of respondents trusted the President, the mass media – 39.3%) (KIIS, 2017), aggravation of the feeling of discrimination in the state, which was won historically and in 2013-2014, cases of subjective and objective confidence in the loss of income, and limited opportunities to obtain it in Ukraine.

It is worth mentioning that there were also conflicts brought about by the introduction of the language law in Ukraine (in particular as regards compulsory secondary education in Ukrainian). The manifestation of this was particularly acute in the areas of Hungarian minority residence in the Transcarpathian region.

Based on the above data, we can conclude that the same negative direction of demographic processes is observed in the Wałbrzych subregion as in the entire Lower Silesian region. Over the decade (2010-2020), both the total and working age populations decreased (by 6.45% and 16.24%, respectively). However, the decline in the total population and the working age population in the Wałbrzyski subregion was higher than in the Lower Silesian region. The population aging index also showed a relatively large increase. This indicator is higher than in the region and amounted to 53.54% (compared to 40.80%).

On the other hand, the values of the basic categories relating to economic activity show a positive trend. However, although the number of economic entities in the Wałbrzych subregion increased within 10 years, the growth dynamics is relatively low (6.41% compared to 19.56% in the voivodship).

The registered unemployment rate (calculated as the ratio of the number of registered unemployed to the number of professionally active civilians) in 2020 in the Wałbrzych subregion was 8.8%. It should be emphasised that this ratio is higher than the unemployment rate in Poland (6.3%) and in the Lower Silesia region (5.6%). In the Wałbrzych subregion, the number of employed persons in the analysed period increased by 4.24%, but the growth rate was much lower than in the Lower Silesian region (17.44%).

The average monthly gross salary in 2020 in the Wałbrzych subregion was PLN 5,002.63. For comparison, the average gross salary in Lower Silesia was PLN 5,693.69, and in Poland, PLN 5,523.32.

GDP for the Wałbrzych subregion in 2019 increased by 43.84% compared to 2010, i.e. it grew slower than in the Lower Silesian region (53.71%). Notably, the productivity growth rate in the Wałbrzych subregion was slightly higher than in the entire Lower Silesian region. Such a development of this indicator results from a slower increase in the number of employees in the subregion and the location of industrial investments in the special economic zone. These investments are characterised by creating jobs with a predominance of non-complex, often assembly activities, which indicates a simple industrial basis for the growth of this indicator.

There are 44 large enterprises (employing more than 250 employees) in the entire Wałbrzych subregion, 36.4% of which are located in Wałbrzych. Most of them are industrial plants (54.5% of all entities). From among all large enterprises operating in the Wałbrzych subregion, thirteen of them are foreign entities, all of them dealing with industrial processing. The dominant forms of ownership among all large enterprises are foreign ownership (29.5% of all entities) and ownership of local government units or local government legal persons (27.3% of all entities). Only one large enterprise is owned by the state.

Such a structure poses a potential threat because entities with foreign capital, in particular those that do not require specialised conditions and staff (including those dealing with low- and intermediate-technology industrial processing) have a relatively high ease of relocation (relocation of activities) – e.g. in order to reduce costs. That is why it is essential that they are rooted in a given location, e.g. by creating significant cooperation relationships with local actors and involving them in local social responsibility.

It should be remembered that the relocation of large enterprises with foreign capital present in the Wałbrzych subregion would result in a significant increase in the number of unemployed. Importantly, those working in these entities are largely people employed in production. The liquidation of one of the large entities, assuming that no new investor with a similar business profile does not appear simultaneously, would force a significant part of the dismissed persons to start working outside the subregion or remain unemployed. Some people would start their own business – and to make it possible, it is necessary to support broadly understood education, counselling as well as fi-

nancial, material, and personal assistance in setting up new companies. Liquidation of large companies in the subregion would also reduce its attractiveness for young people, particularly those finishing secondary schools, which could deepen the unfavourable balance of population migration.

Among the large enterprises in the Wałbrzych subregion, it is difficult to clearly identify the dominant sectors. Both the automotive industry (AAM POLAND Sp. z o.o., FAURECIA WAŁBRZYCH SA, RONAL – POLSKA Sp. z o.o.) and the health care sector (Dr. Alfred Sokołowski Specialist Hospital in Wałbrzych, the Independent Public Healthcare Center in Świdnica) are represented.

There are two public universities (including one branch) and five non-public universities (including two branches and one non-local teaching centre) in the Wałbrzych subregion. The Angelus Silesius State University in Wałbrzych deserves special attention. In its development strategy, the university envisages educating staff for the internal market, not only from the subregion but also from other areas. Moreover, a branch of the Wrocław University of Technology (Faculty of Technology and Engineering) is located in Wałbrzych. There is also one private university, i.e. the University of Management and Entrepreneurship, based in this city. There are two private universities in Świdnica (one branch and one external centre) and the Higher Theological Seminary of the Świdnica Diocese. On the other hand, in Kłodzko, there is a Medical College and a branch of the Higher School of Management 'Edukacja'. Unfortunately, the vast majority of universities in the Wałbrzych subregion educate in the field of humanities and social sciences. There are few technical and exact faculties. There is also a slight adjustment of the education profile to the needs of the labour market, especially with regard to the demand for employees by new investments (e.g. in special economic zones), in which production enterprises dominate.

Business support institutions are an important element of the subregion's economy, as they increase the investment attractiveness of the area by creating a business support infrastructure. In the Wałbrzych subregion, there is a well-developed network of the business environment characterised by numerous forms of cooperation between various entities and institutions (Strategia, 2018). This is an undoubted advantage and, at the same time, a condition for shaping the proper development of this area, including based on cooperation (cooperation) with local government units. Such shaping of these phenomena leads to the synergy effect in the scope of implemented activities. This is due to the fact that such cooperation, combined with the involvement of a wide range of stakeholders (social and economic entities), is the basis for the construction of the territory (defined by the relations taking place within a given area), as well as being a derivative – rooting economic activity in the local environment (Zakrzewska-Pótorak, 2012). This is especially important when a given area has a modest resource of factors that determine their competitive and innovative potential and indicate possible socio-economic development directions (Rynio, 2013). The identification and use of these advantages build the image of the area and affect their investment attractiveness.

Business environment institutions (BEI) in the Wałbrzych subregion (except for scientific and research institutions) that have an impact on the economic development of the subregion include, among others, chambers of commerce, associations, business incubators, technology parks, industrial parks, technology transfer centres, advisory centres, financial institutions and development agencies. Their distribution in the area of the subregion is uneven. Another problem is the unsatisfactory scope of services provided by BEI. They are not often involved in projects implemented in rural areas, as well as in activities supporting pre-incubation and incubation of companies (Strategia, 2018).

An important role in the economic development of the analyzed area is played by the Wałbrzych Special Economic Zone "INVEST-PARK" (WSSE). It is one of the fastest growing industrial zones in Poland (Hajduga, 2010; Hajduga, 2014). It covers areas located in south-western Poland, in the Lower

Silesian, Opolskie, Lubuskie and Wielkopolskie regions. In the Wałbrzych subregion, its subzones are located in the following cities: Bielawa, Dzierżoniów, Kłodzko, Kudowa-Zdrój, Nowa Ruda, Świdnica, Świebodzice and Wałbrzych, as well as in the following municipalities: Bystrzyca Kłodzka, Dobromierz, Kłodzko, Nowa Ruda, Stoszowice, Strzegom, Świdnica, Ząbkowice Śląskie and Żarów (MR, 2020).

The first permit to conduct business activity in the Wałbrzych zone was issued in December 1997 to TAKATA-PETRI Sp. z o.o. The territorial expansion of the zone began in the following years. So far, over 200 entrepreneurs have invested in the WSSE. They include global concerns as well as domestic small and micro-enterprises (WSSE, 2021). The companies invested a total of PLN 25.5 billion and created over 51.0 thousand jobs.

In Wałbrzych, in the area of WSSE, the automotive industry is dominant, complemented by construction activities. In the WSSE subzone in Świdnica, companies operating in the household appliances, chemical, electronic and plastics processing industries. There is a food industry company in the WSSE subzone in Strzegom. The following industries are represented in Świebodzice: plastics processing, heat technology, air technology. In the WSSE subzone in Nowa Ruda, investors from the construction industry, energy equipment, production of plastics and production of cable harnesses conduct their business. In the subzone of the WSSE in Żarów, the automotive industry dominates (AW, 2018, p. 15).

A general diagnosis of the situation of the Wałbrzych subregion indicates that this area still displays less favourable socioeconomic indicators than the entire Lower Silesian Voivodeship. At the same time, an undoubted advantage is the extensive network of business environment institutions, which, despite the above-mentioned imperfections, can play an important role in the development of the former region with appropriate support and inspiration, that is educational, informational, and organizational role. Undoubtedly, however, the Wałbrzych subregion 'lives' to a large extent thanks to the special economic zone. However, this type of enclave-like solution cannot function in the long term. In the absence of diffusion of development impulses to the environment, this will generate unfavourable processes, making the economy of the subregion dependent and positioned in the existing dichotomous structure.

## Conclusions

The Wałbrzych subregion went through a difficult path during the period of shaping the new socio-economic realities in Poland. It was the first practical liquidation of such a large area of economic activity in the realities of that economy. The measures taken during the closure of the basin were characterised by low efficiency, generality, fragmentation and high variability of activities (even chaotic). After closure, the area was left on its own with swollen problems in all socio-economic cross-sections. These processes were accompanied by a lack of clear, comprehensive – and, more importantly, coherent – concepts for the management of post-mining areas, their reclamation or revitalisation (Długosz, 2019). At present, after more than thirty years, when characterising the effects of these activities, they should be unequivocally assessed as downright tragic, both in social terms (huge unemployment, pauperisation, community regression – it was there that the poorhouses were created on a massive scale), environmental terms (secondary emissions and spontaneous combustion of heaps, rising water levels, or infiltration of gases from the pits into the basements of buildings) and economic terms (low entrepreneurship rate, an outflow of people to other cities, low level of productivity of the subregion, etc.).

The word experiment was used in the title of the article, as the activities related to the so-called ‘restructuring’ were the first, even innovative, implemented in the new realities of the Polish transforming economy. This pioneering activity was based primarily on the trial and error method. In addition, during the process, assumptions and adopted procedures were often changed it seems, due to the lack of introduction of any logical assumptions of the restructuring process. For these reasons and the final outcome of this restructuring process, the authors considered this experiment unsuccessful. This is also indicated by the ongoing, long-term restructuring process in Upper Silesia. Of course, the scale of this basin is different, but the experience gained in the Wałbrzych basin is not taken into account in any documents, plans or procedures.

In relating the restructuring process to the examples discussed from Western European countries, it is necessary to point out the unpreparedness of its implementation, the lack of involvement of state levels, the scarcity of funds for social security and the lack of an institutional basis. Also notable is the fast pace of the process, which in practice resulted in only one outcome, the liquidation of the mines and numerous related companies. This attitude may come as a surprise, since all the discussed examples of restructuring measures had already been implemented for a long time and were actually entering the final phase. A separate but important issue is the passive attitude of the local community, the lack of willingness to participate in restructuring processes, or at least the opposition and dissatisfaction so often present in examples from Western European countries.

Looking at Wałbrzych and its surroundings from the today’s perspective, it seems that the legacy of 500 years of mining will continue to affect the way the area functions in all its dimensions for a long time to come. One example is the recent construction of the Wałbrzych city bypass, which was delayed by almost a year due to the fact that several post-mining shafts were found along its route that were not marked in the available documentation. In recent years, there have been a few phenomena of slow containment of the negative consequences of the decommissioning of the pit. However, both the pace and scale are small and, more importantly, their location is spoty and affects mostly Wałbrzych. They are endogenous in character, which indicates that with external assistance there is a possibility of accelerating positive changes and incorporating the area into the national economy as an important element rather than as a supplicant applying for assistance. At the same time, it should be borne in mind that the development of peripheral areas such as the former Lower Silesian Coal Basin requires overcoming the long-term backwardness also in terms of the quality of human capital, the level of which in the subregion is low. This capital will depend on the development of modern education, but also on stopping or reversing migration trends depleting the stock of educated and entrepreneurial young people.

## References

- AW (2018). *Strategia Rozwoju Aglomeracji Wałbrzyskiej z perspektywą do 2030 r.* Aglomeracja Wałbrzyska.
- BDL (2021). Bank Danych Lokalnych. Retrieved from <https://bdl.stat.gov.pl/BDL/start> (28.12.2021)
- Beyotn, H. (1984). The miners’ strike in Easington. *New Left Review*, 148(1).
- CHM (2022). *Centre Historique Minier, Nord/Pas-de-Calais*. Retrieved from [https://www.chm-lewarde.com/wp-content/uploads/2022/08/DOSSIER-DE-PRESSE-en-anglais\\_2022.pdf](https://www.chm-lewarde.com/wp-content/uploads/2022/08/DOSSIER-DE-PRESSE-en-anglais_2022.pdf) (28.12.2022)
- Dahlbeck, E., Gärtner, S., Best, B., Kurwan, J., Wehnert, T., & Beutel, J. (2021). *Analysis of the historical structural change in the German hard coal mining Ruhr area (case study)*. Climate Change, 30. Des-sau-Roßlau: German Environment Agency.
- Długosz, M. (2019). Wykorzystanie terenów poprzemysłowych i nowa forma organizacji przemysłu w mieście na przykładzie Wałbrzycha. *Konwersatorium Wiedzy o Mieście*, 4(32), 87-93. <http://dx.doi.org/10.18778/2543-9421.04.07>

- Flexner, J. A. (1950). Great Britain: Coal Mining since Nationalization. *Monthly Labor Review*, 70(1), 19-25.
- Hajduga, P. (2010). *Instytucja specjalnej strefy ekonomicznej jako instrument polityki regionalnej państwa. Rozprawa doktorska niepublikowana*. Wrocław: Uniwersytet Ekonomiczny we Wrocławiu.
- Hajduga, P. (2014). Special economic zones in the Lower Silesia region as a regional development stimulator during the crisis. In M., Markowska, D., Głuszczyk & B., Bal-Domańska (Eds.). *Local and Regional Economy in Theory and Practice* (pp. 56-65). Research Papers of Wrocław University of Economics, 334. Wrocław: Publishing House of Wrocław University of Economics.
- Hospers, G.J. (2004). Restructuring Europe's rustbelt: The case of the German Ruhrgebiet. *Intereconomics*, 39, 147-156. <https://doi.org/10.1007/BF02933582>
- Kilch, J. (ed.). (2001). *Globalizacja*. Kraków: Instytut Studiów Strategicznych.
- Korenik, S. (1994). *Problemy restrukturyzacji regionów depresji na przykładzie Dolnośląskiego Zagłębia Węglowego* (typescript reproduced). Wrocław: Akademia Ekonomiczna.
- Korenik, S. (2017). Procesy rozwoju gospodarczego w przestrzeni Dolnego Śląska – wybrane problemy. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 490, 11-20. <https://doi.org/10.15611/pn.2017.490.01>
- Leboutte, R. (2009). *European Review of History: Revue européenne d'histoire*. Luxembourg: University of Luxembourg.
- Lesiw-Głowacka, K., Skoczeń, E., Molecki, B., Kasprzak, Ł., & Krahl, T. (2021). *Analiza powiązań funkcjonalnych w Dolnośląskim Zagłębiu Węglowym*. Wrocław: IRT. Retrieved from [https://irt.wroc.pl/strona-470-analiza\\_powiazan\\_funkcjonalnych\\_w.html](https://irt.wroc.pl/strona-470-analiza_powiazan_funkcjonalnych_w.html)
- MR (2020). *Informacja o realizacji ustawy o specjalnych strefach ekonomicznych. Status at 31 December 2019*. Warszawa: Ministerstwo Rozwoju.
- Opałło, M. (1993). *Przestrzenne aspekty restrukturyzacji przemysłu a rozwój regionalny*. Warsaw: IRiSS.
- Ptak, M. (2021). *Restrukturyzacja zagłębia wałbrzyskiego*. Retrieved from <https://docplayer.pl/15204972-Restrukturyzacja-zaglebia-walbrzyskiego.html> (28.12.2021)
- Rynio, D. (2013). *Kształtowanie nowej polityki regionalnej Polski w warunkach globalizacji i integracji*. Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.
- Strategia (2018). *Strategia rozwoju społeczno-gospodarczego południowej i zachodniej części województwa dolnośląskiego na lata 2020-2030, obejmująca swoim zasięgiem subregiony wałbrzyski i jeleniogórski (NUTS 3) – Strategia Rozwoju Sudety 2030*. Wrocław: Centrum Badawczo-Rozwojowe Samorządu Terytorialnego, Uniwersytet Ekonomiczny we Wrocławiu.
- Stein, R. (1925). *Das Buch der Stadt Waldenburg in Schlesien*. Berlin: Deutscher Kommunal-Verlag.
- WSSE (2021). *Wałbrzyska Specjalna Strefa Ekonomiczna Invest Park*. Retrieved from <https://invest-park.com.pl/inwestorzy-w-strefie> (28.12.2021)
- Zakrzewska-Póltorak, A. (2012). *Rozwój regionalny w globalizującej się gospodarce*. Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.

