PRESSto.

STUDIA HISTORIAE OECONOMICAE
UAM Vol. 43/1 Poznań 2025
zhg.amu.edu.pl/sho

Janusz Kaliński (*Warsaw School of Economics*, Poland)
https://orcid.org/0000-0001-9046-3882
jkalins@sgh.waw.pl

CHANGING FATE OF LARGE INDUSTRIAL INVESTMENTS DURING THE GOMUŁKA PERIOD (1956–1970)

Abstract: The Gomułka period of fourteen years includes one of the investment cycles characteristic of the centrally managed economy in Poland. After an initial, short period of stabilization of outlays, in the years 1959–1969 they were significantly increased and clearly focused on the fuel, raw materials and chemical industry. The aim was to reduce the disproportions that had become apparent in the economy in the first half of the fifties, when heavy industry was particularly favored. Additional investments were focused on obtaining new production capacities in the scope of lignite and hard coal mining and the production of copper and sulfur, heat energy, liquid fuels and petrochemical products, non-ferrous metals and inorganic chemical products. As a result of the intensification of outlays, refinery and petrochemical plants in Płock, copper mines and metallurgy in Lower Silesia, chemical plants in Police and Puławy and coking coal mines in the Jastrzębie-Zdrój region gained a permanent position in the Polish economy. In the 1990s, the process of liquidation of the sulfur basin in the Tarnobrzeg region began, mainly under the influence of technological changes in the industry. At the beginning of the 21st century, the role of brown coal basins and the related energy industry in Lower Silesia and Wielkopolska decreased due to the gradual depletion of deposits.

Keywords: Polish People's Republic of Poland, industry, investments, mining, power engineering, metallurgy, chemical industry.

https://doi.org/10.14746/sho.2025.43.1.004

INTRODUCTION

In studies on the economy of the Polish People's Republic, investment policy takes a special place, and especially its impact on fluctuations in

economic growth, economic imbalance and low living standards of the population. It is not without reason that the size and structure of investments are treated as important factors responsible for repeated deep socio-economic crises in the People's Republic of Poland, which in 1989 led to the fall of the so-called real socialism (Cheliński, 1964; Kołodko, 1976; Kotowicz-Jawor, 1979; Landau, 1986; Stankiewicz, 1986; Jezierski, 1987; Chojnowski, 2000; Kaliński, 2007). In the research on investment processes, much attention is paid to the forced industrialization during the six-year plan (1950–1955) and Gierek's acceleration in the 1970s. The period 1956–1970, when the state leadership belonged to Władysław Gomułka, enjoys less interest from researchers. Meanwhile, the 1960s were remembered as a time of no lesser investment effort of a very specific nature. Similarly to the 1950s and 1970s, it was dominated by expenditure on industry, but a characteristic feature of the Gomułka decade was the huge involvement in the extraction of energy and chemical raw materials and the development of energy and chemical industry. Some of these investments still had a significant impact on the structure of Polish industry in the first decades of the 21st century (e.g. hard coal and lignite mining, coal-based energy, copper mining and metallurgy, petrochemistry, nitrogen industry). Some turned out to be ephemeral, as their effects soon became a thing of the past (e.g. sulfur extraction and processing). The article presents selected industrial facilities that have successfully survived since the 1960s and are still important elements in the Polish industry, as well as those that, for various reasons, disappeared from the economic map of Poland at the turn of the century.

DIRECTIONS OF INVESTMENT IN INDUSTRY IN THE YEARS 1956–1970

The obvious failures of the six-year plan in the sphere of the living conditions of the population and sustainable economic growth did not stop communist decision-makers from pushing the so-called socialist industrialization imported from the Soviet Union. The will to continue it was already expressed in the projects of the first five-year plan for the years 1956–1960. It was only after the tragic Poznań June, together with repressive actions, that the demand for changes in economic policy was put for-

ward to improve the living conditions of society and reduce the accumulated economic disproportions (Kaliński, 1986: 227 et seq.; 2023; Landau, 1995: 26 et seq.).

The events of October 1956, which restored Władysław Gomułka's party leadership of the state, among other things, sparked a public discussion on the key economic problems of Poland, conducted mainly in the press, which was experiencing a short period of liberalization. Intellectual revival also reached the highest state and party bodies. In the Planning Commission at the Council of Ministers (KPRM), which replaced the super-ministry of economy, the State Economic Planning Commission, the urgent issue of accelerating the growth of wages and consumption, especially of goods of industrial origin, was considered. It was believed that this would be possible provided that the state industry producing consumer goods was developed and small, private industry and crafts were recreated (AAN, KPRM, 8: 4 et seq.). However, the state leadership quickly lost its reform momentum. Already in May 1957, Gomułka announced the end of the period of reduction of general expenditures and preferences for consumer investments and called for a renewed acceleration of the process of industrialization of the country (Ptasiński, 1988: 89 et seq.; AAN, KC PZPR, 237/II/18: 90). The strategy of re-accelerating industrial growth became the basic economic problem of the 3rd Congress of the Polish United Workers' Party in March 1959. It put forward the concept of a significant increase in the investment fund and the allocation of 80% of the funds allocated to industry for the development of the raw material and fuel-energy base, large-scale chemistry and the machine industry (Szyr, 1959: 15).

A large concentration of outlays in hard coal mining was planned, mainly in the Rybnik Coal District (ROW) with its deposits of coking coal. Several mechanized open-pit lignite mines were to be built in the Turoszów, Konin and Turek areas, supplying fuel to power plants planned nearby. In line with global trends, it was intended to increase the share of crude oil and gas in Poland's fuel balance. In the case of petroleum products, the implementation of the plans was facilitated by the construction of an oil pipeline from the USSR and refinery-petrochemical plants in Płock. The acquisition of gas and oil was associated with an increase in the number and modernization of geological drilling in the country.

Further development of iron metallurgy was supported by investments, including the expansion of the plant in Nowa Huta, based on imported ore and domestic coking coal. An increase in aluminum production was announced, among others by building aluminum smelter in

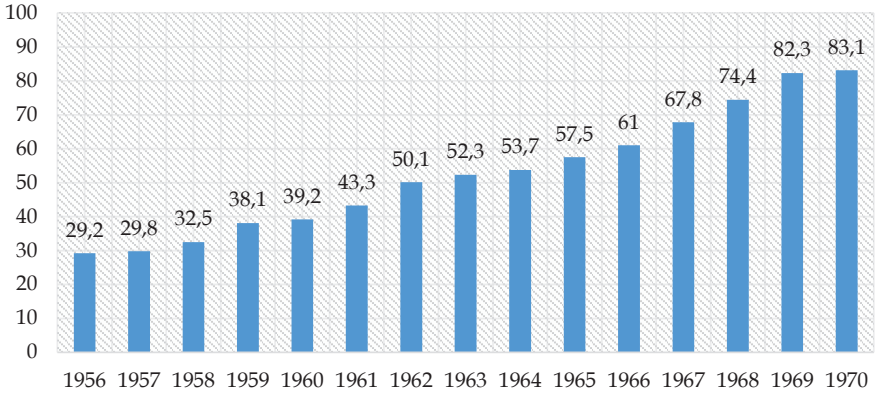
Konin. Great hopes were placed in the exploitation of copper ore deposits in the vicinity of Głogów and its processing. Taking into account natural conditions and opinions of specialists, it was intended to increase the production of the chemical industry. In addition to petrochemistry, it was planned to dynamize the production of fertilizers and artificial fibers, synthetic rubber, and above all sulfuric acid based on discovered sulfur deposits in the vicinity of Tarnobrzeg. The directions of investment also resulted from the arrangements of the Council for Mutual Economic Assistance (CMEA) trying to coordinate the economic plans of its member states. In the case of Poland, it was insisted on further development of the raw material base for industry by intensifying the extraction of coking coal for the needs of metallurgy, developing sulfur and copper deposits, increasing the production of zinc-lead ores, orienting the chemical industry towards the production of synthetic raw materials and accelerating the exploration of crude oil and natural gas (*III Zjazd…*, 1959: 358 et seq.; *IV Zjazd…*, 1964: 260 et seq.; Kaliński, 1993: 114).

Unlike the six-year plan, industrialization in the 1960s was to take into account more broadly the branches of the mining and chemical industries and refined metallurgical products. In general, it was assumed that the industrial structure created in the first half of the 1950s would be supplemented with little involvement in modern manufacturing sectors, then intensively developed in highly industrialized countries (computers, electronic components). At the end of the period under review, in view of the growing payment difficulties, the need to develop industries whose production was directed for export, especially to capitalist countries, was emphasized. The export-oriented production of coking coal, coke, copper, zinc and lead was preferred (Kaliński, 1993: 113, 139–141).

Modernization projects, which were treated as contradictory to the need to absorb the post-war demographic boom by the economy, were definitely in the background (Kaliński, 2011). Modern technology was to support heavy and machine industry and other branches working with imported raw materials, while in the branches using the domestic raw material base, labor-intensive methods were promoted. Limited modernization was to be supported by the licensing policy, activated in the mid-1960s. It was decided to increase the purchase of industrial licenses in capitalist countries and to allow for the necessary cooperative import (AAN, KC PZPR, 237/II/42: 3 et seq.). The symbol of the new trends was the purchase of a license for a FIAT 125p passenger car for a factory in Warsaw's Żerań.

In the Gomułka period, only in the initial period did the state's investment expenditure on industry stabilize and the share of branches directly producing consumer goods (clothing, food and textile industry) increase. However, already in 1959, political decisions increased the outlays by as much as 30.5% and continued uninterruptedly until 1970 (see Figure 1). The pace of investment decreased due to the harsh winter of 1962/1963, and on a larger scale due to the growing economic problems of the late sixties. However, the concentration of outlays on continued investments in the raw material and energy base and on the construction and expansion of processing plants, including the Nitrogen Plant in Puławy and the fifth blast furnace in the Lenin Steelworks, the modernization of the Mechanical Plant 'Ursus' and the acceleration of the construction of the hydroelectric power plant in Włocławek, was not abandoned.

Figure 1. Investment expenditures in industry in the years 1956–1970 (in billion zlotys, in 1961 prices)



Source: *Rocznik Statystyczny…* (1971: 4–5).

The structure of investment outlays on industry was definitely dominated by the fuel industry, which in the peak year of 1964 participated at the level of 23.4%. The chemical industry moved to second place, reaching a share of 15.3% in 1969, and the power industry to third with a peak share of 12.6% in 1963. The electrical industry, very important from the point of view of modern technologies, obtained a maximum of 3.0% (in 1970) of total investment outlays on industry (*Rocznik Statystyczny…*, 1971: 4–5; *Rocznik statystyczny inwestycji…*, 1968: 58). The above indicators clearly indicate the main directions of the second acceleration of investment in the Polish People's Republic, which took place in the Gomułka period. Its ba-

sic priority was the expansion of the raw material and energy base, including capital-intensive and time-consuming investments in mining, power engineering and the chemical industry.

EFFECTS OF INVESTMENT IN INDUSTRY UNTIL 1970

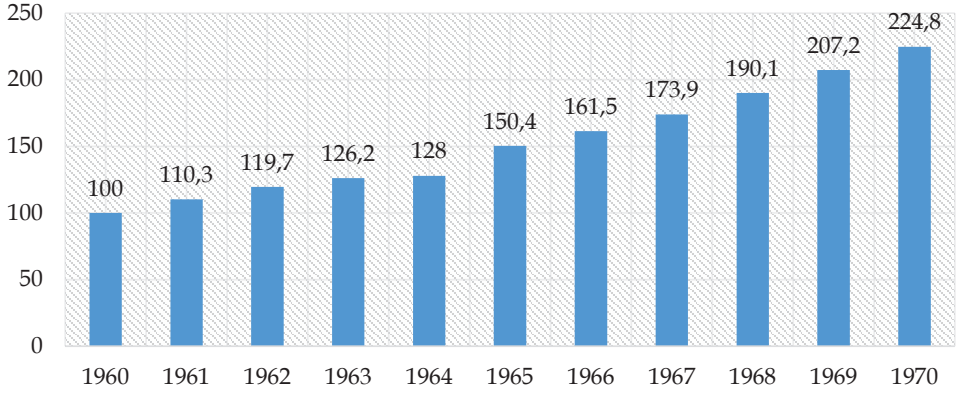
As a result of the strong acceleration of investment after 1958, the gross value of fixed assets in the socialized industry increased more than twice in the years 1960–1970 (*Rocznik Statystyczny…*, 1971: 214). In the priority fuel industry, hard coal mines were put into operation: '1 Maja' (1960), 'Szczygłowice' (1961), 'Jastrzębie' (1962), 'Staszic' (1964), 'Moszczenica' (1965), 'Zofiówka' (1969) and 'Piast' (1970), mostly located in the ROW. In the same industry, the 'Konin' (1962) and 'Adamów' (1964) brown coal mines were established, creating the foundations of the Konin Brown Coal Basin [Konińskie Zagłębie Węgla Brunatnego]. In the mining of metal ores in Lower Silesia, the Copper Mining Plants were launched in Lubin and Polkowice (1968), and in other regions of Poland: the Zinc-Lead Ore Mining Plants 'Trzebionka' in Trzebinia (1962) and the Zinc-Lead Ore Mine 'Pomorzany' near Olkusz (1968). Metal ores were supplied, among others, to the new Zinc Smelter in Miasteczko Śląskie (1968), and imported bauxite was the basis for the production of the new Aluminum Smelter in Konin (1966).

Thermal power plants were built near the lignite mines: the 'Turów' Power Plant in Bogatynia (1962), the 'Adamów' Power Plant in Kopytkowo (1964) and the 'Pątnów' Power Plant (1967). Hard coal powered the new power plants 'Łagisza' in Będzin (1963) and 'Siersza' II in Trzebinia (1964) as well as the 'Siekierki' CHP plant in Warsaw (1962). In the Bieszczady Mountains, on the San River, the Solina-Myczkowce Hydroelectric Power Plant Complex was built (1968), and on the Vistula, the Włocławek Hydroelectric Power Plant (1969).

Rich sulfur deposits became the basis for the creation of the Tarnobrzeg Sulfur Basin, which included mines and sulfur processing plants in Piaseczno (1960), Tarnobrzeg (1961), Grzybów (1962), Jeziórko (1967) and Machów (1969). The largest new chemical industry plants included: Mazovian Refinery and Petrochemical Plants (MZRiP) in Płock (1964), Phosphorus Fertilizer Plants in Gdańsk (1968), Police Chemi-

cal Plants (1969), Puławy Nitrogen Plants (1966), Elana Chemical Fibre Plant (Toruń 1963), Paint and Varnish Factory in Cieszyn (1965), Pollena Capital Household Chemical Plants in Nowy Dwór Mazowiecki (1965), Anilana Chemical Fibre Plants in Łódź (1965) and Stomil Olsztyn Car Tire Plants (1967). The discussed group of chemical, raw materials and fuel sector plants established in the Gomułka period included some of the largest plants of the PRL era. MZRiP in Płock was already in 3rd place in terms of the value of production assets in the year of its establishment, and in 1969 in 1st place in terms of sold production. The top ten largest producers also included Chemical Plants 'Police' and Sulfur Mines and Processing Plants 'Siarkopol' (KiZPS 'Siarkopol') in Tarnobrzeg (Karpiński et al., 2013: 92 et seq.).

Figure 2. Dynamics of global industrial production in the years 1960–1970 (1960=100)



Source: *Rocznik Statystyczny…* (1971: 172).

The new investment acceleration brought an impressive increase in industrial production in the years 1960–1970 by almost 125% (see Figure 2). In accordance with the trend unfavorable for market supply that has persisted since the 1950s, the increase in production of means of production amounted to about 149%, while that of consumption items was definitely less, by only less than 89%. In the privileged branches of industry that are of interest to us, the highest increases occurred in the chemical industry (267.6%) and in the production of electricity and heat (150.8%). In the case of specific products, crude oil processing increased from 876 thousand tons to 7,471 thousand tons, production of elemental sulfur from 26.2 thousand tons to as much as 2,683 thousand tons, nitrogen fertilizers from 1,113 thousand tons to 3,124 thousand tons, synthetic rubber from 20.2

thousand tons to 61.7 thousand tons, artificial fibres from 77.8 thousand tons to 138 thousand tons, plastics from 55.4 thousand tons to 269 thousand tons. tons, and electricity from 29.3 billion kWh to 64.5 billion kWh. Also worth emphasizing is the increase in the preferred lignite mining from 9.3 million tons to 32.8 million tons and the production of electrolytic copper from 21.7 thousand tons to 72.2 thousand tons and aluminum from 26 thousand tons to 98.8 thousand tons (*Rocznik Statystyczny…*, 1971: 172–173, 181).

THE FATE OF SELECTED FACILITIES IN THE RAW MATERIALS, ENERGY AND CHEMICAL SECTOR BUILT IN THE YEARS 1956–1970

Of the large plants built after 1956, the greatest historical success was definitely achieved by the **Mazovian Refinery and Petrochemical Plants [Mazowieckie Zakłady Rafineryjne i Petrochemiczne] in Płock**. Their establishment, and especially their location, was directly related to the construction of the 'Przyjaźń' oil pipeline, which was started in 1960 and is approximately 4,500 km long. It was a joint investment by Poland, Czechoslovakia, the GDR, Hungary and the USSR, aimed at delivering oil from deposits located between the Volga and the Urals to Central Europe, intended for the economic needs of the satellite states of the USSR and the military needs of the Warsaw Pact. In April 1964, Soviet oil flowed to Płock, becoming the basic raw material used by MZRiP (Koński, 1987: 36–38; Zimowski, 1997: 153).

The construction of the largest industrial facility in Płock since the construction of the Nowa Huta metallurgical plant began in 1960. The project assumed a target refinery processing capacity of 6 million tons of oil per year, with the possibility of increasing it to 10–12 million tons of oil per year. In August 1964, oil distillation was launched in the first refinery installation and the first tons of petroleum products were obtained. By the mid-1970s, a total of four installations with increasing capacity were built. Crude oil processing systematically increased, reaching 12.9 million tons in 1978. A small part of the raw material, purchased in the Middle East countries, was delivered from the Northern Port in Gdańsk via the Pomeranian Pipeline built in 1975. In addition to fuels, oils and asphalts,

the plant systematically developed petrochemical production, especially in the 1970s, using foreign loans and Western technologies. Among other things, the following were launched: ethylene, butadiene, polypropylene and polyethylene installations. In 1980, an oxygen and nitrogen plant was put into operation. The economic crisis that had been growing since 1979 also affected this branch of industry. Oil processing in MZRiP decreased to 10.2 million tons in 1982 and until the end of the Polish People's Republic it did not reach the level from the best year of 1978. Before the fall of state socialism, the Płock plant employed over 8 thousand workers, processed 80% of all crude oil processed in Poland, supplied chemical products to approx. 2000 plants and was a major exporter (Koński, 2009: 29–35; Zimowski, 1997: 150–156; Klocek, 2006).

After the political changes, the plant was commercialized and from 1993 it operated under the name the Plock Petrochemistry [Petrochemia Płocka S.A.]. The company established extensive contacts with the Western world, among others by adopting a market-based organizational and business model. It focused on modernization investments and expanding the range of products, improving the quality of products and taking care of the environment. An important direction of changes was the development of commercial activities, including wholesale of fuels and plastics. From 1993, a network of its own petrol stations under the name 'Petrochemia' was created and the distribution of liquefied gas was organized. In 1997, Petrochemia Płocka S.A. held shares or interests in 36 companies, including 'Polkomtel' and the German company 'Chemiepetrol' (Klocek, 2006: 45 et seq.).

In 1999, Plock Petrochemistry was merged with the Central Oil Products under the name of Polish Oil Company Orlen JSC [Polski Koncern Naftowy Orlen S.A., PKN Orlen S.A.] and the privatization of the company was started on the capital path. At the beginning of the 21st century, private capital dominated among the shareholders of the concern, but 49.9% of the shares belonged to the State Treasury. The ownership changes became an impulse for the creation of a capital group including Rafinery Trzebinia JSC [Rafineria Trzebinia S.A.], Oil Rafinery Jedlicze JSC [Rafineria Nafty Jedlicze S.A.], LG Petro Bank JSC [LG Petro Bank S.A]. and a fuel distribution company, employing almost 11 thousand employees, including 5.3 thousand from Płock. The growing investment opportunities resulted, among others, in the construction of further, large and modern petrochemical installations (Klocek, 2006: 49–52).

The company began its international expansion by acquiring a refinery in Lithuania (ORLEN Lietuva), two smaller facilities in the Czech Republic (ORLEN Unipetrol) and hundreds of petrol stations in the Czech Republic, Germany, Slovakia and Hungary. In 2022, it significantly increased and expanded its production capacity again as a result of the merger with Grupa Lotos and Polskie Górnictwo Naftowe i Gazowe. The company, under the new name 'Orlen S.A.', apart from processing crude oil and producing a wide range of petrochemical products, was involved in creating sources of low-emission electricity: combined heat and power plants, wind farms and micro nuclear reactors, as well as exploration for deposits and exploitation of oil and natural gas ('Orlen', 2024; *Prezentacja Grupy…*, 2024).

In 2022, the Orlen Group's crude oil processing reached 37.1 million tons, with 93% of production capacity used. Due to political conditions, the consumption of Russian oil decreased to 20%, replaced by supplies from Saudi Arabia, West Africa, Norway and the United States. Orlen secured its position as the leader of the fuel market, with the largest network of petrol stations. and the largest petrochemical concern in Central and Eastern Europe. In the petrochemical sector, it produced 40 products sold in over 60 countries. Additionally, in 2022, it produced 12.3 TWh of electricity and was the largest producer, importer and supplier of gas in Poland (*Prezentacja Grupy…*, 2024).

The Nitrogen Plant in Puławy [Zakłady Azotowe w Puławach] was established with the aim of reducing the deep deficit of artificial fertilizers felt by agriculture. The construction of the factory was synchronized with the laying of a gas pipeline from the eastern border, guaranteeing supplies of Soviet raw material. Preparatory work for the investment began in 1961, and the construction of chemical installations – in 1963. The following year, a decision was made to build another fertilizer factory next to it, the equipment for which was ordered from Western Europe. In the following years, a number of plants (including carbon dioxide, dry ice, polyethylene bags and polyamide fibres) cooperating with fertilizer factories were established. Individual facilities were put into operation from 1966, when the production of ammonia and urea began, to 1979, when, among others, caprolactam and melamine plants were launched. In 1979, the ten millionth ton was produced, and in 1984 – the fifteen millionth ton of the basic product, ammonium nitrate (Zimowski, 1997: 156).

After the beginning of the systemic transformation, in 1992, the plants were transformed into a sole-shareholder company of the State Treas-

ury under the name of Nitrogen Plant 'Puławy' JSC [Zakłady Azotowe „Puławy' S.A.]. In 2005, the company was privatized on the capital path, but the State Treasury remained the owner of the controlling stake. In 2013, **the Nitrogen Plant 'Puławy'** JBL., which had previously taken over Gdańsk Phosphorus Fertilizer Plants 'Fosfory' LLC [Gdańskie Zakłady Nawozów Fosforowych „Fosfory" Sp. z o.o.) and Nitrogen Plant 'Chorzów' JSC [Zakłady Azotowe „Chorzów" S.A.], merged with Nitrogen Plant Tarnów-Mościce JSC [Zakłady Azotowe Tarnów-Mościce S.A.], under the name Azoty Group [Grupa Azoty]. After the commercialization and privatization of the company, modernization processes were accelerated, making extensive use of Western technologies. The production of hydrogen peroxide and perborate was commenced, and modern urea synthesis installations were built. A flue gas desulfurization installation, a liquid fertilizer production line and a new logistics center were put into operation. In line with contemporary trends, flue gas desulfurization enabled the reduction of air pollution from the plants by over 80%. In mid-2023, Azoty Group Nitrogen Plant 'Puławy' S.A. employed nearly 3.6 thousand people. people, and its main products were ammonia and urea, which provided the basis for the production of various types of artificial fertilizers ('Historia w latach', 2024; 'Grupa Azoty…,' 2024).

Another investment, the main goal of which was to increase the production of artificial fertilizers, was the **Chemical Plant in Police [Zakłady Chemiczne w Policach]** near Szczecin. Their construction began in 1965 in the place where a German synthetic gasoline factory operated until 1945. In mid-1969, the first sulfuric acid plant was launched, and the second one was established in 1970 together with phosphoric acid and two-component fertilizer plants. Further facilities and installations were built in the seventies and eighties, enriching the production offer of fertilizers and their quality, and the rare production of titanium white was also launched. The plants became one of the largest recipients of natural gas in Poland. The systemic changes in Poland resulted in the transformation of the state-owned enterprise into a sole-shareholder company of the State Treasury, Chemical Plant 'Police' JSC [Zakłady Chemiczne „Police" S.A.] in 1995. At the same time, the restructuring processes were accelerated with attention paid to the modernization of the plants and their adaptation to the growing environmental requirements. In 1998, the company acquired. Inorganic Industry Plants JSC [Zakłady Przemysłu Nieorganicznego S.A)] in Wrocław. In mid-2005, after further structural changes, ZCh „Police" S.A. successfully debuted on the Warsaw Stock Exchange.

Initially, 80% of the company's share capital belonged to the state, and 20% to other shareholders, including the staff. In 2011, as a result of the acquisition of 66% of the company's shares by Azoty Group [Zakłady Azotowe w Tarnowie-Mościcach S.A.], it entered the Azoty Group. Since 2018, the construction of polymer installations (Polimery Police) has begun in cooperation with the Japanese Hyundai Engineering Co Ltd (*Karty z historii…*, 2012; 'Historia', 2024). In 2022, the main products of ZCh „Police" S.A. were: multi-component fertilizers, urea, ammonia, sulfuric acid and phosphoric acid. Sales revenues brought PLN 5.3 billion, 35% of which was obtained from export, including to Great Britain, Germany and Italy (*Sprawozdanie Zarządu…*, 2024: 9 et seq.).

Other large investments of the Gomułka period were related to the use of domestic natural resources. The efforts of Polish geologists, culminating in the discovery of rich copper deposits in the Głogów and Legnica regions in the late 1950s, resulted in the establishment of the **Copper Mining and Metallurgy Company [Kombinat Górniczo-Hutniczy Miedzi – KGHM]**. In 1961, construction of the Lubin mine was undertaken on a copper ore deposit between Lubin and Sieroszewice. At the beginning of 1968, the first process of production of copper concentrate was started, and in 1972 the 'Lubin' Mining Plant (ZG) achieved its target extraction capacity. At the same time, the 'Polkowice' Mining Plant was built and launched. In 1974, the 'Rudna' Mining Plant came into operation, and in 1980 the 'Sieroszowice' Mining Plant. Initially, the raw material was supplied to the 'Legnica' Copper Smelter, operating since 1951, which was intensively expanded in the 1960s. In 1968, the construction of the 'Głogów' Copper Smelter began, which was then expanded and modernized, and in 1975 – the 'Cedynia' Smelter. In addition to copper, the smelters extracted, among other things, gold, silver, lead, sulfuric acid and selenium. In the People's Republic of Poland, the peak production year was 1985, when 25.4 million tons of copper ore were extracted and 378 thousand tons of electrolytic copper, 6.8 thousand tons of refined lead and 801 tons of metallic silver were produced (Speczik, 2002: 7–20).

With the beginning of the systemic transformation in 1991, the state-owned conglomerate was transformed into a sole-shareholder company of the State Treasury – KGHM „Polska Miedź" S.A. In 1997, in the next step of ownership changes, KGHM „Polska Miedź" S.A. was privatized on the capital path, with 32% of the shares remaining in the hands of the state. The conglomerate's shares were listed on the Warsaw and London stock exchanges. The privatization was accompanied by the implementa-

tion of a restructuring and modernization program and foreign expansion in the scope of sales of production and acquisition of new copper ore deposits. KGHM acquired five copper ore mines in Chile, Canada and the USA. As part of the expansion and diversification of its operations, the conglomerate undertook investments in telecommunications and renewable energy. In 2022, extraction in KGHM „Polska Miedź" S.A. reached 30.5 million tons, production of electrolytic copper – 586 thousand tons, refined lead – 28.8 thousand tons, metallic silver – 1,298.4 tons, metallic gold – 2.7 tons, with an average employment of 18.7 thousand people. The largest recipient of the Conglomerate's products was the domestic market (25%), with other larger customers being: Germany (19%), Italy (8%), the Czech Republic (8%), China (8%) and Great Britain (6%). In 2022, sales revenues reached PLN 28.4 billion, and profits nearly PLN 4 billion (Speczik, 2002: 11–21; 'Podsumowanie wyników', 2022: 71 et seq.; *Raport Zintegrowany…*, 2024: 100 et seq.).

In the 1960s, a significant part of industrial investments in hard coal mining was concentrated in the **Rybnik Coal District [Rybnicki Okręg Węglowy, ROW]**. Since the 1950s, this name has referred to the area of Rybnik County and parts of Wodzisław, Cieszyn, Pszczyna and Tychy County with identified large deposits of gas-coking and high-calorie coal. The expansion of the basin was determined by the growing fuel needs of the domestic steel and power industries and the increase in coal prices on foreign markets. In 1960, after ten years of construction, the '1 Maja' Coal Mine [Kopalnia Węgla Kamiennego „1 Maja", KWK] in Wodzisław Śląski was put into operation. The construction of the "Jastrzębie" mine in Jastrzębie-Zdrój [KWK „Jastrzębie"], which began in June 1956, was completed in 1962. In 1965, after eight years of construction, the 'Moszczenica' mine in Jastrzębie-Zdrój [KWK „Moszczenica"] was launched. The 'Zofiówka' ('Manifest Lipcowy') mine in Jastrzębie-Zdrój [KWK „Zofiówka" („Manifest Lipcowy")] was built in the years 1962–1969, the 'Borynia' mine in Jastrzębie-Zdrój [KWK „Borynia"] – in the years 1962–1971, the 'Pniówek' ('XXX-lecia PRL') mine in Pawłowice [KWK „Pniówek" („XXX-lecia PRL")] – in the years 1963–1974. Thanks to these investments, the share of gas-coking coal in total extraction increased from 19% to 26% in the years 1956–1970 (Jaros, 1973: 140; 'Historia ROW', 2024; 'Kopalnia Węgla Kamiennego „Borynia-Zofiówka-Bzie"', 2024).

The construction of new mines in the ROW was a very expensive undertaking due to the considerable depth of the deposits and the relatively small thickness of the seams and the need for additional protection

against explosions of the intensively occurring methane. Additionally, along with mining investments, new housing estates had to be built and the commercial, communication and service infrastructure of the ROW had to be created (Jaros, 1973: 134–167).

In the years of the Polish People's Republic, the mines of southern Silesia, like the entire coal basin, despite feeling the effects of the economic and social crises of the 1980s, experienced intensive development and made a significant contribution to the economy, especially to fuel exports. The systemic changes since 1989 caused a transformation depression, which was compounded by the deterioration of the global economic situation. In addition, the mining industry was negatively affected by several waves of restructuring aimed at commercialization, privatization and rationalization of extraction. After 2015, the European Union's plan to achieve "climate neutrality by 2050" became a new threat (Marszowski, 2017). The systemic changes led to mass layoffs and closures of mines, reducing extraction. From the early 1990s to the end of 2019, employment in the entire Polish mining industry decreased by about 300 thousand people (a 76% drop), over 40 mines were closed, and extraction decreased by over 90 million tons (a 58% drop) (Sokołowski et al., 2021: 6). These processes affected the ROW mines, concentrated since 1993 in Jastrzębska Spółka Węglowa S.A. to varying degrees.

The '1 Maja' Coal Mine [KWK „1 Maja"], which was the first mine in Poland built from scratch on a deposit with a particularly gaseous content, implemented pioneering technologies and devices not previously used in Polish mining. They were successfully used in the construction and operation of other ROW mines. In 1970, the '1 Maja' Coal Mine extracted 2.4 million tons, and in 1979 2.7 million tons of coal. In the 1980s, in the conditions of general crisis, production decreased to 2.2 million tons in 1989. The mine specialized in export, in 1975 it supplied 1.9 million tons of coal to foreign customers, which constituted 91% of annual extraction, and in 1989 – 87% of extraction. In the first half of the 1990s, the company systematically recorded a negative financial result. The economic rescue was supposed to be the merger with a nearby mine in 1995, under the common name 'Marcel' Coal Mine [KWK „Marcel"]. In practice, this meant the liquidation of the '1 Maja' Coal Mine ('Historia ROW', 2024; Jaros, 1984: 87).

The Jastrzębie Coal Mine in Jastrzębie-Zdrój was merged with the Moszczenica Coal Mine under construction in 1963, only to become independent again in 1966. Coal production in the Jastrzębie Coal Mine

reached 2.2 million tons in 1970 and 3.3 million tons in 1979, while in the Moszczenica Coal Mine it reached 2.3 million tons and 3.4 million tons of coal, respectively. As part of the restructuring in 1994, the mines were merged again and given the name Jas-Mos Coal Mine. At the same time, extraction was gradually reduced, especially from the coal pillar located under the city of Jastrzębie-Zdrój. A decision was made to significantly reduce extraction further in 1997, and the liquidation process began. In 2001, the mine was sold to the Mine Restructuring Company JSC [Spółka Restrukturyzacji Kopalń S.A.] in Bytom in order to complete the process of liquidation and revitalization of the post-mining area (Jaros, 1984: 56–79; 'Kopalnia Węgla Kamiennego Jastrzębie', 2024; Urbańczyk, 2001).

The 'Zofiówka' Coal Mine in Jastrzębie-Zdrój was called 'Manifest Lipcowy' in the years 1974–1990. Its production increased from 0.3 million tons in the first full year of operation (1970) to 3.4 million tons of coal in 1979. As part of the restructuring of the mining industry, at the beginning of 2011, the mine was merged with the 'Borynia' Coal Mine to create the 'Borynia-Zofiówka' Coal Mine. In 2014, the 'Jas-Mos' Coal Mine was added to it for a period of five years. Since 2023, after the incorporation of Ruch Bzie, it has operated as the 'Borynia-Zofiówka-Bzie' Coal Mine and extracted approximately 8,000 tons of coking coal per day in 2020 (Jaros, 1984: 74; 'Kopalnia Węgla Kamiennego „Zofiówka"', 2024).

The 'Pniówek' Coal Mine in Jastrzębie Zdrój, commissioned in 1975 under the name 'XXX-lecia PRL', extracted 2.6 million tons of coal in 1979. Since 2008, the mine has been expanded to include new deposits. The operation of the 'Pniówek' coal mine was undermined by the tragic disaster in 2022, in which 16 miners died and 15 were injured as a result of a methane explosion (Jaros, 1984: 106; 'Kopalnia Węgla Kamiennego „Pniówek"', 2024).

The history of the Rybnik Coal District mines, as well as the entire hard coal basin, indicates that the period of political transformation had a profound impact on its fate. Only some of the mines established in the 1960s ('Borynia', 'Pniówek', 'Zofiówka') survived the long-term and ineffective restructuring processes. A significant number of miners lost their well-paid jobs. However, it should be emphasized that due to the good situation on the regional labor market and the possibility of taking up work in the Czech Republic, most of them adapted to the new conditions quite easily (Pieczewski, 2015: 313).

A very important direction of investment in the 1960s was lignite mining and the related thermal energy industry. In this field In terms of management, until the emergence of the Bełchatów Basin in the 1980s, the Turoszów Industrial District played a dominant role. Its establishment was related to the decision of the authorities in 1959 to establish the **Turów Mining and Energy Company [Kombinat Górniczo-Energetyczny „Turów"]**. Work began on expanding the existing Turów opencast mine and building the Turów II opencast mine with a target extraction capacity of 10–11 million tons per year, which exceeded the national level of lignite production in 1960. 'Worek Turoszowski', like Nowa Huta before it, attracted people from all over Poland and became one of the largest construction sites at the turn of the 1950s and 1960s. The total extraction of coal from the old and new opencast mine, which began in May 1962, reached 16.5 million tons in 1970. The raw material was intended for the Turów power plant, which was being built at the same time. In July 1962, two 200 MW power units were launched at the power plant. The expanded mine supplied 24–25 million tons of coal per year in the mid-1970s. Most of the raw material went to the Turów power plant, almost 5 million tons to the Hirschfelde power plant in the GDR (until 1982), 1.5 million tons to the Konin power plant in Wielkopolska, and over 1 million tons were sold for the needs of industry and the population. However, at the turn of the century, extraction, depending on the needs of the Turów power plant, ranged between 10 and 11 million tons per year. The power plant, until 1971, achieved its target capacity of 2,000 MW from 10 power units. After the difficult 1980s, the power plant was modernized since 1993 with the participation of foreign companies. By 2011, 6 modern units were adapted to biomass combustion. The power plant's achievable capacity of 1,900 MW allowed it to maintain its position as the third largest thermal power plant in Poland, fired with lignite. As part of the further development of energy based on lignite, in 2015 the construction of the 11th unit of the 'Turów' power plant with a capacity of 450 MW was initiated, which was launched in 2021. At that time, the power plant achieved a capacity of 2,029 MW, which gave it fourth place among coal-fired power plants in Poland. In 2000, the ownership transformation of the 'Turów' mine and the 'Turów' power plant began, which resulted in the establishment of a commercialized sole-shareholder company of the state treasury within the Polish Energy Group Mining and Conventional Energy JSC [PGE Górnictwo i Energetyka Konwencjonalna S.A.] (Kaliński, 2016: 142 et seq.; 'Elektrownia „Turów"', 2024).

In 2020, dark clouds appeared over the future of the mine and power plant. There was a dispute with the Czech Republic related to the granting by the Polish Ministry of Climate of a concession for lignite mining until 2026. The southern neighbor, for environmental reasons, demanded the closure of the mine, which would have a catastrophic impact on the employees of the mine and power plant and the society of nearby Bogatynia, as well as the functioning of the Polish energy system. The Polish authorities firmly rejected the unacceptable demands. In the meantime, the European Commission intervened on the Czech side and threatened Poland with severe penalties for maintaining mining. After difficult negotiations in 2022, an agreement was reached between the Polish and Czech governments, which, as it quickly turned out, did not lead to a solution to the problem, especially since Germany had made similar claims ('Porozumienie…', 2022: 1–4).

Earlier, there were raw material problems in the lignite mining industry in Wielkopolska related to the relatively rapid depletion of energy resources. The decision to build the 'Adamów' and 'Władysławów' lignite opencast mines in the Turek area and a power plant was made in 1958. Extraction of the raw material in the 'Adamów' Brown Coal Mine [Kopalnia Węgla Brunatnego (KWB) „Adamów"] was launched in 1964, and the designed production capacity of 3.3 million tons per year was achieved in 1973. The coal was supplied to the 'Adamów' Power Plant [Elektrownia „Adamów"], operating since 1964, with a capacity of 625 MW. At the same time, near Konin, the 'Konin' Brown Coal Mine [KWB „Konin"] was being expanded, which enabled the extraction of over 15 million tons of brown coal in 1970. The raw material was delivered to the 'Konin' Power Plant [Elektrownia „Konin"], launched in 1958, with a capacity of 583 MW, and to the 'Pątnów' Power Plant [Elektrownia „Pątnów"], operated since 1967, with a capacity of 1,600 MW. The Wielkopolska power plants, merged in 1970 into the PAK complex (Pątnów–Adamów–Konin), supplied as much as ¼ of the electricity produced in Poland (Kaliński, 2016: 144 et seq.).

After the political changes in Poland at the end of 1994, the process of ownership changes in the mines and power plants of the Wielkopolska basin began, consisting in the transformation of the power plant complex into a sole-shareholder company of the State Treasury – the Pątnów-Adamów-Konin Power Plant Complex JSC [Zespół Elektrowni Pątnów-Adamów-Konin S.A., ZE PAK S.A.]. In March 1999, the Elektrim JSC [Elektrim S.A.] became the strategic investor of ZE PAK S.A., and the

organizational transformations undertaken in the Company separated several subsidiaries, including: KWB „Konin" S.A., KWB „Adamów" S.A., Elektrownia „Adamów" S.A., Elektrownia „Konin" S.A., Elektrownia „Pątnów" I S.A. and Elektrownia „Pątnów II" S.A. In 2012, ZE PAK S.A. entered the Warsaw Stock Exchange. Its majority shareholder was the well-known Polish businessman Zygmunt Solorz-Żak ('Informacje o spółce', 2022).

The energy sector in Wielkopolska was constantly threatened by a fuel deficit, which, even in the period of the People's Republic of Poland, prompted the authorities to further expand lignite mining. In the Turek region, new open-pit mines 'Bogdałów', 'Koźmin' and 'Władysławów' were created in the 'Adamów' KWB in the 1970s and 1980s. According to estimates, the investments enabled the mine to operate with a mining capacity of 4.5–5.0 million tons of coal per year by 2023. However, the depleted open-pit mines 'Bogdałów' (in 1991), 'Władysławów' (in 2012) and 'Koźmin' (in 2016) were gradually closed. The prospect of ceasing mining and energy activities, which had significantly influenced the development of Turek and its surroundings for decades, was quickly approaching. This happened at the beginning of 2021, when the last ton of coal was extracted from the 'Adamów' open-pit mine. The post-mining areas were designated for the construction of a photovoltaic farm and other renewable energy sources. The Adamów Power Plant, gradually deprived of raw materials, reduced its capacity to 100 MW, and in the early 1920s it was decided that coal fuel would be replaced by a 600 MW gas-steam unit, partially using hydrogen as fuel ('Kopalnia Węgla Brunatnego „Adamów"', 2024; Aleksandra Eliza, 2022).

In the Konin Brown Coal Basin (KZWB), where old opencast mines were also being exhausted, new investments had to wait until the 1990s. In 1995, the opencast mine 'Kazimierz Północ', four years later 'Jóźwin', and at the beginning of the century the open-pit mines 'Drzewce' and 'Tomisławice' (2011) were built. Over time, the open-pit mines: 'Kazimierz Południe' (1997), 'Pątnów' (2001), 'Jóźwin' (2003), 'Lubstów' (2009) and 'Kazimierz Północ' (2011) were exhausted. However, in 2012, the life of the KWB „Konin", with a mining capacity of 15 million tons per year, was estimated at another 25 years. This provided a strong basis for the development of Konin and its surroundings based on lignite resources and the energy industry based on it. At the beginning of the century, the power plants operating in the KZWB area were expanded and modernized, in accordance with the technological and environmental requirements of the European

Union. The aim was to reduce the level of greenhouse gas emissions into the atmosphere and to burn biomass, in addition to brown coal. At the end of 2014, the total capacity of the 'Pątnów', 'Adamów' and 'Konin' Power Plants amounted to 2,462 MW, which was approximately 6.2% of the total installed capacity of power plants in Poland (Kaliński, 2016: 154 et seq.).

However, the production of energy from brown coal was gradually reduced. In 2018, the 'Adamów' Power Plant was liquidated, as it did not meet the high EU requirements in terms of pollutant emissions and was deprived of coal supplies from the 'Adamów' coal mine ('Elektrownia Adamów', 2024). The 'Konin' Power Plant was modernized and adapted to burn biomass in 2020–2022. In 2019–2020, three units in the 'Pątnów' power plant were shut down, reducing its capacity by 30%. In 2022, as part of the nuclear energy program, a decision was made to build a power plant using small nuclear reactors in the vicinity of 'Pątnów', with Korean technical and financial participation ('Atom 40 km od Turku…', 2022; 'Elektrownia „Konin"', 2022).

The fate of the **Tarnobrzeg Sulfur Basin [Tarnobrzeskie Zagłębie Siarkowe, TZS]**, established in the 1960s, was very specific. Geological studies from the 1950s documented huge deposits of native sulfur in the immediate vicinity of Tarnobrzeg on both sides of the Vistula. In view of the perceived sulfur deficit in Poland, a plan was launched to significantly increase the extraction and processing of this important chemical raw material. In August 1957, the government passed a resolution to build, in cooperation with Czechoslovakia, sulphur mines and chemical plants in Machów and Piaseczno. It was assumed that the new enterprises would produce 10,000 tons of sulfur in 1958 and 100,000 tons of sulfur in 1961 (Wójcik-Łużycki, 2006: 11–12).

An experimental open-pit sulfur mine in Piaseczno was put into operation as early as December 1957. Its ore produced 500 tons of pure sulfur in February of the following year. In 1958, construction of a similar mine began in Machów, which was completed in 1969. Sulfuric acid and phosphate fertilizer plants were also built in Machów, using sulfur from both mines (Paprotny, 2015: 277; Wójcik-Łużycki, 2006: 12–13). Due to the high costs of obtaining raw materials from open-pit mines, a method of underground sulfur smelting was developed in the late 1960s. It consisted of injecting hot steam underground under great pressure, which caused hot sulfur "lava" to melt and flow to the surface. The first so-called borehole mine was established in 1966 in Grzybów, and the following year in Jeziórko. Chemical plants processing sulfur were also built in Grzybów.

In 1985, another borehole mine was established near the open-pit mine in Machów ('Machów II') and the last one in Osiek in 1993 ('Osiek') (Bokwa and Kasztelewicz, 2018: 53; Wójcik-Łużycki, 2006: 17).

The mines and processing plants of the Tarnobrzeg Sulfur Basin operated under different names. In the final period of their activity, they were grouped territorially (on both banks of the Vistula) in the enterprises KiZPS „Siarkopol" in Tarnobrzeg – since 2001 the Chemical Plant 'Siarkopol' Tarnobrzeg LLC [Zakłady Chemiczne „Siarkopol" Tarnobrzeg sp. z o.o.] – and the Sulfur Mines 'Siarkopol' [Kopalnie Siarki „Siarkopol"] in Grzybów. They offered sulfur, fertilizers and chemical products. In Gdańsk, there was the Industrial and Commercial Plant 'Siarkopol' [Zakład Przemysłowo-Handlowy „Siarkopol"], which organized the sea export of sulfur (Zimowski, 1997: 149; *Tarnobrzeskie…*, 2014: 22).

Thanks to significant investment outlays and growing employment in the Tarnobrzeg Sulfur Basin, 2.5 million tons of sulfur were extracted in 1964, and from the mid-1970s, an average of 4 million tons of the raw material was obtained annually. The peak of production was in 1980, when 5.1 million tons of sulfur were obtained. In the 1980s, there was a feeling of underinvestment and technical wear of equipment leading to repeated failures, which limited production. Export, undertaken on a larger scale in 1968, covered 75% of production, giving Poland the position of the world's second largest supplier of sulfur (after the USA). Significant export of sulfur to the USSR was facilitated by the construction in 1979 of the broad-gauge Metallurgical and Sulfur Line, connecting Silesia with the eastern border. Liquid sulfur was also delivered to Czechoslovakia by rail. The western direction of export was carried out through the 'Siarkopol' storage and transshipment base built in the Northern Port in Gdańsk, using specialist ships for in the transport of liquid sulfur (Paprotny, 2015: 277–278; *Tarnobrzeskie…*, 2014: 29–30).

The progress of pro-ecological technologies caused a sharp drop in prices and demand for native sulfur on world markets in the early 1990s. It was replaced by sulfur obtained as a by-product of the purification processes of crude oil, gas and hard coal. Sulfur mining on a global scale lost its raison d'être, which caused its drastic reduction in Poland as well. The 'Program for the restructuring of the sulfur industry in Poland in the years 1993–2000', developed in April 1993, limited sulfur extraction to 2.2 million tons per year in the 'Jeziórko' and 'Osiek' borehole mines. This meant the liquidation of the 'Machów' opencast mine,

and the work related to it and the reclamation of the areas was entrusted to a new enterprise, the 'Machów' Sulfur Mine. Over time, the mine's assets were taken over by the Tarnobrzeg commune. A similar procedure was followed in the case of the 'Grzybów' Sulfur Mine, which was put into liquidation in 1992, and extraction was definitively terminated in 1996. In 2001, extraction was discontinued in the 'Jeziórko' Sulfur Mine and it was put into liquidation. At the same time, the 'Jeziórko' Mining Area Reclamation Company [Przedsiębiorstwo Rekultywacji Terenów Górniczych „Jeziórko"] was established in Tarnobrzeg. This meant the liquidation of the sulfur basin, on the territory of which one mine was left, 'Osiek', belonging to the Azoty Group, 'Siarkopol' Sulfur Mines and Chemical Plants in Grzybów (Bokwa and Kasztelewicz, 2018; *Tarnobrzeskie*…, 2014: 34–36; Wójcik-Łużycki, 2006: 17–18).

In connection with the liquidation process of the Tarnobrzeg Sulfur Basin, group layoffs of employees, dismantling and sale of assets, and reclamation works were ongoing since the early 1990s. The cessation of mass sulfur extraction, which for several decades contributed to regional and national economic growth, created a number of social, economic and ecological problems. For the local community, the liquidation of mines and processing plants meant a huge increase in unemployment and pauperization in the 1990s. Restructuring activities were necessary to create new jobs. Compensating for the severe changes in the natural environment required huge financial outlays. The first step towards the activation of the former sulfur basin was the establishment of the Tarnobrzeg Special Economic Zone in 1997. Its primary goal was to attract capital and develop entrepreneurship. The previous industrial monoculture was gradually replaced by companies from the following industries: construction materials, wood, light and food industry (Paprotny, 2015: 280).

As part of pro-ecological activities, among others, in 1993, the reclamation of areas degraded by the 'Jeziórko' mine was undertaken in the direction of forests and meadows. By 2000, work had been completed on 619 ha, and continued on 561 ha, planting several million trees and shrubs (Warzybok, 2000). By 2009, a 455 ha water reservoir was created on the area of the 'Machów' mine excavation site in Tarnobrzeg, supplied with water from the Vistula River (Jadach, 2016). The processes of revitalizing degraded areas during the operation of the Tarnobrzeg Sulfur Basin were also continued in other areas of the former basin.

CONCLUSION

The changing fate of selected large industrial investments of the Gomułka period generally proves their relevance and the significant role they played in the economy of the People's Republic of Poland and the Third Republic of Poland. The constant and great contribution to the Polish economy of Orlen S.A., KGHM „Polska Miedź" S.A., ZCh „Puławy" S.A., ZCh „Police" S.A. and the Rybnik Coal District (ROW) mines deserve special emphasis. The history of enterprises established in connection with the exploitation of sulfur and brown coal took a different course. In the 1990s, the liquidation of the sulfur basin began, mainly under the influence of technological changes in the industry and a decline in exports. At the beginning of the 21st century, after years of significant contribution to the country's energy sector, the role of the brown coal basins and the related energy sector in Lower Silesia and Wielkopolska shrank. The basic reason was the depletion of deposits and increasing environmental restrictions. The actions taken, especially after Poland's accession to the European Union, to implement new technologies, use renewable energy sources and diversify production give hope for the continued existence, sometimes with a changed production profile, of the industrial centers established in Poland in the 1960s.

Janusz Kaliński, professor emeritus, PhD, hab. in economics, associated with the Warsaw School of Economics (1965–2018) and the University of Białystok (2003–2013), researcher of the latest economic history of Poland and the world. In recent decades, he has published, among others, the following books: *Autostrady w Polsce, czyli drogi przez* mękę (2011), Łódź: Księży Młyn; *Economy in Communist Poland. The Road Astray* (2014), Warsaw: Instytut Pamięci Narodowej; *Gospodarka w PRL* (2012), Warsaw: Instytut Pamięci Narodowej; *Historia gospodarcza XIX i XX wieku* (2008), Warsaw: Państwowe Wydawnictwo Ekonomiczne; *Transformacja gospodarki polskiej w latach 1989–2004* (2009), Warsaw: Oficyna Wydawnicza Szkoły Głównej Handlowej w Warszawie; *Zarys stosunków międzynarodowych po II wojnie światowej* (2014), Białystok: University of Białystok.

RESOURCES

Archival materials

AAN, KC PZPR, 237/II/18 – Archiwum Akt Nowych, Komitet Centralny Polskiej Zjednoczonej Partii Robotniczej, sygn., 237/II/18, *Stenogram IX plenarnego posiedzenia KC PZPR w dniach 15–18 maja 1957 r.*, k. 90.

AAN, KC PZPR, 237/II/42 – Archiwum Akt Nowych, Komitet Centralny Polskiej Zjednoczonej Partii Robotniczej, sygn. 237/II/42, *Stenogram V plenarnego posiedzenia KC PZPR w dniach 15 i 16 grudnia 1965 r.*, k. 3 et seq.

AAN, KPRM, 8: 4 – Archiwum Akt Nowych, Kancelaria Prezydium Rady Ministrów, sygn. 8, *Protokół nr 2 z posiedzenie PRM odbytego w dniu 5 II 1957 r.*, k. 4 et seq.

Statistical materials

Rocznik Statystyczny 1971 (1971) Warszawa: Główny Urząd Statystyczny.

Rocznik statystyczny inwestycji i środków trwałych 1946–1966 (1968) Warszawa: Główny Urząd Statystyczny.

Literature

III Zjazd Polskiej Zjednoczonej Partii Robotniczej. Stenogram (1959) Warszawa: Książka i Wiedza.

IV Zjazd Polskiej Zjednoczonej Partii Robotniczej 15–20 czerwca 1964 r. Podstawowe materiały i dokumenty (1964) Warszawa: Książka i Wiedza.

Bokwa, P. and Kasztelewicz, Z. (2018) 'Technologia wydobycia siarki metodą otworową na złożu „Basznia-1"', *Górnictwo Odkrywkowe*, 6, pp. 52–53.

Cheliński, R. (1964), Etapowy charakter rozwoju gospodarczego w Polsce Ludowej: hipoteza przyczyn tkwiących w procesach inwestycyjnych, *Ekonomista*, 5, pp. 1032–1061.

Chojnowski, W. (2000), Cykliczność i ekspansja inwestycyjna w Polsce w latach 1950–1985, *Zeszyty Naukowe Akademii Ekonomicznej w Poznaniu*, 91, pp. 47–57.

Jadach, R. (2016) 'Właściwości fizyczno-chemiczne wód powierzchniowych zrekultywowanych terenów pogórniczych Tarnobrzeskiego Zagłębia Siarkowego', *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 461, p. 89.

Jaros, J. (1973) *Historia górnictwa węglowego w Polsce Ludowej* (*1945–1970*). Warszawa–Kraków: Państwowe Wydawnictwo Naukowe.

Jaros, J. (1984) *Słownik historyczny kopalń węgla na ziemiach polskich*. Katowice: „Śląsk".

Jezierski, A. (1987) 'Etapy inwestycyjne w rozwoju gospodarczym Polski 1948–1983', *Prace Instytutu Nauk Ekonomicznych i Społecznych Politechniki Warszawskiej*, 36, pp. 47–66.

Kaliński, J. (1986) *Polityka gospodarcza Polski w latach 1948–1956*. Warszawa: Książka i Wiedza.

Kaliński, J. (1993) *Przemiany strukturalne w gospodarce polskiej w latach 1944–1970*. Warszawa: Szkoła Główna Handlowa.

Kaliński, J. (2007) 'Ekonomiczne aspekty kryzysów systemu komunistycznego w Polsce (1956–1980)', *Pamięć i Sprawiedliwość*, 1, pp. 89–104.

Kaliński, J. (2011) 'Gomułkowskie dylematy modernizacji gospodarki', *Annales Universitatis Paedagogicae Cracoviensis*, 87, pp. 41–50.

Kaliński, J. (2016) 'Zagłębia węgla brunatnego w Polsce po 1945 r.', in Jarosz-Nojszewska, A. and Morawski, W. (eds) *Problemy energetyczne Polski*. Część I: *Surowce*. Warszawa: Oficyna Wydawnicza Szkoły Głównej Handlowej, pp. 139–162.

Kaliński, J. (2023) 'Pierwszy kryzys gospodarki centralnie kierowanej w Polsce (1953–1956)', *UR Journal of Humanities and Social Sciences*, 4, pp. 107–123.
Karpiński, A., Paradysz, S., Sroka, P. and Żółtowski, W. (2013) *Jak powstawały i jak upadały zakłady przemysłowe w Polsce*. Warszawa: Wydawnictwo Muza.
Karty z historii polskiego przemysłu chemicznego. T. 20: *Historia polskiego przemysłu chemicznego w latach 1980–2010* (2012) Warszawa: Stowarzyszenie Inżynierów i Techników Przemysłu Chemicznego.
Klocek, A. (2006) 'Niezwykły kompleks rafineryjno-petrochemiczny w Płocku. Mazowieckie Zakłady Rafineryjne i Petrochemiczne w latach 1959–1989', *Notatki Płockie*, 1, p. 40–53.
Kołodko, G. (1976) *Wahania tempa wzrostu gospodarczego w PRL*. Warszawa: Szkoła Główna Planowania i Statystyki.
Koński, W. (1987) '200 milionów ton ropy w Płockiej Petrochemii', *Notatki Płockie*, 4, pp. 36–42.
Koński, W. (2009) 'Geneza budowy, lokalizacja i projektowanie VI rafinerii (Mazowieckich Zakładów Rafineryjnych i Petrochemicznych w Płocku)', *Notatki Płockie,* 4, pp. 27–36.
Kotowicz-Jawor, J. (1979) 'Presja inwestycyjna w rozwoju gospodarczym', *Gospodarka Planowa*, 3, pp. 144–148.
Landau, Z. (1986) *Etapy rozwoju gospodarczego Polski Ludowej*. Warszawa: Szkoła Główna Planowania i Statystyki.
Landau, Z. (1995) *Polska Gomułki*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.
Marszowski, R. (2017) 'Działania restrukturyzacyjne wobec górnictwa węgla kamiennego i ich wpływ na otoczenie społeczno-gospodarcze. Stan i perspektywy', *Humanum. Międzynarodowe Studia Społeczno-Humanistyczne*, 3, pp. 113–123.
Paprotny, Ł. (2015) 'Tarnobrzeski Okręg Siarkowy', in Dwilewicz, Ł. and Morawski, W. (eds) *Historia polskich okręgów i regionów przemysłowych*. Warszawa: Polskie Towarzystwo Historii Gospodarczej, pp. 274–283.
Pieczewski, A. (2015) 'Rybnicki Okręg Węglowy', in Dwilewicz, Ł. and Morawski, W. (eds) *Historia polskich okręgów i regionów przemysłowych.* Warszawa: Polskie Towarzystwo Historii Gospodarczej, pp. 284–318.
'Porozumienie w sprawie kopalni Turów' (2022) *Biuletyn Europejski Biura Analiz Sejmu*, 2, pp. 1–4.
Ptasiński, J. (1988) *Drugi zwrot. Gomułka u szczytu powodzenia*. Warszawa: Krajowa Agencja Wydawnicza.
Speczik, S. (2002) *Czterdzieści lat polskiej miedzi*. Kraków: Polska Akademia Nauk.
Stankiewicz, T. (1986) 'Cykliczność inwestycji w PRL', in Maciejewski, W. (ed.) *Dylematy rozwoju europejskich krajów RWPG.* Warszawa: Uniwersytet Warszawski, pp. 99–123.
Szyr, E. (1959) *Niektóre problemy rozwoju gospodarki narodowej w latach 1959–1965*. Warszawa: Książka i Wiedza.
Tarnobrzeskie Zagłębie Siarkowe. Kalendarium 1953–2013 (2014) Tarnobrzeg: Miejska Biblioteka Publiczna.
Warzybok, W. (2000) 'Rekultywacja terenów górniczych Kopalni Siarki „Jeziórko"', *Ochrona i rekultywacja gruntów*, *Inżynieria Ekologiczna*, 1, pp. 25–26.
Wójcik-Łużycki, A. (2006) *Tarnobrzeskie Zagłębie Siarkowe*. Tarnobrzeg: Muzeum Historyczne Miasta Tarnobrzega.
Zimowski, A. (1997) 'Historia polskiego przemysłu wielkiej syntezy chemicznej', in *Karty z historii polskiego przemysłu chemicznego*, t. 5. Warszawa: Stowarzyszenie Inżynierów i Techników Przemysłu Chemicznego, pp. 147–166.

Internet sources

Aleksandra Eliza (2022) 'Trwa wyburzanie Elektrowni Adamów', *InfoTurek*. https://infoturek.pl/trwa-wyburzanie-elektrowni-adamow/. Accessed 27 April 2024.

'Atom 40 km od Turku. Koreańczycy wybudują elektrownię dla ZE PAK' (2022) *iTurek.net*. https://surli.cc/obnxdb. Accessed 27 April 2024.

'Elektrownia „Konin"'(2022) *ZEPAK*. https://www.zepak.com.pl/pl/o-firmie/elektrownie/elektrownia-patnow-konin/elektrownia-konin.html. Accessed 27 April 2024.

'Elektrownia „Turów"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Elektrownia_Tur%C3%B3w. Accessed 25 April 2024.

'Elektrownia Adamów' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Elektrownia_Adam%C3%B3w. Accessed 25 April 2024.

'Grupa Azoty Zakłady Azotowe „Puławy"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Grupa_Azoty_Zak%C5%82ady_Azotowe_%E2%80%9EPu%C5%82awy%E2%80%9D. Accessed 19 April 2024.

'Historia' (2024) *Grupa Azoty. Police*. https://zchpolice.grupaazoty.com/spolka/o-firmie/historia. Accessed 19 April 2024.

'Historia ROW' (2024) sitg.rybnik.pl. https://sitg.rybnik.pl/1/index.php?historia-row,13. Accessed 25 April 2024.

'Historia w latach' (2024) pulawy.grupaazoty.com. https://pulawy.grupaazoty.com/spolka/o-firmie/historia/historia-w-latach. Accessed 25 April 2024.

'Informacje o spółce' (2022) *ZEPAK*. http://zepak.com.pl/pl/o-nas/informacje-o-firmie.html. Accessed 27 April 2024.

'Kopalnia Węgla Brunatnego „Adamów"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Kopalnia_W%C4%99gla_Brunatnego_%E2%80%9EAdam%C3%B3w%E2%80%9D. Accessed 25 April 2024.

'Kopalnia Węgla Kamiennego „Borynia-Zofiówka-Bzie"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Kopalnia_W%C4%99gla_Kamiennego_%E2%80%9EBorynia-Zofi%C3%B3wka-Bzie%E2%80%9D. Accessed 25 April 2024.

'Kopalnia Węgla Kamiennego Jastrzębie' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Kopalnia_W%C4%99gla_Kamiennego_Jastrz%C4%99bie. Accessed 25 April 2024.

'Kopalnia Węgla Kamiennego „Pniówek"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Kopalnia_W%C4%99gla_Kamiennego_%E2%80%9EPni%C3%B3wek%E2%80%9D. Accessed 25 April 2024.

'Kopalnia Węgla Kamiennego „Zofiówka"' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Kopalnia_W%C4%99gla_Kamiennego_%E2%80%9EZofi%C3%B3wka%E2%80%9D. Accessed 25 April 2024.

'Orlen' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/Orlen. Accessed 25 April 2024.

'Podsumowanie wyników'(2022) *KGHM Polska Miedź S.A. Raport Zintegrowany*. https://raportcsr2022.kghm.com/kghm-w-2022-r/podsumowanie-wynikow/. Accessed 17 April 2024.

Prezentacja Grupy ORLEN. Napędzamy przyszłość. Odpowiedzialnie (2023) Orlen.pl. https://www.orlen.pl/content/dam/internet/orlen/pl/pl/relacje-inwestorskie/o-po%C5%82ce/company-overview/Company_overview_PL_2023_luty_short_www.pdf.coredownload.pdf. Accessed 17 April 2024.

Raport zintegrowany KGHM Polska Miedź S.A. 2022 (2022) KGHM Polska Miedź S.A. https://kghm.com/sites/default/files/kghmraport2022_2.pdf. Accessed 17 April 2024.

Sokołowski, J., Frankowski, J., Mazurkiewicz, J., Antosiewicz, M. and Lewandowski, P. (2021) *Dekarbonizacja i zatrudnienie w górnictwie węgla kamiennego w Polsce*. Instytut Badań Strukturalnych, Research report, 01/2021. https://ibs.org.pl/app/uploads/2021/01/IBS-Research-Report-01-2021.pdf. Accessed 25 April 2024.

Sprawozdanie Zarządu z działalności Grupy Azoty Zakłady Chemiczne „Police" S.A. oraz Grupy Kapitałowej Grupa Azoty Zakłady Chemiczne „Police" S.A. za okres 12 miesięcy zakończony 31 grudnia 2022 roku (2023) Grupa Kapitałowa Grupa Azoty Zakłady Chemiczne „Police" Spółka Akcyjna. https://zchpolice.grupaazoty.com/upload/4/files/2022/r2021/GAPolice_SprawozdanieZarzadu-2021-12-31-pl.xhtml. Accessed 24 April 2024.

Urbańczyk, S. (2001) 'Zarys historii kopalni „Moszczenica"', *Izba Pamięci Kopalń Zlikwidowanych w Rybnickim Okręgu Przemysłowym*. https://sitg.rybnik.pl/kopalnie-zlikwidowane-w-rop/jastrzebie_zdroj-moszczenica.php. Accessed 25 April 2024.

'ZE PAK' (2024) *WikipediA. Wolna encyklopedia*. https://pl.wikipedia.org/wiki/ZE_PAK. Accessed 27 April 2024.