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Just Transition in Poland: A Review of Public Policies to Assist Polish Coal Communities in Transition

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About the Project

This report is part of a series of papers prepared by Resources for the Future (RFF), Environmental Defense Fund (EDF), and other partners that examine policies and programs to promote fairness for workers and communities in a transition to a low-greenhouse has emissions economy, often referred to as a just transition. The series

looks at existing public policies and programs, grouped thematically as "tools in the toolbox" for policymakers seeking effective strategies to address challenges associated with transition. We focus on policies and programs that can support workers and communities in regions where coal, oil, or natural gas production or consumption has been a leading employer and driver of prosperity.

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1. Introduction

Energy systems around the world are facing significant pressures. The long-term goal of global decarbonization operates in tandem with the effects of the COVID-19 pandemic and new uncertainties about oil and gas supplies after the Russian invasion of Ukraine. Decarbonization in the coming years will mean a major shift towards low-carbon energy sources and increased energy efficiency, and away from fossil fuels. In the nearer term, however, there will also be a focus on shifts within the fossil fuel sector—specifically, a shift away from Russian energy sources, and adjustments in the fossil energy mix in reaction to higher global oil and gas prices.

Both near- and long-term energy industry transitions impact workers and communities who depend on those industries for employment and as a driver of local economies. Given this, it is as important as ever to understand the role of public policy in managing such transition. Examples of past experiences addressing such transitions may serve as a useful guide for decisionmakers facing similar challenges today. One such example is the ongoing journey of the hard coal mining regions in Poland as they shift towards a low-carbon future.

Poland's transition away from coal started more than 30 years ago. Since then, hard coal production has gradually decreased by 63 percent (from 147 million tons in 1990 to 54 million tons in 2020), and employment in the mining sector has declined by 80 percent (from roughly 390,000 to 80,000 jobs). These declines have reflected the falling economic and financial viability of the Polish hard coal mining sector in a changing political and economic landscape—once a cornerstone of the Polish economy, hard coal mining has become less competitive in the free-market economy that developed following the fall of communism in 1989.

In response to these declines, policies have been implemented to restructure and bolster the competitiveness of the sector, reduce unemployment among former coal workers, address the social and economic consequences of mine closures and associated job losses, and stimulate economic development outside the coal sector. This report discusses these policies and, where empirical analysis is available, examines their outcomes. This report focuses on Upper Silesia, where most of Poland's hard coal mining operations are located. In Lower Silesia, hard coal mining was phased out completely in the 1990s, and only one hard coal mine is operating in the Lublin coal basin in eastern Poland. The report also does not cover Poland's three lignite regions, which face different challenges and have been the subject of a different set of policies.

The report starts with an overview of reforms undertaken in the mining sector since 1990, and then offers analysis of the 2002 Mining Social Package, which led to a significant reduction of the mining workforce and the closure of numerous mines. Next, the report discusses subsequent policies related to further mine closures, including the establishment of the Mine Restructuring Company (SRK) and various welfare measures for workers. This section ends with a discussion of the recently concluded Social Contract, which established a phaseout schedule for coal mines in Silesia and

described government measures to shield workers and communities from any adverse effects.

The second part of the report focuses on policies implemented to stimulate broader economic development in Upper Silesia, including European Union subsidies provided to the region as part of the EU Cohesion Policy. In the Conclusion, we briefly consider which policies were effective and why, and what role the broader economic context played in their success.

Table 1 summarizes the main types of policy instruments discussed in this report. It shows a broad mix of both sectoral and cross-cutting instruments employed over the years to manage the transition in Silesia's coal sector. Although sectoral and development policies mostly are in separate categories, in some cases they overlap—in particular, when it comes to policies focused on miners. We tend to classify policies to help miners leave the sector (and hence enable mines to decrease labor costs and improve extraction productivity) as sectoral policies, while policies designed to create job opportunities in new sectors are considered development policies.

Table 1. Policies Included in this Report

	Type of instrument	Examples from Silesia	Strengths	Weaknesses
Sectoral policies focused on mines	Subsidies delaying closures of unprofitable coal assets (e.g., coverage of operational losses, bailouts)	Social Contract of 2021; NABE;[a] mining sector bailouts before accession to EU	Additional time for transition	No clear signal on timeline to stakeholders; resources redirected to maintaining inefficient activities instead of investment in new opportunities
	Subsidies for mining closure covering one-time costs (e.g., safeguarding underground infrastructure)	Mine Restructuring Company (SRK); Treasury takeover of mining companies' liabilities for pensioners	Additional time for transition; resources used to ensure socially and environmentally orderly mine closures	Potential moral hazard problem for mine owners (avoiding closure costs)
Sectoral policies focused on miners	Severance payments	Implemented in every restructuring program since 1990s	Effective in decreasing employment in unprofitable mines while mitigating social conflicts	No new economic opportunities for former miners
	Early retirements	Implemented in every restructuring program since 1990s	Effective in decreasing employment in unprofitable mines while mitigating social conflicts	Skills and experience of retired miners not used to develop local economy

Policies Included in this Report, Continued

	Type of instrument	Examples from Silesia	Strengths	Weaknesses
Development policies: cross-cutting instruments	Public sector investments; private sector support; human capital investments; capacity- and knowledge-building instruments	Regional Operational Programs; Network of Regional Specialist Observatories in Entrepreneurial Discovery Process	Strengthened and diversified overall socioeconomic base in region	Too broad to significantly change situation of specific group (former miners) if implemented without complementary, targeted policies
Development policies focused on transition	Subsidies for hiring former miners	PHARE INICJATYWA[b]	Provide new, broad economic opportunities for miners	Effectiveness depends on overall situation in local labor market; no accounting for effects on other job market participants
	Subsidies for miners to start new companies	PHARE INICJATYWA	Provide new economic opportunities for miners	Effectiveness limited by share of miners choosing to start their own company
	Targeted job search assistance for miners	PHARE INICJATYWA, Just Transition Fund	Provide new, broad economic opportunities for miners	Effectiveness depends on overall situation in local labor market
	Local and regional investment funds targeted at areas affected by transition	PHARE INICJATYWA, Program for Alleviating Effects of Employment Restructuring in Coal Mining Sector, Just Transition Fund	Indirectly improve situation in local labor market; long-run effects depend on private sector reaction	Limited direct impact on employment prospects of former miners.
	Special economic zones in areas affected by transition	Katowice Special Economic Zone	Directly improve situation in local labor market	Effectiveness depends on overall investment attractiveness of location; no accounting for effects on economic activity outside special economic zones

a. Acronym for the state-run National Energy Security Agency (Narodowa Agencja Bezpieczeństwa Energetycznego).
b. PHARE is the acronym for the EU program Poland and Hungary: Assistance for Restructuring Economies, initiated in 1989. Its application in Silesia included two "Initiatives" (Inicjatywy) for worker retraining.

The findings in this report indicate that using state aid to extend the operations of mines—a sectoral policy—was not effective at ensuring a smooth transition. Instead, subsidies for mine closures—a development policy—provided a clearer path to orderly transition. The Silesian example also shows that although severance payments and early retirements gave workers incentive to leave the industry, such policies did not ensure long-term success for former miners and communities affected by the transition. It is our opinion that such sectoral policies need to be complemented with development measures that catalyze new economic opportunities for workers and communities. Also, redirecting investments to mining communities or subsidizing the hiring of former miners may negatively affect other communities and workers. Again, a policy mix—both broad measures and targeted support for affected workers and communities—is needed.

Box 1. What is a just transition?

The coal mining sector in Poland has been gradually but steadily shrinking for the past three decades, but not as part of an intentional and planned energy transition. Rather, the shift reflected wider, unavoidable economic trends. The coal phaseout, in contrast, is a policy objective pursued deliberately to achieve Europe-wide environmental objectives, and more broadly as part of a global effort to address climate change. This transition can therefore be handled differently: where once we saw policies that reacted to largely unpredicted developments, now a consciously planned and managed process can take place. Such a process is central to just transition for the coal phaseout, which we define as a range of interventions (prominently including public policies) that reduce adverse outcomes for coal workers and communities making the shift from a coal-based economy to a low-carbon and sustainable economy. This notion of a just transition holds that coal regions should not be left to cope alone with economic and social declines associated with the shift to a low-carbon energy economy.

Scholars of the subject generally agree that a just transition away from coal in Poland should meet certain conditions. Firstly, it needs to be properly planned for and managed, with a clear coal phaseout schedule that offers enough time for effective implementation of the transition policies. Secondly, all relevant stakeholders should be involved in planning and implementing the transition, creating a strong sense of shared ownership and control. Thirdly, mining regions should be offered adequate financial and technical assistance in building alternatives to the disappearing coal economy. In addition, new development models should seek to sustain a reasonable quality of life for local communities, including a healthy environment and strong public services. Finally, workers should be offered tailored retraining and outplacement opportunities (Pal et al. 2020).

1.1. Recommendations

- Plan early and allow time for implementation without prolonging the inevitable decline. In the 1990s, when a large number of mines were shut down over a relatively short time, the adverse effects were severe and long-lasting. The more gradual mine closures of recent years have made it possible to mitigate the consequences. Importantly, the transition period may be extended not only by subsidizing coal mining itself, but also by starting the preparatory activities early and providing support for an orderly closure of mines.
- Avoid measures that prolong the status quo. This restructuring of the coal sector should not foster the creation of vested interests or institutions with an interest in delaying and resisting change. Although preserving the status quo may be the preferred option for some actors, ultimately it increases the risk of adverse outcomes in the longer term, since the social, financial, and economic costs tend to increase with the delay.
- When designing policies, look at the wider context. Policies for small regions where the local economy depends heavily or solely on coal mining will differ from policies for larger industrial regions with more diversified economies and preexisting development potential outside the coal sector.
- Combine locally or regionally driven policies with external assistance (finance, technical assistance, capacity building, governance models) to improve outcomes. Regional actors understand their needs and can plan the transition, but they may lack the resources and experience to implement it. Although external funding (such as EU-financed programs) is crucial to reach the critical mass of investment in alternatives to coal, implementation of good governance practices related to program execution, monitoring, and evaluation also is important to improve cost-effectiveness.
- Involve the wider community in planning the future. Transitioning away from coal is not just the coal sector's internal affair. Doing it successfully requires engagement and contributions of many actors outside the sector, including municipalities, unrelated businesses, and local communities.
- Look beyond "coal-to-green:" other sectors have a role to play as well. Transition discourses often focus on replacing the fossil economy with clean energy industries, but a given region may already have other economic potential. "Smart specialization," discussed below, allows communities to make the most of all available opportunities.

2. Restructuring in the Coal Mining Sector since 1990

In 1990, 70 hard coal mines were operating in Poland, most of them in Upper Silesia (Silesia Province). They employed nearly 390,000 workers and extracted 147 million tons of hard coal (Karbownik 1997). Large and inefficient, the coal sector struggled to compete in Poland's new market economy and since 1990 has undergone a series of restructuring reforms aimed at scaling down employment, reducing debt, improving management, and adjusting production to improve the mines' economic performance and competitiveness. As a result of the reforms, by 2020 employment in hard coal mining had shrunk to roughly 80,000, and annual coal production had decreased to 54 million tons. (Polish Industrial Development Agency 2022).

Although the reform programs had some temporary successes, none achieved the objective of making hard coal mining a competitive sector with good prospects for the future. The sector's decline continued, even though successive governments all assumed that coal would remain the foundation of Poland's energy security for the foreseeable future and therefore implemented energy policies favoring coal (Kamola-Cieślik 2017). Between 1990 and 2016, hard coal and the lignite mining sector received an estimated $25 billion in direct subsidies, in addition to $0.9billion to $1.4 billion annually in subsidies for miners' pensions.[1] The coal and lignite sectors also benefited indirectly from a steady flow of subsidies for coal-based power production, which helped sustain demand for coal (WiseEuropa 2017). Despite these efforts, by 2020 the major Polish coal mining companies were running at a loss again (Ministry of State Assets 2020), even before the impacts of the pandemic. The government and the unions negotiated a new plan, this time envisaging a final—albeit protracted—phaseout. This part of the report discusses the primary hard coal mining restructuring programs implemented since 1990.

2.1. Early retirement and welfare allowance benefits, 1990–1998

In the first years of the transformation, only limited measures were available to help the coal sector and coal workers. Among the first policies to assist workers, emerging in 1993, were a preretirement benefit ("miners' leave") and a welfare allowance.

Miners' leave was offered to underground miners facing job loss at closing mines. Eligible beneficiaries who were old enough or had sufficient seniority on the job were paid 50 percent of their salary for a maximum of three years. The money could be taken in one upfront payment or in monthly installments. Miners eligible for this benefit

1 For easier comparability, all the values in the report which were originally expressed in Polish currency were converted to 2021 US dollars using Polish GDP deflator and average exchange rate from 2021.

were also allowed to keep the standard privileges of active miners: (1) the right to a yearly bonus (so-called 13th monthly payment), which was generally offered to public sector employees; (2) another yearly bonus (so-called 14th monthly payment), paid exclusively to miners; and (3) the coal allowance, provided either in kind (coal for use in domestic heating) or in monetary form (a sum of money equivalent to the market value of the in-kind coal).

The welfare allowance was a payment in return for voluntary termination of the employment contract. It was offered to miners who had more than three years left until their retirement age, and it could be paid for a maximum of two years, in monthly instalments. Both benefits were cut in half if the former miner found another job during the benefit period.

2.2. Mining Social Package, 1998–2002

In June 1998, the government adopted a plan called Reform of Hard Coal Mining in Poland, 1998–2002,[2] which sought to address two problems identified as underlying causes of the sector's rapidly deteriorating economic performance and accumulating liabilities: overproduction of coal and an oversized workforce. The reform aimed to restructure the sector and restore its viability by reducing state support in order to close unprofitable mines and downsize the workforce.

The workforce would be reduced by more than 100,000 (of the 243,300 mineworkers employed in 1997) by encouraging workers to leave voluntarily (without group layoffs) through measures outlined in the Mining Social Package (MSP),[3] which was a complement to the natural retirement process.

The MSP measures were developed in agreement with the mining unions and therefore did not spark significant protests. The package was enshrined in an Act of 26 November 1998 on the Adaptation of Hard Coal Mining to Functioning in Market Economy Conditions and Special Rights and Tasks of Mining Communities,[4] which gave it a higher profile than previous restructuring programs enacted as internal government documents. The act specified the program's objectives, social mitigation instruments, sources and conditions of financing, and supervision of its implementation (Szpor and Ziółkowska 2018).

The MSP benefits, available to all underground miners who had been employed for at least five years, included early retirement and welfare allowances (see previous section). To provide incentives for the former miners to return to the labor market, the welfare allowances were complemented with an additional one-time bonus for those

2 Polish: Reforma górnictwa węgla kamiennego w Polsce w latach 1998–2002.

3 Polish: Górniczy Pakiet Socjalny 1998–2002.

4 Polish: Ustawa z dnia 26 listopada 1998 r. o dostosowaniu górnictwa węgla kamiennego do funkcjonowania w warunkach gospodarki rynkowej oraz szczególnych uprawnieniach i zadaniach gmin górniczych.

who found new jobs, as well as requirements to consider job offers and retraining opportunities offered by the public employment service offices. The alternative to welfare allowances was a one-time unconditional severance payment: miners could choose to receive a single payment with no further requirements or bonuses.

Initial funding for MSP came from a loan provided by the World Bank to the Polish government to support the implementation of 1998–2002 mining reform. Overall expenditures on MSP from state funds equaled reached $1.9 billion in 1998-2002, with an additional $445 million provided by the mining companies (Turek and Karbownik 2005).

The reform led to the closing of 13 mines (leaving 41 in operation) and a reduction of the workforce by 102,600, with 67,000 workers benefiting from the package and the remainder going into regular retirement. The number of miners who took the voluntary leave offer was higher than expected: almost 37,000 workers opted for the early retirement, with nearly 30,000 choosing the one-time unconditional severance payment. Only 419 miners opted for the welfare allowance with the optional bonus on taking up new employment. The program authors had expected the welfare allowance to be the more attractive option, but miners overwhelmingly chose the more flexible alternative, which gave them a short-term financial cushion with no additional commitments (Szpor and Ziółkowska 2018).

In hindsight, accordingly, the MSP succeeded in reducing the size of the workforce and improving the mining sector's economic performance, but it did not provide the support necessary to generate satisfactory outcomes for the workers who left the sector. The welfare allowance, which was expected to motivate workers to find new jobs, was perceived as too risky: obtaining its full benefits required beneficiaries to find new employment in a difficult labor market within two years of leaving the mine, and hence very few workers decided to use it. The assumption that a significant proportion of former miners would invest their one-time severance payments in starting their own businesses failed to materialize, and those who did start businesses in many cases failed because they lacked entrepreneurial experience and effective support mechanisms. The retraining opportunities offered by the public employment services were insufficient, and in some cases the new skills offered did not match the needs of the labor market. As a result, Silesia reported a considerable increase in unemployment during MSP implementation and in the years that followed: the percentage of jobless people in the region increased from 9.9 percent in 1999 to 16.5 percent in 2002 and a record 17.4 percent in 2003.

2.2.1. Special privileges for mining municipalities

The MSP also addressed other priorities, such as environmental protection, cooperation with mining municipalities and regions, and implementation of EU standards in light of Poland's upcoming EU accession.

Mining municipalities, legally defined in the 1998 act as those that had a functioning hard coal mine in 1999 or later, obtained special privileges. Silesia had 60 such

municipalities. To support local job creation, a municipality could start new enterprises with the mining company, take over real estate from closed or scaled-down mines, and receive preferential loans from the government to stimulate economic activity (Szpor and Ziółkowska 2018).

Box 2. Mine site revitalization and New Gliwice project success

Between 1998 and 2001, several mining municipalities took over the real estate of decommissioned mines. Usually, the mining company received debt cancellation in return. In most cases (about 80 percent), the buildings and land taken over were used by the local authorities for various public utility functions rather than for initiating or creating new enterprises and economic activities.

However, some local authorities that assumed the assets of mining sites initiated complex revitalizations to create new jobs in modern business centres. One example is the New Gliwice Center for Education and Business. The municipality carried out a model revitalization of the decommissioned KWK Gliwice coal mine, using pre-accession EU funds, and transformed the site into a modern zone of education and business. New Gliwice is home to several technology companies and a functional urban space that attracts residents with cultural and sports events. It was one of the biggest postmining repurposing projects in Poland. It cost $34 million to revitalize the 15 hectares of land, $13 million of which came from European funds (PHARE 2003 SSG, PHARE Social and Economic Cohesion Programme), with the remainder provided by the municipal budget (Gumienny and Szulc 2013).

The main objectives of the project were to reclaim and revitalize the sites and post-industrial buildings, preserve the cultural heritage and the historical significance of the region, establish favorable conditions for the development of small and medium businesses, create new jobs, and develop institutions of higher education. These objectives have been accomplished, and the project is widely seen as an example of successful revitalisation in Silesia. About 1,900 new jobs were created, particularly in ICT and other new technologies. The buildings were retrofitted to new functions—as business incubators, a technology park, and a college. About 10.5 hectares of former Gliwice coal mine land was used for investments in new technologies. Companies from the IT sector, aviation, special materials, and electronics have established their premises in the reclaimed sites, and the leading sector is computer science (Local Development Agency 2012).

2.3. Mine Restructuring Company, 2000-2018

The restructuring of the mining industry has involved the liquidation of unprofitable mines. In 2000, the Polish state established the Mine Restructuring Company (Spółka Restrukturyzacji Kopalń, SRK)[5] to deal with the task of closing mines, safeguarding their infrastructure (including wastewater removal and protection against fire hazards), repairing mining damage and reclaiming sites, asset management, and sale of real estate.

5 SRK was established within the framework of the hard coal mining sector restructuring under the Mining Law of 1998.

SRK also provides a safety net for workers transitioning from coal to new jobs. As an unprofitable mine is transferred to SRK, the miners are also reallocated to the Company. There, they perform work related to safeguarding the decommissioned mine, and they take advantage of mining leaves (early retirement) and severance pay (for those not eligible for mining leave),[6] which work similarly as in the 1990s restructuring programs. In addition, SRK creates new job openings for employees of the decommissioned mine in other mines that are still operating, and assists departing workers in finding new employment or self-employment.

During the last major restructuring wave in the industry (2015–2018), SRK took over 16 mines and more than 13,000 employees.[7] More than 6,600 of these workers took the voluntary miners' leave, and more than 3,000 opted for severance pay; the rest continue to work on safeguarding the mines.

SRK also acts as a buffer in restructuring processes: it assumes responsibility immediately at mine closure but also offers an option to pass off ownership to third parties that may emerge. Specifically, SRK will transfer ownership of a decommissioned mine on condition that the investor reimburse the state for the funds allocated to the mine during its operation within SRK. For example, in 2015, the energy company Tauron bought the Brzeszcze mine from SRK for a symbolic price of PLN 1 while also assuming the obligation to pay the state more than $44 million as remuneration for prior SRK costs related to the site.

Since 2010, SRK has operated under the rules laid down in the Council of the EU Decision 2010/787/EU on State Aid to Facilitate the Closure of Uncompetitive Coal Mines, which defines member-state aid rules for coal mine decommissioning. The EU decision established that subsidies to existing coal mines would have to be phased out by December 31, 2018—effectively making it impossible for EU member states to provide indefinite support to unprofitable mines. It is still possible to subsidize mine closures (e.g., by covering the costs of mine site remediation and supports for laid-off workers), which is in line with the SRK mandate. But under the EU decision, SRK could not extend coal mining activities by transferring ownership to third parties; it would need to limit its activities to ensuring economically, environmentally, and socially responsible closure of unprofitable mines. SRK's activities are thus financed by the state budget in line with EU state aid rules, but with no involvement of the European funds. The amount of state aid allocated to SRK in 2010–2020 exceeded $2.8 billion.[8]

6 Only miners who have less than four years left to reach applicable retirement age (three years for coal treatment plant employees) are eligible for mining leave.

7 **https://srk.com.pl/english/employment-restructuring.**

8 More details available in the annual reports on state aid published by the Office of Competition and Consumer Protection: **https://www.uokik.gov.pl/raporty_i_analizy2.php.**

2.4. Coal allowance for mining pensioners, 2012-2018

Another component of the government response to the decline of the hard coal industry was state efforts to cover the mining companies' costs associated with the coal allowance for their former employees.

As mentioned above, the coal allowance is an in-kind remuneration whereby miners can receive free coal for use in their homes, or a cash equivalent, and it is provided in addition to a salary. It has been used in Polish collective bargaining agreements since before the Second World War and was similar to in-kind payments to miners in other countries (e.g., Deputatkohle in Germany). The right to a coal allowance in the form of cash equivalent was conferred on employees of coal companies, as well as pensioners from active and liquidated mines. For details of the mining pension system and how it compares with pensions in other sectors, see Box 2.

Box 3. Pension rules for the Polish mining industry

Miners are not part of the general pension system in Poland—they enjoy additional, industry-specific rights, including the right to retire earlier than workers in other sectors and favorable service period conversion factors (1.5 for every year of mining work performed underground, and 1.8 in some specific cases, such as work in a rescue team). Retirement is available for employees who have reached age 55 and have worked for a minimum of 20 years (women) or 25 years (men), including at least 10 years of mining work (i.e., direct involvement in mining operations). Those with at least 15 years of mining work can retire at age 50, and for those with at least 25 years, there is no minimum retirement age. Miners are also entitled to miners' leave, an option available in the event of termination of the employment contract if the miner has less than four years of mining work remaining to qualify for the retirement. In that case, the beneficiaries who lost their mining job get 75 percent of their previous monthly remuneration until fulfilling the requirements of retirement, with time spent on mining leave counting towards the total years of mining work. As such, the mining leave serves as a bridging option for miners who are close to retirement and would otherwise lose the right to access the miners' pension system due to insufficient number of years spent in the sector.

Source: Bukowski et al. (2018).

Pensioners were entitled to a lifetime supply of 2.5 or 3 tons of free coal per year. The amount of the cash equivalent depended on the value of coal, based on market prices, and determined each year by the ministry responsible for the mining sector. Collective bargaining agreements in the mining industry included clauses concerning the coal allowance.

In 2012–2015, mining companies terminated the collective bargaining agreements that had included the coal allowances for pensioners and retired staff. The obligations

were taken over by the State Treasury, which started paying out the cash equivalents to all entitled beneficiaries via Zakład Ubezpieczeń Społecznych (ZUS, the Polish social security institution). The financing of the coal allowance from the state budget constituted state aid to the companies, but it was considered consistent with the Council of the EU Decision of 10 December 2010 on State Aid to Facilitate the Closure of Uncompetitive Coal Mines (2010/787/EU) because it did not serve to extend the life of currently operating mines.

In 2017, a law on compensation for the lost coal allowance came into force and definitively resolved the coal allowance liabilities.[9] According to this law, every pensioner receiving the coal allowance would be paid a one-time benefit, as compensation for losing the right to free coal, in the amount of $3000 (net). These payments were again financed by the state budget. The cost of implementing the law was more than $700 million, with 235 thousand eligible beneficiaries).[10]

Subsidies to pensions and social security benefits for miners could be considered as an indirect form of aid to the mining industry, in the sense that the government accepted the liabilities after collective bargaining agreements were broken in 2012-2015, rather than forcing the companies to continue to bear the costs. Government expenditures on such subsidies have amounted to around $0.9billion to $1.4 billion per year for the past 10 years. Since 1990, this type of support has absorbed more funds than direct coal subsidies and grants, and it currently is the single item that receives the most total public funding going to the sector.

2.5. Program for the Hard Coal Mining Sector, 2018–2030[11]

The Program for the Hard Coal Mining Sector in Poland for 2018–2030 was adopted by the Council of Ministers in January 2018 as yet another attempt at restoring the sector's competitiveness and improving its economic performance. In 2019, the feasibility of the program was assessed, resulting in corrections and updates to the program. Implementation of the program was expected to continue until 2030.

The program consists of two parts. The first, an analysis of the current state of the hard coal sector, shows that Poland has approximately 32 billion tons of undeveloped hard coal deposits, which the government deems a sufficient reserve to ensure availability of a domestic coal supply capacity (for comparison, in 2019 Polish coal mines extracted 62 million tons of coal). It should be noted, however, that the program does not address the economic viability of developing new deposits, omitting both

9 Polish: Ustawa z dnia 12 października 2017 r. o świadczeniu rekompensacyjnym z tytułu utraty prawa do bezpłatnego węgla, Dz.U. 2017 poz. 1971.

10 **https://www.cire.pl/item,152295,1,0,0,0,0,0,opublikowano-projekt-ustawy-o-rekompensacie-za-utracony-deputat-weglowy.html.**

11 The Ministry of State Assets (2018) is the primary source for this section of the report.

supply-side (increasing extraction costs due to rising wages) and demand-side (energy transition and European long-term decarbonization targets) issues.

The second part of the program outlines program objectives and the methods to achieve them. The main goals are to maintain sufficient coal production capability in Poland to safeguard electricity supply availability, and to support the domestic coal industry. Of the 10 specific objectives to be achieved, the most important is to stabilize the profitability and financial liquidity of the mining industry by adapting production to market needs. Further objectives involve integrating the mining industry with the power sector, ensuring that the mining industry can meet domestic demand for coal, developing new coal deposits and improving mining efficiency, developing employee competencies, supporting and developing clean coal technologies, improving safety in mines, diversifying the industrial use of hard coal, unifying and simplifying the remuneration system in the mining industry, and completing restructuring measures (including the incorporation of Kompania Węglowa[12] into the Mine Restructuring Company). The program does not provide any new safeguards for people leaving the mining industry. Accordingly, it does not add to programs already in place to address the challenge of a just transition in the sector.

Consolidation plans for vertical integration of mining companies and energy utilities call for the establishment of two groups: the Upper Silesian Group of energy coal producers, with Polska Grupa Górnicza (PGG, Polish Mining Group) as an entity taking over smaller producers,[13] and the Eastern Group, which includes LW Bogdanka.[14] The program also envisaged the development of a sector stabilization fund to mitigate the effects of economic fluctuations and a dynamic resource base as a tool for ensuring modern management of coal resources.

As of the end of 2021, the program has not been successful: there was no consolidation in the sector, and mining productivity has remained low while labor costs have risen, further diminishing the profitability of companies, and triggering another crisis in the sector. This is reflected in indicators collected by the government to monitor the program: in 2019 (before the pandemic hit), coal production was 14 percent below target levels, and the sector generated a $370 million loss instead of the target $285 million profit (Ministry of State Assets 2020). Overall, the failure to ensure self-sufficiency of the sector was a result of too little focus on cutting costs and improving productivity, which would require further mine closures and job losses. Given the opposition from the trade unions, the state-controlled mining companies were not able to execute the necessary restructuring actions and moderate increases in labor costs.

12 Kompania, a Polish joint-stock company based in Katowice, was the largest mining company in Europe in 2003–2016. All mining sites and mining infrastructure were taken over by PGG in 2016.

13 PGG S.A. is the largest mining company in Europe and the largest hard coal producer in the European Union. The special-purpose company was established to take over the assets and liabilities of the Kompania Węglowa. **https://www.pgg.pl/.**

14 LW Bogdanka is a hard coal mine in the Lubelskie coal basin, near the city of Lublin in eastern Poland. **https://www.lw.com.pl/.**

2.6. Social Contract for mining industry transformation, 2021

The failure of the 2018 restructuring program resulted in quick deterioration of the mining sector. Covid-19 further accelerated the crisis and forced the Polish government to consider a new wave of restructuring, including further mine closures in mid-2020. Facing strong opposition from the mining trade unions, in September 2020 the government abandoned its previous plans and focused on lengthy negotiations on the so-called Social Contract with trade unions, which aimed to develop a mechanism to avoid sudden market-driven closure of coal mines and to prolong the coal phaseout.

The contract was signed in May 2021 by the Polish government, representatives of trade unions, representatives of the Stowarzyszenie Gmin Górniczych w Polsce (Association of Mining Communities in Poland) and the Stowarzyszenia Gmin Górniczych i Powiatów (Association of Mining Communities and Districts Authorities), as well as by representatives of coal companies covered by its provisions.

The contract specifies a schedule of closures for mines belonging to the PGG, Tauron, and Weglokoks companies. According to the schedule, the first mines would be closed in 2021, and the last mines would cease operation in 2049; the majority of mines would be closed after 2030. According to work carried out in the analytical phase of the program, to continue operating as per the schedule, most mines would need subsidies. The contract envisages a state aid mechanism to this end, but it will become effective only after it is checked by the European Commission for compliance with EU member-state aid rules. The notification process started in May 2021, but there is controversy as to whether the subsidy scheme will be approved as submitted (see for example ClientEarth 2021). It should also be noted that the contract does not cover other steam coal mining companies (e.g., Bogdanka mine in eastern Poland, several small, privately owned mines in Silesian coal basin), as well as coking coal mines. Thus, the document does not specify the end of hard coal mining in Poland. Instead, it extends the operational timeline of unprofitable coal mines in Silesia via the proposed state aid scheme.

The Social Contract does address just transition by stipulating a package of safeguards for employees of mines planned for closure. All workers employed in the mines as of September 25, 2020, have the right either to keep their jobs until they retire, or should that not be possible, to find employment in another operating mining unit; or to benefit from a special preretirement mining leave, during which they will receive 80 percent of their salary (for those who will retire within the next couple of years) or a one-time severance payment of $31,000 and a one-time retraining opportunity.

The Social Contract also envisages an investment of more than $4.1 billion in clean coal technologies, such as coal gasification, carbon capture and sequestration, or smokeless fuel production installations. However, the Contract is unclear on who would make the investments, and whether they are economically feasible even with public support.

Finally, the Social Contract calls for establishing the Fund for the Transformation of Silesia ($130 million in initial capital and guarantees for another $260 million), with the objective of coordinating the transformation of former mine sites (as well as industrial and postindustrial sites) with broader economic development efforts in the province.[15] Funding for this element will come from the EU Just Transition Fund.[16]

2.7. Power Sector Transformation and a National Energy Security Agency

Like coal mines, Poland's coal-fired power plants have been struggling financially because of rising carbon prices in the European Union, which exceeded 50 euros per ton of CO2 at the end of 2021. They have been kept afloat by a capacity payment mechanism, but that will be phased out as of 2025.

The solution for restructuring the Polish power sector proposed by the Polish Ministry of State Assets (2021) involves the creation of a state-run entity, the National Energy Security Agency (Narodowa Agencja Bezpieczeństwa Energetycznego, NABE). This agency would take over coal-fired power plants from utilities and continue running them, with the stated aim of maintaining the dispatchable generation resources required to ensure the reliability of the electric grid in Poland. To that end, NABE is expected to benefit from a not-yet-defined state aid scheme that also will be subject to the European Commission's approval (Ministry of State Assets 2021).

According to the government's concept, NABE will purchase 70 coal-fired electricity generation units from three state-owned companies: PGE, Enea, and Tauron. The companies have been urging the government to unencumber them of the increasingly unprofitable coal-fired generation assets so that they can get financing to proceed with greener investments. Once established, NABE would be 100 percent owned by the State Treasury and function under the Commercial Companies Code. It would employ about 30,000 workers from PGE, Enea, and Tauron. It would hold installations with a total capacity of 23 GW, which in 2020 generated more than 80 TWh of electricity, around 55 percent of total power generation in Poland (Kowalczyk and Burny 2021). However, at this stage it is unclear how long the coal units would continue operating and when they would be moved into early decommissioning. It is therefore impossible to say how long NABE would keep buying coal and in what quantities, and to what extent that would enable coal mines to continue operating. It is also worth noting that NABE lacks any link to new investments in clean energy technologies that could deliver new jobs and support the transition of coal sector workers.

15 The official term for provinces in Poland is voivodeship ("województwo").

16 The Just Transition Fund (JTF), part of the EU Cohesion Policy 2021-2027, offers support to regions that face serious social and economic challenges resulting from transformations focused on climate neutrality. JTF was designed to facilitate the implementation of European Green Deal, including the transition to climate neutrality by 2050. JTF will support investments in economic diversification and regeneration of carbon-intensive areas. **https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/just-transition-fund_en.**

3. National and European Regional Development Instruments for Silesia

Efforts to stimulate wider regional development in Silesia have run parallel to the mining sector's restructuring and gradual decline. European funds—which started flowing into Poland even before EU accession in 2004—have assisted the region's transformation and mitigated the social and economic effects of coal's continuing decline. Since joining the European Union, Poland's ability to subsidize the coal sector has become limited. However, with EU membership came the EU Cohesion Policy funds, which included investments in infrastructure, human capital, environmental protection, and public services. To access these funds and implement programs effectively, Silesia has had to build a new institutional structure, which has been instrumental in drafting and implementing regional development strategies and allocating the available funds. This chapter describes the province's major regional development programs, the institutions set up to support their implementation, and other initiatives that have contributed to building economic alternatives to coal mining since the early 2000s.

3.1. PHARE: European support before EU accession, 1999–2002

Created in 1989, PHARE was one of the main EU instruments supporting Central and Eastern European countries before their accession to the European Union in 2000s. Originally launched as Poland and Hungary: Assistance for Restructuring Economies (PHARE), the program expanded to cover 10 countries in the region. Funds were used to support reforms required to join the European Union, as well as to fund investments in economic and social cohesion.

PHARE supported transition in Silesia after the major restructuring of the coal industry that followed the 1998–2002 reforms (when more than 100,000 people left the sector, see above). Former mine workers could enroll in two retraining programs funded by PHARE: INICJATYWA and INICJATYWA II ("Inicjatywa" is Polish for "initiative"). For Poland, these were the first programs providing broad support for economic development and job creation in sectors affected by economic restructuring, and they were offered in addition to the social packages discussed in the first part of this report.[17]

17 The following section derives findings from (i) Marshal's Office of the Silesia Voivodeship (2004b) and ii) PARP (2004).

The budget of PHARE INICJATYWA was set at $52 million, of which $35 million was dedicated to supporting the mining sector's restructuring and the remainder supported the restructuring of the steel industry. The funds were allocated for the following purposes:

- Job search assistance for workers leaving the mining and steel industries, retraining and skill development (so-called "activating measures"), and one-time severance payments ($26 million).
- Job creation through support and development of small- and mid-sized enterprises (SMEs) ($24 million). The development of SMEs was stimulated by
    - a new system to cover social security contributions, which otherwise would need to be paid by former miners and steelworkers, decreasing SMEs' cost of hiring them;
    - a loan fund (Fundusz Pożyczkowy) to support former miners and steelworkers in setting up their own businesses and creating new jobs;
    - a system of interest rate subsidies for loans granted to SMEs planning to employ former miners and steelworkers; and
    - a subsidized advisory services system for those who decided to use the above tools.
- A system to facilitate networking among practitioners working in this field and the sharing of best practices with a twin program implemented in Spain ($2 million).

Under the follow-up PHARE INICJATYWA II, $55 million was earmarked for continuation of INICJATYWA I activities (cofinancing severance payments, retraining, support for SMEs, technology transfer, further operations of the loan fund). Furthermore, the Local Subsidy Fund (Fundusz Dotacji Lokalnych) was established to support small-scale investments implemented by local governments. In total, $21.5 million was allocated to support the mining restructuring process, $16.8 million supported steel industry restructuring, and EUR 16.4 million was spent via the Local Subsidy Fund.

The Local Subsidy Fund was available to municipalities in areas with restructured and liquidated mines and steelworks. Grants for mining municipalities were earmarked for investment in projects consistent with the province's development plans. A total of 33 investment projects were carried out, including the construction and modernization of roads, buildings, and sewage systems; creation of education centers; the development of designated areas for SME business activity and economic activity zones; and the expansion of transport infrastructure and services.

Only about 6,000 miners benefited from PHARE training programs. According to a 2007 study of the subject, among the graduates of both PHARE initiatives, 51 percent were employed, and 49 percent were without jobs (with 15 percent having worked but ultimately lost their jobs), and 9 percent of those who were working were running their own business. Reemployment had mainly been secured by workers under 30 years of age. In the group between ages 30 and 40, every second person found employment

outside the mine. The chances of finding a job decreased above age 40. And, it was much more difficult for female former mine workers to find work than for males—the percentage of women in employment was 30 percent, versus 61 percent for men (Bara and Dobrowolska 2007). Workers leaving the mining and steel sectors most often found employment in the construction sector as heavy equipment operators (excavators, loaders, cranes, saws, crushers), in security and property agencies, as welders, and as freight truck operators (Mining Chamber of Industry and Commerce 2000).

3.2. Program for Alleviating Effects of Employment Restructuring, 2003–2006

The implementation of PHARE programs demonstrated the importance and feasibility of complementing the restructuring measures in the mining sector with policies for job creation and broader economic development at the local level. This led the regional authorities in Silesia to create, in 2003, the Program for Alleviating the Effects of Employment Restructuring in the Coal Mining Sector in the Silesia Region. The program represented another step forward, as the regional government focused on integrating various sources of financing (including Polish government and EU funds) and established development priorities.[18]

In the first stage (2004), $45 million was provided by the Polish government, which took a loan from Council of Europe Development Bank for this purpose. These funds were distributed via two policy instruments managed by Silesia's regional authorities:

- Fund for the Development of Local Infrastructure for Entrepreneurship, which supported development of local infrastructure and entrepreneurship ($37 million); and
- Small and Medium Enterprises Loan Facility, which supported SME development ($8 million).

Funding was allocated to 98 projects proposed by Silesian municipalities and counties. Most of the funds supported projects aimed at improving infrastructure, especially roads and building renovations, for potential SMEs. According to estimates by the Silesian regional authorities, the projects financed via the Fund for the Development of Local Infrastructure for Entrepreneurship led to the creation of 6,000 jobs(Marshal's Office of the Silesia Voivodeship 2004a).

The SME Loan Facility provided support to businesses established by former mining employees, similar to the PHARE programs. Preferential loans were granted to manufacturing and market services. The loans granted to companies for 190 projects had a total value of $9 million. Most of the projects were implemented in the municipalities of Bielsko-Biała, Bytom, Gliwice, Katowice, Rybnik, and Jastrzębie Zdrój.

18 This section of the report draws source material from Marshal's Office of the Silesia Voivodeship (2003).

According to the regional authorities, more than 1,100 new jobs were created as a result (Marshal's Office of the Silesia Voivodeship 2005a).

In the second stage, the Silesia Province received $30 million from the same source (a Polish government loan from the Council of Europe Development Bank). As in the first stage, the funds were also used for local infrastructure investments, entrepreneurship programs, and SME development.[19] According to estimates by regional authorities, the funds helped SMEs in Silesia carry out investments worth a total of around $37 million and create about 1,200 new, permanent jobs in the region (Marshal's Office of the Silesia Voivodeship 2005b).

3.3. EU-funded Regional Operational Programs, since 2007

Since 2007, European funds supporting regional economic development have been channeled via comprehensive programs covering broad socioeconomic challenges and managed by regional (sub-national) governments. This marked a shift toward more integrated management of EU funds on the regional level, compared with the previous years, when targeted programs were created to address specific topics (e.g., PHARE INICJATYWA) or when EU funds were used to finance selected elements of broader packages of measures (e.g., the Program for Alleviating the Effects of Employment Restructuring in the Coal Mining Sector). At the same time, the national government limited its involvement in financing regional development schemes, instead utilizing the increased availability of EU funds.

The Regional Operational Programs are examples of EU-funded plans drafted by regional authorities to reflect specific regional needs and development strategies, while contributing to the wider European objectives established in EU legislation. Within this system, two seven-year programs (implemented in 2007–2013 and 2014–2020) helped facilitate the transition of the Silesian economy.

The focus of Silesia's regional programs has been to create conditions for economic development, with emphasis on economic diversification away from coal production. Program activities included investing in energy and transportation infrastructure, replacing old coal-based heating systems in buildings, reclaiming and revitalizing postmining areas, modernizing municipal infrastructure (e.g., renovated public buildings, efficient street lighting, improved sewage systems), and building human capital. The region was allocated $2.2 billion in 2007–2013 (the second-largest regional allocation in Poland during this period) and $4.4 billion in 2014–2020 (the largest regional allocation in Poland during this period).

19 Funds were allocated as follows: $21 million for infrastructure and entrepreneurship programs from the Fund for the Development of Local Infrastructure for Entrepreneurship, and $9 million for SMEs from the Small and Medium Enterprises Loan Facility.

By the end of the 2007–2013 program, funds had directly supported a broad range of initiatives, including (approximate estimates):

- 3,000 SME projects,
- 220 initiatives related to the digital economy,
- 200 projects related to sustainable urban development,
- Connecting 48,000 households to wastewater systems,
- Revitalizing 220 hectares (around 540 acres) of degraded areas,
- Purchase of 200 public transport vehicles, and
- Renovation of 120 health care facilities, with more than 80 receiving new medical equipment.

Development of transport infrastructure (roads, rail, and urban public transport) was the largest spending category, accounting for more than a quarter of the total allocation, followed by sustainable urban development (mostly revitalization projects), which accounted for close to 18 percent. R&D, innovation, industrial clustering, and enterprise support projects (focused on SMEs) accounted for 17 percent of total funding, and environmental management (waste management infrastructure, sewage system development, investment in renewables) accounted for 11 percent. Most cities in Silesia also implemented projects to reemploy jobless persons over the age of 30, offering training and labor market assistance (Marshal's Office of the Silesia Voivodeship 2017).

A 2014 evaluation of the program (Rudolf et al. 2014) used macro-econometric modeling, case studies, and other methods to analyze the impacts of the 2007-2013 program. The report noted that evidence on the impacts of investments inherently was limited, given how soon after the program the evaluation was carried out. Notwithstanding these limitations, the authors estimated that the program expenditures contributed an additional 1.5 percent to regional GDP and generated nearly 20,000 new jobs, including indirect effects via increased overall economic activity. However, the record of accomplishments for specific objectives was quite mixed.

The 2014–2020 program included many of the same priorities as the 2007-2013 program, with a growing focus on clean energy and the low-carbon economy.[20] Once again, the funds supported a broad range of activities directed at the transition away from traditional industries (e.g., revitalizing old industrial sites, inventorying postmining sites), infrastructure investments (e.g., constructing and modernizing educational and health care facilities, retrofitting public buildings, building new roads and public transport projects, building wastewater treatment plants), and social and environmental improvements (e.g., professional programs, building renovations to replace coal boilers and improve air quality). One example is the flagship program "Silesia Under the Blue Sky", which supported air quality innovations (Marshal's Office of the Silesia Voivodeship 2018).

20 For more details, see the webpage of the program: **https://rpo.slaskie.pl/.**

As mentioned above, the Regional Operational Programs marked an evolution in the EU approach to funding regional development policy, including by disbursing funds through an arrangement known as "shared management," where the regional government works with the European Commission to jointly plan, implement, and evaluate the programs. Spending plans must be based on and contribute to regularly updated regional development strategies while achieving EU policy objectives. Social partners, such as trade unions, business associations, civil society organizations, and local governments, must be involved in the planning, implementation, monitoring, and evaluation of spending, in line with the EU partnership principle.

This governance arrangement contributes to regional development beyond financial support, by bolstering regional and local institutional capacity. The Regional Centre for Analysis and Strategic Planning within the Marshal's Office (regional executive) of Silesia is one example of this—it provides the capacity needed to manage the EU funds, while also providing capacity for evidence-based regional development planning.[21]

The EU Multilateral Financial Framework for 2021–2027[22] takes the Cohesion Policy approach even further, with the Just Transition Fund as a prominent example. In addition to $600 million in regular funds for regional development, Silesia may benefit from $540 million under the Just Transition Fund. To tap into the funds, Silesia must prepare a Territorial Just Transition Plan that is embedded in the region's development strategy, and that harmonizes with national energy policies and EU energy and climate policy objectives. Specifically, the assumptions of the plan (e.g., timeline of the phaseout of coal mining) must be consistent with Europe's objective of reaching climate neutrality by 2050. Funds must be spent to alleviate the social and economic effects of the transition away from coal by supporting job creation (especially in the SME sector), assisting former coal workers, improving the quality of the environment, financing the reclamation and repurposing of postindustrial sites, and promoting innovation.

The governance framework for the development policy in Silesia is not limited to the Marshal's Office working in cooperation with the European Commission. Other institutions play an important role in this context, in connection to both the EU and national policy frameworks, including:

- The Katowice Special Economic Zone;
- Regional Agencies for Enterprise Development; and
- The Network of Regional Specialist Observatories.

21 For more details, see the webpage of the RCAS: **https://rcas.slaskie.pl/.**

22 See European Commission (2022c).

These institutions are discussed in more detail below.

3.4. The Katowice Special Economic Zone

Special economic zones (SEZs) are areas where businesses enjoy preferential conditions. Investors operating in these zones receive public aid in the form of tax relief, based on the investment made or the number of jobs created. The tax relief granted in a SEZ is consistent with the EU public aid rules applicable to similar zones in other countries of the European Union, so SEZ costs (i.e., forgone tax revenue) occur on the national level. Originally, the main purpose of the SEZ program was to attract foreign investment to areas facing restructuring challenges and job losses during the transition to the market economy in the 1990s. SEZs were established across the country, each managed by dedicated entities. Over time, the SEZ framework became a broader development policy instrument, with new provisions introduced in 2018 extending the tax incentives for new investors nationwide (Polish Investment and Trade Agency 2022). The entities responsible for managing the original zones are still delivering services to companies operating in their area, and clusters of economic activity established in the 1990s (in the existing SEZs) remain in place.

The Katowice Special Economic Zone (KSEZ, managed by a joint stock company of the same name, KSEZ S.A.) was established in 1996 to advance regional restructuring in the City of Katowice and to stimulate employment in the region. Since its launch, it has expanded to cover a broader area affected by industrial transition in Silesia. It is now the largest SEZ in Poland, covering an area of 2,750 hectares across 48 municipalities in Silesia and the neighboring Opole Province. KSZE S.A. provides investors with dedicated services, including real estate brokerage, connections with education institutions, consulting, and training. It maintains a database of potential contractors and offers support for investors looking for leases of office and storage space.

According to KSEZ S.A., the 450 companies operating in the zone have so far invested more than $10 billion, and created more than 80,000 jobs, with more than 60 percent of investments coming from the automotive sector (Katowice Special Economic Zone 2022a). Given the importance of the automotive sector for the zone, it also launched its own Silesia Automotive & Advanced Manufacturing cluster.

Participation in the SEZ and the related public aid are available to companies in traditional industry sectors (excluding alcohol, tobacco, steel, electricity, and gas), plus service sector businesses, including IT, research and development, accounting and bookkeeping, technical testing and analysis, call centers, architecture, and engineering. Accordingly, the focus is much broader than just clean technologies in the energy sector. To be eligible, companies must meet qualitative and quantitative criteria for the amount of planned investment, size of company, sector, innovativeness, orientation toward exports, environmental sustainability, and quality of employment (Katowice Special Economic Zone 2022b).

3.5. Regional Agencies for Enterprise Development

Silesia has several regional development agencies tasked with supporting business development—in particular, supporting the development of SMEs and assisting their growth and competitiveness.

GAPR Ltd., the Upper Silesian Agency for Entrepreneurship and Development, supports development of the region's economy and stimulates entrepreneurship (SMEs in particular) by providing training services, business consulting and auditing services, energy audits and group energy purchases, investment and financing services, plus support for organizing conferences, promotional trips, and study visits. It provides financial support through preferential loans for microbusinesses and SMEs and assists businesses in finding foreign business and research partners (Enterprise Europe Network). It also operates in Gliwice, Jaworzno, Żory, and Bytom.

Upper Silesian Fund S.A. focuses on financial support for microbusinesses and SMEs, using both its own resources and EU funding. It deals with nonbanking financial services, asset management, purchase and sale of securities and other financial instruments, and external capital to finance investments in Silesia Province, including financing for restructuring or new firms. It also offers loan programs: investment loans, revolving loans to provide working capital, and start-up loans. Finally, it distributes training subsidies and grants to unemployed persons intending to start a business.

Regional Development Agency in Bielsko-Biala provides consulting, training, and educational services, including in the area of innovation and technology. The agency also helps companies apply for support from EU-funded programs and provides loans, loan guarantees, and financial intermediation via the Capital Projects Fund (Fundusz Projektów Kapitałowych Sp. z o.o.).

3.6. Network of Regional Specialist Observatories

The Network of Regional Specialist Observatories in the Entrepreneurial Discovery Process is an EU-funded initiative whereby leading academic and research institutions and technology parks in Silesia work together to analyze the region's economic sectors and identify "smart specializations" that have the potential to drive development (and should therefore have priority access to EU funds).

Smart specialization is defined as "a place-based approach devised within the framework of the EU Cohesion Policy which seeks to identify strategic areas for intervention based both an analysis of the strengths and potential of the economy and on an entrepreneurial discovery process with wide stakeholder involvement. It is outward-looking and embraces a broad view of innovation including but certainly not limited to technology-driven approaches, supported by effective monitoring mechanisms" (European Commission 2022a). It is a way to maximize the innovation and development benefits of EU funds by identifying and tapping into the strengths of individual regions.

Formally, the Network is a series of consecutive projects funded by the European Union via the regional operational program of Silesia. The mission of the observatories is enshrined in the Regional Innovation Strategy of the Silesian Province (the development of this innovation strategy is a continual process, with updates based on the contributions made by the observatories).

In the first edition of the project, four partners operated five observatories dealing with environmental technologies, energy, ICT, medicine, and nanotechnologies. In the current edition, 11 partner institutions operate eight observatories: the original five domains, plus transport, machine building, and materials.

Each observatory publishes annual reports on market and development trends, areas of technological innovation, and R&D pathways. The reports analyze technological and innovation needs, examine the application of business models and instruments in the field of technology transfer and commercialization, define business and international cooperation opportunities for companies, and identify emerging smart specializations.

4. Conclusion

The policies and measures discussed in this report can be broadly divided into two categories: those related to mitigating the loss of jobs and other consequences of mine closures in Poland's Upper Silesia region, including preventing mine closures, and those aimed at stimulating the region's economy and thereby creating alternative jobs.

The policies aimed at helping laid-off miners have relied predominantly on two kinds of instruments: financial support (severance pay, pre-pension leave payments), and reassignment to mines still in operation. The financial support policies would not have been sufficient to stabilize laid-off workers, underscoring the importance of a strong and diversified economy and labor market. During the mass mine closures in the 1990s, when many workers were laid-off in a short period, even generous severance pay could not substitute for a systematic approach to creating alternative jobs and retraining workers. In those years, Silesia did not have a dedicated policy aimed at creating a large number of new jobs, but the region's generally strong and diversified economy—with automobile and parts manufacturing, ICT, and a variety of service sectors—made up for its absence. The miner reassignment policies have been quite effective since the Mine Restructuring Company (SRK) was established and the initial period of mass mine closures ended, giving way to a more gradual and therefore more manageable mine closure process. After each mine closure, the remaining mines were usually able to take on those workers who did not opt for severance pay or early retirement.

Silesia's general economic development benefited significantly from the industrialization and growth spurred by Poland's accession to the European Union. Although the region's economic power diminished in relation to other regions in Poland, rapid national economic growth ameliorated this loss of relative position and economic activity came to Silesia with European integration (Bukowski et al. 2018).

Particularly important in this context, was the influx of funds under the EU Cohesion Policy. In 2014–2020 alone, the region received more than $4 billion from the European Union, which supported investments in infrastructure, public services, job creation, and training. Those funds stimulated the development of alternative sectors and helped Silesia stave off the risk of an economic slowdown.

The EU funds have had significance beyond the direct economic benefits of a large injection of cash into Silesia's economy. Firstly, managing the funds required the region to implement new models of governance, since the money came with strings attached for transparency, accountability, public participation, and strategic planning. Secondly, the recent addition of the Just Transition Fund to existing EU sources of funding has demonstrated that the prospect of additional financial support spurs more ambitious transition planning and unleashes new potentials by the regional government, local governments, local communities, and businesses. The Just Transition Fund is a relatively small financial instrument compared with the Cohesion Policy funds, but its governance model—the requirement to draft a Territorial Just Transition Plan consistent with EU climate objectives—has reinvigorated the debate about the future development paths of Silesia and its most urgent investment needs. Perhaps even

more importantly, the funding process has engaged a wide array of stakeholders—from local authorities, businesses, and experts to local antimine protest groups—in the debate about the future of Silesia and what policies and measures are needed. This mobilization and planning is expected to be of significant benefit as Silesia enters the final stage of its coal phaseout.

The first few years of the 2020s have seen a series of major shocks affecting economies and energy markets—from the energy demand dip at the beginning of the COVID-19 pandemic, to new energy supply uncertainties resulting from international responses to the Russian invasion of Ukraine. In this context, the policy framework supporting long-term transition to low-carbon economies is important for guiding the decision-making process. For example, the recovery plans designed by the EU Member States in response to the COVID-19 crisis have explicitly recognized the importance of investing in the green economy (European Commission 2020). Similarly, in response to the Russian aggression, the EU has reiterated its commitment to accelerated energy transition through the REPowerEU plan (European Commission 2022b). In both cases, these initiatives build on and connect to the existing long-term policy architecture, making it easier to mobilize and allocate additional resources in line with the strategic priorities on European, national, and regional levels.

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