Lessons learned from the restructuring of Poland's coal-mining industry

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For the Global Subsidies Initiative (GSI) of the International Institute for Sustainable Development (IISD)

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LESSONS LEARNED FROM THE RESTRUCTURING OF POLAND'S COAL-MINING INDUSTRY

By Wojciech Suwala

ABSTRACT

As economies transition from centrally planned to market systems, they often undergo the same processes as do developing countries. Previously inefficient industries, like coal mining, usually shrink in size. Such industries are generally not able to restructure on their own because of the large costs involved, or because of resistance from organized labour unions to the reduction in employment. Polish coal mining is a typical example. Soon after the economic transition began in 1989, demand for coal declined but controls on coal prices remained in place. Over-employment combined with high production costs proved to be untenable for the coal mines. Early government efforts did not improve matters. Only a program endorsed by the Solidarity trade union, and backed by substantial public funds for closing mines and providing social benefits, was at least a partial success. Today, coal companies have nearly achieved long-term viability and the process of privatization has commenced.

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POLISH COAL-MINING RESTRUCTURING: A TIMELINE

1989 (September)	first non-Communist government in post-World War II Poland; start of the economic transition
1990	coal mines transferred to commercial enterprises owned by the State Treasury
1991	the first coal-mining restructuring program begins
1993	a number of coal-mining enterprises merged into seven coal companies
1993–1996	revision of coal-mining restructuring programs
1998	coal-mining restructuring Parliamentary Act; first successful restructuring program started
2003	seven coal companies merged into three
2009	first mine privatized

1. INTRODUCTION

The subsidies considered in this report relate to the underground mining of hard (bituminous) coal.[1] Other sectors of the coal industry in Poland also received state aid between 1990 and 2005 but not to an extent comparable with hard-coal mining. The subsidies were intended to help the industry make the transition from a command-and-control to a market-based system, while becoming internationally competitive.

The focus of this report is the period between 1990 and 2006. Before 1990, during the days of Communist rule, coal mining was also heavily supported by the state, but no reliable data on this period are available. Coal was regarded as the foundation of the country's economy, and to limit the cost of living, prices were fixed by the state. However, little effort was made to control costs. Since Poland's accession to the European Union in 2005, its coal-mining subsidies have been regulated according to EU law; the amount expected to be paid out through 2010 is shown in Table 1. There are only two kinds of subsidies being paid at present: one for investment; and one to settle liabilities inherited form earlier periods. No state aid is given to support operating costs or to maintain access to already exploited coal reserves.

1 Poland extracts hard coal from underground mines and lignite from open-pit mines, the same as in Germany. But, unlike other major coal exporters (e.g., Australia, South Africa and the United States), it mines no hard coal from open pits.

TABLE 1. AID FOR POLISH COAL MINING ACCORDING TO COUNCIL REGULATION 1407/2002, MILLIONS OF EUROS

Year	Investment aid	Aid for inherited liabilities
2003		902.8
2004		912.8
2005		369.1
2006		294.1
2007	27.4	40.4
2008	21.3	40.4
2009	20.3	40.4
2010	15.9	40.4

Source: Paszcza et al., 2007.

During the period under investigation, the Polish hard-coal-mining sector received aid through several policy instruments, the majority of which are common subsidy types:

- debt forgiveness;
- preferential tax rates;
- investment subsidies, such as tax write-offs or direct funds;
- funds to pay for social programs;
- funds to help cover the costs of closing mines; and
- bank loans for working capital.

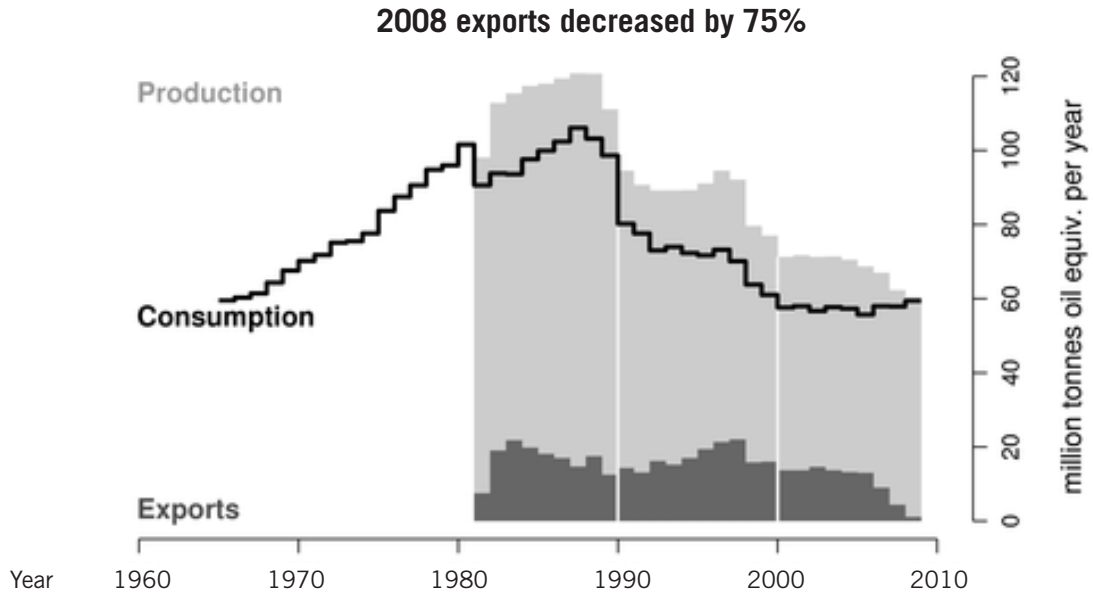
Detailed descriptions of the coal-mining restructuring process and subsidies for the period 1990–2006 are presented in the following sections of the report.

2. THE USE OF COAL-MINING SUBSIDIES IN POLAND

Subsidies for coal mining were widespread in Europe until the mid-1990s when the coal industry faced increasing competitiveness from imports. Many arguments were used to justify these subsidies—mainly energy security, social stability and the dependence of related sectors on the continuance of coal mining (Frondel, Kambeck & Schmidt, 2007).[2] In poorer or transitional countries, where electricity generated from fossil fuels represented a substantial share of total energy production, subsidies that frequently took the form of low coal prices[3] were justified as a way to moderate inflationary pressures. However, as an anti-inflationary policy it was poorly targeted; a 10 per cent increase in coal prices would lead to a 5 per cent increase in the cost of producing electricity in a coal-fired power station and a much smaller cost increase passed on to the consumer.[4]

Poland is one of only a few countries in the world with a coal-based energy economy. Hard coal and lignite provide more than 55 per cent of Poland's primary energy supply, and 95 per cent of its electricity is generated from these fuels. Poland has a large domestic endowment of coal, but its heavy dependence on coal also has historical roots. During the period when its economy was centrally planned (1945–1989) in particular, Poland had limited foreign exchange earnings with which it could import oil and natural gas. But because coal mining was considered one of the country's most important sectors, it was subsidized and coal prices were regulated to keep them affordable. The table below provides further information about Poland's coal sector.

FIGURE 1. POLAND COAL PRODUCTION



Date BP Statistical Review 2009
Graphic provided by Mazama Science: http://mazamascience.com/OilExport/

2 In 1994 there was a special session of SNS Energy Stockholm devoted to various aspects of coal subsidies. Papers can be found in *Energy Policy*, vol. 23, 1995, No. 6.

3 Coal costs are balanced by governmental subsidies, such as is the case in Ukraine.

4 The electricity price for the final consumer consists of the energy price as well as capital recovery and the cost of transmission and distribution fees, which together constitute a substantial share of total costs.

Currently in Europe, only Germany still provides operating subsidies to its hard-coal sector, but these also are being phased out. The reasons and pace for their dismantling vary, but Germany has always had the opportunity of importing coal from politically stable countries. The subsidies discussed in this paper were intended not so much as to maintain the level of production, but to help the Polish coal-mining industry adjust to function more efficiently in an open-market economy by reducing employment and production capacity. Since neither single mines nor newly formed coal companies were able to incur restructuring costs, the state budget needed to support these efforts.

During the early 1990s, the once-wealthy coal sector started to experience the challenges of Poland's economic transition. Starting from a situation of over-employment, low productivity and poor economic conditions, the industry required immediate restructuring, which meant closing inefficient mines and those with few remaining coal reserves, as well as reducing employment at mines that were to keep operating. At first, there was an expectation that self-reliant commercial mining companies, now released from state control, would independently adapt to the new economic conditions. But continuation of the government's policy to control the domestic price of coal limited the industry's potential for income growth and nearly all mines experienced an increase in liabilities. The government supported some mining operations, but despite the state aid few mines were able to balance their accounts.

3. AIMS OF THE RESTRUCTURING PROGRAM

The overall objective of the subsidies was the improvement of the coal mines' economic and technical performance. Government documents articulated the following specific purposes:

- support the closing of unprofitable mines;
- reduce employment levels and thus improve labour productivity;
- adjust each mine's capacity to bring it into line with demand;
- more generally, make the mining sector profitable; and, ultimately,
- turn the mining companies into commercial entities and then privatize them.

In Poland's case, the reasons for the industry's inefficiency were inherited from the command-and-control period's overcapacity and over-employment. The government's first attempt to address this problem through a restructuring program was in September 1991 (Government of Poland, 1991); the program was later amended, in May 1992. Mines were merged into companies operating under the same regulatory rules as were in place previously. Again, there was no substantial progress due to low prices for coal, and the strong bargaining position of the trade unions (of which there were typically 8–10 separate ones at each mine). Not surprisingly, the unions resisted all proposals to reduce wages or cut the number of jobs. In 1992, the initial subsidies targeted to mining operations were stopped, and only mine closures and employment reduction continued to be funded. This program also yielded no positive results.

The next program, launched in 1993, marked a substantial step forward. First, the mine-closure program finally became official policy; and, second, social programs to support employment reduction were established. However, earlier negligence had allowed the mining industry to sink into dire economic conditions, its outstanding debt reaching almost $4.5 billion U.S. by the end of 1994 (Table 2). Nevertheless, the industry experienced a short period of profitability, thanks to a cyclical upsurge in coal prices.

TABLE 2. POLISH COAL-MINING PERFORMANCE DATA, 1990–2006 (U.S. Dollars of 2005)

Indicator	Unit	1990	1992	1994	1996	1998	2000	2002	2004	2006
Number of operating mines		70	69	63	58	54	41	41	36	33
Production level	Mmt	147	132	133	136	116	102	102	99	94
Employment	000 persons	388	336	292	259	208	155	141	127	119
Productivity	mt/ person	380	392	454	526	558	659	725	780	790
Average coal price	U.S. $/mt	37	45	52	45	41	38	38	53	57
Average coal production cost	U.S. $/mt	54	53	51	48	49	37	37	44	55
Income	10^6 U.S. $	8 848	6 347	6 722	6 933	6 148	5 619	5 477	6 473	6 222
Production costs	10^6 U.S. $	8 104	7 237	7 233	7 731	7 760	6 107	5 634	5 568	6 025
Operating profit	10^6 U.S. $	744	-890	40	-798	-1 612	-488	-157	850	235
Net financial profit	10^6 U.S. $	-121	-1 497	-128	-777	-1 445	-504	-162	734	126
Debt	10^6 U.S. $	1 879	3 558	4 490	4 293	5 585	6 232	6 066	2 335	2 130
Total payments from government and local authorities	10^6 U.S. $	610	1 036	1 872	1 103	1 118	752	693	595	493

Mmt - millions of metric tons; U.S. $/mt – United States dollars per metric ton.
Source: Author's calculations based on data from Szlązak, 2004.

The government persisted with its restructuring, with subsequent programs in 1994, 1996 and 1997. These efforts were not successful mainly because the funds for mine closures were insufficient and the miners regarded the social programs as relatively unappealing. The program of 1996 forecasted that 5.2 billion zlotys (1996) ($2.35 billion in U.S. dollars of 2005) would need to be spent over five years (Table 3).

TABLE 3. STATE SUBSIDIES PLANNED IN THE 1996 RESTRUCTURING PROGRAM FOR 1996–2000

Purpose	Amount, millions of U.S. dollars of 2005	%
Payment of debts to social security and pension funds of closed mines	133	5.7
Cost of mining damages and restoration of closed mines	57	2.4
Mine closure costs	623	26.5
Social programs for redundant miners	444	18.9
Costs incurred after a mine's closing	246	10.5
Costs of maintaining complexes being closed	92	3.9
Support for environmental and efficiency improvements and investments	753	32.1
Total 1996–2000	2 348	100.0

Source: Author's calculations based on data from Szlązak, 2004.

Initially it was forecast that the state subsidies would cover 94 per cent ($1 075 million U.S.) of the $1143 million U.S. cost of closing mines and paying for social programs for redundant miners. However, government expenditures in 1996–1997 covered only 75 per cent of what was forecast, with the level of expenditure being insufficient to speed up the restructuring process. Other reasons for the failure were the tendency for decision-makers to delay making the necessary cuts in employment levels, and the lack of a proper legal framework for undertaking the restructuring processes.

4. THE MAJOR POLICIES OF THE RESTRUCTURING PROGRAM

In 1998 the new government, which was supported by the Solidarity trade union election movement, formulated a new restructuring program. This time, it was formalized by a parliamentary bill (Parliament of Poland, 1998), and because the trade unions' representatives were the main architects of the plan, organized labour raised few objections. The related suite of social programs, which envisaged various methods of helping dismissed miners, was central to the success of the new program.

Many of the key people on the mining restructuring teams had university backgrounds, including the person who was the first director of the State Coal Restructuring Agency and then vice-minister responsible for mining. There was some consultation among stakeholders but it was quite limited. The World Bank, which lent the funds for the restructuring, performed some economic analysis. Also, other foreign government sources supported studies on coal mining in Poland. Advanced methods such as modelling and scenario analysis were not used.

The subsidies foreseen in the 1998 program are listed in Table 4. The differences in the structure of expenditures between the 1998 and previous programs are striking. The social program component constituted 60 per cent of the government outlays, whereas it had previously been only 19 per cent. Overall expenditures under this program were almost 30 per cent greater than under the earlier programs. Ultimately, the government would support not only mine restructuring and social programs, but also the forgiveness of coal-company debts.

Also noteworthy were special provisions for pension funds which were actually repayments for coal due in-kind for pensioners. One of the traditional in-kind benefits for mining employees was free coal. When coal was a basic fuel for heating and warming water this benefit was a real help to miners, but as time passed more and more employees connected to distributed heating systems. For these employees, an amount of money equal to the in-kind coal had to be provided. This was especially important for low-income pensioners. But the pension funds did not have adequate resources, so the money had to be supplied by the state budget and the budgets for mining restructuring. The amount was quite large, totalling 14 per cent of the total subsidy, or $335 million U.S. for the years 1998–2002.

TABLE 4. STATE SUBSIDIES PLANNED IN THE 1998 RESTRUCTURING PROGRAM FOR 1998–2002, MILLIONS OF U.S. DOLLARS OF 2005

Purpose	1998	1999	2000	2001	2002	Total	%
Total subsidy, out of which:	250	600	607	459	488	2 404	100.0
Mines closing costs	71	138	155	75	59	498	20.7
Costs of repairing damage to closed mines	9	12	12	12	12	57	2.3
Social programs for redundant miners	169	349	340	272	317	1 447	60.2
Special provisions for pension funds	0	84	84	84	84	335	13.9
Job creation	0	17	17	17	17	68	2.8

Note: the numbers provided in this table have been rounded to the nearest million.
Source: Author's calculations based on Szlązak, 2004.

4.1 SOCIAL PROGRAMS

The social programs were intended to bring about a reduction in employment without significantly reducing the dismissed workers' income or welfare. There were two groups of programs. The first was intended to redeploy younger coal workers elsewhere in the economy. The second provided welfare benefits to dismissed workers while they looked for a new job.

Social protection for older employees was provided in a form called "mining leave," and was reserved for those who had five or fewer years before they were eligible for a pension. The amount paid was 75 per cent of—"vacation wage"—i.e., the wage paid for normal leave. Retired workers maintained other benefits of employed workers such as receiving "coal in kind." If the person took a new job outside of mining the amount paid was reduced to 50 per cent.

Subject to approval from the relevant mining authority, each miner was entitled to choose from one of the following programs depending on their age:

- soft loans for the establishment of a business, or businesses that created jobs outside of mining;
- a social benefit of 65 per cent of the "vacation monthly wage" payment while the former employee searched for a new job, up to a maximum of 24 months;
- a one-time payment equivalent to about 15 average months of wages, based on previous years (initially in 1998, and then the amount decreased to 7.2 average monthly wages in 2002) for those who left coal mining and became employed outside of mining within 24 months after being dismissed; and
- a one-time payment for those employees who voluntarily left coal mining, initially equivalent to 24 months of the employee's previous average monthly wage, and then from 2002 equivalent to only 12 months at the average monthly wage.

Miners less than two years away from qualifying for their pension received guarantees of employment in their current or another mine. Also, workers from closed mines were offered alternative employment or access to active labour-market programs. To ease the transfer to other sectors, two employment agencies were established and their offices, located at each of the mines, offered training and other support to the workers.

Under the social program of 1998–2002, more than 53 000 workers left coal mining, of which 33 000 received some form of help.

TABLE 5. EMPLOYMENT AND EMPLOYMENT REDUCTION IN POLISH COAL MINING 1998–2002, PERSONS

	1998	1999	2000	2001	2002	Total 1998–2002 Planned	Total 1998–2002 Actual
Employment at the beginning of the year	243 304	207 935	173 631	155 032	145 995	243 304	243 304
Employment reduction with social program	24 866	24 413	11 915	5 308	524	65 620	67 026
mining leave	15 068	10 252	6 856	4 524	162	25 450	36 862
social benefit	118	193	61	45	2	6410	419
one-time payment	9 680	13 968	4 998	739	360	33 760	29 745
Other employment reduction	13 494	11 646	7 759	5 227	5 806	47 640	43 932
pensions	6 018	5 971	4 324	3 148	3 636		23 097
New employment	2 991	1 755	1 075	1 498	1 052	11 360	8371
Net employment reduction	35 369	34 304	18 599	9 037	5 278	113 260	102 587
Employment at the end of the year	207 935	173 631	155 032	145 995	140 717	141 400	140 717

Sources: Karbownik, 2001; Karbownik & Turek, 2003.

The actual reduction in employment was very close to what was planned. Most of the significant difference between the planned and actual net employment reduction can be attributed to "social benefit" which was one of the social programs. The "social benefit" policy was not widely accessed mainly because there were quite strict and cumbersome formal requirements for eligibility which, in some cases, made the program unattractive.

As illustrated by Table 4, the pace of reduction fell over time, being large in the first two years and then declining as the reduction in 1998 and 1999 exceeded expectations by more than 15 000 (Karbownik & Bijanska, 2000) (see Figure 2). In the following years, the pace of employment reduction was in line with plans and no additional actions were deemed necessary.

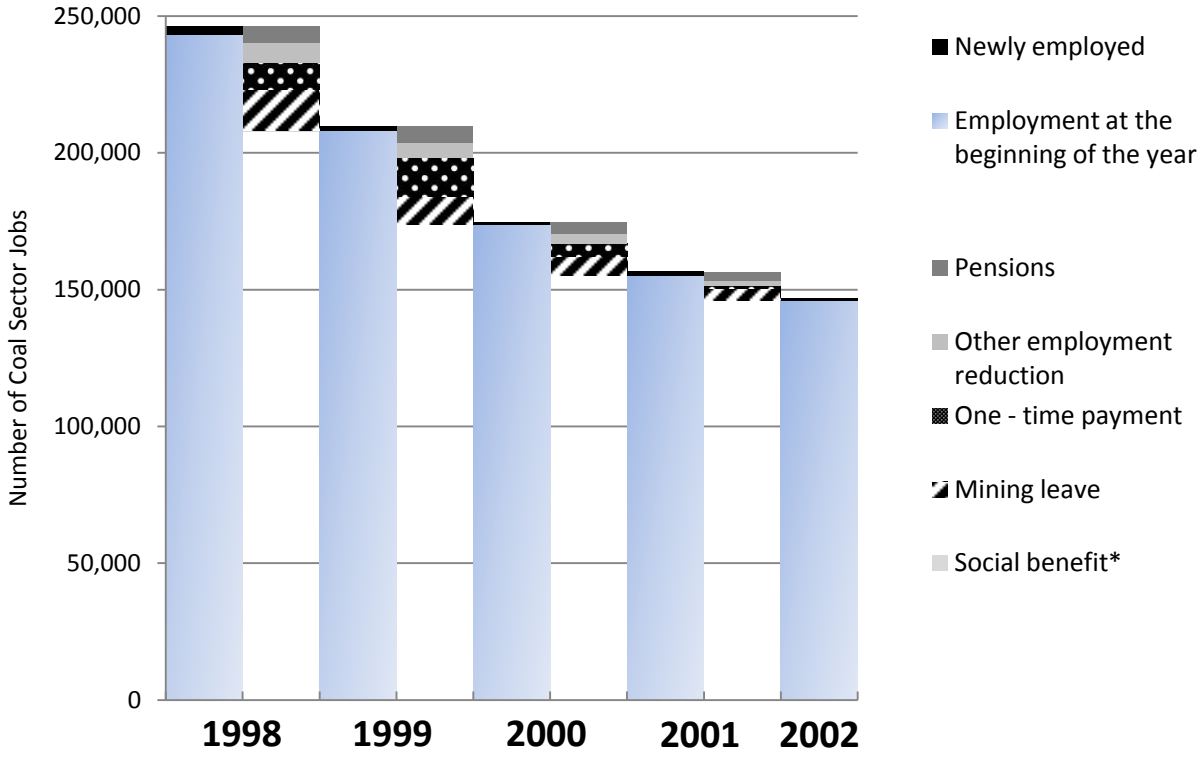
Restructuring also involved local authorities, who were expected to play a key role in creating new employment opportunities for former miners. However, this part of the program enjoyed limited success, as local authorities were not properly prepared nor did they have much experience in creating jobs.

In 2003, Trybon and Szczepanski (2004) questioned former miners and found that a majority of them (between 57–85 per cent) had a positive view about their decision to abandon a job in mining. On the other hand, only 20–30 per cent considered their economic situation as good. Probably the most important factor explaining the relatively low assessment of their prospects is the simple fact that only 17 per cent of the former miners were high-school or university graduates. A majority had only vocational education specific to mining: that usually diminished their ability to be retrained for other jobs or to establish a successful business. However, as many as 54–65 per cent had found new jobs outside of mining and one-third of those interviewed had changed their profession.

4.2 CLOSING UNPROFITABLE MINES

Another measure undertaken to reduce mining costs was closing the most inefficient mines. Numerous mines had been in existence for more than 100 years and though their reserves were economically exhausted they continued to operate, extracting remnant reserves in tough mining conditions, usually at a high cost. The first restructuring activities merely involved the closing of such mines, either entirely or just the exhausted parts. In the case of partial closing, the remaining viable sections were merged with existing mines, which through the sharing of services helped reduce unit costs.

FIGURE 2. EMPLOYMENT AND EMPLOYMENT REDUCTION, PERSONS



Source: calculations made by the author using data sourced from Karbownik, 2001; Karbownik and Turek, 2003.

* The "Social Benefits" component was not large enough to be visible as part of the graph

* Base employment represents the level of overall employment at the beginning of the year, new employment is added to the annual base figure and reductions in employment generated by each program are illustrated in the column adjacent. Overall employment figures at the end of each year equal those at the beginning of the next year.

Closing a mine requires funds for dismantling equipment and facilities, protecting the land above from subsistence, preventing potential accidents and managing the whole operation. Average closing costs were $21 million U.S. (2005) for 1 million metric tons of capacity, and increased by more than $9 million U.S. for each three-year extension granted to a closing operation (Karbownik, 2003). A shorter closing time meant lower maintenance and management costs. In specific cases, maintaining some services, such as water pumping to prevent flooding neighbouring working mines, was required, and these costs were generally covered by the state budget.

Because the closing costs tended to be much larger than the profits of any coal mine or company, leaving restructuring to the coal companies alone would have resulted in prolonged, low-intensity actions, which would have proved to be more expensive in the long term. The experience of the first years of restructuring showed that subsidies from the state shortened the time period in which mines were closed and lowered the overall costs as a result.

4.3 DEBT MANAGEMENT

The third pillar of state support for mines was debt management. The previous policy of tolerating the economic inefficiency of mines for the sake of creating employment led to increasing debts and no serious attempts at their reduction in subsequent restructuring programs.

When the 1998 program was amended again in 1999, the government decided to address the industry's still significant outstanding debt. By the end of 1999, this debt totalled $6 billion U.S., a situation exacerbated by lower demand (as consumers turned to cleaner heating sources), increased imports and falling coal prices. The restructuring turned from a purely "technical" process to a predominantly "financial" one, with the main objective becoming debt management, as costs had been under control thanks to the reductions in mine employment and the closing of exhausted pits. Initially, the government assumed all debts related to the closing of coal mines as well as money owed to it in the form of unpaid income taxes, employment taxes, environmental charges and pension liabilities. The total sum of this debt forgiveness was approximately $440 million U.S. at the time.

Operating mines could delay debt payments until 2002, the year in which it was expected that mines would start to be profitable. Even though the increase in debt was nearly arrested, it was still about $5.9 billion U.S. at the end of 2002 with income of only $720 million U.S.

The financial problems of the industry were finally addressed by the Act of 28 November 2003 (Parliament of Poland, 2003), which ordered the forgiveness of debt incurred before September 2003 from unpaid taxes, payments to the pension fund, environmental charges and others. The amount of debt forgiven equalled $4.9 billion U.S. Other debts from 2004 onward were to be paid before 2010. Since 2004, amendments to the restructuring programs have put off repayment of these debts, with a 2007 amendment putting off repayment until 2015.

4.4 ADDITIONAL MEASURES

Quotas on imported Russian steam coal had been established for the years 1999–2001 (there was no regulation thereafter) with the amount increasing from 690 000 to 760 000 metric tons. But even these quotas were poorly enforced, as importers often succeeded in getting the steam coal reclassified as coking coal, for which there was no import quota.

Apart from the aforementioned subsidies, there was a specific problem of supporting mining enterprise Kompania Weglowa PLC, the largest mining company in Europe, until it became profitable. When formed in 2003, this company struggled unsuccessfully to reach long-term viability, being a partnership of many inefficient and highly indebted mines. The state support was provided in the form of a direct transfer of funds as well as shares of state-owned companies, which were used as security for the bank loan.

5. ASSESSING THE REFORM EFFORT

The main purpose of restructuring, and thus those subsidies to support the process, was to re-orient the mining industry from production maximization to profit maximization. That the period of restructuring and subsidization lasted so long was due primarily to the inability of governments to cope with the power of the trade unions and to avoid social tensions in the coal basin regions. Initially, in the early 1990s, the view was widespread, but not expressed officially, that coal miners should in some way repay the benefits they received under the command-and-control economy, such as access to special shops and special rights to buy goods that they enjoyed which were not available to the general public. On the other hand, miners were working seven days a week with only a few days off. Coal as the major source of convertible currencies had to be produced in the largest possible amount at any cost.

The world had little experience to offer on how to manage the transition of whole economies, and Poland, which formerly had developed heavy, energy-consuming industries, had to completely restructure its economy largely on its own. Coal mining was by no means the only industry affected, but its production was geographically concentrated and its labour traditions were deeply entrenched. Adverse outcomes were all too common—for example, when one large company went bankrupt, throwing a local city, previously reliant on the mine for employment, into poverty.

6. LESSONS LEARNED

By the end of the restructuring process, of Poland's three major coal basins, Lower Silesian was closed completely; Upper Silesian had reduced its production substantially; and Lublin Basin, with only one mine, but a very efficient one, was expanding its capacity. Coal companies still have old debts to pay, and repeated laws relating to the extension of repayment periods prove that the restructuring was not fully successful. There have been periods of profitability, mainly thanks to high prices on international markets, but the current low prices and increasing imports from Russia pose a growing threat to the economic viability of hard-coal mining in Poland.

All the government's goals except its final one—commercializing and then privatizing the mining companies—were, at least partially, fulfilled during the restructuring process. It was not until 2009 that shares in a mine were finally sold to private investors.

Government expenditures on coal-mining restructuring are estimated to have totalled some $9.3 billion U.S. from 1990 through 2006 (Table 6).[5] Subsidies were comparatively high in the early 1990s, but these were the first years of transition from the command-and-control legacy and the country was experiencing hyper-inflation (680 per cent in 1990). No explicit subsidy was provided to cover operating costs, though the government forgave debts totalling some $5.2 billion U.S., of which $4.9 billion U.S. was provided in one year (2003)—an enormous amount considering the small size of the state budget. Because these debts had been created through regular mining operations, relief from them could be considered an operational subsidy.

The program was initially very successful in terms of reducing employment and adjusting to demand by closing unprofitable mines. By the end of 1998, the number of employed had been reduced by 35000 people, or 45 per cent more than anticipated when the program was conceived. Annual capacity reduction was reduced by 3.7 million metric tons as opposed to the anticipated 1 million metric tons.

The experience of Poland's coal-mining restructuring is a tale of dilatory decisions and lost opportunities. The policies applied in the early 1990s mainly served to keep inefficient mines open and maintain the mining jobs. Subsequent programs—half measures for mine closing and social programs, insufficiently funded—were only partially successful. Had more decisive measures pursued under the 1998 program been started earlier, the aim of facilitating the adjustment of coal mining to market-economy conditions would have stood a better chance. It would have also helped to transform company towns reliant on the coal-mining sector into more economically diversified communities.

The origin of the restructuring problems was the challenge of retraining miners for jobs in other sectors that were themselves shedding labour.[6] Another contributing factor, especially early on, was the tendency of the government to intervene to control prices as an anti-inflation measure. The resulting economic inefficiency made it difficult to find funds for social or closing programs and, finally, state subsidies were necessary. It is doubtful whether in any case the mines would have been able to cover all the costs of these programs, but the subsidies required would have been smaller had the restructuring begun earlier. The social program of 1998, which helped achieve a significant reduction of employment, worked toward achieving efficiencies in operating mines that are now close to viable.

5 The information is not complete as not all years' data were published.

6 The unemployment rate in Upper Silesia coal region was half of the overall rate for the country.

TABLE 6. SELECTED DATA ON STATE SUBSIDIES FOR THE COAL-MINING RESTRUCTURING PROGRAMS, MILLIONS OF U.S. DOLLARS OF 2005.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mine's operation																	
Mine's closing				113					58	90				60			82
Social programs									200	312				152			71
Special provisions for pension funds										19				29			7
Cost of mining damages and restoration of closed mines									7	8				8			23
Investments				53					6	8							
Total restructuring subsidies	2 886	1 159	361	311	254	406	195	260	346	545	473	371	249	258.8	457	511.3	245
Subsidies expected according to restructuring programs				792	646	391	457	397	255	564	505	376	354				
Difference				-481	-393	15	-261	-137	91	-19	-31	-6	-105				
Debt forgiveness				146		167								4 919			

Source: Author's calculations based on Szlązak, 2004.

The measures undertaken between 1990 and 2005 at least took the industry in the right direction. However, they seem to have mainly benefited the coal miners, and of course the communities located near mines that managed to maintain their traditional levels of employment (in some cases, for years). At the beginning of the economic transition, the miners were able to hold onto their jobs, even while other companies without comparable subsidies went bankrupt. The restructuring law of 1998 gave miners substantial sums to encourage them to leave the industry. Most other industries did not fare as well. Ultimately, the burden of the restructuring fell on Polish taxpayers, who underwrote not only the restructuring (i.e., mines closing and employment reduction) but also debt relief.

Poland's coal-mining restructuring merits further study of its advantages, disadvantages, errors and successes. Most of the papers written and research conducted on this period note only the quantitative manifestations. Two reports stand out: one on a history of restructuring (Szlązak, 2004) which also explains reasons of their failures in early years[7]; and a second one (Ney, 2006) that analyzes restructuring in a statistical way that validates the restructuring effort. The programs were monitored in the years 2000–2007 by the government or responsible agency, but again the comments or literature on the issue are limited to simple statements on the restructuring process.

The general public apparently understood the need for restructuring and there were no significant objections against spending money on social programs. However, after the success of the mining social programs, other industries that had to undergo restructuring (e.g., steel) asked for similar benefits as had been afforded the mining sector.

Since closing costs received a significant share of subsidies, a special fund was established in 2000 to which mines contribute a percentage of the amortized costs. The mines' contribution is calculated basing on their total amortization (depreciation) costs. This should collect funds to assist in meeting the future closing costs for mines being wound down. There are also doubts as to whether the extent of mine closures and capacity reduction was necessary given the current economic situation. Mining was not capable of benefiting fully from the recent rise in coal prices because of reduced capacity and limited

7 The author, Jan Szlązak, was a deputy minister and then minister responsible for coal mining in 1997–2001 and one of the initiators and the main executor of the 1998–2002 restructuring program.

potential for growth in the short term. The current shortage in domestic supply raises the question as to whether some of the inefficient mines should have been closed only temporarily as opposed to permanently. That would have likely cost less than to construct new mines or expand existing ones as is now being considered.

The initial negligence of coal-mine restructuring could be partially attributed to the inability of the Polish government to devote adequate funds to the restructuring. Also, the view that "the invisible hand of the market" would force industries to adjust to market conditions was popular. Continuous failures finally convinced decision-makers to foster the restructuring and change the policy. There are doubts, however, as to whether the restructuring was a success. Coal companies still have debts to pay, and they may have reduced the economic efficiency of some mines during the 2008–09 economic crisis.

The experience of Polish coal mining may be typical of declining industries or sectors in a transitional economy. Decreasing demand, increased competition from other suppliers and high costs lead to continuously diminishing economic efficiency. One simple lesson is that such an industry often cannot improve exclusively through its own efforts. Social tensions, the resistance of trade unions and local communities' fear of losing jobs are obstacles that cannot be overcome without support from outside the industry. It also seems that slow, step-by-step restructuring without rigid controls being placed on the industry is not a viable option. Only significant effort supported by well designed and targeted subsides, social acceptance and a robust legal framework could improve the sector's performance.

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