

A photograph of a power plant at dusk. Several tall chimneys with red and white stripes are visible, emitting a large plume of orange smoke that rises into the sky. The sky is a mix of blue and orange. In the foreground, there are bare trees and some lights from the plant.

WHAT

ZE PAK?!

**Social and health impact of companies
owned by ZE PAK and external costs of
open-pit lignite mines planned by ZE PAK**

Warsaw, April 2017



The Foundation “DY-OPMN” is the formal and legal representation of the Polish National Coalition “Development YES – Open-pit Mines NO,” a civil society grassroots movement to prevent plans to build new lignite open-pit mines and support the transformation of Polish economy from one based on fossil fuels to one which is resource efficient and based on new renewables.

The most important task of the Foundation is to support the activities of the civil society aimed at stopping plans to build new opencast lignite mines in Poland, including assistance to non-governmental organizations, associations, and ordinary residents opposing the construction of open-pit lignite mines, fighting the negative effects of the operation of existing ones, and promoting the development of energy systems based on renewable energy sources, energy efficiency and local self-sufficiency.

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INTRODUCTION

ZE PAK Capital Group, which mines lignite in the Konin coal basin through its subsidiaries, is aiming to launch more open-pit mines which would prolong the economic viability of local lignite-based power plants. The Group's production assets comprise four lignite-based power plants located in Poland, in the Wielkopolskie voivodeship. These are: Adamów, Konin, Pątnów I and Pątnów II. The total gross installed electric capacity of the Group's production assets as of 31 December 2016 was 2506 MWe. The Group's extraction assets are concentrated in three companies: PAK KWB Konin SA, which currently operates the Józwin, Tomisławice and Drzewce open-pit mines; PAK KWB Adamów SA, operating the Adamów open-pit mine; as well as PAK GÓRNICTWO Sp. z o.o., which carries out exploration of lignite deposits in the south Wielkopolska region of Poniec-Krobia and Oczkowice. First and foremost, ZE PAK is seeking to construct the open-pit mines of Ościszów and Dęby Szlacheckie. It has also undertaken efforts to obtain the necessary permits to extract coal from the Oczkowice deposit – located in the best farming part of Wielkopolska, in the south of the voivodeship, in the Gostyń and Rawicz counties – and in the Management Report for Q1 2016, it also lists the Piaski deposit as a prospective one.

Launching new open-pit mines is connected with growing social resistance, as manifested by protests in southern Wielkopolska attended by many thousands of people, as well as the victory of those opposing the construction of the Dęby Szlacheckie open-pit mine in the referendum in the Babiak municipality in June 2015. Those opposing open-pit mines emphasize especially high costs for local communities and the local environment, as well as lowering of life quality connected with the noise, dust and the increasing



Figure 1. Locations of current and planned lignite open-pit mines of ZE PAK and PGE

shortage of water generated by such a mine. According to some locals ZE PAK, in its chase for profit, is not interested in conducting cost-benefit analysis for the general public and the community residing in the area in which the open-pit mines are planned. Furthermore, it is already avoiding the fulfilment of commitments it has made to local authorities and communities. This report is taking stock of the total gains and losses resulting from extracting activities and the production from open-pit lignite mining to fuel electricity generation. The report focuses on the activities of the ZE PAK Group, which, as a private company that does not engage in energy distribution and which generates 90% of its electricity from lignite combustion, makes it possible to

trace the precise relationship between changes of the external factors and the situation and actions of the Company. The ZEPAK case study makes it possible to illustrate the costs society is in danger of bearing when mid- and long-term business activity becomes unprofitable and, from a purely business perspective, the decision on declaring the Company's bankruptcy becomes one of the options taken into account. The study also shows the limitations of social, environmental and health responsibility of private companies for external costs they generate. When external costs of further activities surpass benefits for the public, generated via the company's operations, it is the present author's view that the company's activity becomes detrimental to the public, as the company's realization of its particular goals and interests causes the deterioration of the total wellbeing of the society.



Another, equally important issue analyzed in this report is the question whether there exists the possibility for the ZEPAK to build new open-pit mines without infringing EU legislation, and especially whether it is possible for the company to build a new lignite open-pit mine in accordance with the requirements of the Water Framework Directive. The answer to this question is: No, there is no such possibility. This will undoubtedly cause serious legal and financial problems for the Company, which is already subject to proceedings on Poland's breach of environmental regulations in connection with the granting of environmental permit for the Tomisławice open-pit mine.

This report is based on four expert analyses by Benedykt Pepliński, Ph.D., Economic and Social Faculty of the University of Life Sciences in Poznań, on the influence of existing and planned ZEPAK lignite open-pit mines on farming and food processing; on the expert analysis by Rafał Bernaś, Ph.D., Eng., Inland Fisheries Institute in Olsztyn, on lack of compatibility between the planned lignite open-pit mine on the Ościstowo deposit and the regulations of the Water Framework Directive; as well as on the expert analysis by Łukasz Adamkiewicz, expert in modelling of impacts of toxic emission on health, on

the effect of power plants and lignite open-pit mines currently used by ZE PAK, as well as planned open-pit mines, on health. The remainder of the report was drawn up based on financial reports and reports on the activities of the Management Board of ZE PAK for the years 2013–2016 and on information from the prospectus prepared by Zespół Elektrowni “Pątnów-Adamów-Konin” S.A., with its registered seat in Konin, and approved by the Financial Supervision Authority on 8 October 2012¹, as well as on information obtained by the author of this report via e-mail and telephone communications with scientific institutions, local government units, international financial institutions, residents of areas at risk of new open-pit mines being built, NGO employees and European Commission employees.

This report represents the author’s own assessment, based on the above analyses and research. It has been drawn up to serve an important public interest – the need to protect human life and health and the environment, as well as the necessity to warn potential investors in and/or lenders to ZE PAK of the full economic and social cost of constructing and operating lignite open-pit mines.

CHAPTER 1

OPEN-PIT LIGNITE MINES – JOB CREATION?



Between 2012 and the end of 2016 2133 people lost their jobs at ZE PAK Capital Group². The redundancy program in Kopalnia Węgla Brunatnego (KWB – lignite mine) Konin between 2010 and the end of 2015 comprised 2497 jobs, and in the same period 1233 people lost their jobs in Kopalnia Węgla Brunatnego (KWB) Adamów. This means that in the last 6 years redundancy in extraction companies within the ZE PAK Group amounted to 69% (3730 jobs).

At the end of 2015 employment at KWB Konin and KWB Adamów totaled 1680 people³ responsible for mining fuel for power plants of the ZE PAK Group. By the end of 2017, long before the potential launch of the Ościstowo deposit open-pit mine, KWB Adamów – which at the end of 2015 employed 472 people – will end extraction. Considering that between 2014 and 2015 redundancy at KWB Adamów amounted to 465 people, and during that same time the number of employees of KWB Konin fell by 1040⁴, it is highly unlikely that ZE PAK is planning, after a gap of over two

years, to re-hire KWB Adamów employees to work at the planned open-pit mine on the Ościstowo deposit. Especially as competition for those jobs in the Konin and Turek counties will be significant. Only in 2015 employment in the lignite industry in Poland fell by 2000 jobs, whereas in Wielkopolskie voivodeship over 4000 people will be qualified to extract coal in the Ościstowo open-pit mine (those currently employed at KWB Adamów, as well as workers made redundant from KWB Konin or KWB Adamów or moved to other companies within the ZE PAK Capital Group). Additionally, over 200 people⁵ working at the Adamów Power Plant will also be either dismissed or moved to other ZE PAK Capital Group companies. The above calculations in no way take into account persons working for subsidiaries and entities providing services to the Adamów Power Plant and KWB Adamów.

In the light of all this, the 850 people who, according to the *Environmental impact report on the Ościstowo open-pit mine* from July 2015, are to find employment if this mine is built would, at best, maintain employment at KWB Konin open-pit mines at the current level, which – according to data from January 2016, cited by authors of the addendum to the environmental report of May 2016 – amounted to 1144 employees⁶. Especially employees currently

working in coal extraction and servicing at the Pątnów IV open-pit mine – whose coal mining will end by 2019, as by the end of 2015 there were 17.568 mln tonnes of lignite left in the mine, and the yearly mining amounted to 5.584 mln tonnes⁷ – will most likely seek employment in extracting coal from the planned Ościsłowo open-pit mine. In subsequent years

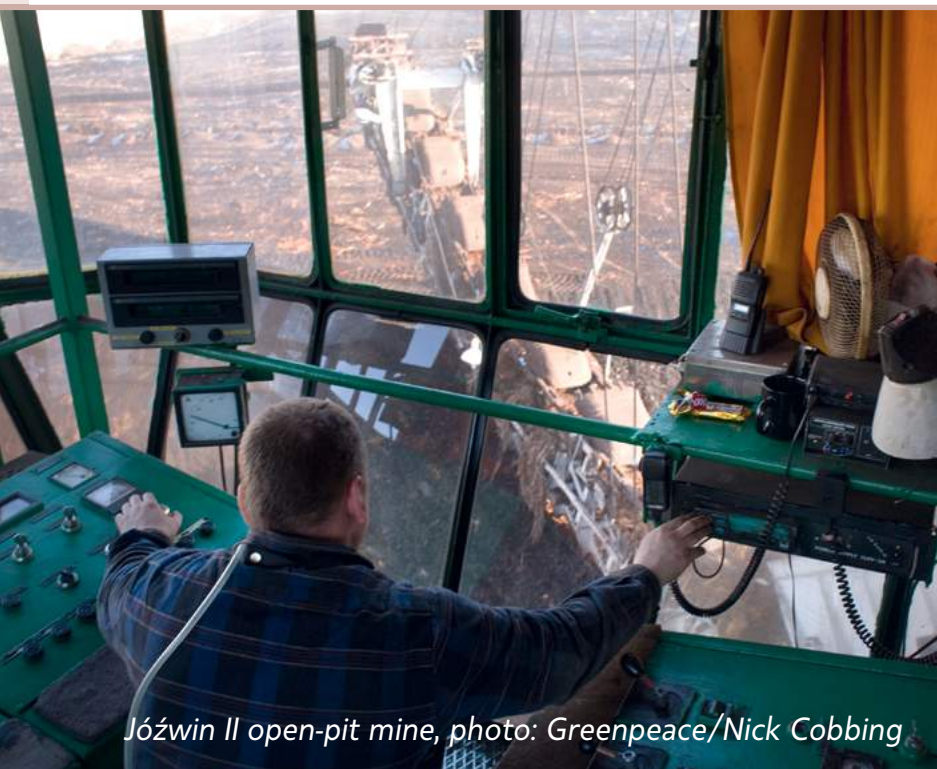


protest against the open-pit mine in the Krobia municipality, photo: Greenpeace/Bogusz Bilewski

this will also apply to current employees of the Drzewce open-pit mine. It is also hard not to doubt the optimistic prognoses on jobs which the planned open-pit mine at the Ościsłowo deposit could create, given that employment at KWB Adamów, where output in 2015 exceeded 4 mln tonnes of lignite⁸, amounted to under 500 people at the end of 2015, while according to the authors of the *Environmental impact report on the Ościsłowo open-pit mine* from July 2015 proven reserves at Ościsłowo amount to 39 mln tonnes and annual extraction target is a mere 2.5–3.5 mln tonnes. What is more, according to an expert analysis carried out in March 2016 by the former Chief Geologist of Poland, Michał Wilczyński, Ph.D., economic reserves of lignite for the planned Ościsłowo deposit are over 25% smaller and amount to 28.8 mln tonnes⁹, which would mean that the destruction of 105.5 hectares of built-up area, the displacement of 568 people and the connected permanent loss of jobs would be effected in order to create 850 jobs for a period of 9–12 years.

Let us stress that by the end of 2023 all currently operating open-pit mines owned by KWB Konin, except for the Tomisławice open-pit mine, will have ended extraction. Further operation of the latter is also jeopardized in connection with ongoing proceedings on breach of regulations of EU law, conducted by the European Commission (2008/4796), and Supreme Administrative Court and Voivodeship Administrative Court rulings ordering the Self-Government Appeals Court in Konin to reexamine the case¹⁰. One should expect the completion of the European Commission's proceedings and

the ruling of the Self-Government Appeal Court in Konin by the end of 2023. It may be assumed that all KWB Konin and KWB Adamów employees will seek employment in the planned Ościsłowo open-pit mine, whereas there will be a significant redundancy already at the end of 2017 in connection with the closing of the Adamów Power Plant and KWB Adamów. Extraction of lignite in the planned Ościsłowo open-pit mine estimated at 2.5–3.5 mln tonnes annually suggests that employment there will at best make up for redundancies



Józwin II open-pit mine, photo: Greenpeace/Nick Cobbing

at 2 out of the 3 currently operating KWB Konin open-pit mines. Assuming 2% decrease in the number of jobs in the years 2016–2020, employment at ZE PAK Group will fall by 675. These estimates do not take into account the decisive fall in the Company's revenues after 2017 resulting from the closure of KWB Adamów and the Adamów power plant, which undoubtedly

will require a larger scale of redundancy. The number 675 approximates the number of people employed at KWB Adamów and the Adamów power plant at the end of 2015, it should, therefore, be regarded as the lower limit of the possible decrease in employment in the ZE PAK Group.

In the clarification to the report of May 2016¹¹ the authors state that 142 households and an estimated 568 people will be removed from the site of the planned Ościsłowo open-pit mine. The number of jobs to be lost if the Ościsłowo open-pit mine were to be created was not stated. Also not taken into account were the decrease in income from farming activity, the decrease in income of companies operating in the food processing sector and using products which are manufactured within the radius of influence of the cone of depression and of the even bigger area which will be affected by the lowering of surface water by less than 1 meter.

Decrease in income in those companies and farms will undoubtedly translate to the necessity of reducing employment, and if income falls below the break-even point for the activity conducted, to the liquidation of farms and companies from the food processing sector. In order to define the impact of the planned Ościstowe open-pit mine on the number of jobs, we should estimate the number of jobs which will be created as a result of the establishment and then extracting activity of the planned Ościstowo mine and compare it with the total number of jobs which would be lost if the mine were to start operating. The suggested comparison should be made for the same time horizon, i.e. until 2066, that is for the entire period of impact of the cone of depression on hydrographic conditions in the region of impact of the Ościstowo open-pit mine.

The expert analysis *Proposal for building farm-scale biogas plants in the region of the planned "Ościstowo" open-pit mine* drawn up by Roman Buczkowski, Ph.D., and Bartłomiej Igliński, Ph.D., from the Nicolaus Copernicus University in Toruń¹², included in legal documentation as part of the proceedings on the issuing of an environmental approval for the Ościstowo open-pit mine, illustrates one of the possible alternatives for building that mine, consisting in withdrawing from its construction and using the farming potential to produce electricity and heat acquired from farm-scale biogas plants located within the planned Ościstowo open-pit mine territory of impact. Experts point out that it is possible to create 84 new jobs while retaining those that already exist, to give developmental impetus to all municipalities within the reach of the negative environmental impact of the planned Ościstowo open-pit mine, as well as to diversify the sources of income for farmers and companies in the region with much less interference in the environment and hydrographic conditions. Additionally, full realization of the potential for producing heat in the proposed farm-scale biogas plants, by means of building e.g. mushroom-growing cellars near the biogas plants, would locally generate a further 60



Józwin II,
photo: Greenpeace/Nick Cobbing



photo: Pixabay/CCO

jobs. Experts assume that for each job at biogas plants another job is created in connection with their construction, provision and servicing, which amounts to a net gain of 228 jobs. This assumption is much more realistic than the statement of the authors of the addendum that each job at KWB Konin generates circa 3.2 jobs in the nearest associated sectors. The corresponding proportion in 2014 amounted to no more than 1.69 jobs. This stems from the fact that employment at KWB Konin amounted to 2248¹³, while according to the aforementioned report of the Management Board of ZE PAK S.A. Capital Group for 2015, employment in the Group's administration in 2014¹⁴ amounted to 431, and the number of operational employees was 6728¹⁵. Between 2014 and 2015 employment in power plants owned by ZE PAK S.A. remained practically unchanged. Reduction of employment in the production segment was offset by increase of employment in the segment responsible for renovations, as well as in other segments. Making a very conservative assumption that the number of jobs in administration and in companies directly servicing all KWB Adamów entities amounts to 15, and taking into account that between 100 and 200 people are employed in the Adamów Power Plant, the maximum number of employees at entities directly servicing the power plants Pątnów I, Pątnów II and Konin was 3805¹⁶. Thus, in 2014 one job in mines owned by KWB Konin generated, even under a scenario most favorable for the mines, 1.69¹⁷ jobs in associated sectors.

These estimates will be equally important when reports are drawn up on the environmental impact of the investments comprising the construction of open-pit mines on the Dęby Szlacheckie and Oczkowice deposits – if ZE PAK decides to continue its efforts to gain the approvals needed to extract lignite from these open-pit mines. These deposits are decidedly larger than that in Ościszów – according to the Polish Geological Institute, the geological

resources of the Dęby Szlacheckie deposit exceed 103 mln tonnes of lignite coal, while those of Oczkowice exceed 996 mln tonnes¹⁸. For comparison, the geological resources of the currently mined Tomisławice deposit amount to over 47 mln tonnes, and those in Ościsłowo exceed 41 mln tonnes¹⁹. So, in the case of the Oczkowice and Dęby Szacheckie deposits, the number of people who would need to be displaced, the number of jobs which would be destroyed, and the number of people whose income would decrease as a result of the planned open-pit mines are proportionally higher.

The issue of external costs connected with the planned Ościsłowo open-pit mine and the open-pit mines planned by ZE PAK on the Dęby Szlacheckie and Oczkowice deposits will be the topic of subsequent chapters. We will also describe the impact of currently used open-pit mines and power plants owned by ZE PAK S.A. on health and analyze the cost connected with further use of operating lignite open-pit mines in the Konin basin to be incurred by farming and food processing.



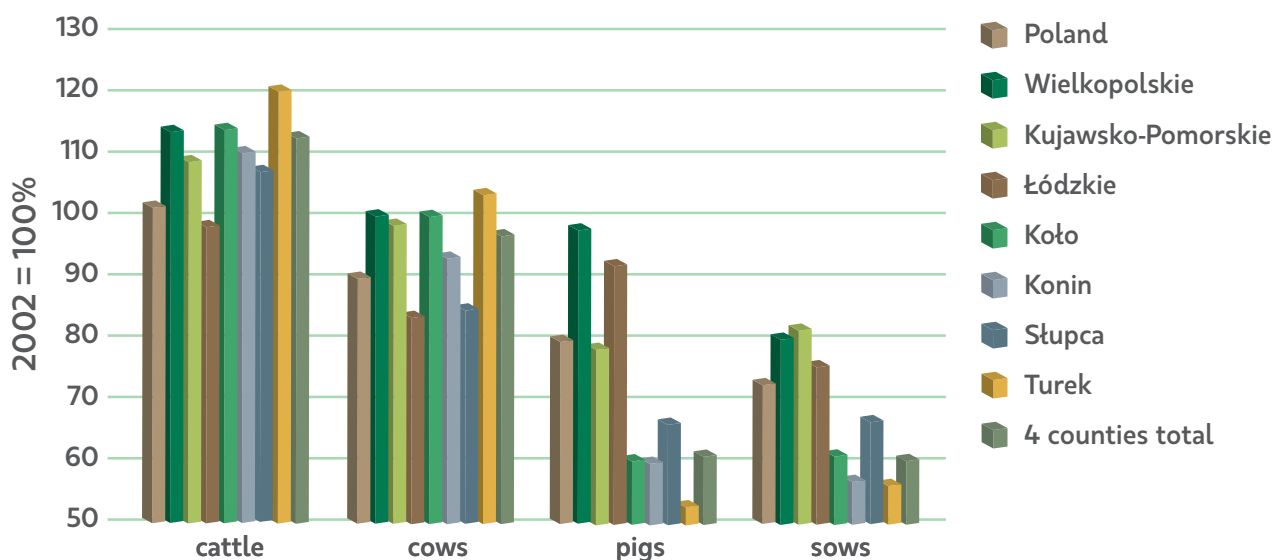
Tomisławice open-pit mine, photo: Renata Walczak

CHAPTER 2

IMPACT OF OPEN-PIT LIGNITE MINES ON CROP PRODUCTION AND FOOD PROCESSING

Benedykt Pepliński, Ph.D., from the University of Life Sciences in Poznań, in his expert analysis *Economic effects of further mining of working lignite open-pit mines in the Konin basin – analysis of costs for farming and food processing* drawn up in May 2016¹⁹ analyzed the costs for farming and food processing connected with lignite extraction in the open-pit mines of Kopalnia Węgla Brunatnego (KWB) Konin (Drzewce, Józwin and Tomisławice open-pit mines) and Kopalnia Węgla Brunatnego (KWB) Adamów (Adamów and Koźmin open-pit mines) open in 2016. The aforementioned open-pit mines are located in the eastern part of the Wielkopolskie voivodeship, in the northern and eastern part of the former Konińskie voivodeship. In this region the open-pit mines are located in the Konin, Koło and Turek counties, yet due to their proximity to the borders of Wielkopolskie voivodeship their impact is not limited to the territory of the former Konin voivodeship but includes adjoining voivodeships: Łódzkie (southern part) and Kujawsko-Pomorskie (north-western part).

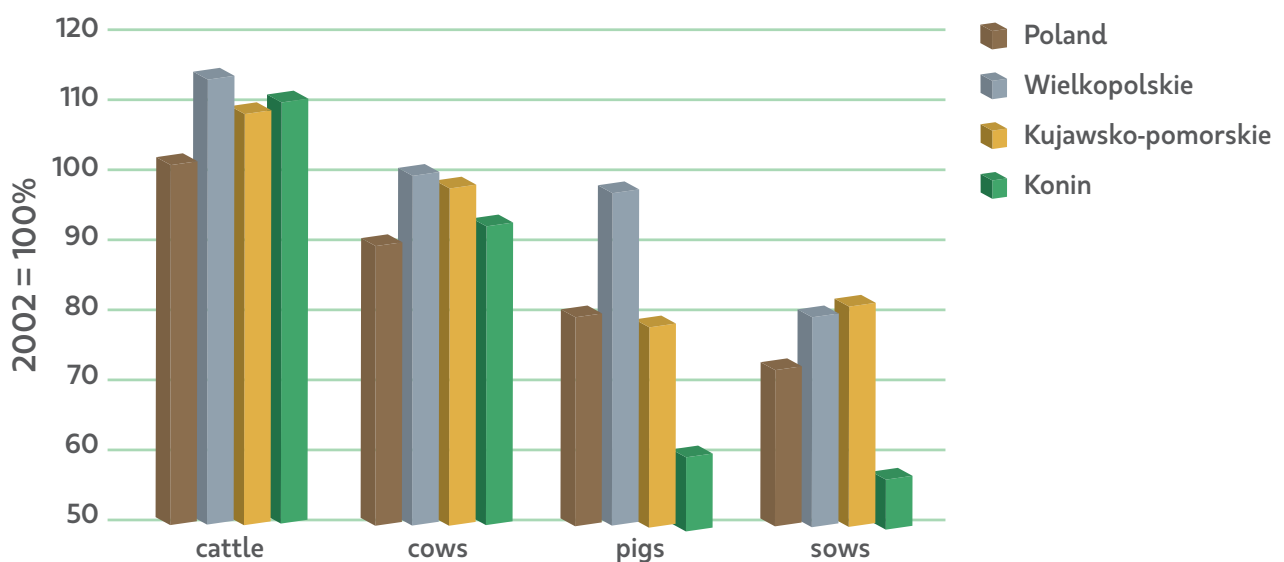
Figure 1. Change in headcounts in Koło country as compared to Poland as a whole and to select voivodeships 2002-2010



As Dr. Pepliński explains in his expert analysis, “[the stated] area of impact of open-pit mines is most often limited to the territory where ground waters are depleted as a result of draining the mines, and less often to the territory spanned by the depression cone on the level of Quarternary aquifers. Unfortunately, the reality is much more complex, as indicated by statistical data, farmers’ opinions and independent observation of plantations especially in dry seasons, when plants cannot draw water or have a much restricted access to aquifers. Underground waters undergo horizontal and vertical displacement, and so Tertiary and Quarternary depression cones, as a result of the lowering of the water level and due to interconnections between aquifers, also impact levels and reserves of surface and subsoil water. Furthermore, the depression cone is defined by the Polish legislation as a situation where water surface lowers at least by 1 meter, yet for farming and forestry, as well as all vegetation, each lowering of the water level, even by a few centimeters, is significant in periods of draught, translating among others into reduced crops.”

Between 1956 and 1965, when the coal basin in the Konin region was only being created, in the territory of the former Konińskie voivodeship crops were only 6.65% smaller than the average for the then-Poznańskie voivodeship, while between 1986 and 1990 they were 23.15% smaller, and in comparison with the years 1981–1985 there was a decrease in relative crop yield by nearly 5.5 percentage points. This points to a relative decrease in crops in the territory of the former Konin voivodeship by at least 17.7%. We can also assume that this relative decrease in crop yields is still growing.

Figure 2. Change in headcounts in Konin county as compared to Poland as a whole and to select voivodeships, 2002-2010



The total cost of open-pit lignite mining by KWB Konin to farming and food industry alone was estimated at between PLN 144 million (EUR 33.5 million) (the open-cast pit + the depression cone area) and, according to the author of the analysis, more realistically PLN 888.5 million (EUR 206.6 million) per year. The total cost of open-pit lignite mining by KWB Adamów to farming and the food industry alone was estimated at between PLN 105.4 million (EUR 24.5 million) (the open-cast pit + the depression cone area) and, according to the author of the analysis, more realistically PLN 737.8 million (EUR 171.6 million) per year.



white beet, photo: iStock

Each year of mining and dehydration of the mine causes an additional year's worth of lengthening the time needed for the recreation of the hydrographic conditions in the depression cone area, i.e. a year of mining lignite equals two years of loss for farming, forestry and generally the environment. One should bear in mind that in mining analyses it is assumed that the

depression cone area comprises the area in which the water level drops as a result of dehydration by at least 1 meter. For plants, especially those of meadows and pastures, whose yield is strictly dependent on the level of ground water, a long-term lowering of the water level even only by half a meter is of significance in terms of yield²⁰. Thus the impact of mines on arable crops and the environment will likely span a larger area. In the territory of the former Konińskie voivodeship the size of crops has relatively significantly decreased as compared with average crops obtained in the territory of the current Wielkopolskie voivodeship, of which it is part.

The construction of each open-pit mine has wide-ranging environmental, social and economic implications. As a result of continued coal extraction and taking up of new territories in order to create open-pit mines, more and more areas of farmland are irreparably transformed, and ever new villages are destroyed in the area of the mining excavation traced by the outside slope of spoil tips. The appearance of the pumping depression and pressure release cone will cause the drying of more wells, which will either have to be deepened or will become useless.

In the case of farming and agribusiness the most important factors generating losses include:

- permanent and temporary exclusion from agricultural production of cultivated land and forests in the territory of the open-pit mine and in its immediate proximity;
- irreparable disturbance of hydrographic conditions around the mine in connection with the appearance of the depression cone, which for farming is linked with a deterioration in hydrographic conditions and a decrease in crop yields;
- liquidation of all homesteads located in the territory of the mine and many others which will lose a significant portion of their land in order for the mine to be constructed;
- decrease in animal production in the liquidated homesteads (known scale of loss) and farms which will lose cultivated land to the benefit of the mine, as well as those that will find themselves in the depression cone area, as a result of decrease in production of their own feeds;
- further limitation of the materials potential for the agricultural and food industry;
- loss of jobs, and, in the case of a change of place of residence, breaking of social ties, which is especially painful for children and the elderly, who make up a large percentage of the population of rural areas.

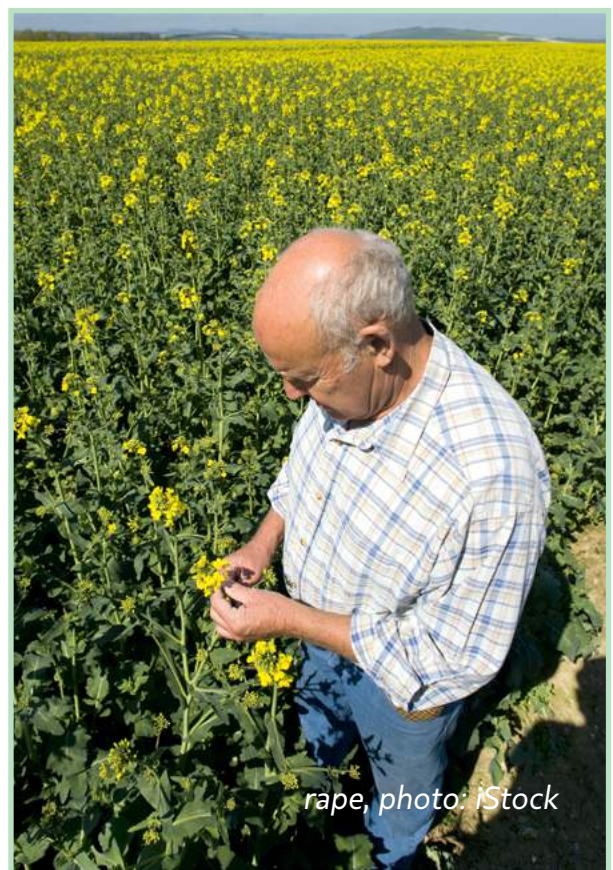
The value of unrealized agricultural production on the site of the open-pit mine depends on the area of cultivation of individual plants, their crops and purchase prices, and in the case of animal production, on the headcounts, productivity and purchase prices.

According to the expert analysis²¹ drawn up by Benedykt Pepliński, Ph.D., the total cost of mining lignite in the Ościstowo open-pit mine, estimated only for farming and the agricultural and food industry, stands at between PLN 2.63 billion (EUR 611.6 million) (the open-cast pit + areas estimated for the depression cones by the authors of the report on the environmental impact of this undertaking²²) and the more realistic, according to the author of the analysis, PLN 4.22 billion (EUR 981 million). The analysis carried out assumes that the process of dehydration of the Ościstowo open-pit mine will begin in 2018. Given the recent rejection by the regional EIA authority to grant an

environmental permit and the appeal of that decision by the KWB Konin to the General Directorate of the Environmental Protection in Warsaw the delay is very likely. Any delay in the launch of the open-pit mine will increase the estimated losses generated in the area of dehydration. In the first variant, additional losses to farming and food processing will amount to PLN 91.5 million (EUR 21.3 million) for each year of delay in the launch of the open-pit mine, or to PLN 253.1 million (EUR 58.86 million) a year in the more realistic scenario, according to the author.

Corresponding cost estimates for farming and the agricultural and food industry caused by the potential launch of the open-pit mine on the Dęby Szlacheckie deposit²³ would amount to between PLN 6.43 billion (EUR 1495 million) (open-cast pit and depression cone area) and more realistically, according to the author of the analysis, to PLN 11.9 billion (EUR 2767 million), whereas in the case of the Oczkowice deposit open-pit mine²⁴ in south-west Wielkopolska these values would be PLN 93 billion (EUR 21.63 billion) and PLN 173 billion (EUR 40.23 billion), respectively.

The scale of costs for farming and the agricultural and food industry calls for reflection on the impact of the planned investments on the wellbeing of all public entities. Those are not the only external costs for which Zespół Elektrowni Pątnów-Adamów-Konin is responsible. Apart from greenhouse-gas emissions, to whose successive reduction by 2020 and 2030 Poland has committed and which is the main cause of climate change, leading to intensification of extreme weather events and migration of millions of people worldwide, burning lignite in coal-fueled power stations is the cause of the emission of harmful substances into the atmosphere, and the extraction of lignite from open-pit mines is connected with the emission of dust into the air and pollution of surface water. Discussion of the impact of those emissions on health is the topic of the next chapter.



rape, photo: iStock

CHAPTER 3

IMPACT OF ZE PAK'S POWER PLANTS AND MINES ON HEALTH

While assessments of the impact of ZE PAK's open-pit lignite mines mostly regards the availability of surface and ground water within the reach of depression cones resulting from lignite mining, which translates to a gradual reduction of income and loss of jobs in farming, the majority of external costs – i.e. those incurred by other economic entities and thus absent from the company's financial statements – are those related to health. Mariusz Kudelko, Ph.D., Eng., Professor at the AGH University of Science and Technology in Krakow, in his expert analysis *External costs of electrical power production from planned power plants for the Legnica and Gubin lignite deposit complexes and the energy sector in Poland*²⁵ points out that the most significant of external costs are health ones (over 50% of all external costs). The remaining external costs comprise deterioration of structures and buildings, impact on agricultural land, loss of biodiversity, including in connection with the land use change, and costs generated by climate change. According to Professor Kudelko's calculations, in 2012 external costs of Poland's energy sector amounted to PLN 30 billion (EUR 6.98 billion).

Table 1. Impact of ZE PAK's yearly pollution emissions on the health of the inhabitants of Poland

Health impact	Unit	Value
Premature deaths (30+)	premature deaths	182
Chronic bronchitis in adults (20+)	cases	251
Bronchitis in children (6 – 18)	cases	1637
Sick days (aged 18 – 65)	days	72518

Table 2. Health impact of yearly emissions of planned mines on the Ościłowo and Dęby Szlacheckie deposit

Health impact	Unit	Value
Premature deaths (30+)	premature deaths	21
Chronic bronchitis in adults (20+)	cases	94
Bronchitis in children (6 – 18)	cases	641
Sick days (aged 18 – 65)	days	8901

In accordance with data provided in the report *Europe's Dark Cloud. How coal-burning countries are making their neighbours sick*²⁶, published in June 2016 by Europe's largest NGOs dealing with the protection of health, the environment and climate – Health and Environment Alliance (HEAL), Climate Action Network Europe (CAN Europe), Greenpeace and WWF European Policy Office – the lignite-fired power plants Adamów and Pątnów I are among Europe's top 10 biggest mercury emitters. These power plants ranked 3rd and 7th, respectively, in terms of mercury emissions in 2013, generating yearly health costs in the ranges of, respectively, EUR 10–23 million and EUR 9–20 million²⁷. In 2013, the Adamów plant also ranked 19th in the ranking of the top 30 European coal-fired power plants with the largest negative impact on health, or the so-called “toxic 30.” According to calculations carried out by the report's authors, emissions from the Adamów power plant in 2013 were responsible for 270 premature deaths, 140 cases of chronic bronchitis in adults, 280 hospitalizations, 76,740 sick days and 5960 cases of asthma in children. The total negative health costs of the emissions from the Adamów plant in 2013 were estimated at between EUR 390 and 740 million²⁸.

In 2013 power plants owned by ZE PAK generated a total of external health costs between EUR 730 mln and 1.42 bln²⁹, which equaled between 13 and 25 times the net profit of the Company for that year of slightly more than PLN 230 million (EUR 53.5 million)³⁰. Estimated health costs from the upper end of the range exceeded nearly three times the net revenues from the sale of products, goods and materials³¹ and meant that each zloty of ZE PAK S.A.'s income cost 25 zlotys in health losses incurred by other economic entities. Figuratively speaking, the most expensive filters at ZE PAK power plants were the lungs and circulatory system of Polish citizens.

The negative impact of emissions of toxic gasses and dust from ZE PAK power plants is also confirmed by the expert analysis *Study of the impact of open-pit mines and power plants including 2 planned open-pit mines owned by Zespół Elektrowni Pątnów-Adamów-Konin (ZE PAK) on health* drawn up by Łukasz Adamkiewicz in July 2016³². Based on precise calculations carried out with the use of reliable methodology and methods, the author of the analysis concludes that “air pollution emitted by Zespół Elektrowni ‘Pątnów-Adamów-Konin’ annually contributes: circa 180 premature deaths, circa 250 cases of chronic bronchitis in adults, circa 1,600 cases of bronchitis in children and circa 72 thousand sick days in Poland.”

The calculations are based on 2013 emissions data submitted by ZE PAK to the National Centre for Emissions Management.

Emissions from an open-pit lignite mine include mineral dust, i.e. mostly PM10. Thus, in municipalities in which lignite is mined in dry seasons, if there are strong winds, dust storms may occur. This results in a high short-term deterioration of air quality.

Emission into the atmosphere from the Ościłowo and Dęby Szlacheckie deposits alone – taking into account

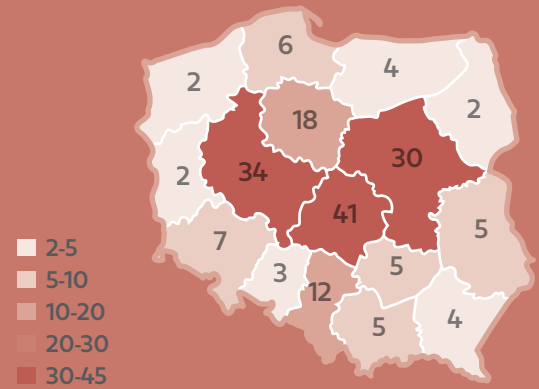


Figure 3. Number of premature deaths connected with ZE PAK air pollution emissions

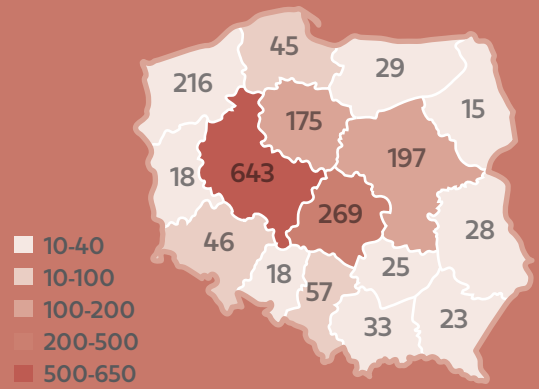


Figure 4. Number of new cases of bronchitis in children connected with ZE PAK air pollution emissions

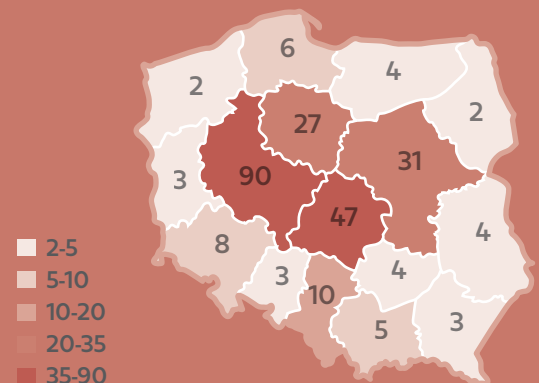


Figure 5. Number of new cases of chronic bronchitis in adults connected with ZE PAK air pollution emissions

only the open-pit mines (if they get constructed), and excluding the power plants in which lignite would be burned – would annually contribute: circa 20 premature deaths, circa 90 cases of chronic bronchitis in adults, circa 600 cases of bronchitis in children and circa 9,000 sick days in Poland³³.

A graphic representation of the results of the analysis making it possible to determine both the combined impact of ZE PAK’s currently used power plants and open-pit mines, as well as that of the planned open-pit lignite mines, broken up into voivodeships, will make it easier for the decision authorities in municipalities and voivodeships to make decisions related to ZE PAK’s efforts to obtain permits to launch new open-pit mines in Wielkopolska.

The aim of the expert analysis prepared by Łukasz Adamkiewicz was not to establish the monetary values of the planned new open-pit lignite mines on the Ościstowo and Dęby Szlacheckie deposits. In light of the findings of previously cited reports, it is possible to draw the following conclusions:

- a) the construction of new open-pit lignite mines on the Ościstowo and Dęby Szlacheckie deposits will prolong toxic emissions from the Pątnów I and Pątnów II power plants generating additional health costs of over EUR 500 million per each extra year of operations. Although the Adamów and Konin power plants will by then have been closed down, resulting in a decisive decrease in health costs generated by ZE PAK, the Company’s profits will still be several times lower than the amount of health costs generated by it.

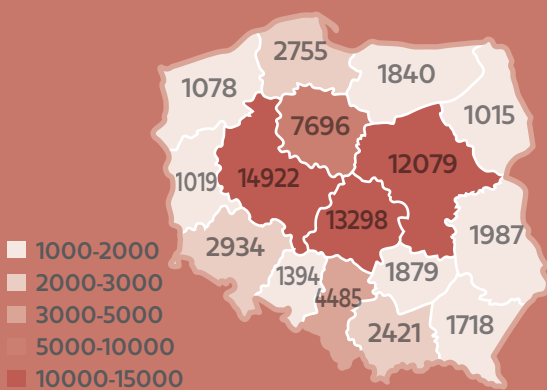


Figure 6. Number of sick days connected with ZE PAK air pollution emissions

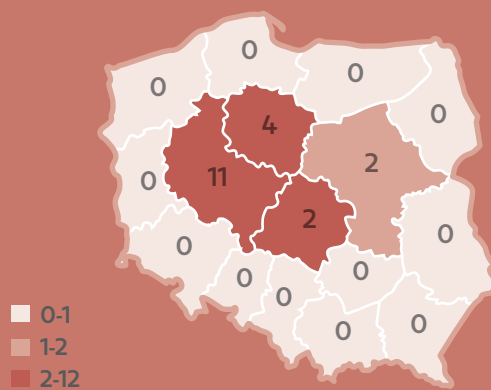


Figure 7. Rise in number of premature deaths if the planned mines on the Ościstowo and Dęby Szlacheckie deposit are launched

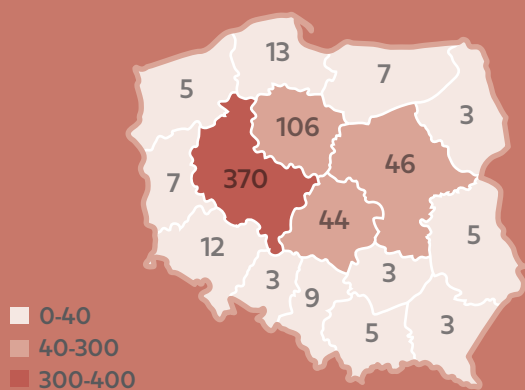


Figure 8. Rise in number of new cases of bronchitis in children if the planned mines on the Oświęcim and Dąb Szlachecki deposit are launched

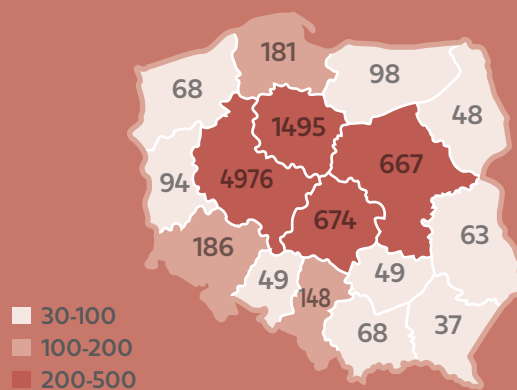


Figure 9. Rise in number of sick days if the planned mines on the Oświęcim and Dąb Szlachecki deposit are launched

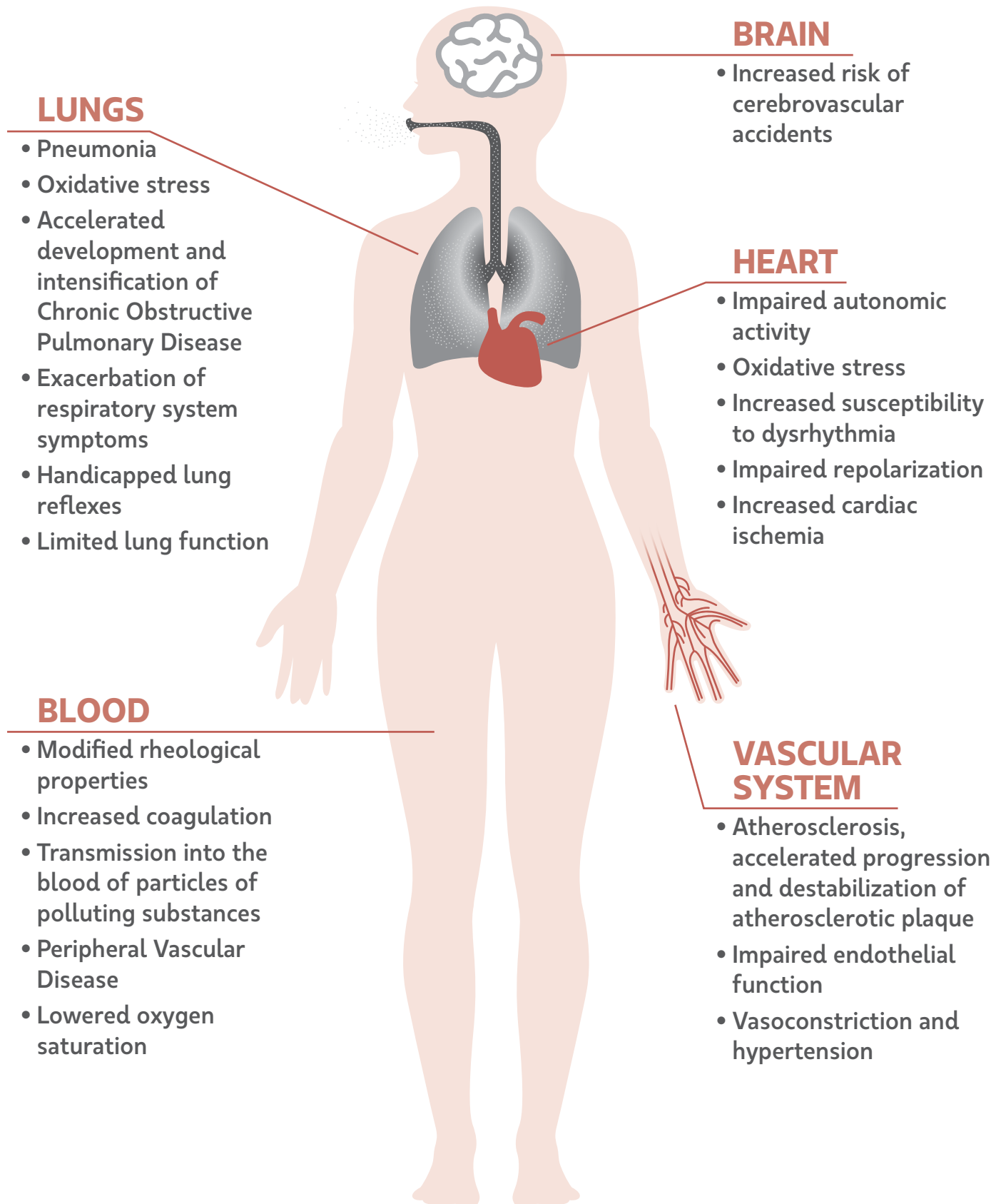
b) the construction of the planned open-pit mines on the Oświęcim and Dąb Szlachecki deposits and extraction of coal from them will in itself result in additional health costs irrespective of health costs generated by power plants owned by ZE PAK. According to calculations carried out in the expert analysis *Study of the impact of open-pit mines and power plants including 2 planned open-pit mines owned by Zespół Elektrowni Pątnów-Adamów-Konin (ZE PAK) on health*, construction of open-pit mines on these deposits and extraction of coal from them will result in over 20 premature deaths a year, which – assuming the value of human life and avoidance of premature death to equal EUR 2.56 million, based on the methodology used by the already cited Europe's Dark Cloud report³⁴ – amounts to over PLN 220 million (over EUR 51 million) of health costs which will be incurred by Polish citizens in connection with ZE PAK's extraction activity. Assuming, as did the authors of the *Report on the environmental impact of the Oświęcim open-pit mine*³⁵, that the extraction of coal in that mine will last between 11 and 16 years and that lignite output is planned at up to 3.5 mln tonnes a year, while the forecast output for the Dąb Szlachecki open-pit mine, based on which health costs were estimated in Łukasz Adamkiewicz's study, was 4 mln tons, this would mean that the health costs generated by the Oświęcim open-pit mine will exceed PLN 100 million (over EUR 23 million) a year,

i.e. will amount to a total of between PLN 1.1 and 1.6 billion (EUR 255-372 million) for the entire period of the mine's operation. This amount does not include health and economic costs connected with cases of chronic bronchitis, bronchitis in children and youth aged between 6 and 18, and sick days, resulting from deterioration of the state of health of inhabitants of Poland due to the activity of the open-pit mine on the Ościsłowo deposit. For the open-pit mine planned on the Dęby Szlacheckie deposit, the health costs connected with lignite extraction will amount to a minimum of PLN 2 billion (EUR 465 million).

- c) economic benefits from the production of electricity generated on the basis of burning lignite from existing open-pit mines owned by ZE PAK are smaller than health costs connected with the emission of poisonous gasses and dust from those power plants into the air. Thus, it is in the interest of the Polish public to close down power plants owned by ZE PAK as quickly as possible and substitute electricity produced there with imported energy, energy saved up in relation to investments in energy efficiency and energy produced based on low-emissions technologies, predominantly renewable sources of energy.
- d) as Poland has the lowest air quality among all European Union countries, we should expect EU citizens and institutions to demand improvement of air quality. Replacement of coal-fired power plants with microgeneration based on various sources of renewable energy, adapted to local conditions, leads to a quick improvement of air quality. These benefits are increased manifold due to the decrease of burning lignite in household furnaces as a result of the increase of its price as lignite open-pit mines providing the local market with this material are closed down.

How inhaling suspended dust can impact our health

Source: Heal report "The unpaid health bill. How coal power plants make us sick"



LUNGS

- Pneumonia
- Oxidative stress
- Accelerated development and intensification of Chronic Obstructive Pulmonary Disease
- Exacerbation of respiratory system symptoms
- Handicapped lung reflexes
- Limited lung function

BRAIN

- Increased risk of cerebrovascular accidents

HEART

- Impaired autonomic activity
- Oxidative stress
- Increased susceptibility to dysrhythmia
- Impaired repolarization
- Increased cardiac ischemia

BLOOD

- Modified rheological properties
- Increased coagulation
- Transmission into the blood of particles of polluting substances
- Peripheral Vascular Disease
- Lowered oxygen saturation

VASCULAR SYSTEM

- Atherosclerosis, accelerated progression and destabilization of atherosclerotic plaque
- Impaired endothelial function
- Vasoconstriction and hypertension

CHAPTER 4

YOU CANNOT DRINK COAL

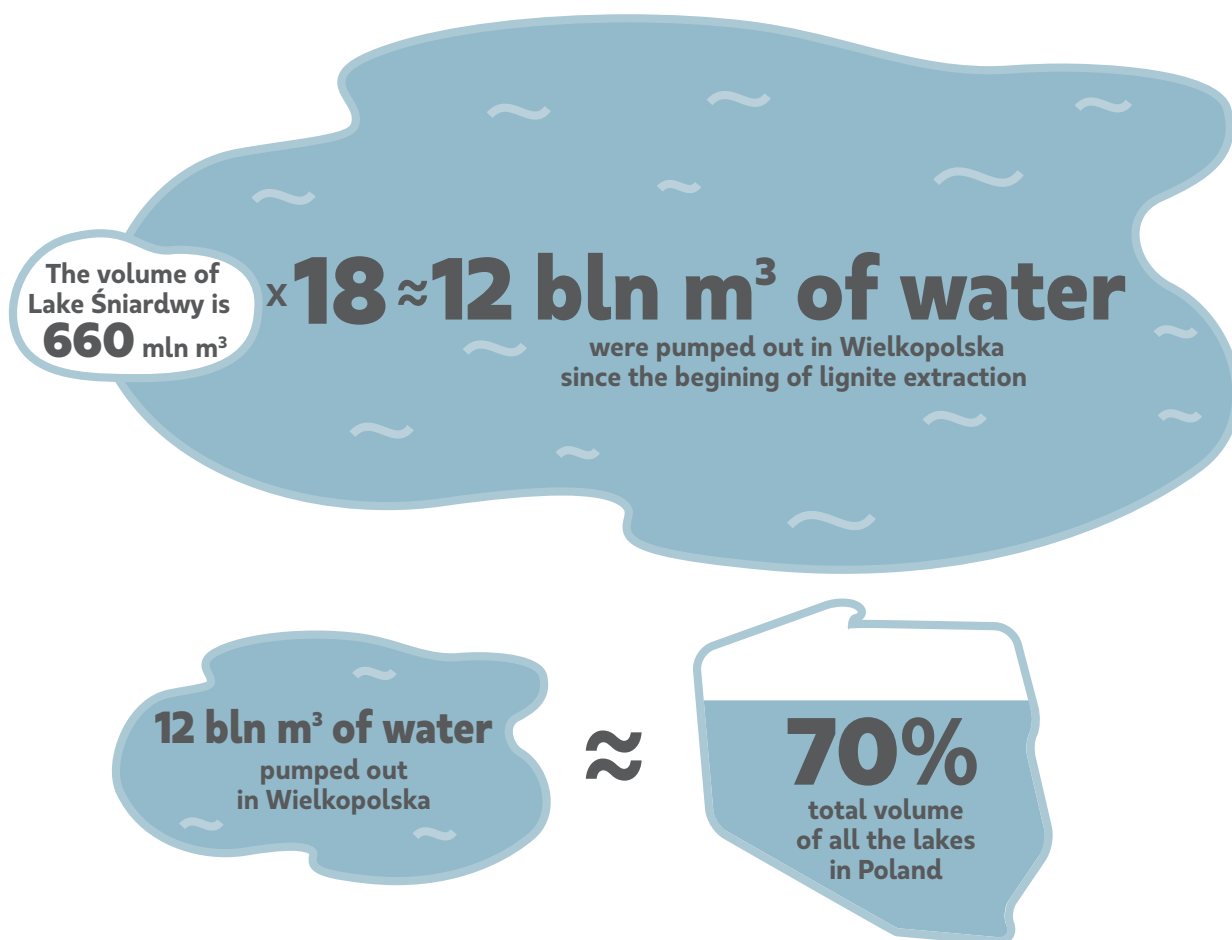


Water shortage is considered one of the greatest long-term risks globally. According to the World Economic Forum and the World Bank, it can pose a serious threat for global economic development. Prof. Andrzej Kowalski, head of the Institute of Agricultural and Food Economics, makes it clear: "Poland's water balance is worse than that of Egypt." National Water Management Authority data show that in Poland there is 1580 m³/year per person. The median for Europe is 4560 m³/year.

Over the period of 70 years the water resources of Wielkopolska have been reduced due to lignite mining. In that period over 12 billion m³ of groundwater³⁶ have been pumped out and flowed down Warta and Odra to the Baltic Sea. 12 billion m³ equals over 18 lakes with a volume of the largest Polish lake, Śniardwy (660.2 million m³)³⁷. The total volume of all Polish lakes is 17 bln m³, so the amount of water pumped out of Wielkopolska as a result of open-pit lignite mining equals 70% of the volume of all the lakes in Poland. In 2015 3.8 m³ of water per tonne of coal was pumped out at KWB Adamów³⁸,

equal to a total of over 135.4 million m³ of water for 2015. Corresponding values for KWB Konin are 11.6 m³ of water per tonne of extracted coal³⁹, or over 108.8 million m³ of water in total.

The necessity to dehydrate deposits by the Konin lignite mine in 3 locations: Pątnów, Tomisławice and Drzewce, together with current mining, caused the creation of 3 large depression cones: north-west of Konin (Pątnów II, III and IV deposits), roughly 23 x 16.5 km; around the Tomisławice deposit, with a radius of circa 4 km (part of the open-cast pit and the depression cone are on the site of Groundwater Body No. 47); and around the Drzewce deposit, with a radius of circa 2 km. These depression cones have been created within the Main Exploitable Aquifer, but are also present in the first aquifer below ground level⁴⁰ In the area of KWB Konin's activity the depression cone spans circa 100 km² in the super-coal level and circa 450 km² in the sub-coal level. In the KWB Adamów area the depression cones within the Quaternary (overburden) layers comprise several square kilometers around the mines and joint depression cones below the coal seam – circa 90 km² in Neogene formations, and nearly 200 km² in Cretaceous formations⁴¹.



Since the start of lignite mining, the amount of water pumped out in Wielkopolska (12 bln m³) has amounted to over 18 times as much as there is in lake Śniardwy (660 mln m³), or, to put it differently, to over 70% of the total volume of all the lakes in Poland (17 bln m³).

According to data presented in the Environmental Impact Assessment of the planned Ościstowo open-pit mine, which has been officially rejected by the Regional Directorate of the Environmental Protection in Poznan on the 10.03.2017, works aimed at dehydrating the deposit are to begin 2 years before the start of mining and are to last until it is finished after 11 to 15 years. On page 2 of the addendum to the report of June 2015 the authors claim that dehydration of the Ościstowo open-pit mine will start before the end of 2016. Given the environmental approval for the discussed investment has been rejected by the Regional EIA authority in Poznań and the KWB Konin has appealed the decision at the end of March 2017, the start of dehydration works is already delayed by over 2 years. This is significant, as – according to calculation presented in the expert analysis *Results of the construction of a lignite open-pit mine on the Ościstowo deposit – analysis of costs for farming*

and food processing drawn up by Benedykt Pepliński from the Economic and Social Faculty, University of Life Sciences in Poznań – each delay of the dehydration process⁴² will increase the external costs of the Ościstowo open-pit mine by losses generated within the dehydration area in farming and food processing by PLN 91.5 million a year under the more conservative scenario, and PLN 253.1 million (EUR 59 million) a year under the more realistic one.

Analyses carried out by the Office for Hydrogeological and Geophysical Studies and Research in Poznań clearly indicate that approval for the construction of an open-pit mine on the Oczkowice deposit in south-western Wielkopolska will pose a real threat of an increase in the drinking water shortages for inhabitants. In Gostyń county as many as 20 (out of a total of 48) water sources would be closed down, and without larger investments it will be possible to keep using only 9 sources. In the Krobia municipality 16 out of the 21 existing water sources will be closed down, including the three largest – Pudliszki, Kuczynka and Potarzyca.



Turów lignite mine, fot. Claudia Ciobanu



Pątnów power plant, photo: Greenpeace/Nick Cobbing

Most recent research results leave no room for doubt – lignite mining in Wielkopolska can in no way be reconciled with the development of farming and the maintenance of the environmental stability of ecosystems. Hence such a strong stress placed by the authors of the environmental report on the planned Ościsłowo open-pit mine as well as in the addenda sent to the Regional Directorate for Environmental Protection since the latter half of 2015, on issues relating to the creation of jobs. The recently rejected EIA report lacks information about the impact of the open-pit mine on land cultivation and animal husbandry within the area of impact of both the cone of depression, and the lowering of groundwater by less than 1 meter caused by the dehydration of the Ościsłowo deposit. There is also no information on the estimated number of people whose livelihoods depend on crop production or food processing and who will lose their jobs as a result of the negative effects of the lowering of groundwater. Similarly, there is no indication of the number of people who will have to abandon their business activity due to the reduction in income from tourism connected with the fall in the number of tourists wanting to spend their holidays in the vicinity of an open-pit mine or lakes changed because of its operation.

The next chapter is devoted to the attempt to answer the question whether there exists the possibility of constructing and using new lignite open-pit mines without breaching EU legislation, in particular the Water Framework Directive 2000/60/EC of 23 October 2000 and individual directives aiming to provide at least a good quality of surface and ground water by 2015 with the possibility of extending this deadline until 2021 or 2027.

CHAPTER 5

WATER PROTECTION IN POLAND VS. OPEN-PIT LIGNITE MINES



In the expert analysis drawn up in August 2016 by Rafał Bernaś, Ph.D., Eng., entitled *Scientific opinion on the compliance of the environmental impact report for the planned lignite open-pit mine on the Ościsłowo deposit with the provisions of the EU Water Framework Directive 2000/60/EC (WFD) of 23 October 2000*⁴³, the author notes that “European directives, as intra-Community legal acts, in themselves do not constitute the basis of rights and obligations in Community states, but they do oblige them to introduce the provisions therein into their national legal systems. WFD is based on the so-called framework control which consists only in indicating the conditions to be met by the addressee undertaking specific actions and is limited to indicating the results of these actions⁴⁴. In Poland, the provisions of the WFD have largely been transferred to the following acts:

- 💧 Act of 18 July 2001 – Water Resources Law (Journal of Laws of 2012, item 145)
- 💧 Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2008, No. 25, item 150, as amended)
- 💧 Act of 27 April 2001 on waste (Journal of Laws of 2001, No. 62, item 628) repealed and replaced on 23 January 2013 with the Act of 14 December 2012 on waste (Journal of Laws of 2013, item 21)
- 💧 Act of 7 June 2001 on collective water supply and collective wastewater disposal (Journal of Laws of 2006, No. 123, item 858).

The Water Framework Directive 2000/60/EC (WFD) requires all Member Countries to undertake actions aimed at protecting inland surface waters, transitional waters, coastal waters and ground waters. Art. 4 section 1 sets

In light of WFD assumptions all actions aimed at reaching environmental goals are to ensure long-term, rational water management and protection of water resources in line with the rule of sustainable development.

out the overall goal to be achieved in relation to all bodies of surface and ground water (i.e. good state by 2015), and includes the aspect of preventing any further deterioration of their state. In the same article of the Directive environmental goals have been set out for bodies of water deemed strongly changed or artificial (i.e. good ecological potential and good chemical state)⁴⁵.

The overarching goal of the WFD is to attain at least a good state of water by setting out and implementing necessary actions within integrated action programs taking into account existing Community requirements (WFD 2000).

The Water Framework Directive basically required the achievement, by the end of 2015, of a good state of all bodies of surface and ground water, as well as the achievement, within the same deadline, of norms and goals for protected areas. Only in the case of water qualified – in line with the procedure outlined in the Directive – as artificial or strongly changed, the aim is to achieve in place of a good ecological state a good ecological potential, which entails a compromise between ecological needs and the needs of using the water which cause certain transformations in it. Only in special circumstances the deadline for reaching the goal may be extended until 2021 or 2027⁴⁶.



Konin power plant, photo: Greenpeace/Nick Cobbing

According to Ph.D. Bernaś “the analysis of alternative variants presented in the environmental report for the Ościsłowo open-pit mine does not fulfil the requirements of the Polish Environmental Impact Assessment Act. It is not possible to choose alternative variants if they are not included in the report. Going further, the lack of alternative variants impedes the possibility to set out potential derogations stemming from article 4 item 7 of the WFD and article 38j of the Water Resources Law of 18 July 2001 and for conditions stemming from article 34 of the Act of 16 April 2004 on nature protection.” What is more, in the opinion of the author “it is impossible to establish the premises of article 34 of the Act of 16 April 2004 on nature protection citing overriding public interest **without obtaining the opinion of the European Commission.**”

Item 3 of article 81 of the Environmental Impact Assessment Act states: “If from the assessment of the venture’s impact on the environment follows that the venture may cause lack of achievement of environmental goals set out in

the river basin water management plan, the body competent regarding the decision on environmental constraints refuses its consent to the realization of the venture, provided that the premises described in article 38 of the Act of 18 July 2001 – Water Resources Law are not met.” The realization of the investment will undoubtedly **cause lack of achievement of environmental goals set out in the Odra river basin water management plan regarding**

both Surface Water Bodies, and Groundwater Bodies.

This fact is stated both in the report (although partly in a concealed way), and in the MasterPlan for the Odra river basin⁴⁷. The investor itself requested the determination of derogation in respect of article 4 items 5 and 7 of the WFD for Surface Water Bodies and Groundwater Bodies in the update to the Odra river basin

The Water Framework Directive secures the right of European Union citizens to good quality surface water and to the protection of groundwater resources from ventures degrading them, and open-pit lignite mines definitely qualify as such.

water management plan⁴⁸, coming to terms, as it were, with causing lack of achievement of environmental goals (p. 173 of the report).

The author of the expert analysis concludes: “Summing up the analysis of the possibility that the premises described in article 38j of the Act of 18 July 2001 – Water Resources Law are met, I conclude that in my opinion **there is no possibility of the use of derogation**. Neither of the premises has been fully met.” Additionally, Ph.D. Bernaś points out: **“The Water Framework Directive is an environmental directive, and exclusion from the obligation to fulfil its goals should be an exception, not the rule”** and **“Exclusion from environmental goals under the WFD cannot be used in order to depart from other goals and obligations set out in other EU legislation”**⁴⁹.

The realization of the Ościstowo investment will undoubtedly cause lack of achievement of environmental goals set out in the Odra river basin water management plan regarding both Surface Water Bodies, and Groundwater Bodies. This fact is stated both in the report, and in the MasterPlan for the Odra river basin, as well as in the updated Water Management Plan⁵⁰.

In the conclusions to his expert analysis Ph.D. Bernaś clearly states that the provision of a good ecological state/potential required in connection with the realization of the WFD will not be possible or will become significantly more difficult due to the operation of the Ościstowo open-pit mine, while carrying out the investment excludes the possibility of reaching WFD goals in other water bodies in the same river basin.

The investment is noncompliant with the implementation of other Community law concerning environmental protection, i.e. with implementing the goals of Directives 92/43/EEC and 2009/147/EC.

In light of such clear conclusions there arises the question whether any new open-pit lignite mine in Poland is able to fulfil the requirements of the Water Framework Directive, considering that the planned Ościstowo open-pit mine has the smallest geological resources among all open-pit mines ZE PAK S.A. is applying for. Also open-pit mines PGE S.A. wishes to exploit, i.e. the open-pit mine on the Gubin-Brody deposit and the open-pit mine on the Złoczew deposit, have much larger geological resources than the open-pit mine on the Ościstowo deposit, and thus there can be expected a proportionally larger impact on groundwater and surface water in connection with the construction and use of those open-pit mines. What is more, taking into account the fact that the start of operation of all open-pit lignite mines in Poland, except the Ościstowo open-pit mine, is planned after 2021, i.e. the deadline by which WFD goals should be fulfilled for all surface and ground waters in Poland, granting environmental approvals for these ventures will be at risk of automatic contestation by local communities opposing the construction of undertakings to such an extent impacting the environment in their area. The author of this report is also currently exchanging information with the European Commission





Turów lignite mine, fot. Claudia Ciobanu

on technical and legal parameters new open-pit lignite mines in the European Union must meet in order to comply with the Water Framework Directive. Guidelines from the European Commission would certainly clarify any doubts in this respect, as well as divergent interpretations of WFD provisions by entities applying for environmental permits in order to construct new open-pit lignite mines and scientific and local communities, local governments and NGOs which see that the Water Framework Directive secures the right of citizens of the European Union to good quality surface water and to the protection of groundwater resources from ventures degrading them, and open-pit lignite mines definitely qualify as such.

CHAPTER 6

SOCIAL OPPOSITION TO THE CONSTRUCTION OF NEW OPEN-PIT LIGNITE MINES

Due to growing public awareness of Wielkopolska inhabitants, as well as improvement in organizational abilities and public support, in 2016, by the end of September, 4 large protests against the plans to construct open-pit lignite mines were held, 3 of them in Warsaw. The first, which took place on 10 May 2016, was a public meeting organized by “Development YES – Open-pit mines NO” Foundation, and supported by local communities and associations opposed to open-pit mines from all the parts of Wielkopolska in which ZE PAK is planning to construct new lignite mines. It began with a protest against the presence of the largest Polish privately managed pension fund, managed by Nationale Nederlanden PTE S.A., in ZE PAK’s shareholder structure. In May NN OFE owned 9.97% of shares in ZE PAK, and so de facto also approved the company’s investment decisions, judging them prospective. Otherwise, it



2016 demonstration outside Polish Parliament in Warsaw, photo: Radosław Gawlik

“All representatives of the public expressed a decisive and unanimous protest against securing and mining lignite deposits in south-western and eastern Wielkopolska.”

would have decided to slowly sell the shares in ZE PAK. Several hundred people from all over Poland decided to forego a workday to demonstrate how strongly they felt about the potential decision to build an open-pit mine in municipalities which they inhabit or which would be under the influence of the planned mines. Between 11 May and the end of June

2700 people signed a petition calling on Nationale Nederlanden to influence ZE PAK to give up its plans of constructing new open-pit mines or, if this proved impossible, to sell shares in the company. The signatories undertook to relinquish the services of Nationale Nederlanden and Nationale Nederlanden privately managed pension fund. Representatives of “Nasz Dom” (Our Home) Association, with considerable support from inhabitants of the region, local governments and entrepreneurs, collected 25 thousand signatures from people opposing the construction of the open-pit mine on the Oczkowice deposit in south-western Wielkopolska. Nearly 2,000 signatures from those opposing the plans to create an open-pit mine on the Ościsłowo deposit were submitted by the Ecological Association EkoPrzyjezierze as part of the public consultation procedure within the Environmental Impact Assessment in July 2016.

On 28 June representatives of the Coalition “Development YES – Open-pit mines NO” took part in the General Shareholders’ Meeting (GSM) of ZE PAK S.A., during which they exercised their right to ask questions as proxies of ZE PAK S.A. minority shareholders. In accordance with the law, official answers to the questions were made public and the shareholders, on behalf of whom the questions were asked, received the answers in writing. Simultaneously with the AGM, outside the seat of Elektrim in Warsaw, i.e. the venue where



the Meeting was held, several hundred protestors gathered to express their lack of agreement to new open-pit mines planned on their land.

A protest was also organized in August outside the seat of KWB Konin in Kleczew, and another one on 20 September outside the Polish parliament in Warsaw, in connection with a conference held by Jan Mosiński, MP, together with the Foundation “Development YES – Open-pit mines NO.”

In 2017 the protests against ZE PAK plans to open Ościłowo open-pit mine intensified. Both international and national press has covered 5500 year old burial mounds of a Funnelbeaker culture which have been discovered within the planned mine area and which are have been declared an archaeological find of regional significance by the Wielkopolska Board of Monument Protection in March 2017. The administrative procedure to get the sight included on the list of protected monuments it's coming to an end. Between November and December 2016 5850 people signed an online petition to the Regional Directorate of Environmental Protection (RDEA)

in Poznań placing themselves on the side of nature, water and the people and calling for a negative environmental decision. A protest organised in front of the RDEA in Poznan on the 27th of January brought together over 200 people from all over Poland and as a result a delegation has delivered a statement and additional evidence to RDEA.

On the 20th of February over 500 people gathered near Gostyń in southern Wielkopolska to stress that politicians, local and regional authorities, local and national organisations and scientists are all against a lignite mine on „Oczkowice” deposit. The conference has been organised by two MPs from the ruling “Law and Order” party and a deputy minister of environment has made a statement that ZE PAK is responsible for an ecological disaster in north-east Wielkopolska and that the company is not to be trusted as it is cheating and lying and that lignite open-pit mines ruin the environment where they are allowed.



2017 demonstration in Poznań,
photo: “Development YES – Open-pit
mines NO” Foundation

Members of the Wielkopolska Regional Assembly deemed the following the most important possible consequences of lignite mining:

- 1. change in hydrological and hydrogeological conditions;**
- 2. irreversible and total loss of high quality agricultural production space;**
- 3. loss of qualities and assets of the natural environment;**
- 4. liquidation of dozens of villages and/or towns located within the boundaries of lignite deposits, and the necessity to displace many thousands of inhabitants;**
- 5. liquidation or transfer of several thousand agricultural business entities;**
- 6. disruption in the functioning of individual administrative units;**
- 7. change in unique landscape and cultural qualities.**

On the 25th of March a Break Free 200 people human chain has been organised next to Noteć river which has dried up completely on 30 km of its run due to the drainage from two ZE PAK mines. Noteć is the 7th longest river in Poland. Two days later a conference in one of the 3 communes on whose territory the mine would be located – Ślesin has taken place. During the conference the director of the KWB Konin faced experts and scientists that were opposing the mine. The event has been aired live in internet.

More protests and mobilisations are expected in the next weeks and months.

The protests were only one of a wide variety of actions in which civic society became engaged in order to stop the construction of socially detrimental mines

planned by ZE PAK. Twice the representatives of the Coalition “Development YES – Open-pit mines NO” and leaders of local communities threatened by the creation of the open-pit mines met with Members of the European Parliament in Brussels. The first such meeting took place on 20 April during a round table⁵¹ concerning the publication by WWF EPO of the report entitled *From Cradle to Grave: the impacts of lignite mining on Europe citizens and environment*⁵², showing the impact of the planned open-pit mines in Germany and Poland on the life of local communities threatened by them, and the second – at the beginning of September⁵³ in connection with hearing out authors of a petition

to The European Parliament's Petitions Committee, who described reasons for which the mine on the Oczkowice deposit should not be created. The mobilization of circles comprising local authorities, entrepreneurs and citizens against the so-called White Book on the Protection of Mineral Deposits, which was published in November 2015 by the Ministry of Environment, resulted not only in its withdrawal from interdepartmental consultations⁵⁴, but also, as the Deputy Minister of Environment and Chief Geologist of Poland, Prof. Mariusz Orion Jędrysek, put it, it has ended up in the dustbin of history and been deemed null and void.



demonstration BREAK FREE 2017 in Nykiel,
photo: Greenpeace/Bogusz Bilewski



demonstration
BREAK FREE 2017 in Nykiel, photo:
Greenpeace/Bogusz Bilewski

On 25 January 2016, as a result of lengthy efforts of local governments, entrepreneurs, NGOs and inhabitants, especially those residing in south-western Wielkopolska, the Wielkopolskie Regional Assembly adopted a resolution⁵⁵ calling on all local government politicians in Wielkopolska to undertake actions aimed at preventing the mining of deposits in the so-called Rów Poznański, as well as deposits in Poniec-Krobia and Oczkowice. The explanatory memorandum to resolution No. XIV/405/16 of 25 January 2016 states that the Wielkopolskie Regional Assembly, out of concern for providing sustainable and lasting development of the region based on the use of new technologies and a respect for traditions, expresses its deep concern with information on plans to mine lignite deposits in an area of exceptional agriculture. The undertaking of actions connected with the introduction and enforcement of the principles of protecting strategic lignite deposits, as well as with their mining via open-pit mines, will cause – it goes on to say – a number of irreversible changes in the social, economic, spatial and environmental realm.

The diagnosed – the memorandum continues – consequences of mining strategic lignite deposits point to the fact that extraction activity will cause an irreversible transformation of the functional and spatial structure of this part of Wielkopolska, and will contribute to a number of unfavorable, negative changes in development conditions. Extraction activity will also be connected with the construction of a new power plant whose functioning will contribute to further environmental inconveniences and cause an additional several hundred hectares of soil to be excluded from agricultural production. It should be stressed that already the introduction of the principles of deposit protection will cause a number of limitations and changes in development many years before the start of actual extraction⁵⁶.



*protest against the open-pit mine in the Krobia municipality,
photo: Greenpeace/Bogusz Bilewski*

In consideration of the above – the authors of the memorandum write – we share the standpoint of local governments concerning disapproval regarding intentions to carry out surface mining of lignite deposits. We call on Members of Parliament to take effective action preventing the progress of administrative procedures aimed at undertaking lignite mining in southern Wielkopolska and changing this region into a mining and energy basin.

We direct our standpoint to the Council of Ministers of the Republic of Poland, and in particular the Minister of Energy and the Minister of the Environment,

and request that the deposits of the so-called Rów Poznański, as well as those in Oczkowice and Poniec Krobia be excluded from the sum of strategic deposits, and that they be completely and definitively removed from the proposed list of strategic deposits in Poland due to their extremely contentious location and the expected negative and destructive effects of their mining.



demonstration BREAK FREE 2017 in Nykiel, photo: Greenpeace/Krzysztof Pacholak

Equally unfavorable towards plans for open-cast lignite mining in south-western Wielkopolska by ZE PAK was the Wielkopolska Social Dialogue Council, whose meeting on, among others, ZE PAK's efforts to obtain a permit to mine the Oczkowice deposit was held on 30 March 2016 in Poznań. The unanimity of local governments, NGOs, marshal authorities, experts, scientists and entrepreneurs on the issue can be seen in the minutes from the session of the Wielkopolska Social Dialogue Council⁵⁷, which state: "All representatives of the public expressed a decisive protest against securing and mining lignite deposits in south-western and eastern Wielkopolska."

Representatives of communities threatened by negative consequences of the construction of open-pit mines planned by ZE PAK were also in correspondence with Members of Parliament, the President of the Republic of Poland, the Minister of Agriculture and Rural Development and the Minister of the Environment, and participated in many meetings with MPs and employees of ministries, the Regional Assembly and the Marshal Office, members of the local government, as well as in Sejm committee works on ZE PAK S.A. and PGE S.A. development plans. They took part in multiple radio and television programs, including twice in TV Trwam's intervention program "Po Stronie Prawdy" (On the Side of Truth) devoted to the issue of an ecological crisis in north-eastern Wielkopolska connected with lignite extraction from active ZE PAK mines. They participated in General Shareholders' Meetings of ING Bank in the Netherlands, as well as of the capital groups of Nationale Nederlanden in the Netherlands and of AXA in France, giving information on ZE PAK's plans connected with the construction of new open-pit lignite mines and

on the financial, environmental and social consequences if these plans are carried out. They also regularly spoke with Polish and foreign press about the threats and consequences of the construction of the open-pit mines planned by ZE PAK. During that time ZE PAK S.A., for the first time since the company had been taken over by the current owner at the end of 2012, announced a financial loss, connected with write-downs, and consequently during the General Shareholders' Meeting made the decision not to pay dividend. In less than a year ZE PAK S.A. has had five different Management Board Directors.

The last chapter of this report will deal with the assessment of the company's credibility based on its fulfilment of investment promises made in its Prospectus of October 2012 and in subsequent financial reports and reports on the activities of the Management Board.



CHAPTER 7

THE ROLE OF BANKS AND INSTITUTIONAL INVESTORS

Hardly any company is able to finance its investment plans solely out of its own coffers. ZE PAK – which, compared to other European and Polish energy companies is a small entity with very little diversification in its asset structure – is no exception. Since the sale of shares owned by the State Treasury and takeover of most shares in Kopalnia Węgla Brunatnego Adamów and Kopalnia Węgla Brunatnego Konin in October 2012, the company has been majority controlled, via various legal vehicles, by Zygmunt Solorz-Żak, one of the richest people in Poland

and the main shareholder in Telewizja Polsat, and Polkomtel, network

Institutional result of the ZE PAK's stock on 30 October over a little more shares of the offered by the (443,000 of have been taken Solorz-Żak's

In 2016 Generali managed Polish private pension funds sold all of its remaining shares in ZE PAK joining MetLife and AEGON Polish privately managed pension funds that have no shares of ZE PAK since 2015. Aviva, Axa and Allianz managed Polish private pension funds are still shareholders of ZE PAK which stands in stark contrast to their international climate commitments.

shareholder in Cyfrowy Polsat the Plus mobile operator.

investors, as a offer preceding exchange debut 2012, have taken than 22 mln 26 mln shares State Treasury those shares over by Zygmunt investment

vehicles). Global coordinators of the offer and of book-building were the banks Credit Suisse, ING, JP Morgan and UniCredit. Co-managers of book-building were Espirito Santo Investment Bank, Ipopema, DM PKO BP and Trigon. After acquiring of shares owned by the State Treasury, Zygmunt Solorz-Żak, via his subsidiaries, administered 51.74% of the 50,823,547 shares of ZE PAK, and since 30 April 2013 this percentage has been 51.55% (i.e. 26,200,867 shares).

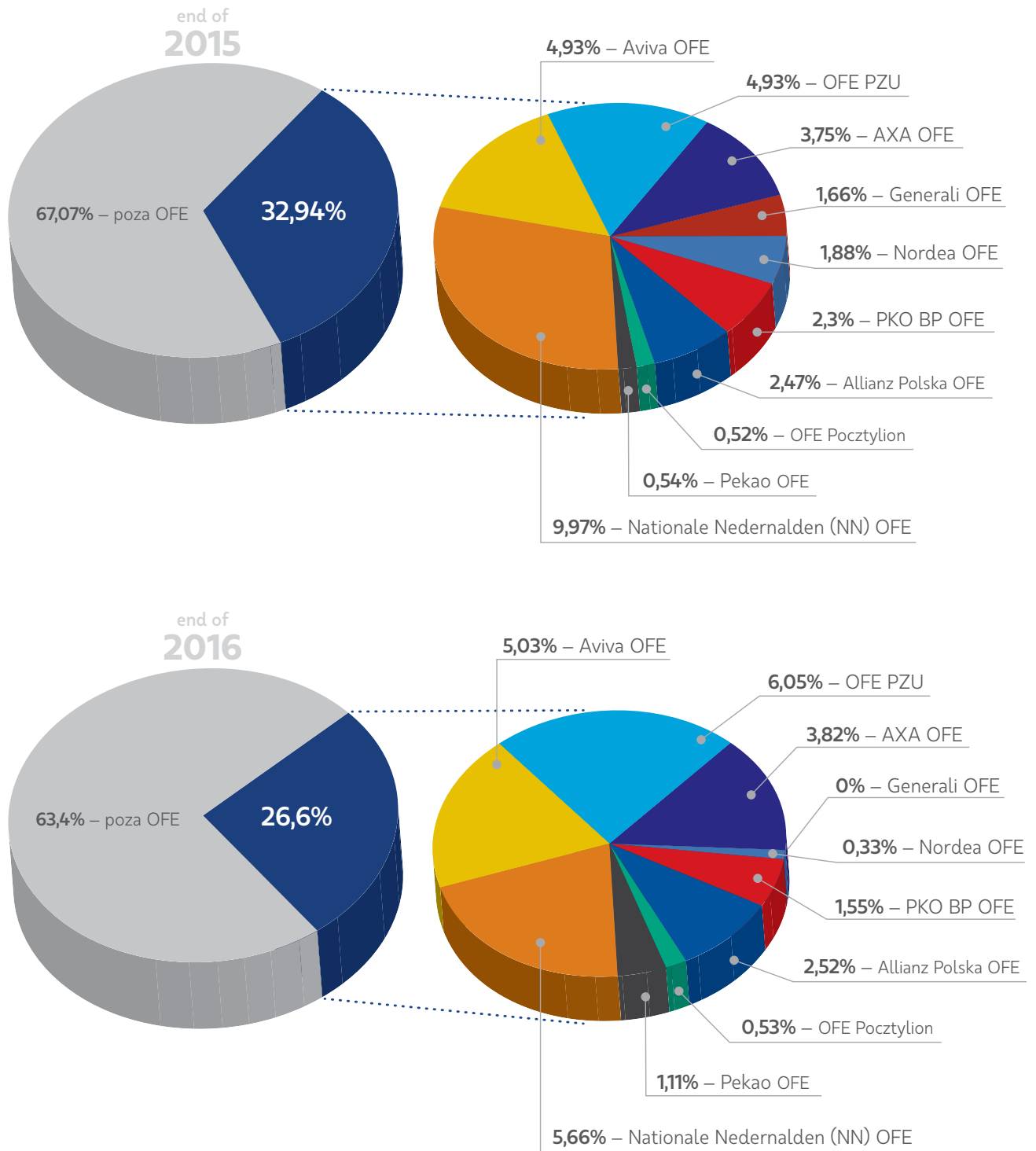


Figure 10. Shareholder structure of ZE PAK S.A. – comparison between end of 2015 and end of 2016

Privately managed pension funds also took part in buying out ZE PAK shares from the State Treasury. As of the end of 2016 they owned a total of over 26,5% of ZE PAK shares down from nearly 33% at the end of 2015. ZE PAK's largest minority shareholder not under Zygmunt Solorz-Żak's control in 2015 was Nationale Nederlanden PTE S.A. which has as a result of public pressure and a targeted campaign reduced its share in ZE PAK from 9,97% at the end of 2015 to 5,66% at the end of 2016 selling over 2 million

shares of ZE PAK in 2016. At its peak moment ING OFE (ING OFE changed its name to NN OFE a few years ago) owned over 11% of ZE PAK shares, and now controls 5,66% of the company's shares⁵⁸. Within less than four years ZE PAK shares lost over 50% of their value, and in mid-March 2016 the share price reached PLN 6.57. Share value has recovered since and currently oscillates around 18 PLN. The price recovery has not prevented the number of privately managed pension funds that have no shares in ZE PAK to raise from 2 to 3. In 2016 Generali managed Polish private pension funds sold all of its remaining shares in ZE PAK. This has not been the case with Aviva, Axa and Allianz managed Polish private pension funds which stands out as a stark violation of their climate commitments. It remains an open-ended question whether those managing private pension funds are counting on a minimization of losses or do they assume that the Company will carry out restructuring and diversification of its production structure and in the mid-turn regain its profitability and the ability to pay dividend.

The realization of the latter scenario is doubtful as ZE PAK has not yet fully met any of the promises, described below, made to its shareholders in the prospectus and subsequent financial reports.

On page 8 of the prospectus one can find the following information: "Our strategy assumes two main objectives which are to ensure growth in the value of ZE PAK Group: (i) optimization of the Group's core productive activity and (ii) raising the effectiveness of supporting activity via restructuring.

Optimization of core business activity assumes: (i) optimization of the output potential portfolio by means of carrying out an investment program comprising both the modernization of owned production assets, **and the replacement of played-out production units with ones based on new, low-emissions technologies in order to maintain output potential on the level not lower than circa 2100 MWe during the next 7 years while simultaneously limiting**



2016 demonstration in Warsaw, photo: Radosław Gawlik

emissiveness and technological risk, and improving production efficiency and diversification of types of fuel” (author’s bold).

On page 16 of the prospectus the Company reminds readers that the project for the construction of a combined cycle gas and steam unit at Konin Power Plant is the key project in the realization phase: “Nonetheless, **during the realization of key projects which are now in the investment realization stage, and assuming green light for realization is given only to the project for the construction of the combined cycle gas and steam block at Konin Power Plant**, with the exclusion of other projects in the preparation phase, **by the end of 2016**, the Management Board intends to recommend to the General Meeting payment of dividend on the level of up to 30% of the Company’s profit indicated in the Company’s individual financial statement, drawn up in accordance with the Accounting Act.”

What is more, on page 39 of the prospectus a future owner of ZE PAK’s shares could learn that “According to current and planned extraction levels, the mining period of the resources of our deposits is estimated to last until **circa 2050**, whereas **at the latest until 2026 (in the case of KWBA)** and 2030 (KWBK) extraction is secured by concessions we have,” and on page 116 that “The most important investments we are currently realizing are:

(iii) Continuation of investment expenditure for exploration works carried out in prospective deposits in Piaski (planned mining from 2017 to 2050), Ościszewo (planned mining from 2019 to 2031), and Dęby Szlacheckie (planned mining from 2024 to 2050) and continuation of expenditure for the upkeep of currently mined Drzewce, Józwin, Koźmin, Adamów and Tomisławice open-pit mines until the exhaustion of resources.

In light of our investment plan and the above contractual obligation, we feel that for the realization of investment projects aimed at the upkeep of mining at current open-pit mines and construction of new lignite open-pit



2016 demonstration in Warsaw, photo: Radosław Gawlik

mines between 2012 and 2015 we will allot circa PLN 400,000 thousand (circa 50% from proprietary funds and the rest from investment loans), of which we plan to allot circa PLN 300,000 thousand to the upkeep of lignite extraction in current open-pit mines.”

The information on the Group’s strategy was repeated on page 154 of the prospectus: “In connection with the planned disconnection or termination of mining in the oldest production units with a total output of 943 MWe, our investment program anticipates both the complex modernization of blocks 1–4 at the Pątnów I Power Plant, and the construction of a new, highly efficient combined cycle gas and steam block at Konin Power Plant” and “We assume the full utilization of all currently mined open-pit mines until their resources earmarked for extraction have been used up (according to estimates, Drzewce until 2019, Józwin until 2020, Koźmin until 2023, **Adamów until 2024**, Tomisławice until 2035) and the construction of new lignite open-pit mines on the Piaski, Ościstowo and Dęby Szlacheckie deposits.”

Modernization of blocks 1–4 at the Pątnów I Power Plant between 2013 and the first half of 2016, ensuring the possibility to use blocks 1–5 at least until 2026 or 2030, continuation of investment expenditure for exploration works carried out in prospective deposits in **Piaski (planned mining from 2017 to 2050)**, Ościstowo (planned mining from 2019 to 2031), and Dęby Szlacheckie (planned mining from 2024 to 2050) and continuation of expenditure for the upkeep of currently used Drzewce, Józwin, Koźmin, Adamów and Tomisławice open-pit mines until the exhaustion of resources also constitute “key investment projects in the realization phase,” as mentioned on page 156 of the prospectus, while key investment projects in the preparation phase whose realization was

to take place between 2012 and 2019, comprise: launch of a highly efficient unit of energy and heat production via building a combined cycle gas and steam block generating circa 120 MWe and circa 90 MWt and an additional gas-fired peak load boiler with a power



output of circa 40 MWt, dedicated for the needs of the supply of heat to the town of Konin, whose commissioning is tentatively planned for 2016, and in Adamów Power Plant: launch of a highly efficient unit of energy and heat production via building a combined cycle gas and steam block generating circa 400 Mwe and circa 45 MWt and an additional gas-fired peak load boiler with a power output of circa 45 MWt, dedicated for the needs of the supply of heat to the town of Turek, whose commissioning is tentatively considered for the end of 2017.”

The risks connected with the purchase of ZE PAK’s shares and the Company’s prospects were pointed out by experts from Greenpeace International and CEE Bankwatch Network⁵⁹ and these aspects, which were indicated in the compilation prepared for potential investors, are the main reasons of the Company’s current financial problems. Subsequent reading of the compilation in April 2017 leads the author of this report to agree with its authors.

In financial reports for three consecutive years ZE PAK’s Management Board stressed that it is necessary to diversity the portfolio of the Company’s output

potential. And so, in ZE PAK’s Management Board report for 2013 the companies authorities wrote:

“At the same time the Company is aware of the changes, especially those in the realm of legislature, taking place around it. Legal regulations aimed at reducing emissions of CO₂ and other gasses (SO₂, NO_x) and regulations concerning the renewable energy sector comprise significant

challenges for the Company. In order to fulfil requirements of current and future regulations on broadly understood environmental protection the Company is planning to modify its output potential portfolio. The goal is the realization, within the next 7 years, of an investment program comprising both the modernization of owned production assets, and the replacement of played-out production units with ones based on new technologies. Carrying out the planned investment tasks will make it possible to limit technological risk, improve



demonstration BREAK FREE 2017 in Nykiel
photo: Greenpeace/Bogusz Bilewski

production efficiency and, via the diversification of the fuel base, will fit in well with plans to strive for Poland's low-emission economy." p. 43–44. (ZE PAK S.A. MANAGEMENT BOARD'S REPORT ON THE COMPANY'S OPERATION IN 2013)

Key elements of the investment strategy comprised – modernization of blocks 1–4 at Pątnów I Power Plant, construction of a combined cycle gas and steam block at Konin with an output of 120 MWe and 90 MWt by 2018 and construction of a combined cycle gas and steam block at Adamów with the output of 400 MWe and 45 MWt, p. 44.

The construction of the combined cycle gas and steam block at the Konin Power Plant will necessitate expenditure of circa PLN 720 mln (including the cost of financing), p. 45 of the report.

As at the end of March 2017 we know that:

- a) ZE PAK will not modernize blocks 3 and 4 of Pątnów I Power Plant on deadline and it is doubtful whether the modernization will be carried out at all;**
- b) the combined cycle gas and steam block at the Adamów Power Plant will certainly not be constructed by the end of 2017 and it is doubtful whether it will be constructed at all, which constitutes a huge problem for the inhabitants of Turek, as in the early 2018 Adamów Power Plant, which has so far been the main heat supplier for the town, will be shut down. ZE PAK has handed in its notice of termination of the agreement on the supply of heat to the town of Turek. The heat supply agreement will cease to be effective as of the end of 2017;**
- c) the combined cycle gas and steam block at Konin will certainly not be constructed by the end of 2016 and it is doubtful whether it will be constructed by mid-2020, so – similarly to Turek – this puts the inhabitants and authorities of Konin in a situation where unfulfilled investment promises threaten the town's heat supply;**
- d) the Adamów and Koźmin open-pit lignite mines will not be mined until the exhaustion of the deposits, the open-pit**

mine on the Piaski deposit will not be constructed, and it is highly doubtful whether ZE PAK will begin the mining of lignite from the Ościsłowo deposit in 2019 (the recent decision NOT to grant an EIA permit for Ościsłowo lignite open-pit mine puts the mine's construction under question) and from the Dęby Szlacheckie deposit by 2024;

e) it is not clear what ZE PAK's plans are in connection with efforts to obtain a concession for the Poniec-Krobia and Oczkowice deposits in light of the standpoint of the Wielkopolska Regional Assembly and strong opposition of local authorities, communities and entrepreneurs; ZE PAK's chances of obtaining the concession for these deposits and constructing an energy complex next to the planned open-pit mine seem slim.

On page 13 of the "Management Board's report on the ZE PAK Capital Group's operation in Q12016" the Management Board writes: "Q12016 saw the continuation of project works connected with the construction of the combined cycle gas and steam block at the Konin Power Plant, which is an investment aiming at the diversification of fuel sources used in the Group's production. The project assumes the launching of a highly efficient unit of energy and heat production via building a combined cycle gas and steam block generating circa 120 MWe and circa 90 MWt and an additional peak load boiler with a power output of circa 40 MWt (dedicated for the needs of the supply of heat to the town of Konin), whose commissioning is tentatively planned for 2020. The realization of this investment aims at substituting played-out lignite-fueled blocks at the Konin Power Plant. The documentation needed for the procurement of all necessary administrative and legal permits connected with the planned investment are being compiled, and talks on contracts needed to carry out the project are being continued. Works connected with the profitability of the investment and its legal surroundings are still underway. Simultaneously, research has been undertaken on an alternative solution, comprising in the conversion of the heat source at the Konin Power Plant, which would secure heat supplies for the town of Konin after the shutdown of the coal section of the Konin Power Plant in June 2020

Production of heat from the currently used source based on lignite at Konin Power Plant will not be possible after 30 June 2020 due to environmental requirements. Adaptation of the currently used source to stricter requirements would entail expenditure exceeding the economic effect this would allow us to obtain.

and in the event the planned new combined cycle gas and steam block not launched. Combined heat and power production would be based on an CFB K-12 biomass boiler and a TG-6 turbogenerator. For the needs of the project under consideration promises of the change of concessions for the production of electricity and heat in the dedicated biomass burning installation at the Konin Power Plant have been obtained from the Energy Regulatory Office.”

At the same time, on page 15, ZE PAK’s Management Board states: “on 30 June 2016 the Company delivered to Miejskie Przedsiębiorstwo Energetyki Ciepłej – Konin sp. z o.o. (“MPEC”, Municipal Heat Supply Company in Konin) notice of termination of the Agreement on the Sale of Heat No. 93/MPEC/PAK/2005, concluded on 1 January 2005 by and between the Company and MPEC, whose subject matter are heat supplies from the Company to the town of Konin carried out from the day of concluding the agreement. The agreement will cease to be binding in compliance with a 4-year notice period, effective as at 30 June 2020. The agreement was terminated by the Company due to the fact that production of heat from the currently used source based on lignite at Konin Power Plant will not be possible after 30 June 2020 due to environmental requirements. Adaptation of the currently used source to stricter requirements would entail expenditure exceeding the economic effect this would allow us to obtain.”

The fact that the Company decided to deliver the notice of termination of the agreement on the sale of heat to MPEC Konin undermines the Company’s assurances concerning the plans to construct an alternative heat source for the town of Konin by June 2020. From the moment of obtaining all the necessary administrative permits to the commissioning of the combined cycle gas and steam block at least 4 years will pass, it is thus most likely that ZE PAK will not complete the new block at Konin, promised in the prospectus and in the Company’s subsequent financial reports, by June 2020.



It is quite significant that in March 2014 ZE PAK obtained a positive decision from the European Investment Bank in the form of the agreement of its Board of Executives to grant the Company PLN 350 mln (EUR 82 mln) for the construction of the combined cycle gas and steam block at Konin⁶⁰. The Company did not take advantage of this opportunity and, despite press releases at the beginning of 2016 on the Company's efforts to acquire external financing for the realization of this project, the preferential loan from the biggest European public bank was lost and, according to information obtained from the EIB, the Company would have to repeat the entire procedure starting with applying for a loan in order to get the money, granted conditionally in March 2014, for the construction of the block at Konin.

What is more, in its financial report for 2015 the Company states that "in the structure of total revenues for the years 2016–2017 on average 85% are revenues from own and purchased electricity. Starting from 2018, due to the shutting down of production at Adamów Power Plant, there is a total decrease in revenues amounting to 40% as compared with 2017."

ZE PAK would not be able to service its debt and undertake the necessary investments were it not for private banks providing it with finance. mBank



demonstration BREAK FREE 2017
in Nykiel, photo: Greenpeace/Krzysztof Pacholak

subsidiary of German C o m m e r z b a n k , Bank Gospodarstwa Krajowego, PeKaO S.A. PKO BP and Millenium Bank – subsidiary of Banco Comercial Portugues provided ZE PAK in 2014 with a PLN 1200 million (EUR 280 million) loan for refurbishment of 4 units in Pątnów I power plant. The company breached

the loan agreement and in June 2016 PLN 533 million (EUR 125.4 million) of the unused loan has been paid back to the banks and the payback period shortened to 20 March 2020. The banks let ZE PAK off the hook by deciding not to require ZE PAK to pay for the loan agreement breach.

Four smaller credit facilities expire in 2017:

- BPH S.A. bank belonging to General Electric Group has an open credit facility worth PLN 76.7 million (EUR 18 million) expiring on the 30th of May 2017,
- Banco Santander Polish subsidiary BZ WBK S.A. has an open credit facility for KWB Konin worth PLN 55 million (ca. EUR 13 million) expiring on the 30 June 2017,
- PKO BP has a PLN 90 million (EUR 21.17 million) open credit facility with ZE PAK expiring on the 25.11.2017 and
- PeKaO S.A. has an open credit facility with ZE PAK expiring on the 30.11.2017 worth PLN 40 million (EUR 9.4 million).

All of those banks take part of the responsibility for the external costs of ZE PAK activities and planned lignite open-pit mines.

CONCLUSIONS AND RECOMMENDATIONS

Construction of new lignite mines in Wielkopolska by Zespół Elektrowni Pątnów-Adamów-Konin will entail external costs greatly exceeding benefits stemming from maintaining for a few more years some of the jobs at KWB Konin and production of electricity at power plants belonging to the Group. After the Adamów power plant and mine are shut down, the Capital Group's revenues will decrease by 40% as compared with 2017. This will undoubtedly be connected with loss of jobs at ZE PAK Capital Group beyond KWB Adamów and the Adamów Power Plant.

Operation of ZE PAK power plants, as well as KWB Adamów and KWB Konin mines entails external costs whose largest component are health costs. The negative impact of exploiting lignite in open-pit mines, estimated only for farming and the agricultural and food industry, was for the KWB Konin open-pit mines estimated at between PLN 144.0 million (EUR 33.88 million) and the most realistic, according to the author of the analysis, PLN 888.5 million (EUR 209 million) for each year of operation. The corresponding value for KWB Adamów was estimated at between PLN 105.4 million (EUR 24.8 million) and the more realistic, according to the author of the analysis, PLN 737.8 million (EUR 173.6 million) for each year of operation. Emission of harmful gasses and dust into the atmosphere by power plants owned by ZE PAK Group was in 2013 responsible for health costs estimated at between over PLN 3 billion (EUR 705 million) and over PLN 5.96 billion (EUR 1 402 million). Furthermore, open-pit lignite mining entails the irrevocable loss of millions of cubic meters of water a year. In 2015 over 240 million m³ of water were pumped out of mines belonging to ZE PAK, i.e. three times the

Closing down ZE PAK-owned power plants and lignite open-pit mines as soon as possible, starting with the Adamów and Pątnów I power plants, which generate the highest external costs, lies in the public interest and will increase the quality of life of the inhabitants of Poland.

volume of Gopło lake located within the area impacted by KWB Konin.

The construction of new open-pit mines will not only lengthen the time during which society will have to bear external costs generated by ZE PAK power plants (the health costs themselves, caused by emissions from the Pątnów I and Pątnów II power plants, amount to EUR 500 million, or over PLN 2 billion, a year), but will also negatively influence the

quality and accessible amount of groundwater within the area of the cone of depression of the open-pit mines. Beginning of lignite extraction from the Ościszów open-pit mine would cause the displacement of over 550 people, loss of income in farming and the food industry amounting to between PLN 2.63 and 4.22 billion (EUR 619 and 993 million), and health costs generated by the Ościszów open-pit mine exceeding PLN 100 million (EUR 23.5 million) a year, i.e. a total of between PLN 1.1 and 1.6 billion (EUR 258.8 and 376.5 million) for the entire span of the mine's operation.

External cost estimates for the open-pit mines on the Dęby Szlacheckie, Piaski and Oczkowice deposits, which are larger than the Ościszów mine, are several times higher.

What is more, lignite-based power production is a declining branch of industry in which production costs will keep increasing and competition from renewable energy sources and nuclear energy, with lower operating costs, will keep growing. Lignite mining and burning are incompatible both in the short- and mid-term with goals and legal requirements of the Water Framework Directive, while EU regulations, aimed at the internalization of external costs, gradually but unrelentingly chip away at the profits of companies such as ZE PAK. Therefore, the author of this report recommends that Polish Members of Parliament support modern and prospective directions of developing the power industry instead of subsidizing obsolete energy and heat production methods, such as lignite burning, with the use of taxpayers' money.

Apart from MetLife OFE, AEGON OFE and Generali OFE all other privately managed pension funds own shares in ZE PAK. As at 31 December 2016 the share of privately managed pension funds constituted over 26% (down from over 32% at the end of 2015) of ZE PAK's shareholder structure. Thus the privately managed pension funds which own ZE PAK shares not only risk their clients' profits, but are also responsible for the external costs generated by power plants and open-pit mines owned by the Company and enable it to continue operating, including to undertake efforts to obtain concessions for new open-pit lignite mines.

All banks should refrain from providing loans and all other forms of services to ZE PAK until the company presents a credible diversification plan that would align the company with a 1.5 degree Celsius energy transition trajectory agreed in Paris and ratified by the EU-28 and Poland in 2016. Banks having open credit facilities with ZE PAK or PAK KWB Konin should let them expire this year and resist the temptation to prolong them for another year.

All privately managed pension fund portfolio managers are advised to sell all ZE PAK shares within one year.



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14. Zespół elektrowni Pątnów-Adamów-Konin Capital Group, *Sprawozdanie zarządu z działalności grupy kapitałowej w 2015 roku* [The Management Board's report on the Capital Group's operation in 2015], March 2016, pp. 59–60.
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