LIGNITE - WHAT'S THE FUTURE?

Is the development of lignite opencast mines a future of energy industry or rather an environmental problem and a violation of fundamental human rights?

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INTRODUCTION

Since the nineteenth century, coal has been one of the main primary energy sources. In many countries, its role in the economy is still very important. Lignite, which is extracted mostly in opencast mines, is the cheapest fossil fuel. It is still mined on a large scale in many European countries. However, plans related to the new opencast mines very often must face with a big social resistance. Is the development of opencast lignite mines a violation of fundamental human rights? It's one of the questions guiding the authors of this report.

Opencast lignite mining is very often associated with big social problems. Along with lignite investments, local communities are threatened by resettlements and repressions. Because of the development of an opencast mine, residents are losing their homes, fields - all their belongings. Standards of displacements adopted in European countries, more often support big companies, not communities. People who live in the area intended for construction of a mine are often not sufficiently protected against forced eviction (under the concern's terms). The law and its implementation rarely supports - in a sustainable way - disadvantaged citizens.
Resettlements of people caused by lignite projects are a phenomenon present in most European countries, where lignite is mined in opencast mines. Each year, thousands of people are forced to leave their place of current residence.

The growing scale of this problem is accompanied by numerous violations of the fundamental rights of those displaced people – Universal Declaration of Human Rights states that everyone has the right to choose the place of residence. Development of opencast mines is also associated with the seizure and destruction of huge areas, often high-quality arable land, forests and wildlife. A violation of human rights to food and clean water is often occurred result of exploitation of lignite deposits.

The objective of sustainable development policy should not only be to increase the economic prosperity of chosen industry (like energy and mining of fossil fuels), but also to respect and even to enlarge the freedom of the individual and social groups. Security (stability) and respect for human rights is seen as a vital condition to ensure people to have the opportunity for proper development. So, is the energy strategy of many European countries - which provides for the continuation and often the increase of production of lignite - correct?

This report focuses on problems of existing and planned opencast lignite mines in Europe. It focuses especially on the problem of resettlements and destruction of huge land areas. The report describes countries where the energy system is highly dependent on lignite and where opencast mines are still operated: Bosnia and Herzegovina, Bulgaria, Czech Republic, Germany, Poland, Serbia, Turkey, Macedonia, Hungary, Romania. The studies for each country were prepared by active members of local NGOs.

Katarzyna Kubiczek, Radosław Gawlik
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BOSNIA AND HERZEGOVINA

1. An overview of history of opencast lignite mining

Coal mining in BiH started in the late 19th century, with the arrival of Austro-Hungarian monarchy. The culmination of the development was reached in the 1980s, especially in the major coal deposits located in the coal basins of: Tuzla (Kreka, Banovići, Đurđevik and Ugljevik), Central Bosnia (Kakanj, Breza, Zenica and Bila), Bugojno (Gračanica), Livno-Duvno (Tušnica), Gacko (Gacko) and Doboj-Banja Luka (Stanari). The Kamengrad mine in the Kamengrad basin has not been significantly active since the end of war, while the Mostar mine in the Mostar basin was closed.

Until the war, BiH mines were organized into a single mining company: Titovi Rudnici Uglja – Tito's Coal Mines. After the war, they were reorganized and a bigger part of mines has remained in the FBiH, and the smaller in the RS.

The most significant reserves of sub-bituminous coal in BiH are placed in Centra-Bosnia, Banovići and Ugljenik-Priboj basin, while the most important deposits of lignite are in the basins of Kreka, Gacko, Stanari, Bugojno, Livno and Duvno.

All mines in FBiH have some problems. It is particularly complicated to raise the production level in shaft mining. A focus should be especially paid on refurbishing these mines, both in terms of restructuring and modernization, and decide about the future of excess workers.

According to data published in the Strategic Plan and Program for Development of Energy Sector in FBIH, the market reserves of coal amount to 327 millions of tons (lignite 187 million tons and sub-bituminous 140 million tons). Coal as a primary energy resource in FBiH and BiH has a strategic and indispensable importance.

Owner	Title	Location	Coal type	method of exploitation	annual production	Existing date
FBiH Government (69,53%), Raiffeisen BANK dd BiH (6.51%) and other shareholders	Rudnici mrkog uglja „Banovići“ d.d.	Banovići	brown coal	Surface and cave	1.500.000	
EPBiH d.d. Sarajevo	Rudnici „Kreka“ Tuzla	Tuzla		Surface and cave	2.645.000	1884.
EPBiH d.d. Sarajevo	RMU „Kakanj“ d.o.o.-Kakanj	Kakanj	brown coal	Surface and cave	1.200.000	1902.
EPBiH d.d. Sarajevo	RMU „Zenica“ d.o.o Zenica	Zenica	brown coal	Cave	428.800	1880.
EPBiH d.d. Sarajevo	RMU „Breza“ d.o.o. Breza	Breza	brown coal	Surface and cave	450.000	1907.
EPBiH d.d. Sarajevo	RMU „Đurđevik“ u Đurđeviku, d.o.o.	Đurđevik	brown coal	Surface and cave	600.000	1936.
EPBiH d.d. Sarajevo	RMU „Abid Lolić“ d.o.o Travnik – Bila	Travnik-Bila	brown coal	Cave	100.000	1948.
EPBiH d.d. Sarajevo	RU „Gračanica“ d.o.o Gornji Vakuf – Uskoplje	Gornji Vakuf - Uskoplje	Lignite	Surface	270.000	1938.
Hercegbosna County Government - Canton 10	JP Rudnici ugljena "TUŠNICA" d.o.o. LIVNO	Livno	Lignite and brown coal	Surface	no production	
UniCredit Bank d.d. Mostar (30,81%), ZIF HERBOS FOND d.d.Mostar (13,22%), Durić Sadik (11,93%) and other shareholders	RMU "Kamengrad" dd	Sanski Most	brown coal	Surface	no production	

Table 1. Exsisting coal mines in FBiH

In Republic of Srpska the reserves of brown coal and lignite are arranged in seven major basins: Gacko, Ugljevik, Stanari, Miljevina, Kotor Varoš, Lješljani and Ramići. There are other locations with smaller reserves that are not attractive from point of view of energy use and/or that are abandoned due to unfavorable exploitation conditions.

Coal is mainly used for power generation in thermal power plants (over 90%) while the rest is used for other commercial purposes. Limiting factor for the development of the coal sector, both in the Republic of Srpska and in the world, are negative impacts on environment of technology for extracting and burning of coal.

In Republic of Srpska mining was entered by the private sector. Beside the lignite mine in Stanari, which is under the concession of company "EFT mine and thermal power plant Stanari" doo Stanari, part of the mine in Ugljevik was given to Rašid Sardarov and brown coal mine "Miljevina" in Miljevina near Foča was took over a private company "Pavgord".

Owner	Title	Location	Coal type	Method of exploitation	Annual production	Existing date
TEREX-KOP d.o.o. Ugljevik	Rudnik "Terex-Kop" (Mezgraja)	Ugljevik	Brown coal	Surface	32.914	
ERS a.d.Trebinje (65%), PREF a.d. Banja Luka (10,08%) and other shareholders	ZP RiTE "Ugljevik" a.d.	Ugljevik	Brown coal	Surface	1.750.000	1899
ERS a.d.Trebinje (65%), PREF a.d. Banja Luka (10,05%) and other shareholders	ZP RiTE "Gacko" a.d.	Gacko	Lignite	Surface	2.480.000	1954
EFT - Rudniki Termoelektrana Stanari''	Rudnik "Stanari"	Stanari, Doboj	Lignite	Surface	881.632	1948
"Pavgord" d.o.o. Foča	Novi Rudnikmrkoguglja "Miljevina" d.o.o.	Miljevina, Foča	Brown coal	Surface and cave	45.042	2010

Table 2. Exsisting coal mines in RS

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Despite the close vicinity of nearby households, the Miljevina Brown Coal Mine is still active. Local residents suffer from noise and air pollution

2. Processes of resettlements

According to its legal nature, confiscation or expropriation can be interpreted as a limitation of property rights.

In the period of the former Yugoslavia, the expropriation process was characterized by symbolic and unfair charges, and essentially it had national and class character. Basic Law on

Expropriation FNRJ ("Official Gazette of the FNRJ", No. 28/47) - has stipulated the possibility of expropriation of movable property, objects of cultural, artistic and historical value, as well as property rights. Compensation was paid in worthless government bonds, and process was led by the county and city commissions.

According to the Law on Expropriation ("Official Gazette of the Federation of BiH", number 70/07), the fee is primarily determined by the other property. If other property can not be provided, the fee is determined financially, in order to correspond to the markets value of the expropriated property.

When the subject of expropriation is residential building, apartment or office space, expropriation beneficiary is obliged to provide other appropriate residential building, apartment or business premises to former owner, prior the demolition.

With respect to the coal mines age and documents destroyed in the previous war, accurate information on relocated households unfortunately is not available. All data are based on Technical management's estimates of each mine individually. It is well known, that smallish villages are mostly displaced to new houses and settlements, built in nearby locations. Also, certain compensations were paid in cash, and all in accordance with the law of the former Yugoslavia.

According to the data available individually from coal mines, new houses and settlements were built in coal mines Banovići, Breza, Kreka and AbidLolić. Financial fees were paid in cache in case of coal mines in Đurđevik, Kakanj, Kreka and Abid Lolić. For coal mines in Gračanica and Zenica there are no available data.

© Boris Čikić, Center for Environment
Activists in front of the Tuzla TPP, asking "What is the price of health?"

3. Impact of opencast mines on the environment and the society

These are indicative data and do not reflect the real situation, since the significant part of documentation was destroyed during the war, and due to old age of the coal mines.[1]

Coal mine Banovići

For the mine construction, Podgorje village was relocated entirely, and Banovići and Grivice villages only partially. According to the assessment, Podgorje village had approximately 100 dwelling- houses, while Banovići and Grivice had about 50 houses. New settlements for all displaced households were built close to the mine.

Coal mine Đurđevik

Around 400 facilities were displaced in 1960's. In addition to facilities, some parts of the Oskova river were relocated (around 900 m) as well as Brčko-Banovići railway. In accordance with the law, they built a new part of the railway, that was relocated by approximately 500 m. According to the Technical Director of Đurđevik mine, all fees for expropriation were paid. All residents have received the money for their homes.

Coal mine Gračanica

As for the number of households relocated becouse of mine construction, the executive director for technical affairs Mr. KadunićRedžo, said with certainty that there was no case of relocation in the post-war period. Unfortunately,

mine “Gračanica” was in a war zone, during the 1992-1995 war, and it has suffered enormous devastation, and for that reason complete pre-war documentation is destroyed. However, it is known that 45-50 years ago in order to expand surface of mine "Dimnjače", smallish village Rosulje was completely relocated, with an unknown number of households. There was no documentation on the settlement of property rights.

Coal mine Breza

Coal mine "Breza" has been operating from 1907, since the Austro-Hungarian Empire, and it was working during the first and second world war as well as during the aggression on Bosnia and Herzegovina from 1992 to 1995 year.
It is a quite large area that is degraded during the years of coal mining exploitation. Over 1 $km^2$of degraded fertile land remained, after the surface exploitation, and biological recultivation of this land was never done. Ten residential buildings were built on this area. Residents were moved out to the alternative accommodation.

The surface, that was alsodegraded as a result of cave coal mining exploatation, is far greater and it is about 15 km^2. In this area, over 200 residential and ancillary facilities were destroyed and the coal mine has paid the total loss for them. They settled people in the new built residences in the new area. Currently, in the former cave exploitation area, there were built over 1000 new residental buildings and several construction buildings.

In Breza, there is still one part of the land, where construction is not allowed due to unfinished settling and consolidation of the terrain above the excavated area.

[1]Please, use this data as "incomplete unofficial information“

Coal mine Zenica

The Company does not have any information on number of displaced households during the construction of the mine as well on the compensation fees. Unfortunately, the data were lost due to war in BiH.

Coal mine Kakanj

Currently there is no exact number of displaced households, but according to available data, it can be said that number is about 160 households. This number refers to households displaced from the site due to surface mining process from Mine "Kakanj", precisely organizational unit named Surface mine "Vrtlište".

Other organizational units (company's administration facilities, underground exploitation plants, processing plants, maintenance, etc.) are physically separated, and in most cases were only entailed the land purchase for these organizational units construction.

Land and facilities owners, by purchasing lands and buildings for the purpose of exploiting coal were paid with the appropriate fee, based on the Law on Expropriation of FBiH.

Coal mine „Abid Lolić“

At one point during the 1980s, the coal was exploited from open pit, so for that reason, was made the expropriation of land. The unknown number of households and people are displaced during the construction of the mine. The exact number is not known due to the lost documents during the 1992-1995 war. It is known for the fact that most of the fees had a financial nature. According to findings, the great number of compensation were realized via cash out payment, but one part of the fees was regulated through the construction of houses in other locations.

Coal mine Kreka

Property expropriation is done by the methodology and by the Assembly decisions of following municipalities: Tuzla, Živinice and Lukavac and based on property values assessment by empowered court experts in the same municipalities.

The relocation process of population and settlements from the mining field of open pit mines Kreka began in the 60's of the last century and it continued until this day. Displaced were following settlements: Šići, the part of Bistrica, Kalaj, Zagorje, Huskić (hamlets Dedići and Huskići), Gornji Lukavac, Prlina and others, by opening and expanding the open pit mines in the northern Kreka's syncline.Emigration from the mining fields took place mainly in the existing settlements, close to the municipalities Lukavac and Tuzla. Displaced population was mainly inhabited by the road communication, and thus they have formed road type villages (Kruševica, New Šikulje, Huskići, etc.). Also, small villages Milići and Perići were displaced too.

Due to the Kreka’s organizational operations, accurate records on the number of displaced households are not registred. Data are estimated, based on the cadastral maps made in 60’s of the last century. According to the estimates, approximately 3.000 facilities were relocated via expropriation with financial compensation, and to a lesser extent, available land or residential units were granted too.

Coal mine Stanari

From 2005 coal mine and thermal power plant is a private property of EFT Company. When we asked for data access, we have received a notice that they are not obliged to send us any information.

Coal mine Gacko

First works on coal exploitation in Gacko began in 1954, a surface mine "Gračanica" was opened in 1978. The war in the former Yugoslavia, in the period from 1991 to 1995, had a negative impact on the mine development and the equipment condition. During the war most of the data, related to expropriation, was lost. This year they started with database construction. In the last period there were no settlements in the mine exploitation area. In the expropriation process, coal mines have mostly offered replacement land to the people, and financial compensations in smaller extent. A small number of households have received the money, because of the mine extension.

Coal mine Ugljevik

Coal mine Ugljevik has been working from 1899. Currently, the surface mining is conducted in the field named Bogutovo Selo. In the early 1980's, due to coal deposits, entire municipality was moved from the old Ugljevik (then not yet called "old") to the newly built complex - New Ugljevik. Two more villages, Mezgarja and Bogutovo selo, were completely relocated and the coal mine has offered to people new households, land or money as a compensation.

© Center for Investigative Reporting (CIN)
Matija Marković points to soil full of tailings on which he produces food for his family

4. Current plans for new opencast mines

Dynamic construction of new mines should follow the dynamics of new thermal power plants construction.

With the assumption that most of the thermal blocks in TPP Tuzla and TPP Kakanj will be closed by the end of 2028, according to the pace of decommissioning of existing units, after 2024 there will remain only one block (Block 7 - 230MW) in operation in TPP Kakanj. Therefore, it can be concluded that FBiH will have the

average thermal energy potential of 3 700 MW at disposal (in period 2025-2030) for which we will need, according to rough calculation, about 22- 25 millions of tons of coal per year.
It is necessary to invest around 743.49 million BAM (380 mil. €) for the new mine Kongora (for TPP Kongora, 2x275MW), with the planned annual production of 3,6 million tonnes of coal. Estimated mine lifetime is 36 years.

For the new mine Bugojno (for TPP Bugojno, 2x300MW), it is necessary, for one TPP block (300 MW) to invest around 275 million BAM (140 mil. €) with the annual production of 2,1 million tonnes of coal. Mine lifetime is not estimated.

There is a significant problem of spatial planning in the mining areas for a longer period.

Infrastructure and settlements are essentially threatened by the work and development of mines, and vice versa. Unfortunately, the coal industry in BiH, has developed mainly near the settlements (due to the labor needs).

This phenomenon is particularly followed in the period of former Yugoslavia's reconstruction (after the World War II), when the necessary labor force for the new industry, was settled in the village near industrial facilities, that were formed on the deposits of coal. Also, many infrastructure facilities, as well as industrial complexes, are built on the best parts of the coal deposit.
Mines have caused displacement of already constructed settlements due to its development, and have left a devastated land unsuitable for any activity behind. In very few cases coal deposits exploitation have left nice landscape behind. After all, there were never provided funds for devastated terrain renaturalization, although it was a legal obligation. Today, a lot of land complexes, that needs to be renaturalize, are placed next to all major mines. Mining Act obliges them to these activities, but generally they do not realize them.

In the process of coal mining the matter of land, water, air and people protection, always was and it still is a weak point of mines. Mines had never enough funds to properly manage their space, not even in the basic working environment needs, despite the fact that it is their obligation by the Mining Law.

Increase of coal production and consumption is also expected in the next period in Republic of Srpska, primarily for electricity generation in thermal power plants. From the current 4.4 million tons, coal production will rise between 6.5 and 9.3 million tons annually in 2030, depending on the realization of projects of new thermal power plants and energy plants, as well on future commitments of BIH. If new thermal block (300 MW) will be constructed by 2025, then annual required amounts of coal would increase for additional 2 million tons and the coal production would be around 11.3 million tons instead of 9.3.

What is very important for the coal sector the existing surface excavations are at the end of the reserves, and in the next few years new mines willl need to be opened and mining machinery needs to be renovated.

Expected investments in the coal mines in the next 20 years will be around 600 million BAM. With the eventual construction of the specified block of 300 MW, investments in coal mines will increase.

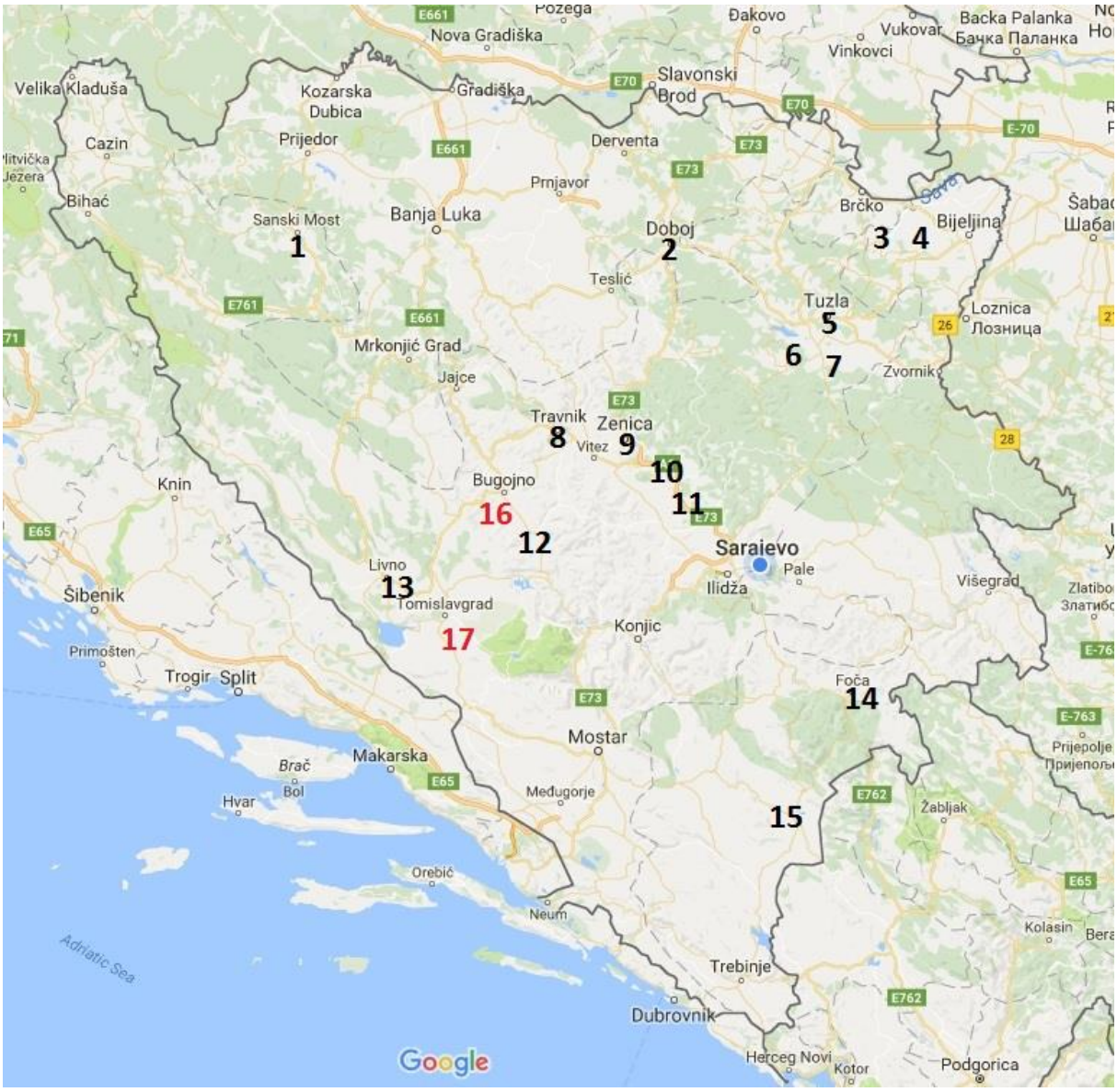
5. Summary

In the figure given below there are marked existing and newly planned mines. The legend for this figure is given in the table with data regarding the size of the mines and the number of displaced households. Needed data were obtained from the direct communication with the mines.

Mines numbered as 16 and 17 are newly planned. The size of the mines and the number of displaced people for coal mines Bugojno and Kongora, are still not estimated.

The data about displaced households and facilities are based on the assessment and obtained from the mines due to old age of opening mines and due to war in BiH.

Two mines, PC Coal Mine "Tušnica" doo Livno and RMU "Kamengrad" dd, does not have production, so required data for this point are not available.



Legend:

Mine number	Name of the mine	Size of the mine	Number of displaced households
1	RMU "Kamengrad" dd Sanski Most	No data	No data
2	Rudnik “Stanari” Doboj	269 ha	No data
3	ZP RiTE “Ugljevik” a.d. Ugljevik	856 ha	No data
4	Rudnik “Terex-Kop” (Mezgraja) Ugljevik	No data	No data
5	Rudnici „Kreka“ Tuzla	2 590.866 ha	3.000
6	Rudnici mrkog uglja „Banovići“ d.d. Banovići	5 650.2 ha	150
7	RMU „Đurđevik“ d.o.o. Đurđeviku	796.1 ha.	400 facilities
8	RMU „Abid Lolić“ d.o.o Travnik – Bila	50 ha	unknown
9	RMU „Zenica“ d.o.o Zenica	218.67 ha	unknown
10	RMU „Kakanj“ d.o.o. Kakanj	532.0542 ha	160
11	RMU „Breza“ d.o.o. Breza	1.6 ha	210
12	RU „Gračanica“ d.o.o Gornji Vakuf – Uskoplje	199.4031 ha	unknown
13	JP Rudnici ugljena "TUŠNICA" d.o.o. LIVNO	Not in function	Not in function
14	Novi Rudnik mrkog uglja “Miljevina” d.o.o. Foča	No data	No data
15	ZP RiTE “Gacko” a.d. Gacko	320 ha	No data
16	Bugojno	still unknown	still unknown
17	Kongora	still unknown	still unknown
IN TOTAL		**11483.8933 ha**	**3920**

HUNGARY

1. An overview of history of opencast lignite mining

The mining of lignite started in Hungary in 1890 in the southern run-ups of Mátra and Bükk mountains, first by underground mining. The opencast mine of Ecséd initiated extraction in 1957. The production has already exceeded 1 million tons in 1963. Technology advanced rapidly and this was the first spot to use special opencast machines coming from the GDR. Underground mines were closed, their role was taken over by opencast mines. As a matter of fact, the opencast mine of Ecséd can be considered as the predecessor and foundation for the large-scale opencast coal mining. The opencast mine of Ecséd has produced almost 16 million tons of coal between 1957 and 1973. In parallel to its run-down, the opening of opencast mine of Visonta run , and it started its operation already in 1969. This had been necessary as pursuant to a resolution made by the Economic Commission in 1965, in the region was erected a power plant of 600 MW, fuel for which was provided from the opencast mine designed for an annual capacity of 8 Mt. The opencast mine of Visonta has been installed on the 200 million tons of mineral reserve limited at the southern foot of Mátra. The considerable mineral reserve and the planned production level allowed for the establishment of a modern mine. This area has produced almost 120 Mt lignite over the last 30 years. The owner of the mine had changed in 1992. The Mátrai Erőmű Rt. (Plc.) became the owner of the opencast mine of Visonta in the restructuring of coal mining, which produces an annual 3.5 to 4.0 Mt lignite for power plants even till now. The coal supply of the country was endangered in 1985, therefore they have decided to open an opencast mine with a capacity of 100,000 t/year in the area of Bükkábrány so that it could have meet the needs of the population. The experts of the Mátraaljai Szénbányák (Mátraaljai Coal Mines), however, directed the investment of the opencast mine such that the opencast mine of Bükkábrány was able to produce an annual 3 million tons of lignite by 1989 and they indeed it in the fuel supply chain of Mátra Power Plant. This, in addition to the mine of Visonta, was the basis for the fuel base of Mátra Power Plant even today.

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© Zoltán Lontay, Hungarian Energy Efficiency Association
Thorez opencast mine at Visonta

2. Processes of resettlements

At the beginning of the 90s relocation of a high-power heavy and extended machinery was a highly appreciated task, when chaging fields, from a completed opencast mine to extract another one being initiated. Such a unique technical feat was to migrate machines 60 km from Visonta to Bükkábrány 'on its own feet' in 1990-1991. The excavator type ERs 710 was migrated in January of 1990. The machine weighed 1000 t.

In January of 1991, a heap-builder type ARs-B 6300.95.1. (weight 1550 t), bucket-wheel excavator type SRsH 401 (845 t), bucket-ladder excavator type ERsH 500 (610 t), belt-car type BRa 1400 (506 t) and three power generator units built on a reel car (44 t each) were transported from Visonta to Bükkábrány.

Some more relevant data of the first delivery in 1990 can be presented here. It took 22 days to complete the route of the machines, the direct staff for the migration amounted to 178 persons. During migration 70 engineering objects (roads, railways, air wires, cables, rivers etc.) had to be traversed. In the earth-works of 'earth-road' established for the machine was moved 200 th m^3 of soil. During migration, route no. 3 was crossed three times under the minimal disturbance of traffic, so there were usedthe railways of Verpelét and Eger as well as several minor roads. After migration, there was realized restoration according to the original conditions. The combined migration cost of the four machines amounted to HUF 106 million based on prices from 1990. These already included the damage compensations (agricultural producers, railways).

3. Impact of opencast mines on the environment and the society

Currently there are 3 operational opencast mines in Hungary: in Visonta (2 440 ha), Bükkábrány (1 170 ha) and Sajókápolna (16 ha). No relocations was realized in Hungary because of activities of this mines.

© Péter Lenkei
Large excavators are working very close to the houses, almost entering the nearby farms. Life in the vicinity of an opencast mine is not easy

4. Current plans for new opencast mines

The relocation is just a plan at the moment. However, in case of decision about its implementation, **618 inhabitants** must be relocated in **Csincse**, and the expansion of mine **shall affect** approx. **a surface area of 10 km^2**. However, the relocation is not a subject of the currently valid mining licence issued in 2012.

The following reflects the conditions from 2010, the expansions of mine and power plant are still on the agenda.

Csincse has almost 700 inhabitants, the majority of them live from agriculture. Only two dozens people work in the mine of Bükkábrány nearby, thus, the village is vulnerable to neither the power plant nor the mine from the point of view of its existence.
The mine of Bükkábrány is owned by Mátrai Erőmű Rt., providing the largest lignite-fired power plant of the country with lignite since 1985. The managing director of Magyar Villamos Művek (Hungarian Electrical Works), Imre Mártha had been already planning the construction of a new 440 MW block, for this the mine of Bükkábrány would have been required to be expanded according to MVM's ideas, which was actually on the agenda in 1996.The problem was Csincse village.

Csincse is namely situated in the way of expansion. To be able to access the valuable lignite deposits, the village had to be relocated one-to-one or a part of the estates had to be mined around by expropriation in more unlucky cases. In the mid-90s the mayor went to Germany to see a similar case and to ascertained that such relocation would be even beneficial to village. The German example was, of course, a fairytale, unlike to the one planned in Verespatak (gold mine planned in Romania). Since MVM wishes to cover 80 per cent of construction of the new block of power plant from a credit, it is thus questionable whether there would be enough money for the expansion of mine. The only way that is reasonable is mining the village around that would also be accompanies the relocation of the Budapest-Miskolc line. The railway cross through the middle of the village ensures a daily connection for those working in Miskolc or its vicinity. In the case of mine expansion, this railway line would be relocated by 4 to 5 km, which be quite a difficulty for the villagers, who already leave in very difficult conditions.

The mayor - under a fair compensation - would consider relocation and mining around a passable option. He trusts in mining and believes that the German example can be similarly functional in our region too.

The locals are not so optimistic. The walls of houses are cracked all around already now from the depressed foundations due to the groundwater sucked-away. The mine either does not always pay its duties. Although the luckier ones get HUF 15,000, that is enough for just filling thosestill arising crackings as an aesthetic renovation. There are also some villagers who has not received anything for compensation of damages, although their walls are cracking both on the outside and inside of the building. And money has an excellent place here. There are people, out of whom four live on a monthly amount of HUF 12,000. They moved to Csincse because real estate was cheaper here and it was easy to biuld it. However, no one warned them that the house would become uninhabitable within two years because of the cracks caused by the mine.

Another serious problem adverse for those who

live here is coal dust, blown over by the wind due to the opencast mine as a large dark cloud. The black dust covers everything, shutters, curtains, terrace and the houses itself. There are certain days when a whole spade is gathered with this after a windier day. In summer white clothes cannot be hung out outdoors as all of them will be carbon black. A villager complained lamentably that a white garden furniture had to be replaced already, after a few months to a green one; the latter reveals blackness to a less extent.

But it is not only Csincse that is under the curse of the mine, these phenomena have been experienced in the vicinity of the mine, in the nearby Bükkábrány and Mezőnyárád. The people living in Bükkábrány say that the number of kids with asthma have increased a fair bit in the last 15 to 20 years. Certainly, experts have been sent here on behalf of the mine to survey health status. Although researchers did not found anything, the villagers not always belive in official findings. They only know that the number of illnesses increased lately.

Neither the public nor the Government of Hungary does not have the fate of coal dust-covered villages at the moment. Csincse is just a tiny village on the map, can be mined around, can be relocated, or even dismantled if the route to fulfill Hungary's energy demand crosses it. Once the new lignite block of the Mátra Power Plant whose capacity would be higher itself than the whole Hungarian wind mill farm is constructed, it is evident that the quiet days of Csincse are numbered. One of the lessons to be learnt of last year's gas crisis, is that Hungary is subject to energy exported from abroad - meaning Russian natural gas - experts have reached the unanimous conclusion that this must be changed. The question is, however, whether one invests in dependence-creating, environmentally polluting and expensive energy types or one thinks well ahead on the long term and go for energy efficiency and the development designed for the exploitation of a number of available renewable energy sources.

In 2004 Nógrádszén Kft. submitted a request for licence to survey the lignite deposits in the vicinity of **Narda** and **Torony**. This has been refused by the Mining Authority both at first and second instances. They received a licence for survey drilling on a surface area of **49 km^2**. The region hosts **a lignite reserve of 1 billion twohundred thousand tons**. One of it is a mining area planned in the seventies that would be extend from the Austrian border to **Nárai** village. The leaders planned to dismantle even two villages and to diverse of the Pinka river, that would have been necessary, but some traffic routes were also in the way. Today's map has not changed much either but the European legislation prohibits village destruction, therefore, the edge of mining fields would be extend as far as the border of villages. The involved municipalities: **Bucsu, Dozmat, Felsőcsatár, Horvátlövő, Ják, Narda, Nárai, Pornóapáti, Sé, Torony and Vaskeresztes.**

In Borsod-Abaúj-Zemplén County, there is planned the opening of several lignite mines, while UNESCO's World Heritage Committee has issued a statement expressing its worries related to this.

Out of these, one would have been established in the region of **Teresztenye** and **Szőlősardó**. The mine would have been opened directly near the Aggtelek National Park, in the neighbourhood of the Aggtelek Caves, that is a World Heritage site of Hungary at the same time. The licencing procedures of the mine was successfully inhibited in July of 2015 but the threat has not been averted though. Since, after having been contacted by WWF Hungary, UNESCO's World Heritage Committee has issued a statement and clearly does not back the opening of the mine. In Hungary it is a milestone though that the area

planned for the mine is qualified officially as 'Galyasági meadows' from May 2016 as a site protected under Natura! Pursuant to the provision of the representative commitee of the municipalities of Teresztenye and Szőlősardó villages the area of **108.23 ha** was officially designed for the purpose to ensure the maintenance of natural assets as well as the conventional and modern sustainable ecological land farming built on ecological characteristics, for long term and over several generations.

The site of **Sajókápolna** is somewhat less lucky where an opencast mine of lignite has started operation lately after a lengthy licencing procedure. According to measurements made by WWF Hungary, the sulphur content of the sample taken on the spot (meant for sale) is 5.87 percent against that of 3.2 to 3.6 percent indicated in the environmental impact study of the mine, that is nearly the double of the designer's data. This affirms worries that the residential combustion causes serious contamination with sulphur dioxide and increase the health risks. Moreover accredited analyses have proved that arsenic content of the coal of Sajókápolna is also high - 96 mg/kg (for information, the limit value for soils is 15 mg/kg). The polluting element may cause environmental pollution and health detriment both by solid particles of its flue-gas and residual ash. It is planned to extract 15 to 20 thousand tons of coal from it. The mine occupies a surface area of about **10 ha**.

At two sites: in **Múcsony** and **Szendrő** there is plnned the mining of low-quality low calorific value fossil fuel. Szendrő may host even ten to twelve million tons of coal. **170 thousand tons** of lignite was planned in Múcsony via opencast extraction on a mining site of **16 ha**.

No relocation of inhabitants is planned at either of the sites.

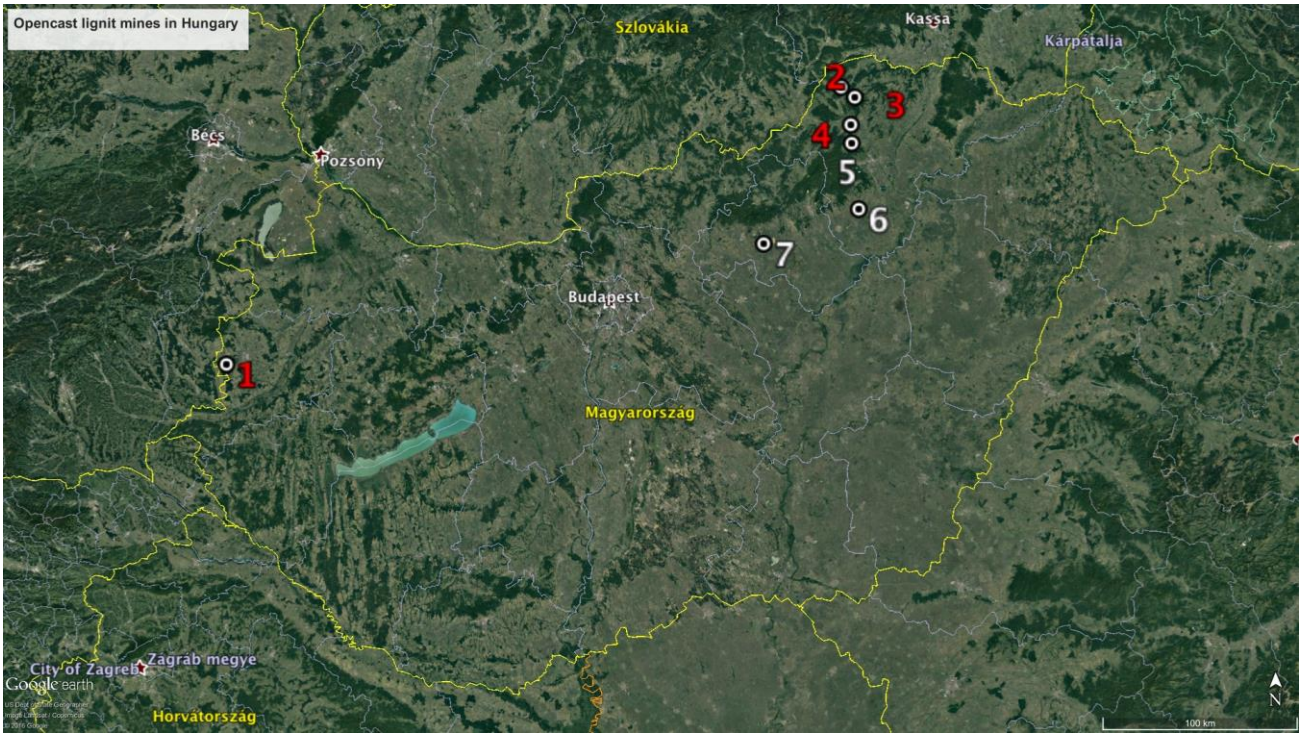
5. Summary

In Hungary no inhabitant has been relocated due to opening of lignite mines but there plans for the municipality of Csincse even now.

Operating mines:
3 operational mines in Visonta, Bükkábrány and Sajókápolna.

Dimensions of the mining sites:
Sajókápolna: 16 ha
Bükkábrány: 11,7 km^2
Visonta: 24,4 km^2

Planned mines:
The area of the mine planned in the region of Torony may even occupy several tens of km^2. The area of the mine planned in Szendrő is unknown, that of Múcsony is 16 ha. The mine would have involved an area of 100 ha in the boundary region of Teresztenye and Szőlősardó. In terms of scale, the expansion of mine in Bükkábrány may affect an area of 10 km^2.



Existing (white color) and planned (red color) mines in Hungary

Legend:

Mine number from legend	Name of the mine	Size of the mine	Number of displaced people
1	Torony	No dana, 4 900 ha for examination	No data
2	Teresztenye	~100 ha	-
3	Szendrő	No data	-
4	Múcsony	16 ha	-
5	Sajókápolna	1 ha	-
6	Bükkábrány	1 170 ha	Planned: 618
7	Visonta	2 440 ha	-
IN TOTAL		**8 627 ha**	**618**

ROMANIA

1. An overview of history of opencast lignite mining

Romania has one main lignite basin – Oltenia, where extraction operations begun in 1957. Since then, an approximate of 1.28 trillion tons have been extracted, from 74 mining perimeters. 64 of the 74 perimeters have been closed in the meantime, and there are only 10 that operate nowadays.

All the lignite mining in Romania, except for several small-scale mining, is currently grouped under the Oltenia Energy Complex (OEC), a state-owned company (75% state ownership). Established in 2012, OEC owns the open cast lignite mines, along with a range of power plants which use lignite as main fuel, in the towns of Turceni, Rovinari, Isalnita, Craiova, Govora and Braila (the last two are not active anymore).

Before 2012, the lignite mines were grouped under the National Holding of Lignite Oltenia (Societatea Nationala a Lignitului Oltenia), a company established in 2004 from the former National Company of Lignite Oltenia (Compania Nationala a Lignitului Oltenia).

Earlier in the past, during the communist era, the entire coal sector, including the lignite mining used to be governed by the Communist Party.

© Cosmin Bumbut
Lignite is extracted in opencast mines with the use of large excavators

2. Processes of resettlements

Before 1990, under communism, the expropriations were decided unilaterally.

Between 1990 and 2015, the needed properties were purchased from owners based on direct negotiations between the coal company and the land owner. The negotiations were carried out according to certain guidelines in mentioned ways for evaluating surfaces of land based on their use (inside/outside town, crops/orchards/forests/meadows), houses and other buildings, trees, vineyards and agricultural crops. Often, negotiations used to include one or more jobs at the lignite company for family members of those selling their land.

In 2012, the lignite extraction was included by the government in the list of public utility activities (Law 255/2010) of national, county and local importance, therefore the lignite company was given the right to expropriate civilians for their land if lignite was underneath it.

In December 2015, the current interim government has issued the first Government Decision linked to the aforementioned Law 255/2010 specifically allowing OEC to expropriate over 130 households and their afferent lands for expanding the Jilt Nord open cast lignite mine. The process of expropriations is evolving slowly, with opposition from part of the affected land owners.

Land owners' main concerns about expropriations, as presented in the public space so far, are linked to the prices, they receive in compensation for their properties and also to the fact that according to Law 255/2010 the company may expropriate without having to offer any employment to the expropriated families.

© Cristian Grecu, Greenpeace
A protest organised by Greenpeace at the Jilt Nord opencast mine. The 1 000-sqm banner says "Justice for Runcurel"

Several similar government decisions are in various stages of drafting since 2013 and some of them await approval, for other mining perimeters in the area: Tismana, Jilt Sud, Pinoasa and Rosia.

3. Impact of opencast mines on the environment and the society

There are no publicly available data presenting the properties already claimed by the open cast lignite mining. Such analysis would require access to internal documents of OEC, of the former mining companies and of the government and its agencies.

List of closed lignite mines

Name	Date of closure
Mina Mătăsari	01.01.1998
Mina Dragoteşti	01.05.1998
Mina Cojmăneşti	01.02.1998
Mina Cuceşti	1992
Mina Lupoaia I	01.04.1995
Mina Roşiuţa II Sud	01.01.1998
Mina Armăşeşti Centru	15.09.1997
Mina Rogojelu P3	01.05.1997
Mina Cerna	19.04.1994
Mina Berbeşti	15.02.1995
Mina Copăceni Est	15.08.1997
Micro Seciuri Vest I+II	1996
Mina Lupoaia II	01.07.1997
Mina Husnicioara I+II	15.05.1998
Micro Cerna	15.02.1997
Micro Valea Mare	1996
Mina Schela	31.08.1997
Mina Alunu	28.06.1998
Mina Armăşeşti Est	10.11.1995
Mina Ploştina Nord	01.01.1998
Micro Berbeşti Est	01.09.1996
Micro Oteşani	25.03.1995
Mina Zegujani I	1994
Mina Zegujani III	1990
Mina Livezile I	1992
Mina Livezile II	1992
Mina Husnicioara III	1989
Mina Armăşeşti Vest	1998
Mina Leurda	1999
Micro Lupoaia V+VI	

Mina Negomir	1988
Mina Pinoasa	1983
Mina Roşiuţa stratul V	
Mina Boca	2002
Mina Albeni P 1,2,3,4	1999
Mina Timişeni	2000
Mina Roşiuţa II Nord Bujorăscu 1998	1998
Mina Urdari P 3,4	1991
Mina Valea Fîntînii	1999
Micro Miculeşti I+II	1996
Mina Lupoiţa	1999
Mina Fărcăşeşti P I	2002
Mina Horăşti Raionul I-II	1999
Mina Urdari P 5	2003
Mina Copăceni Valea Mare	2003
Micro Cernişoara	2003
Cariera Urdari	2003
Mina Albneni II Aprilie	2005
Mina Horăşti Iunie	2005
Mina Zegujani II Decembrie	2005
Mina Lupoaia Prigoroiu	2012
Mina Plostina Taluz 2012	2012

© Cosmin Bumbut
Life near opencast mines is very difficult. As a result of the construction of opencast mines, some families are forced to abandon their farms and others have to live in very bad conditions

4. Current plans for new opencast mines

According to the publicly available information, the Jilt Nord lignite mine - the first to benefit from Law 255/2010 for public purpose expropriations – will claim the properties afferent to 136 households. The total surface for mine expansion is 328 ha. Together with the right to expropriate, OEC was also granted by Law 255/2010 an amount of money from the state budget of approx. 15 million ROL (3.3 million EUR), for compensations.

Apart from Jilt Nord, OEC announced plans to expand several other of its 10 existing mines: Jilt Sud, Rosia, Pinoasa, Tismana, Pesteana, Motru, Rosiuta. Thus, there are similar government decisions awaiting for approval for at least Jilt Sud and Rosia, available in the public space. According to these documents, Jilt Sud will claim 66 households along with their afferent lands, in a total surface of 524.57 ha, for which OEC will receive approx. 19 mln ROL (4.2 mln EUR) state money. Rosia will require expansion of 280.89 ha, for which the company (OEC) expects 2.8 mln ROL (0.6 mln EUR).

5. Summary

In Romania there is one main lignite basin, on the south-west of the country – Oltenia. On the map there are existing mines (color black) and mines which are being expanded (color red).

Legend:

Mine number	Name of the mine	Size of the mine [hectares]	Number of displaced households
1	Rovinari-Vart	no data	no data
2	Urdari	no data	no data
3	Motru	1581.4 + 1028 to be extended	151
4	Rosiuta	1738.8 + 980.01 to be extended	193
5	Pesteana	1800,9 + 265,47 to be extended	no data
6	Jilt Nord	740.5 + 328 to be extended	136
7	Jilt Sud	971.6 + 524.57 to be extanded	66
8	Rosia	1738.8 + 280.89 to be extended	no data
9	Pinoasa	1581.4 + 500.96 to be extended	no data
10	Tismana	1712 + 279.58 to be extended	no data
IN TOTAL		**11 865,4 ha +4 187,48 ha to be extended**	**546**

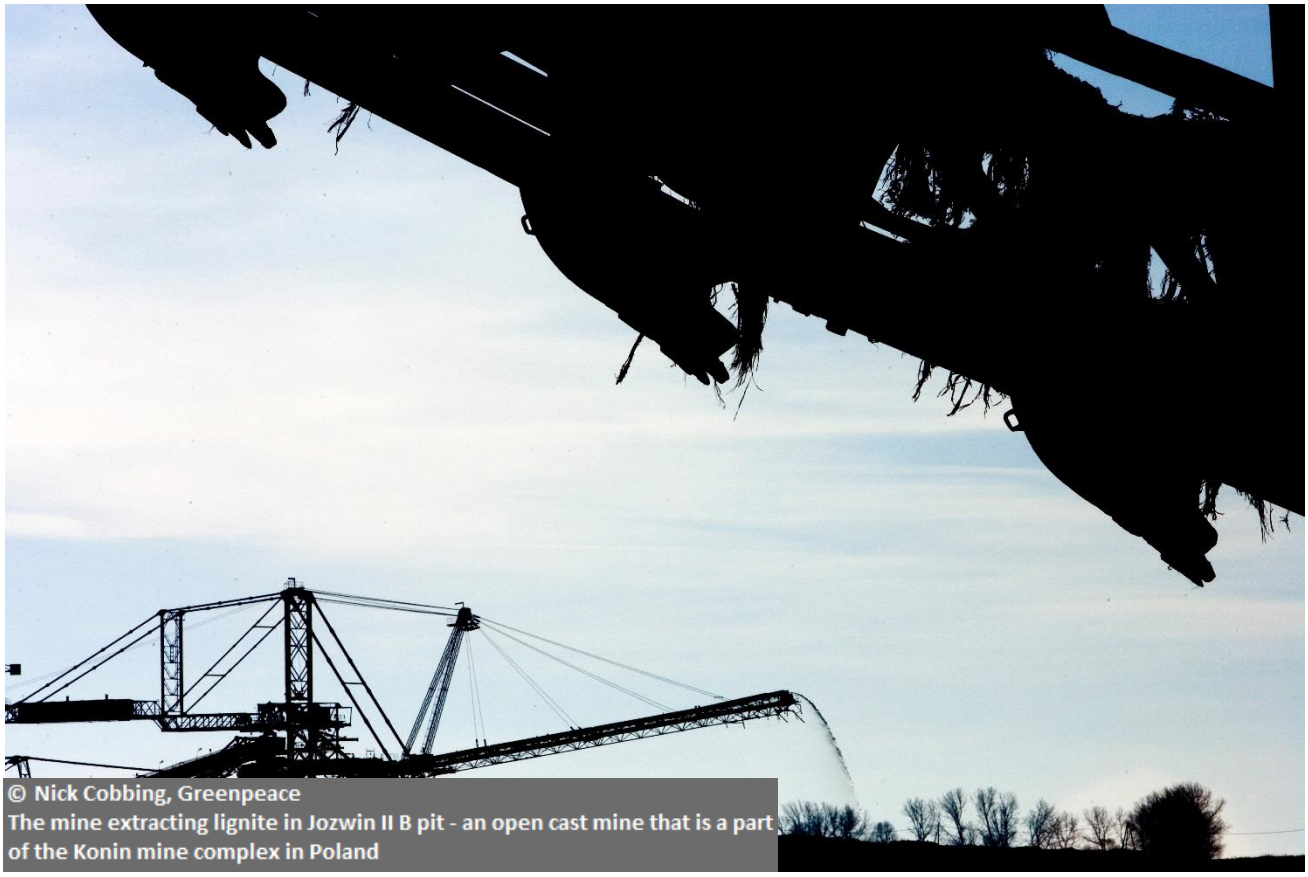
POLAND

1. An overview of history of opencast lignite mining

The beginning of mining in Poland is dated on the seventeenth century, when the first opencast mine was opened in Murcki. Therefore, for many years coal (and lignite) has been an important source of energy in Poland. Lignite mines has extracted more than 2 670 million tons of lignite since the beginning of their activities.

There are more than 150 deposits in the central and western parts of the country. The largest lignite basin is located in Belchatów - with the power plant that is the largest in Europe (4 320 MW) which supplies 20% of the national electricity. Other deposits, where lignite is extracted are: Turoszowskie Basin and Wielkopolskie Basin - near Konin and Turek. Currently, the lignite industry in Poland consists of five opencast lignite mines and five lignite power plants. Individual lignite mines began overburden removal and lignite extraction in the following years:

- Lignite Mine Adamów (PAK KWB Adamów SA) - overburden in 1959, lignite in 1964; currently the operation is carried out at Adamów and Koźmin pits. At Bogdałów and Wladysławów pits operation has been completed
- Lignite Mine Belchatów (PGE GiEK S.A. KWB Bełchatów) - overburden in 1977, lignite in 1980; currently the operation is carried out at the Belchatów and Szczerców pits
- Lignite Mine Konin (PAK KWB Konin S.A.) - overburden in 1945, lignite in 1947, currently the operation is carried out at pits: Jóźwin II B, Drzewce and Tomisławice. At the open-pit Morzyslaw, Niesłusz, Gosławice, Patnów, South Kazimierz, North Kazimierz, Lubstów and Jóźwin I and II A lignite mining has been completed
- Lignite Mine Turów (PGE GiEK S.A. KWB Turów) - mining was begun in 1904
- Lignite Mine Sieniawa (KWB Sieniawa Sp. z o.o.) - mining was begun in 1853



© Nick Cobbing, Greenpeace
The mine extracting lignite in Jozwin II B pit - an open cast mine that is a part of the Konin mine complex in Poland

2. Processes of resettlements

The battle with mines was extremely difficult in communist times. Those people who has opposed, could be affected by various kinds of repression and harassment, including imprisonment. The sector of energy, such as mining, was regarded as a crucial one, paramilitary in the functioning of the communist state. Today, in a democratic country the situation is much better, but still in disputes with citizens, there is a special, better treatment for large energy companies. In courts, cases for a decent compensation are pending for years. Lignite mining, according to Polish law, is a Public Purpose Investment. An entrepreneur who plans to realize a public purpose investment can count on a preferential treatment, including planning the place of investment and getting the land necessary for the implementation of such an investment.

According to Polish law, if mining company needs a property for its operations, in the first place it must try to repurchase it. There are no regulations governing the transaction prices, but in practice the amount offered by the mine is based on the valuation of its experts, and they tend to be much lower in relation to the market value. If the negotiations are unsuccessful (the owner of the land does not agree with the price offered by the mine), the entrepreneur submits to the governor a request for initiation of procedure for the expropriation. Thus, the former owner may lose the right to the property for the State Treasury. Unfortunately, a mining company expropriates only those persons whose properties are located directly on the area where the investment is planned. Those who are located on borders of the investment, often cannot count on

repurchase and they must vegetate near the “lunar landscape”.

In Poland, judges prefer to return a tenement (worth millions of PLN) in reprivatization, then admit a fair compensation to owners of houses and fields which are being repurchase for the construction of opencast mines. People who were expropriated by the Lignite Mine Konin because of the construction of the pit Tomisławice for several years (initial of the investment started in 2009) are fighting for a compensation.

Jan Kwiatkowski, who was ejected from his house which was located in a place of lignite deposit "Tomisławice", he said - *I had a house with an area of 200 m2, a livestock building, a garage, a little pond and 60 acres of land. Some experts of the mine have valued it at 960 000 PLN. I made an independent valuation. According to it, my property was worth 2 million PLN, so I didn’t agree with conditions of the mine. I went to a court. There were about 50 court hearings in Konin and it lasts for already 5 years. The judge agreed to the amount of 1.2 million PLN. In a battle with a powerful mine company, we have a small chance. Nobody cares about citizens' rights.*

Another resident of Wielkopolska, who suffers from dry land and ruined farm, has tried to fight with his lawyer for higher compensation than those proposed by the mine. The case didn’t go forward. – *One day my lawyer stopped answer the phone. In the end, he said he resigns because he was afraid* - said victim.

Another big problem is a fact that nothing happens in areas where new opencast mines are being planned. Nobody builds new roads and houses; new companies don’t want to invest there. Municipalities cannot develop because on the one hand, there are no administrative permissions for mine investments and on the other hand, any other investments are not viable when there is a possibility of new mine.

©Radosław Gawlik, Ecological Association EKO-UNIA
An 8-kilometer chain of people formed between Polish Grabice and German Kerwitz in protest against planned opencast mines on the Polish and German side, August 2013

3. Impact of opencast mines on the environment and the society

The four largest Polish lignite mines (Adamow, Belchatow, Turów, Konin), from the beginning of their activities (until 2006), have purchased a total of 32 982 hectares of land. Adding to it the area of Sieniawa mine - 55.381 hectares – in total, over 33 000 hectares has been occupied by lignite mines in

Poland. Unfortunately, there is no information about the number of people displaced because of the development of opencast mines. Below, there are details for each mine.

Lignite Mine Adamów

Lignite Mine Adamów has conducted mining activities in the area of Turek for over 40 years. From 2 April 2012, lignite has been extracted from three open pits: "Adamów", "Koźmin" and "Wladyslawów." Currently, lignite is extracted from two pits: "Adamów" and "Koźmin." The total area which the mine has possessed until 2006, is 5 678 hectares. Unfortunately, there is no data on people displaced by the Lignite Mine Adamów.

Lignite Mine Bełchatów

Lignite deposits in the region of Belchatow were discovered and documented in the early sixties of the last century. As a part of the deposit (2 billion tones), three areas of extraction were isolated: "Kamieńsk" Field, "Belchatów" Field and "Szczerców" Field.

Finally, the exploitation takes place only in two Fields: "Bełchatów" and "Szczerców". In 2011, the "Szczerców" occupied an area of 673 hectares, and the depth of the excavation reached 120 m. Ultimately, the opencast mine will occupy an area of 2 359 hectares, and its depth will be 330 m. Deposit of "Szczerców" Field, according to the plan of development, will be used until 2038.

"Bełchatów" Field occupies an area of approximately 3 887 hectares and it will be depleted in 2020. The total amount of land occupied by the Lignite Mine Bełchatów (until 2006) is 9 818 hectares. There are no data relating to number of persons displaced by the mine.

Lignite Mine Turów

Lignite Mine Turów is located in Lower Silesia, just at the borders of three countries: Germany, Czech Republic and Poland. Its deposit has been exploited by opencast since 1904. The annual production is approx. 12 million tons of lignite. It is assumed that opencast lignite mine Turów will be conducted by 2040. Mine Turów - because of its industrial mining activities - occupies an area of approx. 6 600 hectares (data from 2009). No data on displacement.

Lignite Mine Sieniawa

Lignite Mine Sieniawa is the smallest mine in Poland, with a local importance. An annual production of lignite is around 150 000 tones. Sieniawa deposit is one of the longest known and exploited lignite deposit in Poland. Exploitation of lignite began in 1873. At the beginning, the mine was the only underground lignite mine in the country. In 1997, began a liquidation of the Lignite Mine Sieniawa. However, new investors were found who took up the challenge to continue mining operations, and currently (since 2002) extraction is carried out in opencast mine in the area of the two municipalities: Łagów and Sulęcin. Mining operations take place in Field IX. The area occupied by the opencast mine is 55.381 hectares. According an information obtained from the Directorate of Lignite Mine Sieniawa, mining operations were not related to the displacement of residents.

Lignite Mine Konin

Lignite Mine Konin was founded during the Second World War. Mine area covers several municipalities. The size of the area, which the mine acquired during its activities (until 2006) is 12 379 hectares. Currently, the operation is carried out on open-pits: Jóźwin II B, Drzewce and Tomisławice. Mining extraction is completed on pits: Morzyslaw, Niesłusz, Gosławice, Patnów, Kazimierz South, Kazimierz North, Lubstów and Jóźwin I and II A. Because of the construction of open-pit Jóźwin II B, 233 people were displaced in the community of Wilczyn, and the pit area took over about 373 hectares. There are no data on the displacements caused by this pit in other municipalities.

The youngest opencast mine is Tomisławice, where the overburden removal began in May 2010. The pit occupied about 900 hectares in several villages. As a result of the construction of this mine, 12 villages were destroyed and more than 500 people were displaced. There are no data on the displacements caused by constructions of other opencast mines of Lignite Mine Konin.

© Nick Cobbing, Greenpeace
Waste ash mixed with water is pumped out through outflow pipes of the Konin and Pątnów lignite plants into a draining area behind the two power stations. The water collects into a shallow lake and eventually drains into a larger lake.

4. Current plans for new opencast mines

Currently, in Poland there are plans of development of new opencast mines at the border with Germany in the Lubuskie Province, in the Łódź Province and in Wielkopolska. Although residents of some municipalities opposed to investments in local referendums, the government does not take their voice into account. It is estimated that development of planned mines will result in huge holes in the ground with a total area of 57 400 hectares, and displacement of more than 26 800 people in four provinces.

In Wielkopolska there are plans to build opencast mines on the deposit Ościsłowo, Dęby Szlacheckie and in the southern part of the region - deposit Poniec-Krobia-Oczkowice.
The opencast mine **"Ościsłowo"** can be built in municipalities of Ślesin, Skulsk and Wilczyn - on the border of Wielkopolska and Kujawy. The deposit Ościsłowo is an eastwards extension of the deposit Patnów IV, which will be extracted until 2021 in the Jóźwin II B mine. The area of the opencast mine "Ościsłowo" is 1580 ha (open-pit + technical infrastructure) – in the municipality Wilczyn - 805 hectares (i.e. 51 %), in the municipality Ślesin - 575 ha (i.e. 36%) and in the municipality Skulsk -200 ha (i.e. 13%). A total number of displaced people may even reach 1 901.

The opencast mine **„Dęby Szlacheckie"** can take place in the community of Babiak. It can occupy up to 2 500 hectares. The construction of the opencast mine „Dęby Szlacheckie" can result in a displacement of about 2 500 people and a destruction of 526 houses and 202 farms.
On the deposit **Poniec-Krobia-Oczkowice,** the mine can take over 10 000 hectares. 22 rural communes from Krobia and Miejska Górka may be liquidated, which will result in a displacement of more than 6 000 inhabitants, and subsequently - because of the expansion of the mine - next 11 000 people.1789 farms are planned to be liquidated. Apart from the mine, there are plans to build two power units with a total capacity of 1000 MW.

Another opencast mine, which is planned for many years, is "**Gubin- Brody"** – a deposit located in the municipalities of the same name (Lubuskie Province). The proposed mining area (the area where the project will be implemented) will occupy an area of 10 363 hectares. About 2,367 people may be displaced. There are also some plans related to development of a new power plant with a capacity of 2 800 MW.

The last planned investment in Poland is an opencast mine **"Złoczew"**. The deposit is located in the south-western part of the province of Lodz, in the district of Sieradz - in municipalities Złoczew and Burzenin - and in the district of Wieluń - in the municipality Ostrówek. The proposed mining area includes also the city Złoczew and the municipality Lututów in the district of Wieruszów. Over about 38 years of operation of opencast mine "Złoczew", the occupied area is expected to be 32 960.6 hectares. On the area of the planned mine (open-pit area and external dump) there are 33 villages, with a population of approx. 3041 peoples. Since not all rural areas have the detailed records of the municipal population and not all the villages are located entirely within the designed opencast mine and external dump, the abovementioned number of possible displaced residents is only an estimated number.

5. Summary

For many years, lignite has been a strategic source of energy in the Polish power industry. Approx. 34.1% of electricity is produced based on this fuel (data for 2013). Currently, there are plans of 5 new opencast mines in the country. However, this plans meet with a big public opposition. In many Polish municipalities were carried out referendums, in which most residents have voted against the development of new lignite mines. Opencast mines which are planned on inhabited areas, against will of residents, are contrary to human

rights. Such a proposal was announced by the Committee on Petitions of the European Parliament after analyzing cases of the location of opencast mines in Wielkopolska and Lower Silesia. These projects are also not consistent with the long-term climate policy of the EU.

It is very difficult to get an accurate historical information on number of displaced people (caused by existing opencast mines) in times of Polish People's Republic. However, the total number of people who may be displaced due to development of new opencast mines is possible to estimate and it can reach up to 26 809.

A map below shows all data of existing opencast mines (black color) and planned opencast mines (red color) – number of displaced people.

Legend:

Mine number	Name of the mine	Size of the mine [hectares]	Number of displaced people
1	Lignite Mine Adamów	5 678	no data
2	Lignite Mine Bełchatów	9 818	no data
3	Lignite Mine Turów	6 600	no data
4	Lignite Mine Sieniawa	55.381	0
5	Lignite Mine Konin	12 379	Just parcial data: 233 - Jozwin II B (data just from one community) 500 - Tomislawice pit
6	Lignite Mine Ościsłowo	1 580	1 901
7	Lignite Mine Dęby Szlacheckie	2 500	2 500
8	Lignite Mine Poniec-Krobia-Oczkowice	10 000	6 000 - 11 000
9	Lignite Mine Złoczew	32 960.6	3 041
10	Lignite Mine Gubin-Brody	10 363	2 367
IN TOTAL		**91 933,981**	**16 542 - 21 542**

GERMANY

1. An overview of history of opencast lignite mining

The biggest enlargement of lignite mining in Germany in the history was caused by the II World War and after the war by the division of German country into German Democratic Republic and Federal Republic of Germany. At that time lignite constituted a resource that could be easily inscribed into the concept of energy independence and national autarchy. For the sake of limited access to the oil during the war, Nazi Germany have started the scientific investigations to lignite liquefaction. In Brandenburg and Saxony there were established factories – for instance chemistry Nazi factory BRABAG - where petrol and gas from lignite were produced.

After the war, lignite constituted the energy independence of GDR. Eastern Germany were cut off from the hard coal which occur in western Germany. One can say that without lignite there could have been no GDR. Unfortunately, it is also possible to estimate that if there had been no 1989 what resulted with the end of GDR, such city as

Leipzig could have not existed in the future. The demand on energy was so high that even such old cities as Leipzig could have been devoted for the sake of energy independence of GDR. In many

© Markus Pichlmaier
Opencast mines are large holes in the ground that cause soil degradation,forming a "lunar landscape"

parts of eastern Germany, but above all in Lusatia and middle Germany, many villages were destroyed to enable coal extraction. The state realized the plan consequently without the concern on social and ecological issues. The goal was „Lignite for every price". Today the visible elements in the Brandenburg and Saxony landscape are open pit mines, slag heaps, and mine lakes. The main mine regions in eastern Germany are Cottbus, Welzow, Jänschwalde, Reichwalde, Nochten and Borna by Leipzig.

In western Germany, the most of open pit mines were built in the mid-nineteen fifties. Many villages and agriculture areas were destroyed. For the sake of mine Garzweiler or Hambach such places as Berrenrath, Mödrath, Königshoven were devoted.

2. Processes of resettlements

Extraction of lignite in Germany from the beginning was based in the political or even military context. During the war in Lusatia and middle Germany lignite was extracted for military purpose. Lignite mining and human rights did not go hand by hand. More than 13,000 prisoners had been working in BRABAG factory which produced petrol for the army. People who worked in these factories were very often Jews from work camps located in this region, mainly for the sake of mines. Replacements of local inhabitants were implemented without the care for people. In order to enable full extraction of available resources, special law was introduced. The possibility to expropriate inhabitants from their houses, for the sake of energy production, was introduced into German mining law in 1937. It was, however, enforcement of the mine law which was introduced already in XII century for such minerals as silver or iron. Today many organizations who support the protest against new open pit mines say that the mine law stays in contradiction to human rights.

Evictions of people in GDR were implemented different than in FRG. Citizens of socialist country counted less than the main purpose of the state. They had less time to prepare themselves to the removal, they got very small reimbursement for their lost houses. Destruction of the Lusatia region was especially tragic for Sorb nation for whom the loss of that region meant the loss of the only one space for a living. Sorbian Slavic minority living in this region since centuries used to say: "God created Lusatia but devil lignite".

Villages in GDR where lignite occurred were destroyed without rebuilding one as it is practiced now. Lots of people who used to live in villages and worked in agriculture had to move from day to day to cities, to completely different landscapes and started to work in other occupation they had. These who decided to continue living in their own houses had to count on their own resources and finances. Many old peoples had to change their old houses in villages on the bed in homes for the elderly or on live in flats in large multi-family residential.

Replacements contributed to destruction of communes as well as to traditional structures of national minorities. Moreover, coal combustion contributed also to large amount of emissions of SOx what caused ecological catastrophe in the Sudetes As a description for this time the term "black triangle" was established. Furthermore, air pollution was caused by briquette production and combustion. This region was perceived as one of the most polluted regions in Europe. Even

socialist media in eighties but still under People's Republic of Poland, described that phenomenon as “ecological disaster”.

There were not many protests from the side of inhabitants. Many of inhabitants were dependent on the work in coal industry. Later on, during the oil crisis in 1973, occur another reason for building new mines. The most famous protest took place in Klitten just around the end of communist time. It was the time when people could be more courage and asked questions - what is more important, my home or coal?

After 1989 in Germany, coal industry was visible limited. Also, resettlements were implemented in a different way as in GDR. An example could be the village Horno which was rebuilt due to the previous form. People believed that Horno would be the last village devoted for the coal.

In 1993 people in Brandenburg were informed that no more villages would be devoted for new open pit mines. Many opened pit mines and power plants were closed but not all of them. Unfortunately, the hope given to people was confronted with “Realpolitik”. Everything changed when Vattenfall concern announced that new open pit mines would be build - Janschwalde Nord, Welzow Süd II and Nochten II. Since then people live in uncertainty and feel that their days in this region are numbered. Between 1924 and 2015 only in Lusatia 84 villages were destroyed and 7 more are endangered.

Nowadays in Lusatia there are planned new openings of pit mines and this entails that around 3200 of inhabitants could be resettled. As it was mentioned above, this decision would have enormous influence on the future of Sorb nation in Brandenburg. New open pit mines will be located in the region where the part of Sorbs minority lives. Even though the constitution of Brandenburg and Saxony protect Sorbian settlement area, it is still not obvious that this area will be protected.

Open pit mines were built also in FRD, however the resettlements and reimbursements were implemented with more respect of human rights than in GDR. RWE Concern who is responsible for the extraction and combustion of brown coal is dependent on land politics. They public relation strategy is the „wellbeing of people”. Concern managed to convince people that they had to be resettled. As a result, there were not many protests of local inhabitants in fifties in western Germany. People believed that all problems caused by open pit mines would be solved thanks to technological means. Protests against open pit mines occurred mainly from the NGO side, as well as from church organizations. Green party was active in the protest in 90s what contributed to tensions in Green-Red coalition in NRW government. But inhabitants were not so much involved, partly because the investor reimbursed them costs and houses. Communes obtained dividend as well.

Today, even though inhabitants obtain reimbursements for resettlements they are more aware on another aspect related with open pit mines. Problems such as agriculture devastation as well as the level of ground water lowering are emphasized. Important arguments are heard from people who were not resettled but they had to live not far away from the mine. There are also new protests active in the region of planned mines such as Garzweiler II. BUND and „Zukunft statt Braunkohle” demand that enlargement of the Garzweiler mine would go no further than until motorway no. 61 and to motorway A 4 regarding Hambach.

© Radosław Gawlik, Ecological Association EKO-UNIA
Protest against mining and burning lignite next to Jänschwalde power plant by Polish and German residents The nearby opencast mine contributes to land drainage and deterioration of water quality on both sides of the border, August 2015

3. Impact of opencast mines on the environment and the society

Until now over 230 places in Germany has been already destroyed due to open pit mine. There are different amounts of people who were resettled in regard with the initial date we take. Starting from 1924 over 110 000 people were resettled in whole Germany and the majority in GDR. BUND NGO says that it is estimated that since 1950 until 2045 around 45 000 people in western Germany will be resettled.

But resettlements are related not only with inhabitants. It means also the destruction of places. Since 1924 over 200 places in Germany had been destroyed – 84 in Lusatia, 52 in west Germany and 97 in middle Germany. Middle Germany was the most destroyed part of Germany in regard with lignite mining. Today there are still plans to make the mines broader. Many places are still endangered – 7 in Lusatia and among of them majority constitutes places where Sorbs live. Nowadays people who are resettled obtain reimbursement but there is still a little attention to the lost that is perceived in non-material terms. It is not possible to rebuild regions, places, cultures and relationships. It is indeed illusion what concerns often promise that after resettlements inhabitants who lost their houses will obtain the same quality of life. One must admit that many villages that are to be destroyed have long history, sometimes even mediaeval.

© Markus Pichlmaier
The contamination of the Spree River and its tributaries by iron compounds. Although bottom sediment, also called "ochre", is not toxic, it colours the river and infrastructure brown, and eliminates the existence of many organisms

4. Current plans for new opencast mines

It is still discussed in Germany when the coal phase out will take place. Many still waits for the proper date. Such situation means that inhabitants whose houses are endangered are not sure what the future bring. In western Germany, new open pit mines that are planned are in Pesch (Inden mine), Manheim (Hambach mine), Immerath and Borschemich, which are endangered by enlargement of Garzweiler II. Around 11 places are planned to be resettled. Agriculture and forests will also be destroyed if Garzweiler II will be build.

In Lusatia we can find at least 10 places, that are not sure about their future. Only Welzow Sud II (estimated 205 million mg) will take homes for 810 people from Proschim, Welzow, Lindenfeld. Another mine Nochten II, (estimated 300 million mg) is larger and there are 1700 people from places Rohne, Mulkwitz, Muhlrose that need to be resettled. Jänschwalde Nord (estimated 250 million mg) will entail also resettlement of villages Atterwasch, Kerkwitz and Grabko including its 900 inhabitants and several memorial places. Planned mining area belongs to the community of Schenkendöbern. Local representatives in 2007, after announcement of the plan by Vattenfall has decided not to accept the plan. Their standpoint is to undertake every legal means in order not to let the mine come true.

5. Summary

In Germany, opencast lignite mines have been operated for many years and the problem of resettlement is well-known. German mining law that enabled forced resettlements is nowadays called as „the source of all evil".

The worse conditions, in terms of human rights, for people who had been forced to move out from their family houses and regions took place in GRD. In North Rhine Westphalia, in contrary, inhabitants obtained much better offer from the state when it comes to reimbursement and replacement of houses. After the resettlement, they could live in similar houses whereas village inhabitants from GRD were moved to cities and to block of flats typical for communist time.

A map below shows data for existing opencast mines in Germany (black color) and planned opencast mines (red color) – number of displaced people and the size of area which has been destroyed.

Legend:

Mine number from legend	Name of the mine	Size of the mine	Number of displaced households
1	Jänschwalde	6 015 ha	5 villages
2	Jänschwalde Nord	3 100 ha	900 persons
3	Welzow Süd I	11.200 ha	17 villages
4	Welzow Süd II	1 900 ha	810 persons
5	Nochten I	No data	No data
6	Nochten II	1 200 ha	1700 persons
7	Garzweiler I	7 200 ha	44064 persons Garzweiler I + II
8	Garzweiler II	3 800 ha	As above
IN TOTAL		**23 226,2 ha**	**22 villages + 47 474 persons**

GREECE

1. An overview of history of opencast lignite mining

The first mining of lignite in Greece, began in Aliveri (Euboea) in 1873, but a tremendous flood four years later destroyed all the opencast and underground mining facilities. The exploitation was renewed after the First World War. But only after the Second World War, the need of electrification of Greece led to the decision of the construction of a lignite-based steam-electric power station in Aliveri. In early 50's, DEI (the Public Power Corporation of Greece, or PPC) increased the production to 750 thousand tons per year, supplying power stations of a total power of 230 MW. But this lignite mine shut down in the early 1980s.

As Aliveri was going down, Ptolomeida raised. Production increased from 11.7 million tons in 1975, to 27.3 million tons in 1985, and to 49 million tons in 2006 (including the mine in Florina). In lignite deposit of Megalopoli PPC began the exploitation of poor quality lignite in 1969. Production reached 13.5 million tons in 2006.

So today, PPC produces approximately 63 million tons of lignite in total annually. Greece is the second largest lignite producer in the European Union, and the sixth largest in the world. Approximately 75% of the energy needs of Greece are covered by lignite.

© Panos Mitsios, Greenpeace
Open lignite excavations at the Mavropigi field (part of the Main Field), in Ptolemaida, in 2013

Thus, 85% of lignite is used in the production of electricity.

Lignite can be distinguished in peaty lignite (25% of the deposits of Greece), lignite (64%) and sub-bituminous lignite (11%).

The most important basins are the ones of the area of Ptolemaida (mines Ptolemaida, Komnina, Aghios Christoforos, Perdika), Megalopoli, Drama and Florina.

Outside Ptolemaida there are 5 main active brown coal mines (covering an area of 160.000.000 m²), the Lignite Center of Western Macedonia is made up of 18 power plants, with a total capacity of 4.388 megawatts.

2. Processes of resettlements

Ptolomeida region

There are 5 open pits located in this region: Ptolemaida (municipality of Eordaia, Municipal unit of Ptolemaida), Komnina (municipality of Eordaia, Municipal unit of Vermio), Aghios Christoforos (municipality of Eordaia, Municipal unit of Agia Paraskevi), Perdika (municipality of Eordaia, Municipal unit of Ptolemaida).

In Ptolomeida region from 1972 to 2003, almost 4,000 inhabitants were resettled, after five villages (Kardia, Eksohi, Charavgi, Klitos and Komanos) were swallowed up by the mine extensions. At present, in Western Macedonia the relocation of an additional 4 villages is either underway or has been decided (Pontokomi, Mavropigi, Akrini and Agioi Anargyroi).

Kardia was the first village of the Western Macedonia (Ptolomeida) region to be relocated. The relocation began in 1972 and was completed in 1976, involving a total of 692 people. In 1979, 300 people were relocated from the Eksohi settlement and 1,228 people from the Charavgi village.

When a government started eviction of Charavgi's residents, villagers formed barricades with burning tires in effort to blocking the process. It was a fight with a lot of crying due to tear gas and a beatings. The new village the PPC was obliged to prepare for them wasn't ready on time, it took a long time until they gave them compensation money, so people got personal loans and started leaving the village. Village was next to the mine and there were three or four blasts daily. They couldn't live here becouse since houses started cracking, people got scared. Villagers got frustrated and many of them left for the nearby cities, where they bought apartments.

One of the latest example of villages that have been relocated is that of Klitos. The relocation began in 2000. However, the inhabitants have not been offered a sustainable settlement, since the new village – just outside Kozani – faces many issues as a result of incomplete infrastructure.

The Komanos inhabitants began relocating in 1999 and by 2003 almost all of them had left. However, a new settlement was never constructed. Today, in the area designated for the new village is only a church.

The relocation of Pontokomi and Mavropigi villages started after that, while it has also been decided to relocate Akrini and Agioi Anargyroi. Concerning Mavropigi resetllement, locals complaine the management of the PPC informed residents of a village on the mine's southwestern periphery, that they had ten days to move out,

even though they have yet to be compensated for the loss of their property and a new village hasn't been prepared for them.
Mavropigi also held a referendum, it has been decided to move the village to the Kouri Ptolemaidas area. Mavropigi faced a major groundstability issue. A large crack has been created that runs through the village, forcing a large number of inhabitants to abandon the village, either on receiving compensation from the PPC or at their own expense. On 14/09/2011, the expropriation decision was published in the Government Gazette.

Mavropigi is built on a 415,000 m^2 area, Pontokomi covers an area of 887,230.56 m^2.

The cases of the Akrini and Agioi Anargyroi villages differ from others, as there are no lignite reserves under them. According to the law, the mines can be as close as 250 meters to inhabited areas. As a result, both these settlements adjoining lignite extraction and deposition areas, are subject to heavy pollution and a dramatic decline in living standards, but nevertheless no obligation arises for their relocation. Following an intense struggle by the local community, the relocation of the settlements was included in the 3937/2011 law, article 28. According to that decision, the PPC bears only 50% of the cost and the Greek State the other half. Akrini inhabitants choose as their relocation area the Kozani region, after holding a referendum in the summer of 2012.

Megalopolis region

Also in Megalopolis Lignite Center three small villages located in mining field have been relocated. One of them was settlement of Psatha which was mowed 2 km to the east.

Years later, the mine continued to take away farmlands and extended southward where it is currently near the forest and is expected to be at the line of the Tripotamo-Anthochori Road. It will probably not affect the settlement of

© Takis Grigoriou, Greenpeace
Deserted village Komanos at Ptolemaida. The compensation paid out to people hardly even covered relocation costs and certainly did not compensate for the emotional cost of abandoning their birthplace. Today, only the church remains, a stark reminder that there once lied a lively village

Tripotamo. By the time it reaches near Tripotamo, the power plant may be scheduled to close.

Law and practice

In accordance with the law, the mines cannot be closer than250 meters from inhabited areas.

By Greek law the mine operator has a major part to play in supporting the local municipalities in planning and explorations of the new locations in connection to relocated villages. The support functions of the mine operator should also apply to the individual resettlement and to the village community and also from the start of the planning to the complete relocation from to the new site. PPC's resettlements practice is a very long process which lasts more than 10 years from the start of planning to the completion of relocation.

3. Impact of opencast mines on the environment and the society

Environmental protection is one of the major parameters defining PPC's overall strategy and its daily mining activities – claims the company adding in the lignite mining areas around Ptolemais – Amynteon and Megalopolis, they carried out site restoration projects to create farmland, tree plantations, woodland, sanctuaries for small animals and crop testing areas.

PPC in document „towards Sustainable Development" from 2009 mentiones only resettlement due to hydro, not mentioning coal related resettlements at all. On their internet site PPC wrote their answer to possible question about which actions do they take for the reduction of CO2 emissions from thermal Power Plants stating: for the limitation of CO2 emissions of thermal power plants, the Corporation implements actions and programs that include investments for the replacement of old Power Plants with new state-of-the art technology and high performance so as to modernize the existing installation and their operation using of the existing facilities and operation on the basis of the Best Available Techniques, for improvement of energy mix characteristics so as to further develop Hydroelectric Plants and Renewable Energy Sources projects for the promotion of saving actions and rationalized use of electricity. Also, PPC participates in research programs and is constantly informed on the application of efficient technologies for lignite as well as the development of CO2 capture and storage.

Agriculture is still very important in Greece and also still plays an important role in the local economy. Lignite mining inevitably causes problems for the environment and for the everyday life of the population. The long-term use of the land was resulting in the debasement of the quality and the aesthetics of the landscape and it has also caused great disturbance to native flora and fauna. It also created an unavoidable need for the resettlement of the communities nearby with great loss of the land value. The reduction of available agricultural land resulted in the reduction in productivity of the land and the reduction in income from agriculture. Mining activities also led to the diversification of the hydrologic status of the area, the lowering of the water level and the debasement of the quality of the usable surface and underground water resources. Moreover, mining activities caused increase in sound and dust pollution because of the growing heavy traffic loads on local roads. Furthermore, the disposal of dangerous industrial solid and liquid wastes and the increase in the

concentrations of toxic matters to soil and water created a great danger for the health of the local population.

Local media reported at a time: The Public Power Corporation (PPC) installations are poisoning their environment but the firm doesn't want to reduce production by even a single kilowatt. Residents of the Ptolemaida-Kozani-Amyntaio region in northern Greece have lived for years in an environment polluted by lignite mines and the PPC's 18 power plants.

The article adds a committee representing the local community, a group in Kozani is calling for the restoration of the landscape destroyed by the lignite mines, greater job security and the rational exploitation of lignite reserves with investments in new non-polluting units that will continue operations after 2047. Kozani Prefect Giorgos Dakis at a time said they want PPC to do everything it hasn't done so far for the environment adding people's tolerance is at an end because the community cannot survive within this ecological disaster zone.

«The corporation's long-term, large-scale activity in the prefecture has created many social problems,» said Kyriakos Michailidis, the mayor of Ypsilanti of a time. «Despite the transfer of settlements, the residents of another 10 communities continue to suffer from noise, falling ash and pollutants, and their properties have been completely devalued.» The region's microclimate has changed, the water table lost through the extraction of lignite. «Fifteen years ago,» added Michailidis, «we were getting drinking water at a depth of 2 meters. Our last drill was down to 420 meters.»

People who live in western Macedonia have little option but to work for the PPC. The company's presence appears to have crowded out other sectors. As a result, the region has the highest rate of youth unemployment in the EU (72.5 per cent) and the fifth highest rate of general

© Takis Grigoriou, Greenpeace
Open lignite field excavations at the deserted ('ghost') village Komanos in 2009, at Ptolemaida

unemployment (29.9 per cent). Many PPC workers are concerned about their jobs. Many PPC employees are worried that the new owner will fire them and then rehire them on lower salaries, or could even simply hire different employees altogether.

Concerning Megalopoli environment, pollution has been a problem in the area as sulphur and carbon dioxide (CO2) have been emptied as low as 200 m during windy and cloudy days and as high as 1 km during clear days, visible from as far as 20 km as well as northwestern Laconia. The main concern is dumping used-up coal into the Alfeios which ruins its water supply and nature as well as the ancient city of Megalopoli which saw marble and stone begin to rust. Also, as with all fossil fuel based plants, the Megalopoli Power Plant produces large amounts of greenhouse gases that contribute to climate change.

4. Current plans

In the northern Greek city of Ptolemaida, a new 660-megawatt power plant that burns lignite, a plentiful soft brown coal, is scheduled to be built by 2020. The European Investment Bank has withdrawn funding from the project because of its high CO_2 emissions and other pollutants, but the German government-owned development bank KfW is planning to provide half the money needed, roughly €800 million ($888 million) in loan guarantees.

The total reserves of Greece in lignite are estimated to approximately 10.000 million tons, of which the measured reserves are 6.800 million tons, indicated reserves are 310 million tons, inferred reserves are almost 2.000 million tons, and hypothetical reserves are 860 million tons. Of the 6.800 million measured reserves, 3.260 million tons can be found in Ptolemaida, 400 million tons in Megalopoli, 1.550 million tons in Drama, 1.150 million tons in Elassona and 470 million tons in Florina.

The exploitation is opencast, and the main exploitation basins are the ones of Ptolemaida and Amyndaio (annual production of 43.6 million tons) and Megalopoli (8.9 million tons).

Lignite as the base load fuel gives consumer competitive prices in Greece in relation to other comparable markets in EU.
Greece coal lobby argues lignite's future role in Greece will depend on changes taking place in the European energy sector, including the cost of CO_2 emission allowances. They say low – cost domestic lignite is more competitive compared to imported energy sources such as natural gas. But, PPC faces important changes relating to the regulatory framework governing energy market liberalization. Strategic priorities include the replacement of old and inefficient plants and the promotion of renewable investments. However, the current recession has a negative impact on any new investment and the government's "green policy", but renewables are displacing generation from lignite and natural gas.

5. Summary

The first mining of lignite in Greece began in Aliveri (Euboea) in 1873 but only after the Second World War, the need of electrification of Greece led to construction of a lignite-based steam-electric power station and increased the production. Production reached 13.5 million tons in 2006. Today, PPC produces approximately 63 million tons of lignite in total annually. Greece is the second largest lignite producer in the European Union, and the sixth largest in the world.

The most important basins are the ones of the area of Ptolemaida (Ptolemaida, Komnina, Aghios Christoforos, Perdika), Megalopoli and Drama and Florina.

Outside Ptolemaida there are 5 main active brown coal mines (covering an area of 160.000.000 m²), the Lignite Center of Western Macedonia is made up of 18 power plants, with a total capacity of 4.388 megawatts.

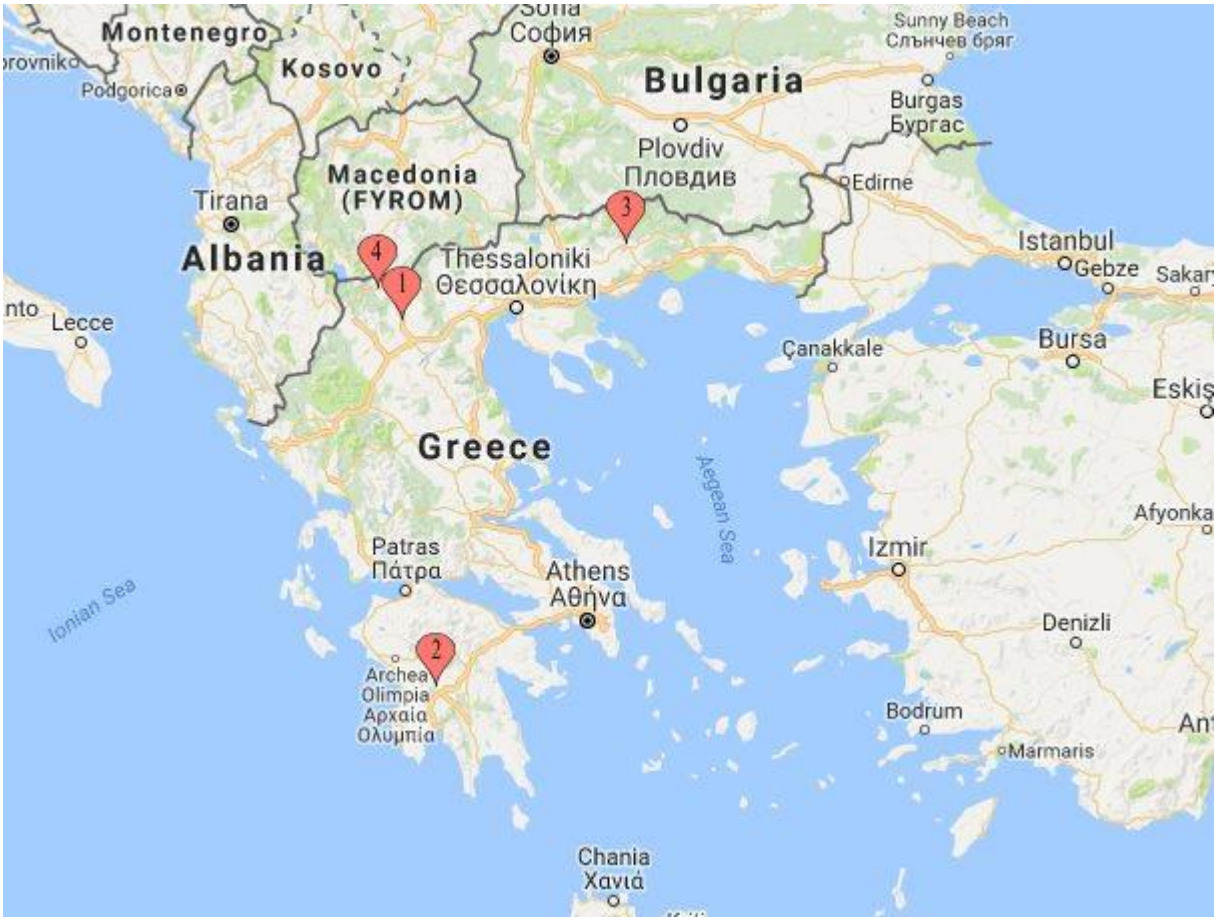
In the '80s and '90s, the Public Power Corporation of Greece resettled a few villages. It was not without problems, revolt and late payments. Its estimated four thousand villagers had to be relocated in total untill now. Expropriasions are under way even today.

Mines also took they toll on agriculture, which is still very important in Greece and local economy. Soil is debasement, flora and fauna are disturbed. There is a reduction in productivity and reduction of income from agriculture. Mining activities are lowering water levels, increase sound and dust pollution. The disposal of dangerous industrial solid and liquid wastes and the increase in the concentrations of toxic matters to soil and water created a great danger for the health of the local population.

Locals say installations are poisoning their environment as they live for years in an environment polluted by lignite mines and power plants. They are calling for the restoration of the landscape destroyed by the lignite mines. The corporation's long-term, large-scale activity created many social problems. Despite the relocation of some settlements, the residents of another 10 communities continue to suffer from noise, falling ash and pollutants, and their properties have been completely devalued.

The region's microclimate has changed, the water table lost through the extraction of lignite, drinking water is now on 420 meters, and before it was 2 meters deep.

People who live in western Macedonia don’t have many options but to work for the PPC, as they crowd out other sectors. So, the region has the highest rate of youth unemployment in the EU and the fifth highest rate of general unemployment. Many PPC workers are concerned about their jobs.



Legend:

Mine number	Name of the mine	Size of the mine [hectares]	Number of displaced people
1	Lignite basin Ptolemaida (Ptolemaida, Komnina, Aghios Christoforos, Perdika mines)	16 000	4 000 inhabitants
2	Lignite basin Megalopoli	No data	3 villages
3	Lignite basin Drama	No data	No data
4	Lignite basin Florina	No data	No data
IN TOTAL		**16 000**	**4 000 persons + 3 villages**

CZECH REPUBLIC

1. An overview of history of opencast lignite mining

In the Czech Republic, brown coal is mined in north-eastern Bohemia bellow the Krušné mountains. Surface mines can be found in Sokolov and North-Bohemian lignite basins. Mining of lignite have already started here in 1860 and till 1900 the mined volume had achieved 17 million metric tons annually. During World War II, when the factory for production of engine fuels was operated in Záluží u Mostu, the mined coal volume rose to 25 million tons per a year. After the World War II, the brown coal mining experienced a boom, and lignite had become the basic raw material for development of Czech electro-energetic industry. The maximum of mining volume was achieved in 1984, when it grew up to 38 million of metric tons of brown coal per year.

They key moment for the development of brown coal mining was 1991, when the Czech government has approved Clean Air Bill, which led to decrease of emissions from thermal power stations and established territorial environmental limits for brown coal mining. Limits for individual mines and landfills define borders, which are forbidden to cross by location of surface mines as well as landfills for waste from mining. Limits protect among others all communities including sanitary buffer zones between margins of communities and final edge of mining pit. Establishment of limits did not mean the immediate end of mining. It gave clear perspective to inhabitants of the region as well as mining companies – if you look at the map with border line based on limits, you can see which area is dedicated to mining and where it is possible to think about different alternatives of development.

Nevertheless, the owners of mining companies have tried to cross the limits since the end of 1990's. It would allow them the access to hundreds of million tonnes of brown coal, but at the same time, it would mean the destruction of Horní Jiřetín city. Protection of territorial limits is still the key environmental priority on the national level of the Czech Republic.


© Petr Globočník
Mine pit ČSA, which produces annually 5.2 million tonnes of lignite

2. Processes of resettlements

The policy of so-called "coal-ousting" of North-Bohemian lignite basin was accepted in the beginning of 1950's on the highest level of the Communist party. All other concerns and interests of inhabitants had to yield to the priority of maximal volumes of extracted coal, without the possibility of appeal. Miners as well as party officials were evaluated exclusively based on volume of extracted coal and excavated area. Communities standing in the way planned widening of mines, were quickly eliminated. The total number of destroyed communities reached 81 (see tables with overview of the communities that were destroyed after 1945, because of the mining). Over 90 thousand people were relocated. Some of them were relocated several times during their lifetime. The destruction of communities has stopped only after implementation of territorial limits of mining after the end of communist regime.

Overview of communities in North-Bohemian basin disappeared after 1945 because of coal mining.

Name	District	Year
Jezeří	Most	1952
Míchanice	Chomutov	1955
Pláň	Most	1955
Lipětín	Most	1957
Ervěnice	Most	1959
Růžodol	Most	1959
Staré Verneřice	Teplice	1959
Dolní Litvínov	Most	1960
Hajniště	Teplice	1960
Podhradice	Teplice	1960
Střimice	Most	1960
Podhoří	Ústí nad Labem	1961
Prunéřov	Chomutov	1962
Úžín	Ústí nad Labem	1962
Varvažov	Ústí nad Labem	1962
Březánky	Teplice	1964
Břešťany	Teplice	1965
Bystřice	Chomutov	1965
Milžany	Chomutov	1965
Most	Most	1966
Nové Sedlo	Chomutov	1966

Name	District	Year
Újezd	Teplice	1972
Kamenná Voda	Most	1973
Kralupy u Chomutova	Chomutov	1974
Kyjice	Chomutov	1974
Liptice	Teplice	1974
Podhůří	Chomutov	1974
Tuchomyšl	Ústí nad Labem	1974
Vysočany	Chomutov	1974
Zálužany	Ústí nad Labem	1974
Židovice	Most	1974
Drmaly	Chomutov	1975
Jenišův Újezd	Teplice	1975
Vršany	Most	1975
Český Újezd	Ústí nad Labem	1976
Dřínov	Most	1976
Lochočice	Ústí nd Labem	1976
Otovice	Ústí nad Labem	1976
Bylany	Most	1977
Konobrže	Most	1977
Kopisty	Most	1977
Podhlody	Chomutov	1977

Radovesice	Teplice	1966
Dělouš	Ústí nad Labem	1967
Hetov	Teplice	1967
Roudná	Ústí nad Labem	1967
Tušimice	Chomutov	1967
Čepirohy	Most	1968
Pařidla	Most	1969
Přezetice	Chomutov	1969
Slatinice	Most	1969
Vrchnice	Chomutov	1969
Dřínek	Teplice	1970
Chotovenka	Teplice	1970
Kamenice	Ústí nad Labem	1970
Lyskovice	Teplice	1970
Souš	Most	1970
Újezd	Chomutov	1970
Stránce	Most	1971
Studánka	Ústí nad Labem	1971
Kundratice	Chomutov	1972
Střížovice	Ústí nad Labem	1972

Hrdlovka	Teplice	1978
Holešice	Most	1979
Libouš	Chomutov	1979
Vyklice	Ústí nad Labem	1979
Brančíky	Chomutov	1980
Brany	Chomutov	1980
Hořany	Most	1980
Naší	Chomutov	1981
Račice	Chomutov	1981
Albrechtice	Most	1982
Čtrnáct Dvorců	Most	1982
Krbice	Chomutov	1982
Zásada	Chomutov	1982
Ahníkov	Chomutov	1983
Dolní Jiřetín	Most	1983
Komořany	Most	1985
Žichlice	Teplice	1987
Hrbovice	Ústí nad Labem	1989
Libkovice	Most	1990

Overview of communities in Sokolov basin disappeared after 1945 because of coal mining.

Name	**District**	**Year**
Alberov	Sokolov	1970
Bukovany	Sokolov	1949
Čistá Obec	Sokolov	1947
Dolní Rozmyšl	Sokolov	1950
Habartov	Sokolov	1949
Horní Rychnov	Sokolov	1950
Jehličná	Sokolov	1970
Lipnice	Sokolov	1950
Lísková	Sokolov	1949
Nové Sedlo	Sokolov	1952
Smolnice	Sokolov	1950
Stará Chodovská	Sokolov	1950
Vítkov	Sokolov	1980

3. Impact of opencast mines on the environment and the society

Over 300 square kilometers of the landscape was totally devastated by surface mining of brown coal within North-Bohemian lignite basin. Major part of formerly blossoming cultural landscape with arable land, orchards, popular spas and lakes transformed into dreary territory. The landscape here consists of mining pits, landfills, industrial zones and no-man lands overgrown by weed bushes. Roads and rails were relocated many times. River Bílina is even flowing through the pipeline for several kilometres of its course. In the Sokolov lignite basin, brown coal mining had an impact on 90 square kilometres of the landscape.

In the North-Bohemian lignite basin, 81 communities were resettled and demolished, including Most - the historical city, which can be compared with Old City of Prague in terms of density of the historical monuments. It is hard to imagine, that the number of relocated people achieved 90 thousand. Together with production of electricity in neighboring brown coal power station, mass mining changed the reputation of former "Garden of Bohemia" to the place with the worst living condition in the former Czechoslovakia.

Resettlement of the citizens was implemented because of Communist party rulings. Citizens did not have any opportunity to participate in the decision-making process nor to appeal against the decisions. Inhabitants of the traditional communities with the long history were often intentionally relocated to newly built blocks of panel housings in Chomutov, Most, Jirkov and other cities. The resistance of citizens was also decreased due to the fact, that big part of inhabitants were incomers, who replaced Sudeten Germans, driven out after the end of World War II.

In the end of 1970's and during the first half of 1980's, the Ministry of fuels and energy were pushing for so called "big option" of mining in North Bohemian lignite basin, which would cause the devastation of the area of 80 times 25 kilometers. Part of the plan was to mine away the slopes of Krušné mountains and eliminate the cities of Chomutov, Jirkov, Litvínov, Lom u Mostu, Novosedlice and Chabařovice. This plans were stopped due to the disagreement of urban planning experts. After the change of political situation after 1989, the plan was definitively abandoned.

Community of Libkovice was the only community demolished for coal brown mining after 1989. The decision of the demolition was approved in 1988. However, the demolition works had started in the end of 1991. Efforts to save the village, organized by environmental NGOs Hnutí Duha and Greenpeace were unsuccessful. Nevertheless, the strength of the resistance, including direct actions with blockage of the demolition works, contributed to political declarations about ban of further demolitions of other communities.

Efforts to save the castle in Jezeří, located in the slope of Krušné mountains above the grand mine "ČSA", have become the important symbol of the local resistance, against unlimited brown coal mining. Original plan of communist establishment was to demolish this valuable historical monument and sacrifice it to the further growth of the mine, what was finally repelled due to the huge efforts of local people. After 1989, the castle was visited by among others the prince Charles and Netherlands queen Beatrix. Today, the castle is successfully renovated.

4. Current plans for new opencast mines

Declaration of the territorial environmental limits of brown coal mining in 1991 was important step made by Czech government. Delimitation of the areas for mining and for regional development was supposed to give clear boundaries for plans of communities as well as for mining companies. Territorial limits clearly stated that the mining shall be continued only to the extent, which cannot endanger of the existence of the city of Horní Jiřetín and community of Černice with 2 000 inhabitants. Limits protect also Litvínov city with 25 000 of its inhabitants. In case of fulfilling intention of mining companies, the grand mine could reach the distance only 500 metres from the nearest buildings. Widening of mining area would thus bring significant increase of dust and noise levels in Litvínov.

Development of Horní Jiřetín is the example of positive impact of territorial limits definition. Prosperous municipality with high quality of services, repaired roads, small- and middle- sized enterprises and rich cultural life does not remind in any means the dusty miner town. Citizens of Jiřetín have vigorously started many activities and successfully completed many of them – from reconstruction of municipality buildings to new façade of imposing church of St. Mary's Assumption.

Delimitation of mining in the region bellow the Krušné mountains would be a demonstration of right approach of the government to the mining areas, assuming the all subsequent governments keep the decision consistently. Since the beginning of 1990's, we have witnessed suspicious (and, according to the decision of Swiss courts, illegal) privatization of some mines, followed by the effort of the new owners and

ministers of trade and industry to increase the limits. Owners of mines did not give up the chance to mine and sell 150 million metric tons of brown coal located under Horní Jiřetín and Litvínov's chemical factories, which would mean the destruction of the factory as well as the city of Litvínov.

The intention of the mining company to continue the mining at the expense of the citizens of Horní Jiřetín and Černice is highly risky, even from the technical point of view. The coal would be extracted in demanding geological circumstances under the extremely unstable slopes of Krušné mountains, endangered by landslides. Already in 1984, the missive landslide occurred under the hill "Jezerka", with approximately 4 million cubic metres of rock falling to the mining pit, creating a danger even for the huge mining machinery . Another 3 million cubic metres landslide occurred in June of 2005.

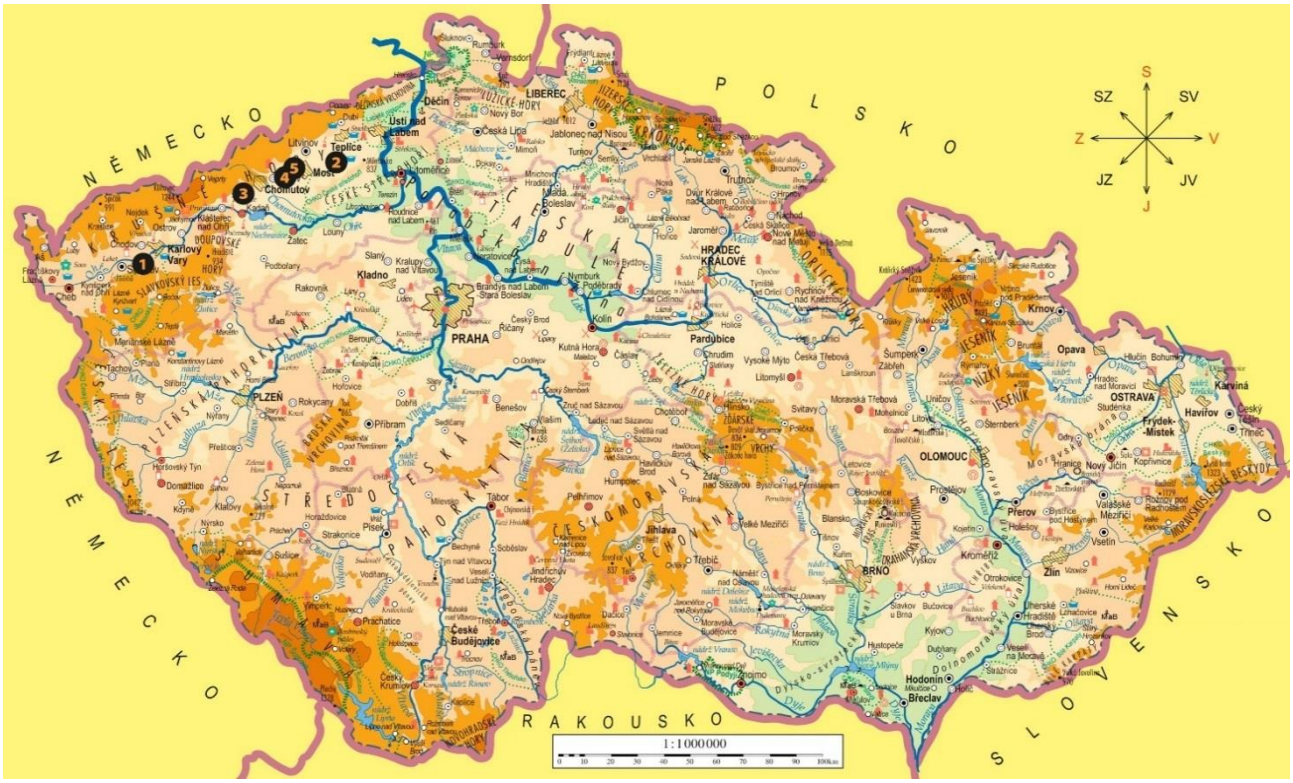
To our losses, the mining lobby finds allies among politicians and the ceaseless questioning of the limits of the mining put citizens in distress. The relations of citizens to the city were demonstrated among others by local referendum, whose results were overwhelmingly to the favour of keeping the territorial limits, as well as by the municipal elections, won regularly by politicians opposing the mining.

Current government of prime minister Bohuslav Sobotka (coalition of social democrats, Christian democrats and "Yes movement" of Andrej Babiš) made the decision on environmental territorial mining limits in the fall of 2015. It confirmed the limits on the ČSA mine and thus also the protection of the city of Horní Jiřetín. On the other hand, it changed the limits in case of mine "Bílina", which gave the mining companies access to another 100 million tons of lignite. Further attempts of mining companies to push further limits can be expected after the changes in the government after 2017 elections.

Two thousand citizens of prosperous city of Horní Jiřeítn and community of Černice will be able to feel safe only after the end of mining and the start of landscape restoration works in the ČSA mine.

5. Summary

Czech Republic is in the third place in EU – after Germany and Poland – in production of electricity from coal power stations. At the same time, 12 to 16 TWh of electricity is annually exported (1 TWh of electricity is produced from approx. 1 million tons of lignite). The future of communities endangered communities depends on ability of the government to oppose the pressure of mining companies. If the politicians stay consistent also in the coming years, there is a big chance to close the ČSA mine and restore the landscape, after exhausting of the coal stock in the delimited area (after 2021). Libkovice would thus become the last Czech community demolished because of the brown coal mining.



	Mine	Owner	Production (Mt/y)	Area (ha)	Date of closure	Number of displaced inhabitants
1	Jiří and Družba	Sokolovská uhelná	4 - 8	1 300	2034	90 000 together
2	Bílina	Severočeské doly (ČEZ subsidiary)	7 - 9	1 800	2050	
3	Libouš	Severočeské doly (ČEZ subsidiary)	10 - 12	4 000	2035	
4	Vršany	Czech Coal	7 - 9	3 000	2054	
5	ČSA	Severní energetická	3 – 3,5	5 000	2021	
IN TOTAL			**31- 41,5**	**15 100**		**90 000**

SERBIA

1. An overview of history of opencast lignite mining

Serbian coal is playing important role of economically development of country since very beginning of industrialization of Serbia since end of 19th century. Since the very beginning of mining research in Serbia, it soon became clear that in Kostolac and Kolubara region there are significant volumes of coal. Due to this fact the Danube river Kostolac mining region was the first that have attracted domestic and foreign capital interested in exploiting and using it for industrial purposes. Apart of that researches have revealed numerous deeply deposited coal basins in large number of locations mostly in eastern and central Serbia that are exploited up to date in underground mining company of Serbia.

This coal was very important for the Belgrade thermal power plant named "light and power" that was constricted in 1920'. During the World War II, in September 1943, German forces have opened open cast mine in Kostolac: It was the first open cast mine (so called "daily mine") in Balkan that was supposed to relate to high voltage line with Bor copper mine.

History of Kolubara lignite mining

Existence of coal in the area, that is now known as Kolubara mining basin is mentioned as early as year 1875. Interest for mining on industrial scale started in 1937 when thermal power plant with installed with a capacity of 12 MW, that have supplied the electricity for Belgrade, Kraljevo, Kragujevac, Šabac, Valjevo, Jagodina, Ćuprija and Lazarevac.

Historically production leap was achieved in 1952 when in vicinity of Barosevac village field A and field B in Kolubara mining complex was opened.

Modern time mining

Since the construction of last thermal power plants in late 1980ties and beginning of 1990ties Serbia is producing about 70% of its electricity from lignite, that is being produced in the level of about 40mt annually. Almost all the excavated coal for electricity production is being produced in two main mining basins, namely Kolubara and Kostolac Basins. While speaking of basins we should highlight, that those are spread over all the Serbia and that those basins are differing in quality, quantity and geologically profile, thus only on few of basins open cast mining are used while in other basins underground excavation are being utilized.

Since July 2015 EPS is vertically integrated thus all the daughter companies have lost their independent status.Parallel to development of its mining and power generation capacities Serbian mining experts and companies have developed mining operation in Kosovo, that have served as important constitutional part of Serbian electricity system until 1999, when Serbia have temporarily lost control over Kosovo mining and electricity production.

Most of Serbian coal since 1999 is being produced in 3 main areas, two in Kolubara region and one in Kostolac. In Kolubara region main Fields are field D (plus B and C as integral parts of it) and Tamnava West (which was also directly

connected to already in 1990 exhausted Tamnava east and Veliki Crljeni fields). In Kostolac region since closure of Ćirikovac main field is so called Drmno field that is supplying coal to the Kostolac A and B Thermal power plants.

Due to decades, long record productions levels with the aim to provide cheap and for citizens of Serbia affordable electricity National Electricity Company that is monopoly holding public company have seriously depleted most valuable coal deposits in all the listed fields. Such record braking production have triggered serious plans to extend production area and to provide new mine fields as replacement fields for operating ones.

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Kolubara basin - the largest area of lignite mining in Serbia, which has reserves estimated at 2.2 billion tons

2. Processes of resettlements

A sad story about systematically negligence and violation of human rights. "First generation of the resettlements": Up to the 2000 Resettlements have being implemented as state interest and looking at the numerous interviews there were conducted with citizens affected by resettlement in that period it was deeply corrupted process in which authorities and EPS have used every possible opportunity to demand money from citizens, if they would like to solve their problem, otherwise citizens were exposed to voluntarist and manipulative treatment. There are known numerous cases where people were directly cheated and they have never received money if they did not agree to pay bribery money, in other

cases Company corrupt employees together with affected citizens, have shared illegally received money for expropriation.

With regards to the economically human rights it is known that serious and systemic violations have happened. Most of citizens affected by mining could not protect integrity of their properties. In the same time once involved in process of resettlement they have being exposed to high levels of legal uncertainty and almost 100% loss in front of courts. Damages on agricultural production was wide spread occurrence witnessing very poor, irresponsible and malicious design of mining operations that did not took in to consideration rights of citizens. These damages had form of a) illegal use of someone's lands due to always occurring emergencies, b) accidents with water management, c) constant and illegal "taking" of parts after parts of someone soils/ lands without doing it at once and paying decent money, d) damages of "cultures" both orchards/ wine yards/ crops/ cattle grazing fields.

Most of resettlement occurred only in directly necessary areas/households and there is wide spread situation that some households are still on less than 20 meters from mining operations (Medoševac) or on less than 50m (Baroševac, Veliki Crljeni, Junkovac).
Court process in that period mostly represented game of power where EPS have exercised fully control over court and over citizens. In the same time, corrupt chain was leading deep in to company since persons responsible for the payments in significant number of cases didn't payed fully amounts or even any amounts to the citizens. Situation is same or sometimes even more distorted today than back in that time.

"First generation of resettlements became second generation of resettlements- how it looks like today?"

Damages on houses practically never have being considered as legal case and there are some villages where just in period of CEKORs (a Serbian NGO) intervention (so after 2010) occurred first cases demanding compensation. Characteristics of such cases is absolutely partials courts that is absolutely and almost exclusively taking side with the company doing all the possible forms of a) extensions of periods, b) demanding specialist analysis that is always produced by "experts" that have long term professional involvement with the company- so simply corrupt and having direct conflict of interest , c) providing estimations of value of properties based on completely malicious and even criminal approaches, d) enabling company to take possession of property long before solving problem on court leaving citizens to absolute social and economically brake down and pushing them to accept any offer of the company.
Such criminal conduct has led to number of cases that have lasted for 15-30 years and even today number of persons who were damaged are trying to gain right for fully compensation. By looking at the current politically and other situation and on social and financial status of those citizens there are not many possibilities that the more than 20 years long cases will ever be solved in favor of justice.

"Second generation of resettlements"

After 2000, there is much more evidence about violations with regards to the economically human rights. Same and even more perfidious and treacherous situation is today. Legal battle for protection of citizen's properties is even harder today due to high levels of blackmail with "unemployment" (since most of citizens directly or indirectly depend on company), lack of honest/ just and /brave lawyers.

Company and authorities are systematically (to this day) violating rights of citizens to expression of their opinion, of participation in decision making process by using different means and forms of violation, right to objective information and even more citizens are directly exposed to media aggression and attacks, citizens do not have any protection from side of court and police and there was never the case that police investigated and prosecuted damages on houses from mining even in case of Junkovac when the organization CEKOR demanded criminal investigation.

There happen all the possible forms of violation of right to undestroyed environment.
There is no constant and detailed measurement of pollution of air, waters and soil. There is no credible measurement of noise in any of villages surrounding all the mines.
With regards to vibrations there have being made some attempts to measure them in village of Drmno in Kostolac region but after intervention of mining company, that activity was abandoned and never resumed again.
There are no credible geologically monitoring of movement of soil that leads to violation on the industrial scale of right on justice with regards to damages on houses.
Even more there is no record on status of health of citizens so it is impossible to claim and sue the company.
Complete complex of energy and mining related strategically decision making, spatial plan development, proclamation of public interest, EIA and SEA studies development and consultation are completely distorted and utilised for the company and its interest and practically completely excluding citizens, their opinions and thus directly leading to closed and corrupt system that serves interests of politically elites and their economically brotherhood relations with the domestic and foreign banking and corporate partners that establish complete control over resources, space, decision making process and citizens properties. these complex is leading to all the forms of violations.

3. Impact of opencast mines on the environment and the society

According to draft version of spatial plan for Kolubara mining region in previous period since beginning of mining in Kolubara and up to 1991, about 966 families have being resettled while up to 2003 there were 1383 families resettled from the Kolubara mining region while since 2003 – 2015 overall 2.362 families have been resettled.
As pointed out it is estimated that this number of expected resettlements up to 2020 is actually attempt of EPS to reduce its production cost by reducing obligation towards widening of the protective belt around its mining operation to 500m and consequently size of number of families that should be resettled.

In the same time, some extensions of existing mine fields in Western parts of Kolubara mining region have happened, causing resettlement of number of smaller villages.
Trying to avoid serious increase in price of investments for every new coal mine EPS is seriously and systematically violating rights of citizens that are surrounding its mining fields.
Main cause of violation of human rights is systematic avoidance of national authorities and national electricity company (EPS) to admit detrimental impacts of coal mining on the zone

not narrower than 500m. This avoidance of responsibility is being systematically implemented thorough number of failures of authorities:

a) systematically avoidance to measure pollution of air and soil
b) Systematically avoidance to measure noise and vibrations
c) Systematically avoidance to measure damages on houses
d) Systematically avoidance to cover damages in agriculturally production
e) Systematically avoidance to keep detailed record of the health condition of the citizens.

In 2008 when spatial plan for Kolubara mining region was formulated as part of obligation of EPS and Serbia towards foreign financier it was first time that any local community was involved and that some of rights of citizens have being involved in design of spatial plan. Most significant part of this spatial plan was introduction of protective area around villages at distance of 300m for the villages and 200m for places where there are no human settlements.
Spatial plan is practically having status of law therefore its prescriptions should be followed in every detail.

Unfortunately, this solution was not implemented in practically none of villages surrounding Kolubara mining basin. Due to such violation of spatial plan there are known witness situation where hundreds of families are living in houses in near vicinity of the mine. Looking at the presented civil movement in both Kolubara and Kostolac mining regions it becomes clear that much more citizens consider their living conditions not sustainable, suffer from the high levels of different forms of pollution, serious and dangerous damages on properties due to mining and auxiliary mining activities.

In Kostolac region most affected are cities of Kostolac, Požarevac and significant number of villages surrounding both mining and Thermal power plants especially Drmno, Old Kostolac, Ćirikovac etc.

For the future, it is expected that additionally at least 1500 families and their properties should be resettled in Kolubara and about 350 families in Kostolac region.
According to official data overall it is expected that Kolubara mining region will need to resettle about 3000 persons from 1050 families. According to human rights defender NGOs it is needed to establish much more strict and wide protecting belt around mining operations of Kolubara mining company which will mean that wider number of persons will need resettlement.
In same time in second most important mining basin in Kostolac region, official estimations do not consider any new resettlements which is per se direct violation of human rights especially taking in to consideration all the damaging and detrimental consequences of mining on properties and moreover human health in Kostolac region.
Therefore, local communities in this basin have initiated process of demanding resettlement based on right to clean environment and moreover protection of right to use their property without anions interference. In this case, more than 250 households in Drmno are exposed to detrimental ruptures on their houses directly caused by mining that is happening at distance of 100- 800 meters from village. While exposed to mining, these villages are exposed to high levels of pollution from two large thermal power plants in Kostolac and Drmno where at least 15000 citizens are living directly next to the Thermal power plants, coal deposits for thermal power plants, ash deposits of these blocks and one among largest mining operations in region of SEE Europe.

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Junkovac is a village where people live in fear since a landslide destroyed thirteen houses and road in 2013. Since then they wait to be resettled with appropriate compensation, but the Kolubara mining company is letting them wait

4. Current plans for new opencast mines

There is number of projects that are envisioned for increasing and prolonging Serbian lignite mining for use in electricity production. Since Serbian mining fields that are already being excavated are for decades old and some of them very near to complete exhaustion and looking at the energy development plans of Serbian authorities that are

reflected in national energy strategy until 2025 with projections to 2030 it is clear that planned new coal based TPPs will need development of new fields. As presented in table (with brown colour) in Kolubara mining region EPS and authorities are planning some major investments in new feds.

These developments in Kolubara and Kostolac mining regions will demand investments of at least 3- 5 billion EUR.

By looking at the development plans we can see that Serbia with Kosovo* has rather significant deposits of coal and lignite (1000 tons).

Type of coal	**Serbia without AP Kosovo* and AP Vojvodina**	**AP Kosovo***	**AP Vojvodina**	**Overall Republic of Serbia**
Stone coal	8.214			8.214
Brown coal				111.293
Brown- lignitous	536.678		8.729	545.407
Lignite	3.989.333	15.746.000	13.608	19.748.941

With regards to the volumes of coal needed to produce electricity according to the scientific studies and looking at the official strategically documents it is obvious that Serbia does not plan to align its energy policy with EU projections requiring de carbonization of electricity sector until 2050.

Officially mining balances and plans designed in spatial plans of mining basins of Kolubara and Kostolac based on decades long geologically researches are showing that Serbia is planning to produce more than about 48mt of coal until 2060/ 2064 in Kolubara and Kostolac mining regions, which will mean that Serbia will emit about 52,8mtof CO2/a based on conservative emissions factor of Serbian coal.

Year	Field B	Field D	Tamnava East	Tamnava West	Veliki Crljeni, field	Extended D field	Field E	South field	Radljevo field	All the Fields in Kolubara Kolubara
Up to 2020	19,9	56,6	12,0	156,0	31	65	55,2	28,0	40,3	464
Up to 2025				55			50	40	40	185
Up to 2030				55			50	40	40	185
Up to 2035				55			50	40	40	185
Up to 2040				33			50	40	40	163
Up to 2045							50	40	40	130
Up to 2050								40	22	112
Up to 2055								40		40
Up to 2060								40		40
Overall fields Kolubara				198			300	320	222	1040

Table: Capacities of fields in Kolubara mining region per field in mt

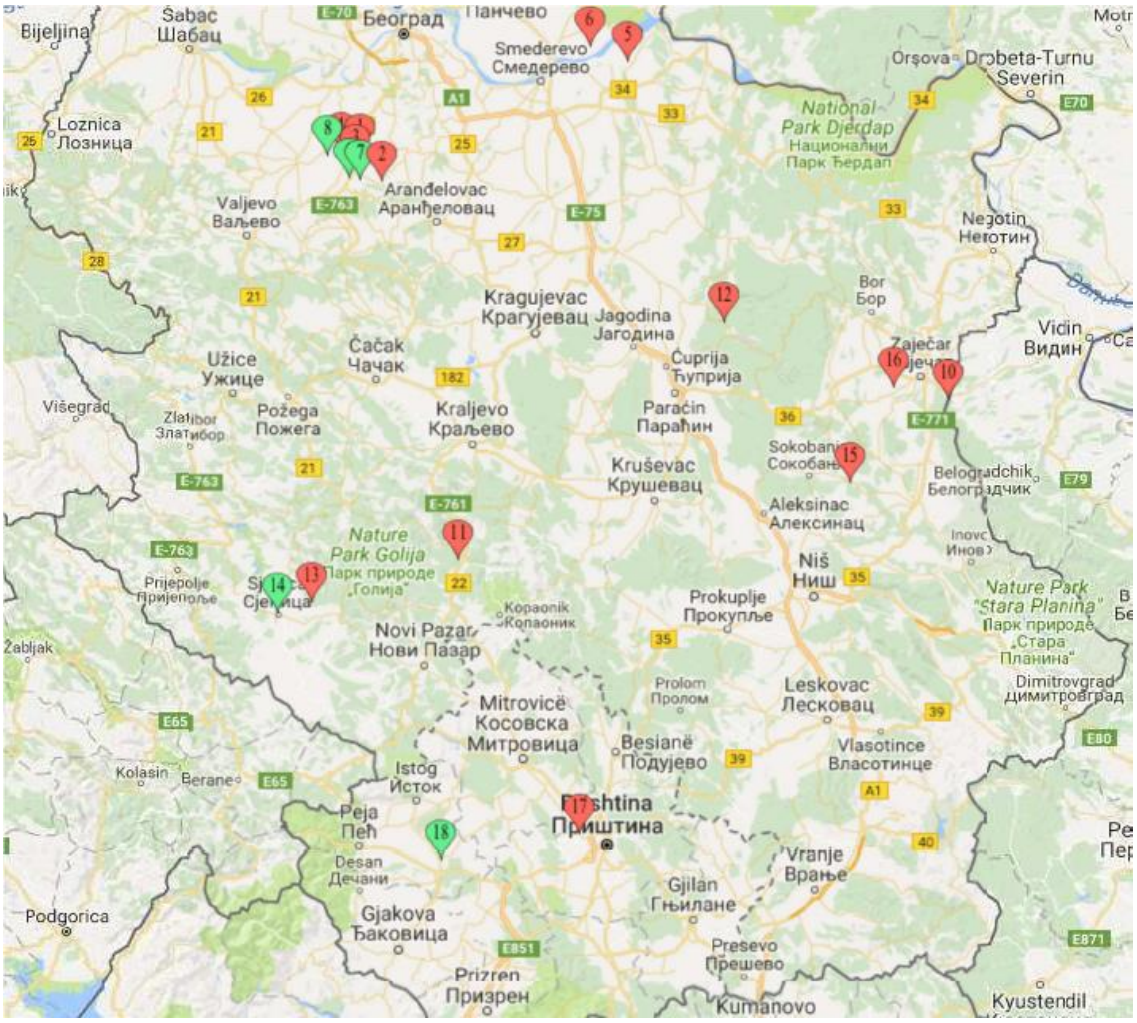
coal	Class	
Field F	Balanced	646,16
	Non balanced	
Šopić Field	Balanced	109,712
	Non balanced	19,13
Zvizdar field	Balanced	320,00
	Non Balanced	40,00
Overall potential fields		1.135,204

Table: potential lignite fields in Kolubara mining region in mt

It is only necessary to add that Kostolac mining field "Drmno is estimated to have deposit of about 329 mt that will be produced until 2064 according to projections of new and replacement TPP capacities for Kostolac mining region.

5. Summary

A map below shows data for existing opencast mines in Serbia (red color) and planned opencast mines (blue color) – number of displaced people and the size of area which has been destroyed.



Legend:

No	Name and description	Location	Number of families in need of resettlement	Size
0	**Kolubara mine overall**		About 1000 families untill 2020; according to human rights standards at least 500 more families should be resettled	Kolubara mines and auxiliarry industrial activities - 58648,1 ha
1	**Veliki Crljeni mine field** in Kolubara basin stopped in 2016	Veliki Crljeni	0 - officialy (250 - possible)	245 in 2015
2	**Field B/C** in Kolubara basin: the oldest mine in Kolubara; producing about 3 mt lignite annually	Baroševac	15-20 - officialy (50-100 - possible)	580 ha in 2015
3	**Field D** in Kolubara basin: producing about 11 mt annually	Vreoci, Junkovac	370-380 (need more field research, estimated at least 100 more than officially number)	2040,5ha in 2015
4	**Tamnava West field** - biggest field in Serbia producing 11-12mt lignite annually	Radljevo, Mali Borak, Kalenić Veliki Crljeni, Skobalj,	50 - officialy (~100 - possible)	1075ha in 2015
	Tamnava East field - exhausted mine			1108 ha in 2015
00	**Kostolac region**		Officially no resettlement needed; human rights defenders demand at least 350 families to be resetteled	
5	**DRMNO mine field** – the most important field in Kostolac region, producing about 9,5mt of lignite annually	Drmno, Old Kostolac, Ostrvo	0 - officialy (~300 - possible)	
6	**Kovin mine** - under water lignite mining (under Danube excavation)	Kovin on danube River	0 - officialy (~ 300 - possible)	
7	**Field E** in Kolubara Mining Basi	Burovo, Zeoke, Medoševac, parts of Baroševac, Šopić Burovo, Kruševica, Junkovac, Rudovo	About 350 (~450 - possible)	
8	**RADLJEVO** - planned field in Kolubara mining basin	Radljevo, Kalenić, Brgule village in Ub municipality	800 - officialy (~1000 - possible)	

9	**SOUTH Field** in Kolubara mining basin	Šopić village in Lazarevac municiaplity	50 - officialy (~150 - possible)	
10	**Vrška Čuka** Antracite mine, underground production	Vrška Čuka, Serbia, Near Zaječar municipality		
11	**Ibarski mines**, underground mine, producing about 120000-180000t hard coal annually	Baljevac na Ibru, Serbia		
12	**Resavica mine**, Brown coal production; underground mine.	Resavica, Serbia		
13	**Štavalj**, underground lignite mine	Štavalj in Sjenica municipality		
14	**Štavalj**, open cast mine	Štavalj, Sjenica municaplity, Pešter plane Štavalj, Dunišiće, Medovine, Vapa villages affected	about 1000 persons - more research needed	
15	underground excavation.	Levovik, Serbia		
16	Lignite,. Underground mine.	Lubnica, Serbia		
17	**Obilić Mines** since 1999 are not under Serbian state control, however it is expected that ownership will be discussed	Obilić, near Priština	According to spatial plan from 2001 in Kosovo mining basin – it was about 70000 persons (17000 families) and for 2020 - 190000 persons.	
18	Open cast mine.	Klina, Kosovo	no data - more research needed	

MACEDONIA

1. An overview of history of opencast lignite mining

Coal is currently the main resource for production of electricity in the electric power system in Macedonia. Coal and gas are more than 50% of the electrical energy production in the European Union and it is likely to stay an important part of the electric power mix in the following decades. Coal (lignite) is used both in industry and for broad consumption and currently, Macedonia's energy supply depends on production and exploitation of coal. According to the strategic documents, it could be ascertained that plans of the energy sector in The Republic of Macedonia are dependent on the already established and potential reserves of coal. All reserves of coal together with the potential from Pelagonija Basin are estimated at 2.5 billion tons. Macedonian coals are lignite with relatively low caloric value and high content of moisture and ash from the geological ages like Pliocene and Miocene. Now, coal exploited in mines in The Republic of Macedonia is largely intended for electricity production. A minor part of the production of coal is intended for use in houses. Macedonian Power Plants (ELEM), the main publicly owned energy producer, has announced that they have begun procuring of modern equipment needed to fully utilize the new part of the Suvodol lignite mine, and to have the open pit mines Suvodol and Brod Gneotino that can operate continuously and independently. ELEM has informed that the program will include investments value a total of EUR 64.5 million, partially provided by ELEM itself, and partially as a loan from the Deutsche Bank.

The future discussion is expected to focus on the long-term challenges, posed by the depletion of quality coal deposits that are used to fire the only two coal plants in Macedonia, TPP Bitola (near Bitola) and TPP Oslomej (near Kicevo).

Experts from the field are expected to discuss the possibilities to provide alternative fuels and to continue the search for new deposits of fossil fuels or direct the research towards alternatives for production of electricity from renewable sources. Nearly 80% of Macedonia's electricity is produced in the TPP Bitola coal-fired plant, which has a huge impact on the energy security in Macedonia considering that the energy mix is highly homogenous and dependent on lignite. The remaining 20% of electricity production is in hydro power plants (HPPs) which limits the energy security even further, particularly in years when the hydrology is not favorable.

2. Processes of resettlements

The first mine that was open prior to beginning of operation of the TPP Bitola was Suvodol mine, named after the largest of three villages expropriated for the purposes of mining. When the process of resettlements begun about 40 years ago, (in the

1970-ies), settlements that were affected were Suvodol, Biljanik and Vranjevci – villages which were situated in the location of the coal mine used for TPP Bitola. Almost 1000 people were resettled and most of them were given new homes in the suburbs of Bitola. Some of the people were also employed in the TPP Bitola as a part of the compensation made by the state. However, not all inhabitants of the villages got appropriate compensation and there are still grievances about the issue.

© Initiative for Clean Air in Bitola
Protest held in Bitola against air pollution

3. Impact of opencast mines on the environment and the society

Considering that all those three villages affected by the mining operation related to TPP Bitola were completely emptied, expropriated and levelled, historical data on the number of the population were gathered and compared to the number of people currently living in the location of the replacement settlement in the suburbs of Bitola. As in the period there was intensive migration from the region to countries overseas, the numbers were consulted with people who were resettled and could give more information on the process.

The three villages affected by operations in Suvodol mine were Suvodol, Biljanik and Vranjevci. The housing area of them was approx. 10 km^2, while with the surrounding arable land pertaining to the villages they covered nearly double surface. All three villages were in the Municipality of Novaci near Bitola, in the close vicinity of the power plant Bitola and are now non-existent.

The operations in the Brod-Gneotino mine did not require displacement of people, although it cannot be said for certain that no expropriation was done.

Figures related to the mines can be found in the table in part 5 of this report.

Suvodol

Suvodol was the largest of three villages expropriated for the mining operations, hence the mine got the name Suvodol. Population that was displaced is approx. 430 people. The village is now non-existent, but it was located approx. 7.3km from the centre of the Novaci municipality.

Biljanik

Biljanik was the second largest of the villages expropriated for the purposes of mining in mine Suvodol. Approximate number of people which were displaced from this village is 300. The village is now non-existent. The distance between the former location of Biljanik and the centre of the Novaci municipality is approx. 2.7km.

Vranjevci

Vranjevci was the smallest of the three villages expropriated for the purposes of mining the Suvodol lignite mine. Approximately 140 people were displaced from it before it was levelled for the purposes of the mine. There are still some visible remains of houses from this village near the borders of the mining operations. The distance from the previous location of Vranjevci and the centre of the Novaci municipality is approx. 5.3 km.

Bitola opencast lignite mine and power plant

4. Current plans

Zivojno is located on the right bank of the Crna River, 35 km from Bitola and 20 km from the existing open pit mine Brod Gneotino. According some plans, Zivojno can be exploited with a combination of surface and underground mining, but priority is given to underground exploitation method.

Mariovo mine is located 30 km south of Prilep, among villages Manastir, Vitoliste Polchishte and Beshishte.

The plans for Mariovo mine are to use underground exploitation due to the characteristics of the deposit. The plans are to use the Velenje method, however since the method has never been used in Macedonia so far there is no experience with it. The so called "Velenje method" is used for excavation of the mines of Velenje, Slovenia. If this method of exploitation is used, the annual production would be between 1 and 2 Mt lignite.

Negotino mine is located southeast of the Vardar River, 2,3 km south of the existing TPP Negotino. Provided that surface and underground excavation are used simultaneously, the yearly production would be 2 Mt lignite per year (1,5 Mt with underground and 0,5 Mt with surface method).

Popovjani mine is located in the village Popovjani, Municipality Oslomej, 3 km north of the existing TPP Oslomej and is not sufficiently explored at this point. The capacity is estimated at about 9 Mt lignite and open pit exploitation is possible.

Lavci is located in the village of Lavci, 10 km to Resen and there is insufficient information to determine the exploitation reserves since the exploitation technology is not determined yet.

Zvegor-Stamer and Pancarevo is located in the eastern part of Macedonia near the border with Bulgaria. Research conducted so far cannot determine the dynamics and possible methods of exploitation.

5. Summary

All active lignite mines in Macedonia are exploited with surface mining. Out of all planned mines, according current plans and strategies (in 2016) priority is given to Zhivojno (underground exploitation method), Mariovo (underground exploitation method) and Negotino (combination of exploitation methods). It should be noted that all planned lignite mines have very low quality lignite with low caloric value. Even if all above mentioned mines are exploited, energy security of the country is not ensured in the long term.

In the table below, data for current and planned mines are cross-referenced with data on how many people would potentially be affected by those mines. Data for surface area are taken from the analysis on availability of coal. Data on people affected are based on last census carried out in Macedonia in 2002 (except where stated otherwise).

Both current (black colour) and planned (red colour) mines are shown on the map below.

Legend:

Mine number	Name of the mine	Deposit [10^6 t]	Size of the mine [hectares]	Number of displaced people
1	Suvodol GJS	6	10	870
1	Suvodol PJS	48	3	0
2	Brod Gneotino	23	10[2]	0
3	Oslomej West	0,7	-	N/A
4	Zivojno	21	25	214
5	Mariovo	61	14	227
6	Negotino	38	15	2985[2]
7	Popovjani	9	-	399
8	Lavci Resen	15	4	338

[2] the data assumption made based on information from census done in 2002 for villages Tremnik, Przdevo, Dubrovo, Timjanik and Dolni Disan. According plans for the mine it is not clear if all of these villages will be affected

9	Pancarevo Pehcevo	20	6	375[3]
10	Zvegor Delcevo	12	3	949[4]
IN TOTAL		**254**	**90**	**6357**

[3] data refer only to residents of Pancharevo while data for Staro Istevnik is not available

[4] Zvegor – according to census from 1994, Stamer – according to data taken on 27.09.2016 from Wikipedia, https://mk.wikipedia.org/wiki/%D0%A1%D1%82%D0%B0%D0%BC%D0%B5%D1%80#.D0.94.D0.B5.D0.BC.D0.BE.D0.B3.D1.80.D0.B0.D1.84.D0.B8.D1.98.D0.B0

TURKEY

1. An overview of history of opencast lignite mining

Apart from the new lignite deposits discovered from time to time in Turkey, from 1950 to the early 1980's, mostly administrative structures of lignite mining developed. From the second half of the 1960's, especially in the 1970's, there has been a pause in the field of lignite reserve research in our country. Lignite production, especially since the early 1970's, has been accelerated by the onset of investments in lignite operations for electricity generation in response to oil crisis. Thanks to rapid production in this period, lignite extraction has shown a significant increase since the second half of the 1980's.

In 1960 about 2,860,562 tons of lignite was produced by the public sector and 1,006,089 tons by the private sector. A remarkable increase in the private sector (1,806,288 tons) was not recorded even though lignite production in the public sector increased to 6,638,049 tons in 1970. In 1980 public's production were recorded at the level of 13,079,000 tons and private sector's production on 1,380,000 tons; in 1990, the public sector produced 36,584,000 tons of lignite, whereas the private sector produced only 7,823,000 tons of lignite. Distribution and size of lignite production after 1990's are presented in Figure below.

In 2005, the ongoing project "Development of Lignite Reserves and Lignite Seeking in New Lands" which was operated by MTA(Mineral Research and Exploration Institute) under the supervision of the Ministry of Energy and Natural Resources, expanded by obtaining positive results from cooperation activities of public and private institutions. As a result, lignite reserve of 8.3 billion tons, have been updated to 11.5 billion tons which ranked Turkey high with its hosting of 5.9% of the world lignite reserve after the update.

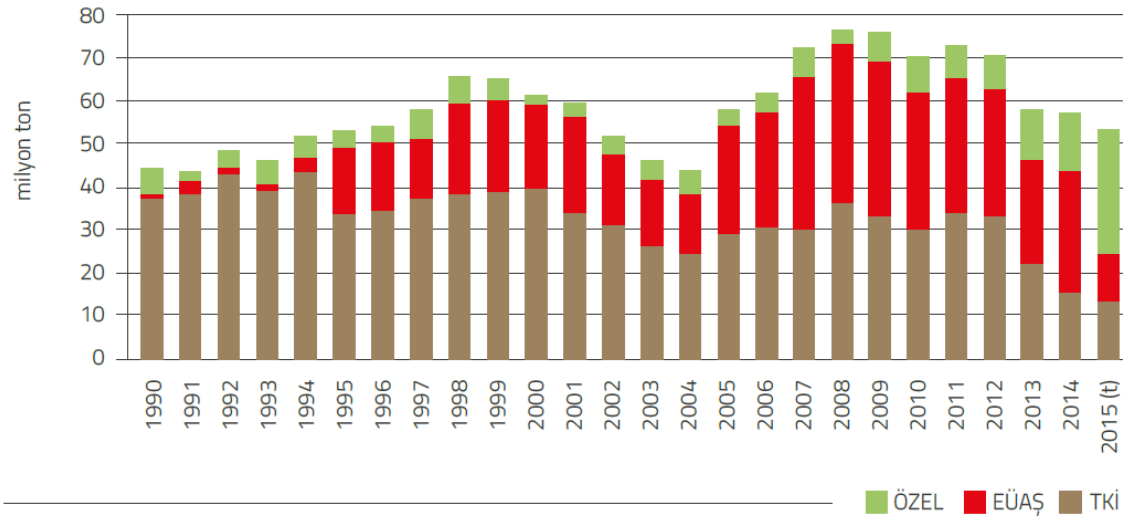


Figure. Distribution of Lignite Productions to Enterprises by Years (Green: Private Sector, Red: Electricity Generation Corporation, Grey: Türkey Coal Enterprises)

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Çöllolar opencast lignite mine in Afşin Elbistan

2. Processes of resettlements

Although Turkey's energy policies encourage lignite production, unfortunately in our country, opencast lignite mining activities take place without the need for many necessary procedures. The dust released into the environment due to the carefree approach during both opencast mining and transportation of lignite; the polluted water due to the heavy metals which are formed as a result of not paying sufficient attention to the disposal of solid and liquid wastes of opencast lignite mining, which is not usable for domestic, agricultural and even for industrial use; risks the health of all living things on the environment, destroys agricultural lands and damages their biodiversity.

The grievances experienced by people living in settlements near opencast lignite mines are mainly exposured to unhealthy environmental conditions which can lead to irreversible health burdens and the economic damages caused by 'inefficiency' and 'losses' in agriculture and livestock as a result of this exposure.

However, the real victimization occurs not in the stage of production, but in the stage of lignite consumption f. Turkey thanks to its lignite mine reserves and lignite mining, that is an important source of energy domestic production is a rich country; almost 90% of the produced lignite is used in thermal power plants, so when the effects of the opencast lignite mining in a settlement area are examined, the effects of the thermal power plant established in that area should also be checked.

Thermal power plants have had disastrous effects from the past up to now. There is no "realistic and comprehensive" quantitative source of direct effects of thermal power stations on the environment and human health, but some non-governmental organizations and some universities in Turkey have carried out researches, fieldwork and interviews with locals at the settlements located near thermal power plants to analyze these effects and bring human rights violation into open on site. Results are not digitized data but give general opinion about the situation there.

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Elmadere village of Soma, in the city of Manisa, where is the highest number of miner casualties

Air pollution is the biggest disadvantage of thermal power plants to nearby settlements due to the fact that there are no control units for sulphur dioxide gases or existing dust control units do not work efficiently at times in some thermal power plants even though large quantities of lignite is burned. In addition to that, the distance between plant and settlements and the direction of wind is not taken into consideration when the power plant is installed. Furthermore, while the plants were being expropriated during the establishment phase, the land prices were kept very low. Eventually people lost their health; suffered economically both because of inefficient agricultural production and livestock breeding, and they face the capital loss during expropriation. Some thermal power plants choosing their workers from other regions have disappointed people who look at power plants with a new source of livelihood. Consequently, settlements near thermal plants have been abandoned because they have become inhospitable with limited resources for living and poor environmental health. For these reasons, in terms of Human Rights, it can be said that the production of lignite in Turkey violated the rights of Life, Healthy Environment, Ownership, Work and Peace.

3. Impact of opencast mines on the environment and the society

There is no public data available for opencast lignite mine size and locations, therefore related provinces population have taken in consideration to estimate population affected by mines and thermal power plants.

Name of the Enterprise, Opencast Lignite Operational District / Province /City	The first time a lignite cave has been found	The first major opencast lignite coal production	Start date of the last opencast lignite mine enterprise at area	Thermal Power Plant Existance	Population Change in Province			Change in agricultural land (decar)	
					1965*	2000	2012-2016**		
					Center / Country	Center / Country	Center / Country	1995***	2015
Private – No name	n/a	n/a	n/a	has license	5.044/ 21.256	28.656/ 24.332	37.303/ 11.774	233.450	175.228
Gölbaşı / Adıyaman									
Private – No name	1892	1927	1955	has license	9.687/ 14.545	42.715/ 11.408	37.203/ 9.293	266.970	265.904
Suluova / Amasya									
Private – No name	n/a	n/a	1984	none	27.558/ 47.180	62.384/ 75.355	70.522/ 45.064	614.300	617.679
Söke / Aydın									
Private – No name	1899	n/a	n/a	operates	6.533/ 38.939	14.654/ 32.775	n/a	225.350	282.531
Dursunbey / Balıkesir									
Bursa Lignite Enterprise	n/a	n/a	1918	operates	2.377/ 45.304	8.071/ 22.378	Total: 20.602	216.780	77.513
Orhaneli / Bursa									
Çan Lignite Enterprise	1940	n/a	1979	operates	5.826/ 30.366	28.878/ 24.051	n/a	177.980	200.503
Çan / Çanakkale									
Private – No Name	n/a	n/a	1960	none	20.237/ 52.397	36.162/ 37.324	n/a	741.910	608.165
Uzunköprü / Edirne									
Afşin Elbistan Lignite Enterprise	1967	1981	1995	operates	10.794/ 51.345	35.834/ 56.884	Total: 81.591	805.540	627.609
Afşin / K. Maraş									
Afşin Elbistan Lignite Enterprise	n/a	n/a	1984	operates	17.859/ 74.119	71.500/ 56.767	Total: 141.468	1.265.850	1.015.436
Elbistan /K. Maraş									
Private – No name	n/a	n/a	n/a	none	12.592/ 21.851	15.509/ 27.133	Total: 29.475	243.550	179.423
Ermenek / Karaman									
Private – No name	n/a	n/a	n/a	İn construction	7.456/ 72.057	41.312/ 76.832	Total: 72.347	657.490	373.985
Beyşehir / Konya									
Garp Lignite Enterprise	1907	1926	1939	operates	13.652/ 45.585	47.224/ 52.551	Total: 102.677	385.220	358.257
Tavşanlı / Kütahya									
Seyitömer Lignite Enterprise	n/a	n/a	n/a	operates	n/a	n/a	n/a	n/a	n/a
Seyitömer / Kütahya									
Aegean Lignite Enterprise	1864	1914	1978	operates	18.633/ 20.471	60.674/ 28.364	Total: 108.213	201.320	208.217
Soma / Manisa									
Yeniköy Lignite Enterprise	n/a	n/a	1984	operates	12.987/ 55.050	38.063/ 74.745	Total: 134.774	795.680	780.222
Milas / Muğla									
Yeniköy Lignite Enterprise	n/a	n/a	n/a	operates	n/a	n/a	n/a	n/a	n/a
Yatağan / Muğla									
Sivas Kangal Lignite Enterprise	n/a	n/a	1989	operates	4.412/ 52.186	12.099/ 24.950	Total: 21.484	1.306.600	1.458.304
Kangal / Sivas									

Table - Opencast Lignite Production, Thermal Power Plant Existance and Population Change in Related Settlements.

*Online data not available before 1965 (Turkish Statistics Institute)

**Because of the change in population census methods after 2000's, database for population of Turkish Statistics Institute is no longer available for public use. The data regarding 2012 and after is taken by each provinces individual database, therefore a certain year could not be set on the table.

***Online data not available before 1995 (Turkish Statistics Institute)

Conclusion: Even though that it is a known fact amongst green NGO's and those who study in the areas of opencast lignite mines and to anyone who has witnessed it on site that mining activities harm human health and environment resulting some settlements to be abandoned; without study on site, it is hardly possible to calculate effected population and due to the fact that there is no data for the size of mine it is not possible to measure the agricultural land destroyed by opencast lignite mining.

In order to make a projection in population, a calculation was made over the provinces that have a decline in their agricultural areas. A hypothetical population is created considering the change in rural population of these provinces. (Population that are subject to the calculation are marked on the table.)

1) For Gölbaşı, Suluova, Orhaneli and Uzunköprü decrease in the rural population can be calculated from the table. 9 482 + 5 252 + 22 926 + 15 073 = 52 733 people.

2) For Tavşanlı and Milas, the effect of thermal power plants established after 2000's on the rural population is taken into consideration and a population chart is expected just like the above mentioned Orhaneli province which also hosts a thermal power plant. Considering the increase in their urban population, these two provinces have the following decrease in their rural population: Approximately 55 000 people. (35 000 decrease

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Since coal mining and coal power plants has ruined agricultural activities in Soma Manisa, the villagers try to collect usable coal to sell and earn their living

of Milas and 20 000 decrease in rural population of Tavşanlı after 2 000 is expected.)

3) For Ermenek, Afşin and Beyşehir, it can be said that the decline in total population after 2000 was mainly due to the rural population, considering the high decline in agricultural areas and the increasing urban population. Hypothetical decrease in rural population of these provinces is; 83.000 people. (Population decrease at rural is expected around 18 000 Ermenek + 45 000 Beyşehir +20 000 people in Afşin after 2 000.)

To sum up, there is a decrease in rural population of the above mentioned provinces - around 190 733 people - which can be caused by, among others, development of opencast mines.

4. Current plans

Since 2012, Turkey has been focusing on reduction of foreign energy dependency and therefore has been working on finding and using existing coal reserves. By using these local reserves in Konya-Karaman, Afyon Dinar, Eskişehir Alpu and Ergene, the Turkish government plans reflect the aims of doubling electricity production by using locally sourced coal powered plants. In addition to these mentioned cities, imported coal power plants are planned and authorized in coastal cities like İzmir, Adana, Çanakkale and Zonguldak.

TEMA Foundation has focused on the planned opencast mine in the Mid-Anatolia (the provinces of Konya and Karaman) recently. Almost half (47.18%) of the designated region is agricultural land, and 21.19% is meadows and pastures. The size of the agricultural land of the towns where the coal reserve of 1.8 billion tones is found is estimated at 5 million decares.

As the planned opencast mine is underneath a vast agricultural area, if the mine is to become active, farmers and other people who work in the agricultural sector will experience drastic effects, not to mention the mine's effects on the soil and agricultural production. According to the Turkish Institute of Statistics there are approximately 312.000 inhabitants of the mentioned 4 districts (2015 data) (Ereğli and Karapınar in Konya, Merkez and Ayrancı in Karaman).

Although having an opencast mine in the region would not seem to reflect poorly on all the inhabitants in the region, bearing in mind that many of the adults who live in the region do agricultural activities for their living, having an opencast mine will have a drastic impact on their production and therefore their living.

As the mentioned Konya Closed Basin is an important area for agricultural production, turning the area into an opencast coal mine will have devastating effects on agricultural production as well as on the people who are employed in the agricultural sector. The size of the licensed opencast mine accounts for 20,000 hectares. Furthermore, this large area will be dug up and the excavated soil (11.5 billion m3, 22 billion tonnes) will be piled up on other fertile nearby agricultural area. This reveals the effect of the planned opencast mine not only on the area with that holds coal reserve but also on other fertile agricultural areas. On another note, all the mentioned activities to dig up the coal reserve will cause displacing and unemployment of approximately 5,000 people if not more.

Since the use of local coal reserve is central to the energy policies in Turkey, there are more other projects all around the country. However the size of these mines and other relevant information of these planned mines are not available because the relevant authority, Ministry of Energy and

Natural Resources, is not willing to make information available. (Listed below).

5. Summary

A map below shows data for existing opencast mines in Turkey and planned opencast mines (circled area) – number of displaced people and the size of area which has been destroyed.

Legend:

	Enterprise/Basin / City	Permit Holder	Production Available for Sale (Million Tones)	Stripping (m^3)	Number of displaced people
1.	Aegean Lignite Enterprise	Turkey Coal Enterprise (TCE)	8.8	24.4	n/a
2.	Çan Lignite Enterprise	TCE	1.9	5.1	n/a
3.	Garp Lignite Enterprise	TCE	3.7	42.0	20 000
4.	Bursa Lignite Enterprise	TCE	0.4	11.8	22 926
5.	Southern Aegean Lignite Enterprise	TCE	2.8	n/a	n/a
6.	Yeniköy Lignite Enterprise	YEAŞ	7.5	n/a	35 000
7.	Afşin-Elbistan Lignite Enterprise	KEAŞ	13.5	28.2	20 000
8.	Sivas-Kangal Enterprise	EÜAŞ	2.4	n/a	n/a

9.	Seyitömer Lignite Enterprise	EÜAŞ	5.5	n/a	n/a
10.	Adıyaman Gölbaşı	Private	0.14	n/a	9 482
11.	City of Amasya	Private	0.35	n/a	5 252
12.	City of Aydın	Private	0.7	n/a	n/a
13.	City of Balıkesir	Private	0.6	n/a	n/a
14.	City of Edirne	Private	0.3	n/a	15 073
15.	Karaman Ermenek	Private	0.3	n/a	18 000
16.	Konya Beyşehir	Private	0.45	n/a	45 000
17.	City of Manisa	Private	0.6	n/a	n/a
18.	City of Tekirdağ	Private	1.6	n/a	n/a
19.	Konya-Karaman*	EÜAŞ	1 800	n/a	5 000
20.	Afyon-Dinar*		941.5	n/a	n/a
21.	Eskişehir-Alpu*		1,5	n/a	n/a
22.	Ankara-Çayırhan	Private	213	n/a	n/a
23.	Kırklareli-Vize		415	n/a	n/a
24.	Trakya-Çerkezköy-Çatalca		495	n/a	n/a
IN TOTAL				**111.5**	**195 733**

*planned mines

BULGARIA

1. An overview of history of opencast lignite mining

Lignite coal comprises over 92% of total extracted coal, followed by brown coal (7.5%) and black coal (0.1%). Coal extraction in the last years remains at relatively steady volume of approximately 30 million tonnes a year.

Maritsa East Mining and Energy Complex

Maritsa East Mines started exploitation in 1952 with the Mine Troyanovo 1, TPP Maritsa East 1 (now renamed to Brikel) and the coal factory (nowadays also Brikel), that annually generates 3,5 – 4 m tons of coal into form of briquettes for domestic heating. The additional capacities of TPP Maritsa East 2 and 3 come gradually online by the mid 1970s.

The mine is literally huge. The productive area of the lignite basin in exploitation is 240 sq km. The mine is technically divided into three subenterprises – Troyanova 1 mine (at Troyanovo village), Troyanowo North (Kovachevo village), and Troyanovo 3 (Mednikarovo village).

The coal is extremely poor quality – with low calorific value, very high sulphur and ash content that varies from 16 to 45% and is quite wet – with 50-60% humidity.

The latest concession is from 2005 and was issued for 35 years – until 2040. The company has over 7000 employees and operates under the umbrella of the Bulgarian Energy Holding (BEH).

© Gabriela Petkova, Greenpeace Bulgaria
Mini Maritsa-Iztok opencast lignite mine

2. Processes of resettlements

Processes of resettlements are described together with the impact of opencast mines on the environment and the society – in the next point.

3. Impact of opencast mines on the environment and the society

Maritsa East Mines extend from the Radnevo town at their north side to the Galabovo town at their south end. The area of the open pit mine is part of some of the most fertile land in Bulgaria (Upper Tracian Valley) with excellent climate conditions and fertile soils. The existence of the mine of course affects local economy structure, it has direct effect on the land and water use and also results in that some of the agricultural produce is not so well perceived on the market.

Most of the affected villages are on the territory of Radnevo Municipality which nowadays has a total population of around 20 000 people. The expansions of the mines lead to the wipe-off of a number of villages that were on the territory of the mining concession. The first village was expropriated in mid 1960's and the process of swallowing up villages continues to date. The villages already expropriated are: Targovishte (1965), Starosevets (1978), Malka Detelina (1983), Golyama Detelina (1984), Gledachevo (demolished and excavated between 2001 and 2009). The local people claim that the expropriation in the past during the socialist state have been done in a way that provided better benefits to the people who were expropriated – with the provision of a dwelling or a house in other location if they were expropriate.

Photo: Google maps. Expropriated large villages are marked in black, villages in process of expropriation (currently) are marked in red

Bubo Dol – A (Not Yet Fully) Ghost Town (open pit and underground)

Bobov Dol is a municipality and about 50-60 sq km of its territory lies on a layer of brown coal. The development of the deposits started in Socialist times in the 1950's. The town of Bobov Dol can be considered as a mining town that was born and now fades with its resource – the coal. The open pits are situated right in the outskirts of the town and the mining continues also in underground galleries. The view of the mines adds additional depressive look to the very poor and struggling to existed town. There are also more mines but they are all underground. Only one village Krushovitsa has been expropriated back in 1965. The entire population of the Municipality to date is less than 10 000 people.

Stanyantsy and Beli Breg

Two more open pit mines for lignite coal operate to date in the Western Balkan Mountains of Bulgaria – Stanyantsi in the municipality of Godech and Beli Bryag at Dragoman. Both mines contribute to a very small percent of the mined lignite in Bulgaria. Only Beli Bryag have caused the expropriation of a village in the last – Malo Belyovo village has been expropriated in 1986.In personal testimonies to people from Za Zemiata workers in the mines admit that the conditions are awful, that the intensity of mining from those mines has increased dramatically which intensified the shifts.

4. Current plans

Official ongoing expropriation is expected only in the Maritsa East Mines region. The remaining villages in the "gravity field" of the mines are in very bad condition. For example the village of Kovachevo (east side of the mines, population of 500 people) which is not

planned for expropriation is surrounded by the open pit of the mine and the infrastructure is in poor state and remains with little or no maintenance in the recent years. This deterioration of livelihood goes at full speed also in the two villages that are on the queue for expropriation – these are the village of Beli Bryag (150 people) which is about 7 km away from the Municipal center of Radnevo and the village of Troyanovo (750 people) situated further towards Galabovo Municipality.

Two thirds of the roughly 150 houses in Beli Breg are already bought by the mine, despite the fact that no official expropriation has started yet. The prices offered to the people are in the best case around 1/3 of what they would require to set their live all over again in a property with the same size and parameters in the region. The village has lost its gas station, shop and cafeteria. The funerals in the local graveyard are prohibited since 2011. The big excavators are approaching the village by a few hundred meters annually and the mining horizon is less than 1.5 km away from the houses already. In the same time no official date for the forced expropriation is scheduled – a condition that may put the case of the people more into the public attention and that may as well provide a bit fairer compensation. The planned year of expropriation has been initially announced as 2016, and then moved to 2018 and in the recent communication with the villagers it is said "no earlier than 2023". This insecurity plays also bad role in the relations between the mine and the villagers. The conditions in the village no longer support normal living and people have to move indeed but be also fairly compensated. In the same time most of the people are of age – this constant game of postponing the "doomsday" is putting a lot of stress and pressure on them. Many of the senior people people in Beli Bryag remember that in 1984 when the village of Golyama Detelina was expropriated tens of the elderly people passed from stroke and heart attack within a month before the actual expropriation was about to take place.

Pernik – The Undermined City

Right after Bulgaria broke free from the Otoman Empire in 1878 Pernik was a village of a few neighborhoods with less than a 1000 people of population. When the brown coal was discovered Pernik began fast expansion and industrialization as of 1890's and became an 80 000 people city nowadays. Around the World War I the city contributed on average of 75-95% of all coal extraction in Bulgaria and 1/3 of GDP. The mines were underground. In the socialist times Pernik expanded with huge factories and the extraction of coal began to be open pit mining and galleries.

The city was protected from the effects of the open pit mines by a forest belt that encircled the north and north-west part of the city. After the 1990's the mines were privatized.

In 2005 the state granted the right to mine within the forest belt to a Belgian-Bulgarian company called ReCoal. The deposits proved to be very shallow. This attracted illegal miners – at first mostly poor Roma people - to start digging vertical holes and mine coal for heating illegally. Then these miners called "moles" started to offer the coal to the illicit market. In a few years this spontaneous enterprise initiated by poor people

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Activists protest in front of the Council of Ministers in Sofia

turned into a highly organized criminal business. More than 300 vertical holes, 15-20 m deep and below tunnels that spread sometimes hundreds of meters – with no support and frequent accidents. Local people testify for more than 12 fatal accidents with illegal miners over the years that are not even recorded by the police or the medical service afterwards.

The forest belt that divided Pernik from the open pit mines was partly logged by the illegal miners. What was once the extension of the local forestry part Ursa turned into "Swiss cheese" – with hundreds of dangerous deep holes the park could no longer be used by the citizens for recreation – it was just too dangerous to step around. It is hard to find at what moment land swapping deals started in the forest belt but it was something around 2012, when a big expansion coming from the open pit mines started right next to the Belgian concession and the illegal mining. Until 2015 when local people began their own investigation there was no trace of this mining extension in the concession registry of Bulgaria, neither in the exploration registry. The police did not pay any attention to the signal of the locals and for 2 years the open pit extension reached the size of the mine of ReCoal which has been in operation for 10 years. It has been a public secret and spreads like an urban legend that the big machines that excavated the terrain are owned by a local businessman – Hristo Kovachky – a person whose name even local and national politicians do not dare mention. He is connected with the ownership of number of many coal mines and thermal power plants in Bulgaria and whose business is registered in off-shore jurisdictions for tax reasons. Apart from not paying taxes this form of registration is also a way to keep the real ownership in secrecy and to avoid liability.

Meanwhile the Belgian-Bulgarian company ReCoal did not pay royalties for the last two years of its existence. The maintenance of the rail road passing close by the mine that was affected by landslides costs tens of times more public funds then the royalties due. The mine had approached the District of Stara Teva to 80 meters and the edge of the mine reached 30 m from the district of Rudnichar – beyond any imaginable sanitary

minimums, the matter how this concession has been legally possible is an open question and a riddle for the public to date. Some of the reserves excavated over the years have actually been the coal reserves kept for emergency state – e.g. in case of war or disaster. These resources are no more available for the population – rather someone took a very cheap deal of coal – shallow and easy to mine – to do business.

In the spring of 2015 the local people organized resistance. They started attracting media attention with stunts to force the institutions to act. Coincidentally the same summer 4 houses undermined by the illegal mining collapsed. No one was hurt but two of the dwelling became uninhabitable. The cases from Pernik became well known in Bulgaria. Serious police presence was set and stopped almost fully the illegal mining. Heavy machinery was never seen again. The Belgian company tried to get an extension for their concession but protests made them give up their further mining intentions and in 2016 they declared default. This was a little victory for the locals but it also means the company has vanished without keeping the promise to restore the land where they mined. The excavations have put in danger of further landslides 3 districts of Pernik.

There are no viable plans for new coal mines in Bulgaria. Although couple of years ago the energy company ENEMONA tried to structure a project for open pit coal mine and a thermal power plant nears the city of Lom. They attempted to make a publicly listed company in the Bulgarian stock exchange but ultimately there were no investors. The only to some extend still realistic threat of coal mine and capacity expansion is in the Miritsa East Basin with plant to put one more block of capacity in Maritsa East 2 – realistic because the plant is state owned and the construction may go under national policies and despite the sound economic sense.

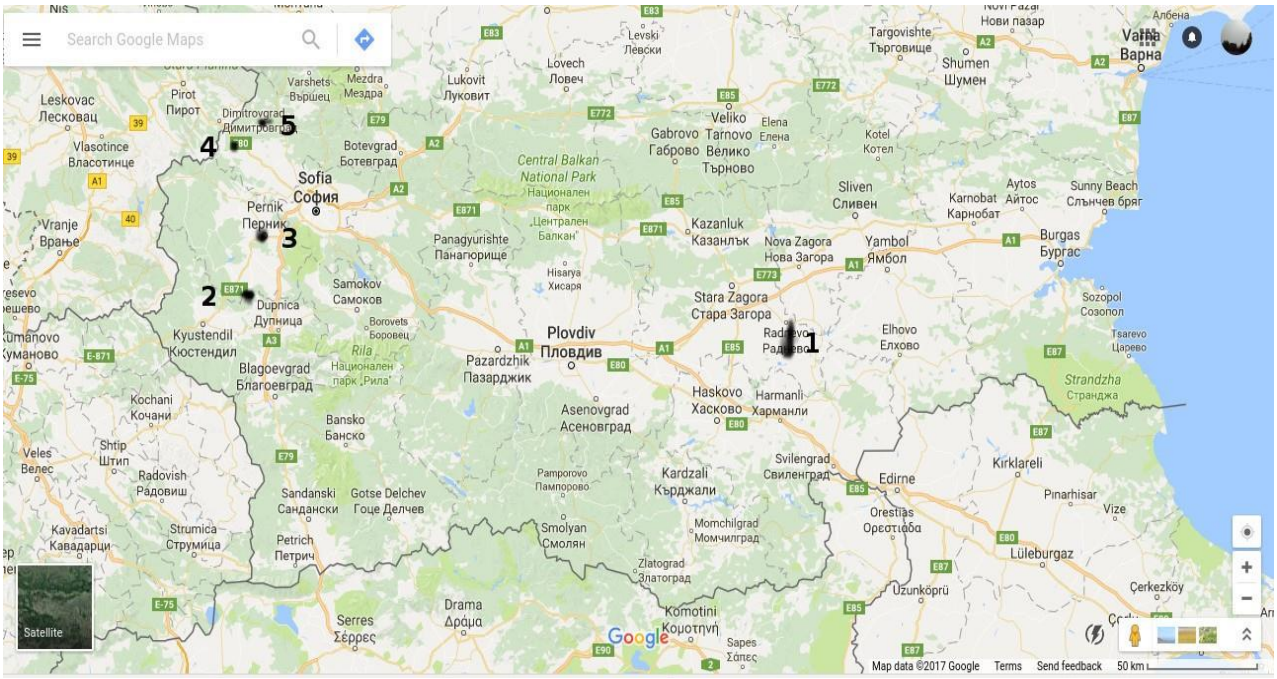
5. Summary

Getting to see the picture at local level it can be concluded that the coal regions of Bulgaria can be classified as 2 types: the ones have the coal industry in agony (Pernik and Bobov Dol) because the industry there is not economical anymore and is maintained through political favors and breach of environmental and social standards. These regions are sunk in poverty. The people who are employed in the coal mines and the coal power plants there have no security for their future. The local government is hijacked by people related to the coal industry. Local initiatives on spot go as far as the village of Golemo Selo is about to leave the current municipality of Bobov Dol that they are subordinate to and move to Dupnitsa municipality which will place the local coal oligarch in a very awkward position.

The second category of coal region is the region of Stara Zagora with Maritza East energy complex. This is where the economy and the people seem much better off – the regions are number two in economic development and income in Bulgaria. But this feeling is giving a sense of false security and people avoid considering that much sooner than anticipated the industry there will be dying too with the first signs of panting already being felt. Opposition is forming there against the mining expansion. In the same time the fears of the workers were pumped seriously by industry leaders especially

in the time of BREF discussions before the voting at the end of April 2017.

The map below shows existing mines in Bulgaria.



Legend:

Name	Size	Number of displaced people
1. Maritsa East Mining And Energy Complex	24 000 HA of technically exploitable area	Diplaced in the past: The villages already expropriated were: Targovishte (1965), Starosevets (1978), Malka Detelina (1983), Golyama Detelina (1984), Gledachevo (demolished and excavated between 2001 and 2009). Currently facing expropriation: Beli bryag village and Troyanovo village – approximately 1000 people will be displaced by the end of the process
2. Bobov dol	9 000 HA of technically exploitable area – open pit is only around the town of Bobow dol – the rest is underground	village Krushovitsa have been expropriated back in 1965
3. Mini otkrit vagledobiv (Pernik)	Open pit is only around the town of Pernik– the rest is underground	No information of expropriation of entire villages

	mining but the entire city lays de facto on the concession area which results in legal conflict and paradox	
4. Beli bryag (Dragoman)	N/A	Malo Belyovo village has been expropriated in 1986
5. Stanyantsi (Godech)	N/A	No information of expropriation of entire villages
IN TOTAL	**33 000 ha**	**1000 persons + 7 villages**

SUMMARY

Scenarios for economic development of many European countries provide a continuation of lignite production for many years. In many of them, lignite is still perceived as a resource with the important meaning for „social interest".

As we can see from the data presented in this report, the development of lignite opencast mines is associated with taking over and destruction of huge areas of land, as well as resettlement of many thousands of people.

It is very difficult to get an accurate historical information on number of displaced people (caused by existing opencast mines) in most countries. Data on the number of people potentially affected by planned lignite mines is also difficult to estimate. However, the number of people who were, and who may be displaced due to development of opencast mines in the studied countries can reach up to hundreds of thousands - this number, even with partial data obtained during researches, is almost 400 000 plus 32 villages. Also, the destroyed area reaches size as much as hundreds of thousands of hectares – around 275 000 ha (also partial data). And this numbers are incomplete, as data for most mines is not available - the size of the problem is in fact much bigger.

The table below shows partial data for each country.

Country	Size of land occupied by opencast mines		Number of displaced people	
	Existing mines [ha]	Planned mines [ha]	In the past	Planned
Bosna and Herzegovina	11 483.8933	no data	11 760* (3 920 families)	no data
Hungary	3 661	5 016	no data	618
Romania	11 865.4	4 187,48	no data	1 638* (546 families)
Poland	34 530.381	57 403.6	733	15 809 - 20 809
Germany	13 226,20	10 000	22 villages + 22 032 persons	25 442
Greece	16 000	none	3 villages + 4 000 persons	none
Czech Republic	15 100	none	90 000	none
Serbia	58 648	no data	12 000 (3410 families)	3 175 (1048 families)
Macedonia	23	67	870	5 487
Turkey	111.5	no data	190 733	5 000
Bulgaria	33 000	none	7 villages	1 000
IN TOTAL	**197 649.3743**	**76 674.08**	**332 128 + 32 villages**	**58 169 – 63 169**

*number of people - calculated as 3 persons in a family

We can conclude that the development of opencast mines is often an action of violation of human rights. People who lives in the area where new opencast mines are planned, are not sufficiently protected against forced relocation (there is a legal imbalance on the line person-mine). As a result of development of opencast mines, local residents are losing their homes, farmlands, pastures, and compensations for it often do not compensate their losses. There is also a problem of cone of depression, lowering water levels and an increasing air pollution (mainly as a result of activities of lignite power plants which are being built in the vicinity of the mine). Moreover, active open pit mines have often an enormous influence on potable water. One of the questions posed by opposition to opencast mines is: what is more important - water or coal? Such management of natural resources is also contrary to the principle of sustainable development and the idea of intergenerational justice.

Coal industry must also consider that enlargement of mines will contribute the lost in working places for many branches such as tourism, agriculture and others. Mines regions constitute really hard conditions for the people who live in the neighbourhood. Very often these people obtain no financial reimbursement (or very small) for the conditions, that they must endure.

Development of the lignite sector is also contrary to modern trends of energy transformation in the world towards civic energy, energy efficiency and renewable energy. In the future, the lignite industry can also count on the new protest and counterarguments that have not been emphasized before such as these related with human rights. Lignite mining influence on human lives is many-sided.

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