Environmental mining limits in North Bohemian Lignite Region

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INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

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INTRODUCTION

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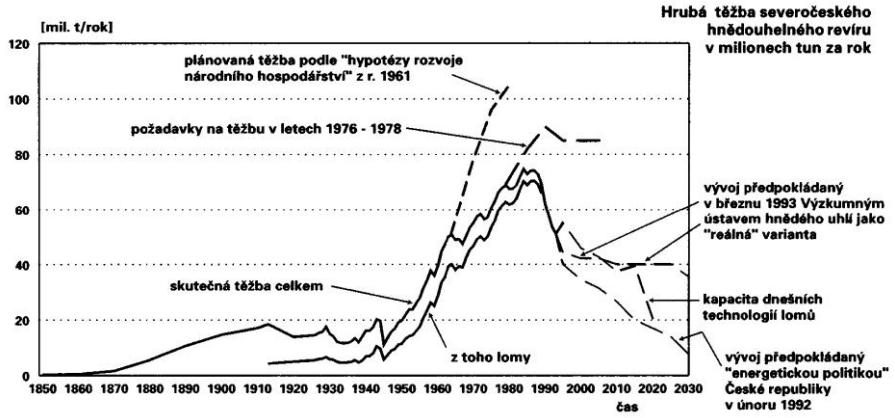
The Czechoslovakian Communist Party and government strategies of the 1950s and 60s emphasised the development of heavy industry and energy, dependent almost exclusively on brown coal.

The largest deposits of coal are located in the basins of the foothills of the Ore Mountains, at Sokolov, Chomutov, Most and Teplice. These areas were developed exclusively on the basis of coal mining at the expense of other economic activities, the natural environment, the existing built environment, social structures and public health. Everything had to make way for coal mining as coal was considered the “life blood of industry”. Mining executives, mining projection auxiliary operations, and especially Communist party functionaries were rewarded for ever increasing the quantities of coal mined and the excavation and relocation of as much overburden as possible. When I began in 1979 as an officer of government of the regional Regional National Committee (KNV) for North Bohemia in Ústí nad Labem, the craze for coal was in full swing, as villages, one after another, were swallowed up. Not even the royal city of Most was spared devastation.

Shortly after the events of autumn 1989 which led to my appointment as Deputy Minister of the Environment of the Czech Republic, I submitted an article to the magazine “Přítomnost” entitled, “North Bohemia – the site of our bad conscience”. In the article I confessed my feelings of failure at not managing to halt the devastation of the coal craze while I was at Regional National Committee in Ústí nad Labem in the field of spatial planning and environmental care, despite help from other experts in the field. I only succeeded in limiting the damage, and not sufficiently to prevent the ongoing exploitation of the North Bohemian brown coal basin and the destruction of the Ore Mountains.



During the work on changes and supplements to the Land Use Plan for the territory of the North Bohemian Brown Coal Basin (NBBCB), processed in 1985 by Institute for Territorial Planning (Terplan), we did however succeed in averting the so-called ”large variation of extraction" promoted by the Federal Ministry of Fuel and Energy (FMPE) which would mean devastation of a long belt of foothills from Klášterec nad Ohří to Ústi nad Labem and which even at the southwestern edge of the NBBCB would have affected the thus far intact landscape of the Pětipeské basin. This “large variation of extraction” would have meant the excavation of the foothills of the Ore Mountains and flattening of settlements including large cities like Chomutov, Jirkov, Litvinov, Lom u Mostu, Novosedlice and Chabařovice, turning the landscape upside down and completely disrupting settlement in an area larger than 80 km by 25 km to a depth of 400 m. Surviving maps and texts reveal the extent of these plans. Mining threatened numerous communities, and even entire cities, or parts thereof, such as Chabařovice, the southern edge of Krupka and Dubí, North Novosedlice, the edge of Teplice, Duchcov, Libkovice, estates on the western edge of Litvinov, Horní Jiřetín, Černice and Jezeří castle, the southern edge of Jirkov, Chomutov, Březno u Chomutova and some other smaller communities, including historical sites, many of them with significant historical and cultural value.

At stake were not only the settlements of the basin. Large scale extraction reduced access to towns and villages already isolated in the Ore Mountains. Distances lengthened for conducting trade, commuting to work and accessing services such as schools and medical assistance, which fewer and fewer people were willing to tolerate.

Surface mining and the power plants fuelled by the extracted brown coal not only eliminated human settlements and monuments. Apart from 106 municipalities, including the 650 year old royal city of Most, hundreds of square kilometres of cultural landscape were destroyed, drainage and water management systems created over hundreds of years, the ecological stability of landscape, and its agricultural and forestry potential were all shattered. To eliminate these adverse effects technically interesting, but environmentally inefficient projects emerged such as the Podkrušnohorský water supply conduit (in the Lower Ore Mountains) - the rerouting, with the use of pipes, of the river Bilina through the Ervěnický corridor between Jirkov and Komořany. This serves as the entire water supply system of North Bohemia replacing the original local sources of drinking water in the area. Railways, roads and other technical infrastructure projects were similarly rerouted through the same corridor. Vast swathes of landscape traditionally cultivated for centuries disappeared. While land reclamation has been carried out with great success in many cases, it is beyond the scope of devastation in this region. Priority was given to agricultural recultivation, even though it required long-term, artificial irrigation and adding other deposits in the soil, less attention was paid to the forest and water recultivation. The landscape was impoverished by its loss of diversity and essential ecological stability, but on top of this, there are devastated areas, overburden heaps, weed infested land, not-drained holes in mine collapses, ash sludge, and mining dumps. Poisoned by polluted air, forests in the Ore mountains died, and mining began to threaten remaining healthy beech forests on the southern slopes the Ore Mountains, key to maintaining ecological stability of the region. The region was in ruins, and increased illness was evident not only in forests, but also in the physical and mental health of residents. How could our parents' generation and our

generation let something like this happen as part of the “planned economy”? It was a complete debacle and utter barbarism! In addition to this, after the Second World War the vast majority of the original German population was expelled from the land where they had their roots. They were replaced by newcomers from other regions who preyed upon the land as property of the ousted “enemy” as if it did not deserve protection, but was perceived instead as a conquered territory to eradicate. Contributing factors to this perception was the combination of communist ideology with tense postwar Czech nationalism and the general situation in postwar Europe. It seems extraordinary that during the First Republic, Czechoslovakia was among the economically most advanced countries in the world, whose demand for energy was satisfied by small surface and underground mines with bucket excavators without needing to turn the land upside down or destroy settlements. Furthermore this allowed the selective extraction of raw materials from the top layer of excavated rock while accessing the coal below it to supply the power plants. The largest and most advanced of these power plants is, by today's standards, the small and now non-existent Ervěnice power plant. Development in our country and our region after 1948 must have been not only politically, but also economically, erroneous and, it could be said, pathological.

Those who gradually learned about development and the managing of similar problems elsewhere in the world tried to stop the negative open mining trend, and at least protect the rest of our surviving regional natural and cultural treasures. Even before November 1989, we together with regional geologist Miroslava Blažková at Regional National Committee in Ústí nad Labem managed, despite opposition from Federal Ministry of Fuel and Energy (FMPE) and miners, to push the Czech Mining Office and the Czech Geological Office to write-off the coal reserves under the historical centre and urban conservation area including the Castle of Duchcov. Particularly memorable is the determination and patience displayed by Josef Záda of Duchcov as he contributed all his knowledge of the history of mining in the area, Jaroslav Horký from Faculty of Civil Engineering (ČVUT) in Prague who assisted with projects to restore the rest of the castle gardens and landscapes to the south and west of Duchcov, the chief designer of the NBBCB Land Use Plan, the architect Zdeněk Stáhlík of Institute for Territorial Planning (Terplan), Prague and landscape environmentalist Marie Lafarová from the former Research Institute of Construction and Architecture in Prague, all of whom supported us by providing technical arguments and evidence.

Even before the "Velvet Revolution" non-governmental organisations such as Brontosaurus from Litvinov were established in the NBBCB and Ore Mountains through which activists such as Peter Pakosta and Miroslav Brožík engaged to save the Jezeří castle and slopes of the Ore Mountains.

The worthy deeds of Jan Marek from Stavební geologie (Structural Geology), Prague are also important to highlight as he was the one who pushed the authorities to carry out the appropriate monitoring of the Ore Mountains using a special shaft under Jezeří castle. He was the one who provided insight into the geological information of confidential documents to the Regional National Committee officials, decision-makers regarding land use. These documents should not have been shown to us as a transparency measure to ensure fair dealing with mining applications. The mathematical models clearly demonstrate the safety risks also to the outcrops of coal seams under the southern slopes of

the Ore Mountains. They proved that that if indeed mining the coal seam outcrops loosened the southern slopes of the Ore Mountains, as had already occurred at the ČS Armády (ČSA) mine west of Jezeří castle, owing to the nature of the bow and transformed crystalline layers of wrinkles and spatial orientation fractures and fissures in the solid, massive landslides at the mine slopes would be a real threat. This had security implications for the workforce of the mine and threatened the collapse not only of the diverted water system around the pit, but also the transport and technical infrastructure and mine function as such. According to the mathematical models, surface blocks would have to be anchored deep into the slopes, surface water would be captured and redirected by artificial troughs around the pit with devastating effect on the beech forests on the southern slopes. A more detailed description of the history of struggles between the interests of mines, settlements, the landscape and the miners themselves is given in chapter 3.

Marie Lafarová obliged the mining engineers to make a schematic construction to evaluate the safety and stability of pillar slopes of the Ore Mountains in the upper section of Černice-Horní Jiřetín at 300 m above sea level. This showed that the protective pillar would have about 120 million tons of coal removed, unduly narrowing the coalface to the east. This was not acceptable and an alternative proposal was made to mine to the seam outcrop, which would mean mining to a height of 400 meters above sea level! The model showed that even mining to 300 meters above sea level would not save the beech forests on the slopes due to the need to capture surface water. In order to divert the Šramnický and Albrechtický streams, mining would have to stop at 270 m above sea level which, however, addressed only the protection of the slope, rather than the wider question of saving the residential areas and landscape.

Apart from the ecological arguments which neither proponents of mining nor our superiors at the Regional National Committee wanted to hear, we also emphasised an argument which could not be ignored because it concerned the safety of the miners and trouble-free operation of the mine itself. To prevent any attempts to conceal these documents or hushing up of the affaire we organised a press conference to present the material publicly. The resulting scandal was not only a concern for the region but also Czech and federal political institutions - the information was out and the public was informed.

At the same time, in the late eighties a member of the Central Committee, Rudolf Hegenbart, then Deputy Prime Minister and Chairman of the Government of Czechoslovakia for the environment also engaged in the issue. After the appointment of Gorbachev in the USSR Hegenbart understood that the attitudes of those in authority needed to change, not only in terms of politics and interpersonal relations, but also in people's relationship to nature, to the environment, and to public health. He understood that saving Jezeří castle was important not only because of its cultural value, but also an acceptable solution to the instability of the slopes of the Ore Mountains.

One problem, however, was what to do with the castle after its reconstruction. Jaroslav Stoklasa was at the time a member of the Czechoslovak Commission after cooperating with the Institute for lnternational Applied System Analysis (IIASA) in Laxenburg, Austria, an international institution established in the USA, USSR, and 16 other countries including Czechoslovakia, which employed the world's top researchers to address urgent, current problems. All member states contributed to the operation of the Institute and had the opportunity to send its employees out into the field to propose solutions to problems of their interest. Jaroslav Stoklasa tried to offer the castle to this institution as a suitable cause for the Institute’s attention.

Although I lost my job at the Regional National Committee I was employed in Prague at Institute for Territorial Planning (Terplan) which was responsible for preparing the Land Use Plan of the NBBCB. The ball was rolling, it was impossible to stop it: local NGO Brontosauři from Litvínov established an initiative to protect Jezeří castle, the remaining arboretum under it and the remaining municipalities, including Horní Jiřetín and Černice. Although reluctant, Regional National Committee officials in the Commission of the Environment in cooperation with the central authorities had to include higher environmental protection standards

in the planning documents for the further development of the region. Also, compensation measures were put in place and some measures to address the causes of environmental degradation.

Spontaneous public demonstrations took place in Teplice and other towns in late October and early November 1989 against environmental degradation and the inability by district, regional and state authorities to respond constructively and appropriately to the problem. Finally, there was the demonstration in Prague on 17th November and the ensuing avalanche of events. This impulse let to the establishment of a separate Ministry of Environment of the Czech Republic headed by Bedrich Moldan and the Federal Committee for the Environment led by Joseph Vavroušek on the 1st January 1990.

Programs to restore the environment of the North Bohemia Brown Coal Basin in Sokolov and Ostrava-Karviná, the worst-affected areas from an environmental perspective, were among the first materials submitted to the Government based on an inventory status of the environment in the Czech Republic prepared by the Ministry of Environment at the beginning of its existence. As Deputy Minister of Environment of the Czech Republic, in the department which prepared these materials, I ensured that they were prepared in collaboration with the then Regional National Committees and ecological non-governmental organisations. For the Northern Bohemia Ekoforum, Miroslav Brozik from Litvinov, Peter Pakosta of Hora Sv. Kateřiny, and lawyer Lubomir Volenik, a respected and revered, now deceased President of the Supreme Audit Office started working with NBBCB.

People of environmental initiatives and from both environment ministries soon tackled the problems of NBBCB perceived until that time as “internal affair of Czechoslovakia", and publicised them internationally. Minister Josef Vavroušek and his advisor Jaroslav Stoklasa from Federal Committee on Environment (federal ministry – FVŽP) were able to arouse interest in the Jezeří Castle from British Crown Prince Charles, who visited Jezeří in 1991. He was shocked by the state of the castle and view of the lake to the massive ČS Armády (ČSA) Mine, which he had inspected by air while flying over the site. He then piloted the aircraft himself and was, after many decades, the first foreign, Western pilot to try the abandoned military airport. Since this visit, we secretly promised a significant financial contribution to restoration of Jezeří castle. This visit strengthened hopes that more positive events might materialise. At the same time, the hopes of a descendant of the Lobkowicz family ended as after having the castle returned to him in restitution, it became clear that the responsibility for its restoration and upkeep was too demanding so the castle was returned to the care of the state.

In response to the documents presented to the government which described the environmental damage in the worst affected areas of the country, particularly Sokolov and the Ostrava-Karviná, among other stipulations, the Federal Ministry of Fuel and Energy was required to de-sulphurise or shut down all its power plants within 8 years. The first task for the Ministry of Environment, which was then a central government authority for planning and building regulations and geology was to determine "territorial ecological limits for mining and energy" and incorporate these limits in the NBBCB Land Use Plan. Gradually these limits were mapped out for Chabařovice, then for the rest of the NBBCB: Sokolov, Cheb and Ostrava-Karviná. The government resolutions on mining limits were approved on the basis of accurate maps of the plots. Simultaneously, resolutions stated that the coal resources beyond these limits should be written off and that by the year 2005 (i.e. in 14 years) the government energy policy for the period after 2005 should examine whether there is another, less damaging way of accessing coal than surface mining.

Spatial planning and building regulations, as well as competencies concerning geology were transferred from the Ministry of the Environment to the Ministry of Economy in 1992, led by Karel Dyba. While I (reluctantly) passed on the responsibility for tasks completed in the field of spatial planning, depreciation of coal reserves for the quarry at Chabařovice had never been prepared. Responsibility for spatial planning and building was transferred to the newly created Ministry of Regional Development and partly to the Ministry of

Geology Industry and Trade, the political will to fulfil and enforce the resolutions of government weakened until it disappeared altogether.

In 1993 after a dispute with Minister Dyba on management of southern D5 motorway bypass around Plzen I was suddenly “retired”. I could only continue to monitor developments from a distance from the position of deputy director of the project of the Institute for Territorial Planning (Terplan) in Prague. There local environmental limits on mining in the related NBBCB were respected until my return to the Ministry in 2000.

However, these limits never left in peace miners and also the Ministry of Industry and Trade (MIT). The year 2005 was fast approaching when the government was obliged to return to the discussion on coal reserves beyond the environmental limits in the context of drafting an energy policy for the period after 2005, regarded as a challenge to the mining industry.

The National Energy Policy, developed between 2003 and 2004, openly claimed in 2005 that the limits must cease to be valid, and based on forecasted coal and electricity needs for the Czech Republic until the year 2030, these limits should be breached. Decision on this matter is acute especially in the case of the ČS Armády (ČSA) mine, in effect deciding whether it is viable to restore facilities and technology to continue extensive extraction to the east or not. If not, the mine would be scheduled for closure between 2010 and 2013.

Supporters of continuing mining justify the need to continue by citing the loss of jobs in mining and energy if the established limits are not breached. However, they themselves have caused the loss of tens of thousands of production and other jobs by favouring surface mining rather than underground mining, which has a significantly less impact on settlements and the natural environment. At the same time, these proponents of mining deny the possibility of new jobs linked to the development of renewable energy sources.

After my (only temporary) return to the Ministry of Environment, the Ministry drafted an alternative to the National Energy Policy. Referring to the same materials as the Ministry of Industry and Trade, it was concluded that the amount of coal over within the agreed limits, let alone breaching the agreed limits, would not even be used up by 2050 let alone 2030, providing that the coal was used efficiently. For producing comparable products our country consumes 1.7 times more energy than other developed countries. Concerning heat loss from buildings, the difference is even bigger, where we are decades behind more progressive insulation practices. These projections were also based on the assumption that renewable energy sources will be developed (solar radiation, water, wind, geothermal energy, biomass, landfill gas, etc.) and that a fair share of energy would be retained from oil, natural gas, and today’s proportion of nuclear energy. This also assumes that we will not produce energy and mining coal for export, but rather conserve the stock not only as fuel, but as a chemical raw material for more sophisticated use by future generations, when it will be possible to extract coal by more environmentally friendly methods and technologies than the current barbaric nature of extraction, which does not allow for selective extraction or use of accompanying materials from surface rock, intermediate layers between coal seams and bedrock, such as gravel, ceramic clay, kaolin, etc.

We managed to persuade the government of Prime Minister Vladimir Špidla to adopt an amended, compromised version of Ministry of Industry and Trade (MIT) original proposal, in which breaking the "regional environmental extraction limits" is not mentioned, let alone approved. Numerous speeches by MIT officials, especially the Minister, Milan Urban, and his Deputy Martin Pecina show that MIT still aims to abolish the limits and constraints on mining. They are under pressure from energy

and coal lobbies on the occasion of the forthcoming privatisation of previously state-owned shares from government-private enterprises.

MIT does not behave as a state institution, established to defend the public and long-term interests, but as an extension of the private sector, representing the short-term interests of the business community, which hopes to extract and sell crucial supplies before the effect of environmental tax reforms and the need to include externalities in the price of coal i.e. costs arising as a result of mining and their profit. Rather than covering these external costs from the profit of coal, they hope these costs to be covered by state or other public budgets, and even the damage subjects, including private subjects (individuals, villages, companies), thanks to the still valid "postbolshevick" mining legislation and practice of the mining authorities.

The authors of this publication are convinced that the mining and energy limits not only must not be breached, but must be confirmed as permanent. It is essential to establish a radically different relationship to our inherited natural and cultural treasures, the need to be reconciled with our predecessors in the area and today's neighbours, to reconcile ourselves with our vulnerable, wounded landscape and between ourselves too.

The 3 million cubic meter landslide which now threatens the stability of the soil under the Jezeří arboretum, the less recent landslides below Jizerka and other locations in the foothills of the Ore Mountains which have occurred in the last 16 years has convinced the mining industry that they were wrong when they assured the state municipalities, administrative authorities and the public that everything was under control. The encroaching piles of overburden at the ČS Armády (ČSA) mine and ensuing landslide disrupted the protected zone of the Jezeří castle and. Its continuation eastwards and mining of the coal seam deep below means not only that regional environmental limits for mining have been breached, but also that there are immediate threats to the stability of the protective pillars of the arboretum and the castle lake, Černice, Horní Jiřetín and Janov. A passive defence of established mining limits is not enough. It is now essential to immediately cease devastating surface mining methods, to ensure the stability of the arboretum slopes and lakes and to review the possibilities and ways of using today’s stocks obtained so far.

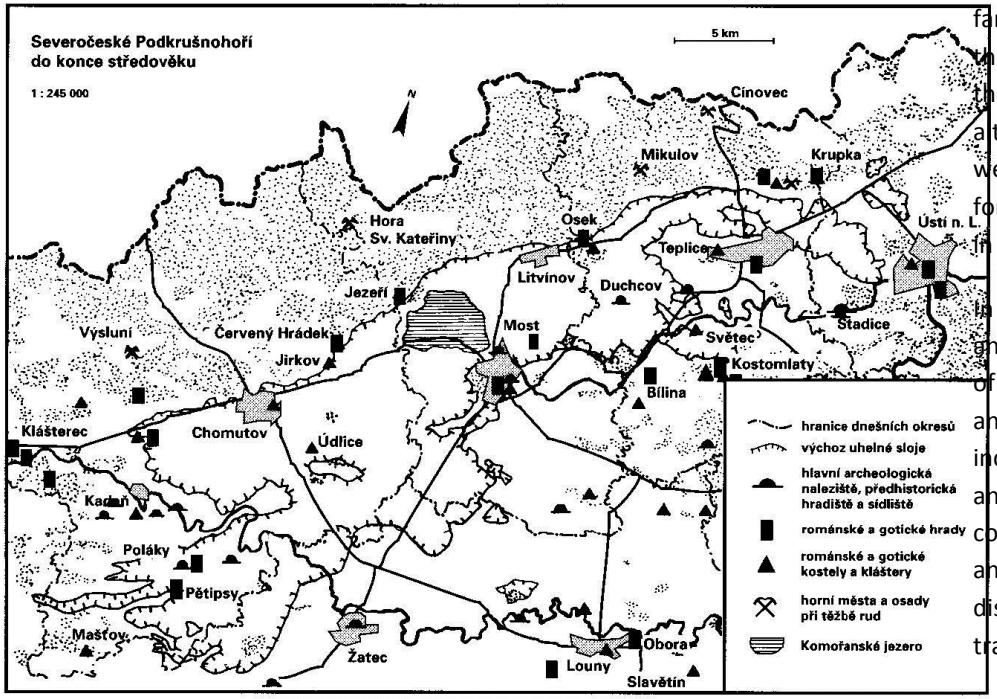
Only then will it be possible for people to live securely and prosper, in a home which they can improve and protect. We do not want people to have to move repeatedly, to retreat from mining, to lose their environment in which they live. We want to work here and enjoy the cultural inheritance and nature’s endowments, rather than looting them. Nothing more, nothing less.

HISTORY OF NORTH BOHEMIAN LANDSCAPE AND POPULATION

Martin Říha, Petr Pakosta

The landscape of Northwestern Bohemia, with its Ore Mountains, Sokolov and North Bohemian coal basins, Central Bohemian Uplands and Egerland, is the result of millions of years of orogenetic processes. The Ore Mountains crystalline complex was formed during the Hercynian orogeny at the turn of the early Palaeozoic, when older rocks of various ages and origins were affected by metamorphic processes. They were, roughly speaking, sediments saturated with deep magmatic rocks, and deep magmatic rocks themselves. Depending on the nature of the original rocks and the intensity of the metamorphic processes, they were turned into orthogneisses, paragneisses, crystalline slates, crystalline limestones, schists, and phyllites. As part of the Bohemian Massif, the Ore Mountains crystalline complex belonged to the Hercynian European mountain system. The massif sank repeatedly and was lifted again in the Mesozoic. The associated erosion and accumulation processes fashioned it into a levelled peneplain by the end of the Mesozoic; its sheet was broken at the edges by the Saxon orogeny in the early Tertiary. The elevated plain of the Ore Mountains and the rift valley below it were formed at the northwestern breach of the Bohemian Massif; it was filled with lake sediments, containing brown coal seams in their older strata, in the course of the Tertiary. The deposition of massive layers of dead organic matter from the tropical vegetation of that era is probably linked to the repeated disastrous effects of volcanoes in the emerging Central Bohemian Uplands and Doupov Mountains. The landscape was then completed by the

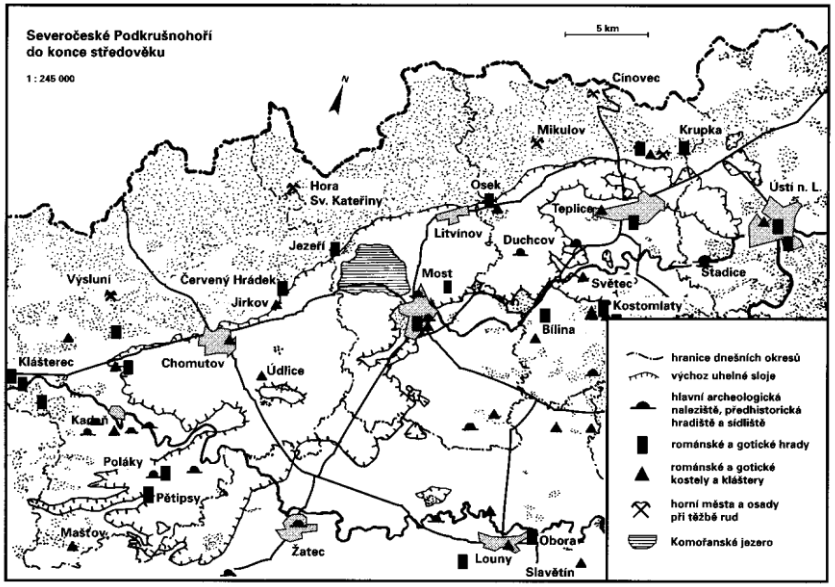
alteration of colder and warmer periods, effects of water, vegetation, and evolution of plant and animal species since the beginning of the Quaternary. The contribution of human activity to the landscape formation can only be recognized in the last millennium.



Nevertheless, the territory of the North Bohemian Basin has been populated since the end of the Palaeolithic, the Magdalenian period in the 8th millennium before Common Era (BCE). One of the most significant residential sites of that era has been found by erstwhile Lake Komořany, but it has been removed along with the overburden of the coal seam. Other important archaeological sites have met a similar fate, including the Neolithic linear ceramic excavation near Ervěnice, dating from the 6th millennium BCE (already a farming culture), and the site of a subsequent pricked ceramic culture in Chabařovice from the 5th millennium BCE.

Another significant proof of life below the Ore Mountains – the site of the oldest abandoned mines in Central Europe with a system of shafts and tunnels of a prehistoric flintstone mine from the early 3rd millennium BCE – was destroyed when the Tušimice power plant was built. These and other finds indicate that the basin has been populated continuously since the 6th millennium BCE; all of its farmable areas have been populated at least since the end of the Neolithic, i.e., the 4th millennium BCE. From then on, until the Middle Ages, man has reworked the originally forested and swampy landscape into a variegated mosaic with alternating forests, meadows, pastures, fields, water bodies, watercourses, wetlands, human settlements, roads, protective castles, and market town – often fortified – at the crossroads of trade routes, by fords across the local rivers, and in the focal points of farming areas.

In the Middle Ages, the appearance of the settled country as well as the villages and towns was the result of feudal administration alongside the growing power of the church: in addition to "noble" structures (castles, chateaux, town palaces) and secular homesteads, the look of the towns, villages and open country was increasingly formed by churches, monasteries, pilgrimage sites, etc. The functions and sizes of the settlements progressively differed depending on their natural conditions, position, economic and administrative importance, privileges granted, and defence capacities. Epidemic outbreaks of plague and other contagious diseases forced the earliest hygiene-driven regulations on the location of certain trades within towns, improved water supplies and sewerage.



Mining towns, not “naturally” evolved but “artificially” established, are a special phenomenon typical of the Ore Mountains and the land below them. They were founded by locators at the turn of the Middle Ages, after the local wealth of natural resources (metallic ores, semiprecious stones, arsenic, etc.) was discovered and first exploited. In the architectural sense, the period of their emergence was associated with a shift from the Gothic style to Renaissance: numerous novel types of public buildings were invented, such as town halls, schools, markets, spas, as well as breweries, craft workshops, etc.

As the towns evolved, there came a need for a certain regulation of locating the various functions within the settlement based on their nature, beauty or potential harm to their surroundings and people, according to guilds. Emerging hygiene and defence problems led to the emergence of first “urban designers” among locators, builders (stonemasons, bricklayers, carpenters), geometricians (surveyors), soldiers, fortification experts, and artists. Millers and pond-builders laid down the foundations for professional hydraulic management; charcoal burners, craftsmen, ore processors, weavers and other processing trades were forming the core of future manufactures and then industries. The development of towns and villages, new construction projects and trades were generating demand for the production of timber, construction stone, ceramic clays for bricks and ceramics, metallic ores, and sand. This was now changing not only the vegetation groundcover, but also its soil profile and the rock environment: the landscape character started to change. Mine spoil banks were a new land formation around mine galleries and shafts; the first intentional water transfers occurred and races for mills and sawmills were dug; wetlands and fields were drained and watercourses were canalized and bridged; a selected “imperial” road network was upgraded to allow heavier cart traffic and horse-swapping posts were built. Still, however, this was a harmonious, small-scale and variegated mosaic of natural and manmade elements in the landscape, ecologically stable, with adverse human impacts on the environment limited to tiny locations, measurable on an are scale.

The beautiful landscape and residual manifestations of volcanic activity through numerous thermal and mineralized springs and spouts have resulted in the emergence of another type of settlements typical of this region: curative spas. They further increased the variety in the landscape character and exploitation of the natural resources. They produced additional specific building types: spa houses, buildings for temporary guest accommodation, colonnades and promenades, gyms and casinos, open-air theatres, theatres and concert halls, riding schools, park gazebos, maintained walking paths with vistas and resting facilities, and landscaped compositions of spa town surroundings.

The discovery of the reserves and possible uses of the energy potential of the brown coal in both the basins below the Ore Mountains was a fundamental milestone for the region. The initially tiny and primitive shallow surface “rustic” mining progressively developed into demanding underground extraction in increasingly difficult geological conditions due to the growing demands by emerging manufactures, then industries and railway transport. Surface mining

continued to develop where the coal seam was not deep under the surface or even lay exposed on the ground ("in the day" as they used to say). Due to its high calorific capacity, coal soon replaced firewood and charcoal, common in both production and household heating until then, and permitted an unprecedented growth of industry once the steam engine was invented and widespread. It also brought about a radical change in transportation as the railway expanded. Coal is a phenomenon that made the Industrial Revolution possible. It permitted rapid concentration of small-scale craft and manual production capacities into industrial buildings with mechanical distribution of the "driving force" across factory halls via systems of transmission rods and belts; their mediating role in transmitting power was taken over by electricity only much later. However, the nature of production made the industrial operations dependent on sources of workforce and energy, so they were established not only in towns but often by watercourses and transport routes in the country. Many of the industries required vast quantities of water for the production processes, and they also made use of the hydraulic power potential of the watercourses. That was how the numerous factories in valleys by rivers arose. Dams were built across watercourses, both in populated valleys and scattered across open country, to provide raw water. Nevertheless, their scale, architecture and method of exploiting the natural conditions still showed a certain degree of respect to the surroundings, the nature of the place and the resources in the early days of the Industrial Revolution. The people's attachment to nature was not as disrupted and intermediated as that of the population of big cities today. The enlightened nobility was capable of envisaging most of the adverse impacts of production on the country, and tried to avoid them by observing some rules. It can be claimed that this relatively environment-friendly situation lasted until the disintegration of Austria-Hungary after World War I and, more or less, during the First Republic until 1938. The Ervěnice power plant, built in 1926, was the largest and newest power plant in the North Bohemian Basin. Its installed capacity of 70 MW was only a fraction of that of modern-day power plants in the Basin, yet it sufficed in supplying Prague and an extensive consumer industry, and the first tram operations in the Basin towns, including Ústí nad Labem. The mine towers and growing spoil heaps of underground mines as well as the opencast mines with bucket excavators – small from today's perspective – were greater scars on the face of the landscape. Yet they still spanned several dozen hectares, not tens or hundreds of square kilometres of devastated country. The North Bohemian Basin still had a full-fledged landscape background for its settlements, and the mining did not threaten the spa functioning with the exception of isolated accident episodes (disastrous outburst of the thermal waters of Teplice hot springs into the Döllinger mine in 1879).

In addition to its natural wealth, including a beautiful and variegated landscape, the region was rich in cultural heritage. There were entire heritage towns and villages, numerous castles and chateaux, monasteries, churches, parks and arboreta, and lakes. The economic development was increasing both the extent and quality of the settlements. Thanks to the spas, visited by prominent cultural and political personalities of Europe, Russia and other continents, the population had a rich social and cultural life. The end of the 19th century and the early 20th century were the heyday in this respect.

Unfortunately, the same cannot be said about the "social and economic pillar of long-term sustainability of life in the Ore Mountains and the country below them", as the modern terminology has it. Growing differences between the standards of living miners, factory workers, small-scale farmers and tradesmen and those of the cream of the society, including local industrialists, accompanied the Industrial Revolution from its start at the turn of the 18th century. They resulted in occasional social unrest already in Austria-Hungary; it was boosted by both the German nationalism and the emancipative efforts of the Bohemian national revival. It was contributed to by the fact that most of the mines and factories were owned by German businessmen. The relationships between the German majority and Czech minority in the borderland would not improve after World War I. Quite the opposite was true: the national resentments of Austria-Hungary were aggravated by the German attempt to separate Sudetenland from the newly independent Czechoslovak Republic and annex it to Austria as Deutschböhmen. The Czech-German relationships further deteriorated during

the Great Depression, which affected the entire economically advanced world of the time in the early 1930s after the first global collapse of exchange markets that started in New York in 1929.

These circumstances and developments in neighbouring Germany, where the Nazis ascended to power in 1933, resulted in a growing tension in the entire Czech-German and Czech-Austrian borderlands where there was a populous German “minority” (over 90% of the population in some parts of Sudetenland, more populous overall than the Slovaks). National and social conflicts overlapped and sparked mutual clashes of opinions and words, which escalated into violent and armed conflicts between the German population and the Czech-controlled state power, or between the nationalities. The Czechs were forced out of the borderland after the Treaty of Munich unless they professed to the Reich. The natural resources, the industrial, agricultural and human potential of the Protectorate, and more so the Ore Mountain Foothills – which was now part of Germany – were filly engaged in the German war economy. A facility for producing synthetic petrol from gas was built in Záluží near Most, Czech ammunition and machinery manufacturers, aviation and textile factories were producing weapons, vehicles, ammunition and outfits for the German army. The coal mining and the production were pushed up to the limits. There was no consideration of repairs or maintenance of buildings, the environment, cultural co-operation or social respects. The material and spiritual devastation of the Ore Mountains and the basin below started during the War. Unfortunately, the devastation did not stop at the end of the War.

Scenery past Chemopetrol Litvínov, April 1993.

The blanket eviction of the German population of the Ore Mountains and the basin below had much more devastating impacts on the economic and social life, culture, and people’s relationships to nature and each other in the purely German-settled areas – which was the case of a large part of the basin area – than in areas where Germans made up a smaller proportion of the pre-war population. Unfortunately, the Germans often “took away” with them their qualifications, sense of order, and attachment to the towns and village, cultural heritage, nature and landscape. The first wave of settlers from the interior of Bohemia, Moravia, Silesia and Slovakia included lots of “prospectors”, who plundered and burgled the abandoned German properties and soon left again.

Arrivals from Carpathian Ruthenia and Czechs and Slovaks returning from Volhynia, Hungary, Romania and other parts of the Balkans could mostly not compare to the evicted Germans with their level of knowledge and management. Under the influence of the war that had recently ended, the gradually arriving skilled settlers, too, often behaved like in a conquered “enemy territory” without the slightest respect to the heritage of another culture. Since their roots were not here, many regarded everything German – the Saxonian and Lusatian architecture and culture – as worthless and hostile. Driven by an urge to supplant the German with the “Czech”, they carelessly destroyed links and values developed over centuries, neglected maintenance and repair, causing the total decay of the housing, factories, farmsteads, transport and technical infrastructures, including a sophisticated aquaculture, public and cultural amenities, cemeteries, churches, and recreational facilities in the landscape. In many towns, they through out official documents and papers written in German, ranging from medieval manuscripts to building authority archives.

The communist regime, established in 1948, made a cunning use of the people’s disappointment with the Western allies at the Conference of Munich, the anti-German nationalist feelings and its ideology to carry on the psychosis of fear and enmity towards the West and bind Czechoslovakia to the Soviet Union. The Ore Mountains and the basin below became an unprecedentedly cheap source of uranium, coal and power for the Soviet Union. Czechoslovakia’s national economy, renowned in the First Republic for its balanced proportion of heavy metallurgical, chemical and engineering industries with the light and processing industries and a high rate of valuation of input raw materials, became the “forge of the socialist camp” with a dominance of metallurgical and other raw material and energy-intensive heavy industries. This orientation severely harmed all of Czechoslovakia’s national economy, devastated certain regions of the country such as the areas around Příbram, Kladno, Žacléř-Svatoňovice below the Giant Mountains, Hodonín in South Moravia, but was most abominably manifested in Ostrava-Karviná district and the Sokolov-Cheb and North Bohemian Basins. Vast tracts of the landscape, spanning hundreds of square kilometres, were devastated due to opencast coal mining and sinking of underground mines, extraction of kaolin, gravel, sand, ceramic clays and construction stone, erection of gigantic power plants, power and heat distribution systems and repositories of power plant fly ash. The landscape character with the round hillsides and plateaux of the Ore Mountains, covered with forests and peat bogs, both the basins with fertile farmland and clear watercourses, preserved in a harmonious form until the World War, was transformed into an “industrial landscape” filled with new land formations due to shifting millions of cubic metres of rock and earth, industrial and storage buildings, deposits and dumps. The dense network of linear transport and technical infrastructures cut the once continuous country into fragments difficult to access and manage, upset its harmony, liveability and passability for both game and people. Natural plant societies disappeared, replaced by weeded patches and invasive non-native plant and animal species. Towns and villages where tens of thousands of people once lived were wiped out, along with thousands of cultural and natural heritage sites.

Nor has the pressure for selective deposition of valuable portions of the overburden, intermediate and underlying layers of the coal seam, containing reserves of gravel, ceramic clays, etc., proven to be effective. The promised plans to use these raw materials one day have never come true. Together with the mine operators, designers in 1990-91 developed projects for two large-scale brick factories that would utilize the high-quality brick and ceramic clays from the overburden layers. Deposits of many thousands of tonnes for the future production were made. The assumed direct and associated workforce was envisaged in the region of hundreds of people. We have 2005 today, the brickworks do not exist, and the clay deposits have long been reforested to make people forget. This is how the miner’s promises have been fulfilled.

The cultural attachment to the natural and cultural heritage was also wiped out of most of the people for two generations. Only the younger generations today have sunk their roots in the region, and their newly gained attachment to their homes empowers their will to save the remains of the inherited values and remedy at least some of the past harm. The last demolished village, Libkovice,

admittedly succumbed to the dynamics of the "running engine" of the mines, but it was Libkovice where the organized opposition to the continuation of the current practice first gained life and voice. Locals got the courage to make themselves heard and oppose the property purchases at ridiculous officially assessed prices, which would not even allow them to buy a substitute flat in a prefab block, not to mention a house. They were joined by environmental activists from elsewhere and a considerable media coverage of the case was achieved for the first time. The Libkovice case provoked a debate on other, more considerate mining methods that make it possible to preserve the landscape with its historic and living values.

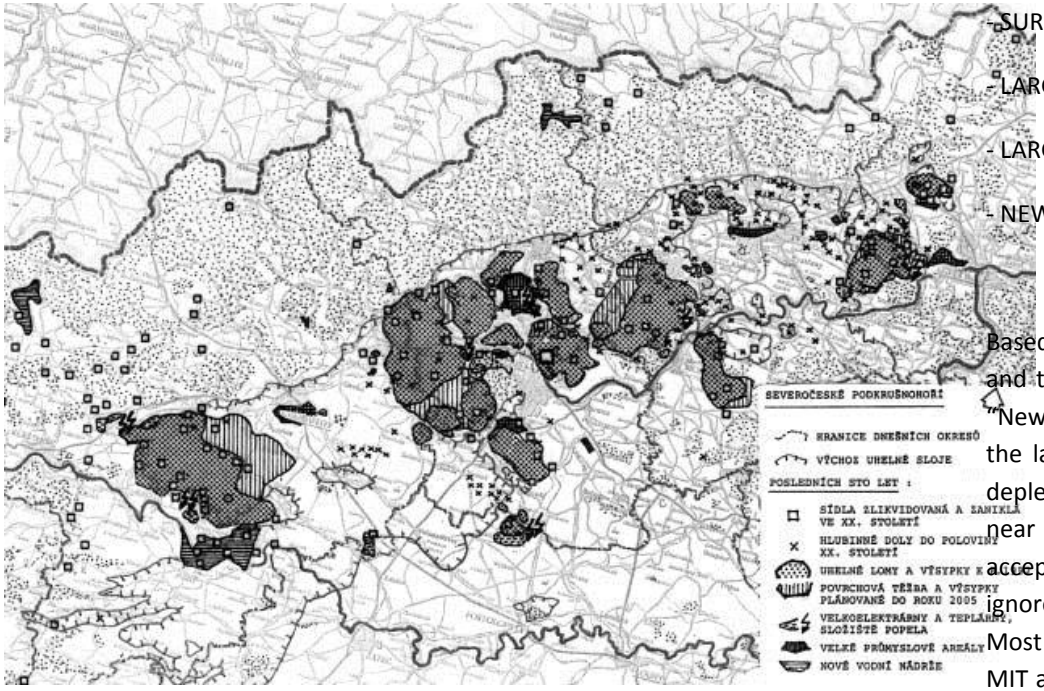
Table: Settlements and municipalities in the North Bohemian Basin wiped out after 1945

Name	Pop. *	District	Reason	Year
Ahníkov	B	Chomutov	Nástup opencast mine	1983
Albrechtice	B	Most	Lenin opencast mine	1982
Běšice	A	Chomutov	Nechranice reservoir	1967
Brančíky	A	Chomutov	Nástup opencast mine	1980
Brany	A	Chomutov	Nástup opencast mine	1980
Břešťany	A	Teplice	Maxim Gorkij opencast mine	1965
Březánky	A	Teplice	Maxim Gorkij opencast mine	1964
Bylany	B	Most	Ležáky opencast mine	1977
Bystřice	A	Chomutov	Nástup opencast mine	1965
Čachovice	A	Chomutov	Nechranice reservoir	1965
Čermníky	A	Chomutov	Nechranice reservoir	1965
Český Újezd	A	Ústí n. L.	Chabařovice opencast mine	
Čtrnáct Dvorců	A	Most	Vítězného února underground mine	1982
Čepirohy	B	Most	Ležáky opencast mine	
Dělouš	A	Ústí n. L.	Zápotocký opencast mine	1967
Dřínek	A	Teplice	Maxim Gorkij opencast mine	1970
Dolní Litvínov	B	Most	Vítězného února underground mine	1960
Dřínov	C	Most	Lenin opencast mine	1976
Dolní Jiřetín	C	Most	Vítězného února underground mine	1983
Dolina	B	Chomutov	Přísečnice reservoir	1979
Dolany	A	Chomutov	Nechranice reservoir	1967
Drahonice	A	Chomutov	Nechranice reservoir	1967
Drmaly	A	Chomutov	Čs. armády opencast mine	1975
Ervěnice	D	Most	Lenin opencast mine	1959
Fláje	A	Most	Fláje reservoir	1959
Hajniště	A	Teplice	opencast mine	1960
Hájovna		Chomutov	Přísečnice reservoir	1979
Hetov	A	Teplice	Maxim Gorkij opencast mine	1967
Holešice	C	Most	Lenin opencast mine	1979
Hořany	C	Most	Šverma opencast mine	1980
Hrbovice	B	Ústí n. L.	Chabařovice opencast mine	1989
Hrdlovka	D	Teplice	Maxim Gorkij opencast mine	1978
Chotěnice	A	Chomutov	Nechranice reservoir	1967
Chotovenka	A	Teplice	Maxim Gorkij opencast mine	1970
Jenišův Újezd	C	Teplice	Maxim Gorkij opencast mine	1975
Jezeří	A	Most	landslide	1952
Kamenice	A	Ústí n. L.	Zápotocký opencast mine	1970
Kamenná Voda	A	Most	Lenin opencast mine	1973
Komořany	C	Most	Čs. armády opencast mine	1985
Konobrže	C	Most	Ležáky opencast mine	1977
Kopisty	D	Most	Ležáky opencast mine	1977
Kralipy u Ch.	C	Chomutov	Nástup opencast mine	1974
Krbice	A	Chomutov	Nástup opencast mine	1982
Kundratice	C	Chomutov	Čs. armády opencast mine	1972
Kyjice	B	Chomutov	Čs. armády mine and reservoir	1974
Lochočice	A	Ústí n. L.	Chabařovice opencast mine	1976
Libkovice	C	Most	Vítězného února underground mine	1990
Ledvice	C	Teplice	Ledvice power plant	
Libouš	A	Chomutov	Nástup opencast mine	1979
Lipětín		Most	Vítězného února underground mine	
Liptice	B	Teplice	Maxim Gorkij opencast mine	1974
Lomazice	A	Chomutov	Nechranice reservoir	1967

Lužice	A	Chomutov	Nechranice reservoir	1967
Lyskovice	A	Teplice	Maxim Gorkij opencast mine	1970
Míchanice	A	Chomutov	Žižka opencast mine	1955
Milžany	A	Chomutov	Nástup opencast mine	1965
Most	25,700	Most	Ležáky opencast mine	1966
Nakléřov	A	Ústí n. L.	military area	1949
Naší	A	Chomutov	Nástup opencast mine	1981
Nechranice	A	Chomutov	Nechranice reservoir	1967
Nové Sedlo n. B.	C	Chomutov	Čs. armády opencast mine	1966
Otovice	A	Ústí n. L.	Chabařovice opencast mine	1976
Panenská	A	Ústí n. L.	military area	1949
Pařidla	A	Most	Ležáky opencast mine	1969
Pláň	A	Most	Ležáky opencast mine	1955
Podhoří	A	Ústí n. L.	opencast mine and dump	1961
Podhůří	A	Chomutov	Čs. armády opencast mine	1974
Pohlody	B	Chomutov	Šverma opencast mine	1977
Pohradice	A	Teplice	Maxim Gorkij opencast mine	1960
Prahly	A	Chomutov	Tušimice power plant	1972
Prunéřov	C	Chomutov	Nástup mine and Tušimice PP	1962
Přezetice	A	Chomutov	Nástup opencast mine	1969
Přísečnice	C	Chomutov	Přísečnice reservoir	1972
Račice	A	Chomutov	Nástup opencast mine	1981
Radovesice	A	Teplice	Maxim Gorkij opencast mine	1966
Roudná	A	Ústí n. L.	Zápotocký opencast mine	1967
Rusová	C	Chomutov	Přísečnice reservoir	1970
Růžodol	A	Most	Vítězného února underground mine	1959
Skyřice	A	Most	waste dump	1965
Slatinice	A	Most	Ležáky opencast mine	1969
Souš	C	Most	Lenin opencast mine	1970
Staré Verneřice	A	Teplice	opencast mine	1959
Stránce	A	Most	Lenin opencast mine	1971
Střimice	A	Most	Ležáky opencast mine	1960
Střížovice	A	Ústí n. L.	mine facilities	1972
Studánka	A	Ústí n. L.	Zápotocký opencast mine	1971
Třebušice	C	Most	industrial development	1980
Tříškolupy	A	Louny	sludge pit	1972
Tuchomyšl	C	Ústí n. L.	Chabařovice opencast mine	1974
Tušimice	A	Chomutov	Nástup mine and Tušimice PP	1967
Újezd		Teplice	opencast mine	1972
Újezd	A	Chomutov	Šverma opencast mine	1970
Úžín	A	Ústí n. L.	opencast mine and gasworks	1962
Varvažov	C	Ústí n. L.	Zápotocký opencast mine	1962
Velebudice	A	Most	industrial development	1960
Vernéřov	C	Chomutov	Prunéřov PP fly ash wash reservoir	1988
Vrchnice	A	Chomutov	Nástup opencast mine	1969
Vršany	A	Most	Vršany opencast mine	1975
Vyklice	C	Ústí n. L.	Chabařovice opencast mine	1979
Vysočany	A	Chomutov	Nástup opencast mine	1974
Zálužany	A	Ústí n. L.	Chabařovice opencast mine	1974
Záluží	C	Most	chemical plant	1972
Zásada	A	Chomutov	Nástup opencast mine	1982
Ždov	A	Chomutov	opencast mine	
Židovice	A	Most	Lenin opencast mine	1974
Žichlice	A	Teplice	Maxim Gorkij opencast mine	1987

* A – population up to 500; B – population of 500-1000; C – population of 1000-5000; D – population over 5000 (averages from the 1930, 1950, 1961 and 1970 census). Missing data could not be found.

In addition to municipalities and settlements wiped out due to coal mining, reservoirs and other industrial activities, there were numerous villages in the North Bohemian Basin that ceased to exist after the Sudeten Germans were evicted.



map p. 13:

NORTH BOHEMIAN BASIN

- PRESENT-DAY DISTRICT BOUNDARY

- COAL SEAM OUTCROP

LAST ONE HUNDRED YEARS:

- SETTLEMENTS DESTROYED OR DISAPPEARED IN THE 20TH CENTURY

- UNDERGROUND MINES UNTIL THE MID 20TH CENTURY

- OPENCAST COAL MINES AND SPOIL BANKS AS OF 1992

- SURFACE MINING AND SPOIL BANKS PLANNED UNTIL 2005

- LARGE-SCALE POWER AND HEATING PLANTS, FLY ASH REPOSITORIES

- LARGE INDUSTRIAL FACILITIES

- NEW WATER RESERVOIRS

Based on an assignment by the Ministries of Industry and Trade (Minister Dlouhý) and the Environment (Minister Benda), a detailed analysis was produced, titled "New underground mining methods without surface sinking and with preserving the landscape (employing the deposition of solidified/neutralized waste in the depleted underground spaces). A test polygon was defined at Koh-i-noor mine near Most. The multi-page result of two years of work was handed over and accepted with the ministers' approving nods in 1995. However, it has been ignored to this day by those who could build a future on it for themselves, the Most region and its population. The whole affair sits in a bottom drawer at the MIT and MoE and the authors' offices, fortunately. It was eventually for nothing. Nevertheless, Libkovice was demolished without any mining below it whatsoever.

What is the essence of the method? Simply put, the specially prepared depleted spaces of an underground mine are filled with a liquid solidifying mixture with the treated waste (the formula was developed by Brno TU), which is pumped underground via a pipeline and once it solidifies, it will not allow the overburden to collapse into the depleted seam. Mining continues using the same method next to the backfilled spaces; the resulting seam exploitability and economic profit are greater, because the waste generator has to pay to depositing its waste. The financial costs of the underground mining and transporting the coal to the surface would therefore be lower.

Chabařovice near Ústí nad Labem has managed to oppose its fate successfully, unlike Libkovice. The position of its self-government was supported by the public

and political representatives of Ústí nad Labem municipality and district, which allowed the Government, under the situation, to pass – without political friction – a first resolution defining binding territorial ecological limits beyond which neither the mining nor its adverse environmental impacts were permitted. That was the turning point, and we as its orchestrators in the post-Velvet public administration believed that it would be permanent. It has not been. The struggle continues 15 years later.

A BRIEF HISTORY OF THE THIRTY YEARS' WAR FOR COAL MINING AND LAND CONSERVATION

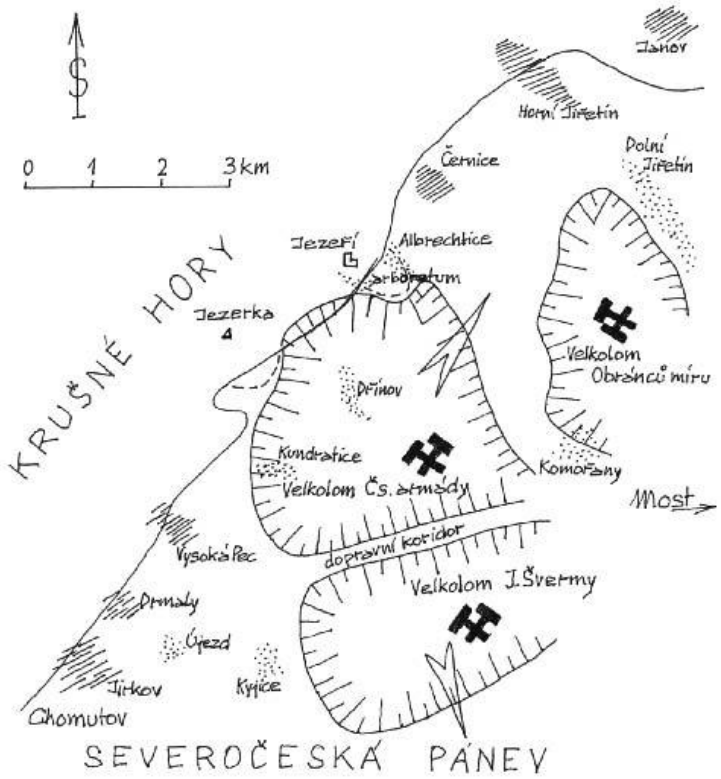
Jan Marek

It has been described above how the initial underground and small-scale opencast mining changed scale and extraction technology to large-scale opencast mines in order to meet the growing demand of the energy-intensive heavy industry. The historic underground mines, previously scattered around the basin, were shut down gradually. They had not had such massive impacts on the landscape as large-scale opencast mines, but they had not permitted full depletion of the seams and work in them was very hard and often dangerous. Extraction in the large-scale opencast mines has many advantages: it enables a higher degree of mechanization, eliminates the risk of sudden firedamp explosions and collapsing mine roofs, permit almost full depletion of the seams; but all of that comes at drastic irreversible changes to the entire environment. It literally turns the country "inside out". It results in the characteristic "moon landscape" with huge mine pits, waste rock banks, tangles of access roadways, shrouded in constant mist with power plant fly ash and a sulphurous and phenolic carbonaceous waste gases.

A universal expansion in large-scale opencast coal mines started in the 1950s. Their advance resulted in the destruction of 106 pre-existing settlements, including the historic centre of the royal city of Most. The totalitarian system did not expect any resistance from the local population, and indeed none emerged for decades. After all, most of the population was not indigenous: they only arrived after the deportation of the Germans, so they had no deeper roots in the area and most of them depended on jobs associated with the coal mining for their existence.

Three large-scale opencast mines were in development in the early 1970s in the study area at the border between Chomutov and Most district: Jana Švermy, Čs. armády and Obránců míru. Two of them expanded from the central section of the basin towards the Ore Mountains hillsides. The old Maršál Koněv (formerly Grohmann) underground mine was still in operation there. The extraction focuses on a continuous coal seam about 25 metres thick on average, which is situated at the bottom of the basin strata series. It is concealed under a massive layer of claystones, which has to be completely removed, transported away and deposited in spoil banks as part of the large-scale opencast mining process.

The general management of North Bohemia Coal Mine corporation in Most decided that the Koněv underground mine would shut down in the late 1970s and the Obránců míru opencast mine would not proceed towards the Ore Mountains base but would rather shut down in the mid 1980s and then backfilled. The rest of the coal reserves by the mountain base was to be extracted via the Čs. armády opencast mine. Having reached the foot of the hills near Vysoká Pec, it was supposed to swerve and advance northeast along the mountainside. The municipalities of Podhůří, Kundratice, Jezeří, Albrechtice, Dřínov, Černice, Horní Jiřetín, and Janov were to be destroyed and mined in the process, and the operation was to continue smoothly into the planned Koh-i-noor opencast mine, which would proceed towards Hamr and lower Litvínov.



Site sketch of the area between Most and Chomutov with the planned advances of opencast coal mines plotted in

KRUŠNÉ HORY = ORE MOUNTAINS

S = N

SEVEROČESKÁ PÁNEV = NORTH BOHEMIAN BASIN

Velkolom… = …Opencast Mine

A number of complicated and costly measures needed to be undertaken before the Čs. armády mine could proceed as planned. The main road under the Ore Mountains, the I/13, was rerouted closer to the mountainside as of 1975. An artificial water channel was built next to it to catch the waters of the mountain streams and convey them into the large Dřínov reservoir below Jezeří. However, the large artificial lake on the Bílina river itself stood in the way of the planned advance of the opencast mine. It was therefore to be emptied and substitute hydraulic structures built. The mountain streams were to be dammed and transferred to another catchment area; the new trunk road was to be cut open and mined under; the Bílina river was to be transferred via a pipeline in an artificial block of land constituting the new Most-Chomutov transport link.

Chief survey works

The substitute hydraulic engineering measures turned out to be extremely complicated. The designs for all the projects had to be repeatedly reworked based on the results of the engineering geological surveys, which were initially commissioned by Vodohospodářský rozvoj a výstavba state enterprise with Prague-based Stavební geologie national enterprise. A comprehensive survey for the dam and reservoir on the Bílina below Jirkov, near Kyjice, was performed in 1970-1972. The conditions for building a long earth dam in the place with a diverse delta evolution of the basin strata series, near the Jana Švermy large-scale opencast coal pit, were reported as unsuitable. The construction took place nonetheless, only the dam had to be shifted, the area below the dam permanently secured with a technically complex drainage barrier, and the villages of Kyjice and Újezd had to be destroyed. As part of the comprehensive survey, I was charged principally with surveying the deposits of construction materials and documentation of an underground gallery dug from the bottom of the opencast coal mine towards the old flooded Lobkowitz underground mine near Pohlody. The tunnel was endangered by unexpected outbursts of mine water, but offered unique findings of the tectonic disruption of the basin sediments in the lower segment of the coal-bearing strata series.

I combined the findings from the Kyjice survey with those I had made earlier when the massive earth dam across the Ohře was built near Nechranice, where I had worked as the supervising geologist in the mid 1960s, documenting all the temporary artificial exposures. I did the subsequent surveys in the forefields of large-scale opencast coal mines to be expanded equipped with knowledge of and experience with the basin environment. I am saying this because I soon ended up in opinion clashes with some local geologists, who believed that their long experience with coal mining in their "local setting" in the centre of the basin authorized them to word exclusive correct interpretations of the geological conditions at the basin edges and that an unknown geologist from Prague was not to teach them how to do their job.

The survey works ascertained that the planned substitute water reservoirs on the Bílina at Březenec and on the Vesnický brook at Kundratice could not be built without serious risk. In the event of a failure in the dam, the Březenec reservoir might threaten the residential development of Jirkov, including the new housing estate; the Kundratice reservoir might endanger operation in the expanded mine pit of the Čs. armády opencast coal mine. The hydraulic designers had no other option than to transfer the Vesnický brook via a new bed to the Kyjice reservoir and design a new transfer line for the Šramnický and Černický (Albrechtický) brooks, partly underground and partly surface, following the hillsides of the Ore Mountains into the reservoir on the Loupnice at Záluží. The surveys in 1974-1978 again produced unique findings about the nature of the Ore Mountains crystalline complex near the edge of the coal basin.

Chateau Jezeří on the Ore Mountains slope above the Dřínov reservoir. Albrechtice to the right. Deep under the reservoir and the village is the coal seam, stretching all the way to the mountainside. Picture taken in 1978, before the opencast mine expanded to this area.

The size of the coal deposit as well as the presence, thickness and position of the coal seam and its technological characteristics had largely been based on from older bore surveys focused on the seam, introduced in the mid 19th century and massively developed after 1948, and the extraction progress in the historic underground mines. However, information on the nature of the crystalline complex of the Ore Mountains was lacking in order for the opencast mines to proceed towards the mountainside. The massif, neighbouring on the coal basin and looming up to 700 m above it in places, had remained an almost unknown territory to the geologists working in the coal basin and the mine planners and

managers of various mine operations. The entire massive had been regarded as a firm and stable element that would have no significant effect on the coal extraction in the basin. There was no coal there.

In the early 1970s, the large-scale opencast coal mines were still some 3 km away from the Ore Mountains hillside, and the management of North Bohemian Mines corporation saw the chief technical problem of the future extraction along the mountainside in managing the influx of surface and groundwater into the opencast mine pits. That is why it charged Stavební geologie with an extensive survey of the hydrogeological conditions in the broad forefield of the mines to expand, including the Ore Mountains sides and summit areas. The survey was to involve a detailed engineering geological mapping of the area in order to recognize and describe the Quaternary cover formations and their hydraulic functions. I was charged with that task. I spent until 1976 making a detailed survey of approximately the first 20 km^2 along the basin edge, the mountainside and the summit plateau near Vysoká Pec, Kundratice, Jezeří, Nová Ves and Albrechtice, and ascertained facts that radically changed the mine managers' pre-existing ideas of easy exploitability of the coal reserves under the Ore Mountain slopes.

While excerpting results of previous seam surveys and reappraising the vast amounts of survey bore descriptions, I found many ignored data on the fault zones in the basin strata series and deformities in the bores at the basin edge. I had to start reappraising the mining documentation from the old underground and small-scale opencast mines, including reports on visits by mining inspectors. I traced the course and likely causes of various mining accidents, the reasons for destruction of Jezeří village, disrupted in consequence of extraction in the Koněv underground mine in 1952-1954, and the reasons for abandoning the mining district under Jezeří. I delved in various archives for the causes and course of the disappearance of Lake Komořany, which had covered the basin bottom between the Ore Mountains and Most until the mid 19th century. I studied the structural development of Chateau Jezeří and other castles in the surroundings and searched for the general characteristics and reasons for building them on the Ore Mountain slopes. I ascertained the lithological nature and structural composition of the crystalline mountain massif, and studied the theories of its evolution, especially of that of its slopes. I produced an entirely new survey, mapping and general description of the conditions of the Quaternary cover formations in both the mountainous territory and the coal basin. Above all, however, I had to handle the issues of the tectonics and existence of splinter faults in the crystalline massif and the basin edge virtually from scratch. The reason was that soon after I started my research, I discovered in the pre-existing primary geological research documents an astounding lack of knowledge of the tectonics, the fault lines and discontinuities, their effects on the geological formation and the mechanical behaviour of the rock formations. In the field, I discovered numerous proofs of historic as well as recent slope deformities, landslides and rock collapses off the mountainsides, and ascertained the extent and size of the collapses near Jezeří, which turned out to be the largest in all of the Bohemian Massif.

Doing that, I also kept track of all the other works within the hydrogeological survey commission, the advances of the coal mining, additional seam surveys by other organizations, and various casual exposures when roads were rerouted, etc., and made my own documentation on those.

The conclusion I made was that with no previous experience with mining under steep mountainsides, the Čs. armády large-scale opencast coal mine operation, whose mine pit was about 200 m deep, was intended to be the first to interfere with the Ore Mountains base zone exactly in the stretch that seemed to be the most complicated and riskiest from the engineering geological point of view. Hydrogeological problems can be handled with planning and technology, but the expansion of large-scale open cast mines into the Ore Mountains base zone will depend on the mastering of very specific, unexpected and difficult-to-solve engineering geological and geotechnical problems. Of priority importance here goes to tectonics and the stabilization of the end slopes of the mine pits and the mountainsides in their forefield. Those issues should have been handled in good advance before the coal mining advanced, already during the primary geological surveying of the location, and the mining planners should have resolved them

effectively. However, that was not the case in the study situation, and the coal mine was rapidly approaching the critical points. Moreover, it turned out that there were no relevant examples for the solution in foreign literature or any practically tested procedures that might be imitated.

The section of the Ore Mountains slope where the promontory with Chateau Jezeří protrudes about 100 metres above the mountainside base appeared to be the riskiest within the critical zone. If the mining plans were implemented as originally designed, the chateau would rise 300 metres directly above the gaping opencast mine pit. There was a real danger that the promontory with the chateau would collapse into the mine pit if the load was lifted off the base of the tectonically disturbed crystalline massif. That would mean the destruction of not only the mountainside with its rocky cliffs and valuable beech and oak forest stands, but also a first-class cultural heritage building and a dominant feature of the Ore Mountains section bordering on Most district. The opencast mine pit would be buried complete with the extraction equipment and miners at work, the coal reserves would be degraded, investment put into the mine expansion undone, and various auxiliary and substitute facilities in the area destroyed. The situation was rapidly progressing towards and ecological, economical, technical and social disaster without the mining planners and managers of North Bohemian mines aware of it.

Human activity and ill-considered technical interventions might have imitated the conditions under which gigantic rock collapses occurred on the neighbouring slopes of Jezerka and Jánský vrch in recent geological past: approximately 30 million m^3 of crystalline material collapsed into the basin.

The general management of North Bohemian Mines corporation in Most, the Brown Coal Research Institute and Teplice-based Báňské projekty enterprise employed many geologists who were adhering to the theory of non-tectonic origin of various irregularities in the basin strata series. They attributed them to the effects of the delta development and/or the Pleistocene glaciation. With minor exceptions, they did not acknowledge tectonic fault zones. They even considered the rising of the Ore Mountains to be a result of folding, of course without the effect of any tectonic faults. Such opinions had dominated in the basin area for the past 10-15 years. The mine management and planners accepted them fondly, because they called for no special technical provisions in the opencast mine operation, not to mention any cardinal changes to the mining process. I remained practically alone with my opinions and interpretations. Plus I incensed an old, renowned state primary research organization – the Central Geological Institute – against me by pointing out deficiencies in handling fundamental problems of the area's geological evolution.

There was a problem with submitting the results of my research if it should convey findings obviously inconvenient to the client (North Bohemian Mines corporation management) and the entire political-economic-power establishment (note that this was the "Normalization" era of the communist totalitarian regime, persecuting anyone who went against the powers that be in any way). Still I took on the gravity of the case and, without previous approval by superordinate ministerial bodies, I published my results in mid 1977, complete with the conclusions and interpretations, simultaneously in the professional journals "Geologický průzkum" and "Památky a příroda".

My articles were published under the titles "Engineering geological problems arising from expanding large-scale opencast coal mines towards the Ore Mountains baseline" and "Conserving Chateau Jezeří as a engineering geological problem".

Beyond the scope of my commission, I attached two extra chapters about tectonics and geodynamic phenomena in my 1976 final report on mapping the Quaternary cover formations. In an effort to confute or cast doubt upon my findings and interpretations, the mine management arranged a review procedure, appointing leading geological experts from the Czechoslovak Academy of Sciences and the Mining University in Ostrava as the reviewers. Nevertheless, I weathered the review procedure and succeeded in defending my conclusions and interpretations.

However, the articles I published created a stir, including in the highest political circles spanning from the Central Committee of the Communist Party to regional, municipal, company, street-level and who knows what other Party committees, several government ministries and their subordinate enterprises, including the Central Geological Institute and Stavební geologie management. The management of my own company disclaimed responsibility by stating that it only warranted the results of papers that had been commissioned. The company Communist Party committee held a long debate on whether they should punish me and how, but reached no agreement. North Bohemian Mines management declared by conclusions and interpretations were "hypothetical, unproven and generally not accepted". I was labelled as an enemy of the establishment, a disaster reporter, and an enemy of the Czechoslovak power industry. A service and political supervision was set over me, and I was banned entry to the opencast coal mine.

The Battle of Jezeří

In 1975, I had informed the Regional Office of State Cultural Heritage and Nature Conservation of the risk to the heritage building of Chateau Jezeří and the surrounding mountainsides. I set up a permanent field office in an abandoned old tower of the chateau with the Regional Office's approval.

The critical site became popular after I submitted my final report on the engineering geological mapping and especially after my articles were published. Czechoslovak Television asked me speak in their economy show "Is It Worth It?" from the chateau courtyard. Jezeří started to host journalists, political officials, leading scientists, entire busloads from the Regional Mining Authority in Most, Báňské projekty in Teplice, the Regional Office of State Cultural Heritage and Nature Conservation in Ústí nad Labem, the Central Geological Institute, various institutes of the Czechoslovak Academy of Sciences, and universities in Prague, Brno, Ostrava, Bratislava and Košice. Josef Velek – the only journalist with an openly pro-environmental focus – arrived. I spent several evenings debating with the young author of well-known books "Jak jsem bránil přírodu", "Příběhy pro dvě nohy" and others that the communists in control liked very little. He began to write a new book about the Jezeří problem, but never completed it: he died diving in the Red Sea soon afterwards. Whispering tongues said somebody pushed him.

The growing popularity of the Jezeří area was in sharp contrast to the frightening state of neglect of the chateau itself. The expansive building had been abandoned in 1954, rid of all furnishings (burgled) and managed platonically by the Regional Office of State Cultural Heritage and Nature Conservation by means of a single custodian. Outside the scope of interest of district or region-level political authorities, it was rapidly decaying. To make the responsible political and administrative authorities and, more importantly, mining institutions aware of the real value of the building, I compiled an overview of its historic and structural development, appraising its importance, and published it in the North Bohemian Mines professional journal "Hnědé uhlí".

The practical result was that, almost simultaneously, both the State Cultural Heritage Conservation and general management of North Bohemian Mines commissioned Stavební geologie to perform a new, detailed, purpose-driven engineering geological survey of the Jezeří area. It was obvious beforehand that the survey was primarily meant to either confirm or refute my conclusions and interpretations made as part of the previous engineering geological mapping. It was also evident that it would not succeed without unconventional and costly mining engineering methods, tunnels, shafts and deep core holes. It was not clear beforehand where to put them, what sizes to make them, who would design them, who would make them and how, and who would pay for them. A professional project design had to be made for each separate mining facility. In order to clarify those issues, I spent the whole of 1977 making a detailed survey of the cellars and other underground spaces of the Chateau Jezeří grounds, and commissioned geophysical measurements in several points along the chateau buildings and the surrounding slopes where I had predicted the existence of tectonic fault zones. Only after that did I design subsequent, technically demanding works. I had my entire design reviewed by the most revered

professionals, old professors Quido Záruba and Vojtěch Mencl, the founders of the scientific discipline of engineering geology. They both arrived at Jezeří several times regardless of their advanced age of around 80 years.

A team of designers at Báňské projekty Teplice – the last ones still capable of designing underground works in the North Bohemian Basin – were charged with elaborating the technical designs for the mining works. By the foot of the hill under the chateau, I proposed a vertical shaft and two horizontal galleries under one another, dug towards the mountains; the bottom gallery was to be dug from the bottom of the shaft. Their purpose was to detect and cross the predicted tectonic fault zones. However, the mining designers gave up on the job after a year spent designing. There was no-one at hand who would be willing to carry out the designed works.

The Central Committee of the Communist Party decided that the costs of the designed works were to be paid by the North Bohemian Mines (Doly V.I. Lenina, later renamed to Mostecká uhelná společnost). So I borrowed Stavební geologie director's managerial Tatra 613 with a driver, put two mine development officers with the right to sign and a stamp in the car, and we started to tour Czechoslovakia. We were trying to make contract for the works at Jezeří on the spot with renowned companies doing mining works. We failed in Rýmařov and in Zlaté Hory near Jeseník and in Žilina and in Spišská Nová Ves.

Surveying underground spaces at and around Chateau Jezeří in 1997.

In the meantime, Jáchymov-based Výstavba dolů uranového průmyslu (VDUP) began digging a hydraulic tunnel in the mountainside above Jezeří to transfer the Šramnický brook, and then another tunnel at Albrechtice to transfer the Černický brook to the reservoir on the Loupnice. With my team mates, we monitored the digging of both the tunnels for over a year. We were making detailed documentation of the geological phenomena detected in the depth of the crystalline complex to have enough background for comparison for the planned survey under Jezeří. However, we were only able to do that at night, when the digging was halted in the underground. To make matters worse, we also took up documenting the new three-kilometre-long drainage tunnel in Jáchymov.

Thanks to co-operation with VDUP Jáchymov, we succeeded in convincing the company's diggers to perform at least part of the designed mining works under Jezeří after the digging was completed. Most importantly, we managed to do the principal work: the horizontal gallery dug from the mountain base into the crystalline complex right under the chateau, 430 m long. We were documenting the gallery throughout the digging process, again mostly at night. Deep core holes were bored in front of the gallery portal; an underground hole was bored inside the gallery; and an inclined core hole was bored under the chateau foundations. We documented all the rock formations around the chateau. We measured all the fissures, analysed the geodynamic phenomena and other facts. We found and documented remains of medieval chambers for iron ore extraction and processing in old "salamander furnaces" extant around the chateau. I published the finds in the professional journal "Rudy", which later resulted in their inclusion among protected national technical heritage sites.

The research around Jezeří took more than 4 years and was completed in 1981. It fully confirmed the findings and conclusions of the previous engineering geological mapping, which the North Bohemian Mines management would not accept in 1976. It confirm the existence of massive tectonic fault zones at the mountain base and inside the massif, various anomalies in the positioning of the basin sediments along the seam edge and the groundwater conditions, and most

importantly, it confirmed the unstable position of the promontory on which the chateau rests.

I was writing the final report on the Jezeří survey in bed at the Institute for Clinical and Experimental Medicine (IKEM) in Prague, where I had been taken after I collapsed as a result of extreme physical strain, long-term psychic exertion, dangerous work in the underground and staying in the unheated tower at Jezeří.

When I was put more or less back together at the IKEM, I defended my set of findings and generalised experience as my Candidate of Sciences dissertation thesis at Charles University Faculty of Science. The thesis was reviewed by three top graduated experts at three universities whose expertise it involved: the geotechnician Prof. Mencl of Brno Technical University, engineering geologist and hydrogeologist Prof. Homola of Ostrava Mining University, and geomorphologist Prof. Král of Charles University Faculty of Science. They appraised it as the best in years and the most momentous in the Czechoslovak Federation, with a direct impact on the entire country's economic condition. It seemed that the battle was over and there would be some resting on laurels at last. The reality was soon different, though.

The results of my research were to be confirmed by a mathematical calculation of the stability of the slope. This was an extremely tall slope, however, its integrity had been disrupted by tectonic zones, and its base was meant to be unloaded by coal mining. There was no one at hand who wanted to take on that task without sufficient previous experience and examples in foreign literature. Eventually, the calculation was taken up by the country's undoubtedly most experienced experts, geotechnician Vojtěch Mencl and mathematician Ladislav Mejzlík, both emeritus professors at Brno Technical University. They used the finite element method, novel in this country at that time, using computer equipment. In addition, a physical model was constructed at the BTU Construction Faculty Geotechnics Department, made of equivalent materials (Chateau Jezeří being represented by two sugar cubes).

Interior of Chateau Jezeří in the 1980s

While the professors were calculating, the lecturers and instructors in white robes were working with the physical model located inside transparent Plexiglas walls. The used a toy spade to rake away fine sand, which stood for the basin sediments, imitating the mining activity in the opencast mine. The condition of the adjacent crystalline complex was monitored by means of a network of surveyed points; a movement was expected, and I was cautiously watching along

with renowned experts of the Academy of Sciences. After all the sediments were removed, nothing shifted until late at night; the sugar cubes remained in place. The next morning, we found the massif collapsed complete with the sugar cubes.

The mathematical calculation confirmed that removing the top approx. 2/3 of the sediments at the base of the mountainside might not cause a stability collapse of the entire slope, but the bedrock directly under the chateau would suffer deformities of up to 10 cm. A total stability collapse would occur if the basin fill extraction continued. (The coal seam is located in the bottom segment of the sedimentary strata series.)

Moreover, the course of both the mathematical and physical modelling showed a deficit of some input data, the importance of which only became clear during the modelling, such as the role of discontinuous groundwater horizons, the size and orientation of the natural tension inside the crystalline complex at the mountainside base, the role of slow secular movements of the massif due to internal geological forces, etc. That was why the Jezeří area immediately became a test site in which various professional institutions and teams of specialists tried to test various empirical approaches to modelling, conduct parametric studies and regression analyses. Eventually, Stavební geologie Praha became the manager of an extensive national research task “Studying stability problems of opening opencast coal mines at the base of the Ore Mountains”. Within it, I dealt with the issue of “Studying the tectonic loosening of the crystalline complex”. Using inclined and horizontal core holes in the mountainsides around Jezeří, I examined the presence of tectonic faults and zones, verified their tectonic effects in the ground surface, and tested possible applications of various geotechnical equipment for monitoring changes in the tension and movement inside the massif. The research was completed in 1986.

After I submitted the results of the detailed survey at Jezeří, the mine management commissioned detailed engineering geological surveys of similarly critical sites below Jezerka, at Černice and Horní Jiřetín, again using demanding mining works. The mining works were taken up by the tried and tested VDUP Jáchymov, which was then able to dig vertical shafts in addition to horizontal galleries. At the same time, comprehensive surveying started on the adjacent site in the forefield of the disused Obránců míru opencast mine, between Jezeří and Janov, covering another approx. 20 km^2. Its chief focus was on the stability of the mountainsides and the end slopes of the planned opencast mine. I continued the detailed engineering geological mapping of that section and kept track of all the other survey and research works.

Survey gallery under Chateau Jezeří: main site of the detailed engineering geological survey

Immediately after the conclusion of my detailed survey at Jezeří in 1981, I held a seminar for the staff of the Regional Office of State Cultural Heritage and Nature Conservation in Ústí nad Labem about its results and predictions for the future advances of the coal mines. The seminar was also attended by the chiefs of the then newly formed youth conservationist movement "Brontosaurus" from Most and Litvínov, Miroslav Brožík and Petr Pakosta. I invited them to use the help of young environmental activists to assist in saving and rehabilitating the devastated chateau, its gardens and former parks around it. The Brontosaurs pulled their weight effectively with the consent of the Regional Conservation Office, but to the disfavour of the District Committee of the Communist Party in Most. The latter regarded their action as a violation of Party guidelines, which were unequivocally in favour of the coal mining. They saw no gratitude either when they cleared out and prepared for renovation the devastated historical Franciscan hospital in Most, scheduled for demolition.

The large-scale opencast coal mine started expanding towards Chateau Jezeří in the 1980s

The youth group run the “Quite Small Theatre” in Litvínov, where they invited well-known people in environment-related professions for discussions with locals. In 1982, they invited me to lecture on “Shall we prop up the Ore Mountains?” The feedback was substantial. The public of Litvínov, Most and the surrounding villages revived their interest in conserving not only Jezeří but also the surrounding landscape and the remaining settlements. Following discussion evenings involved speeches by Dr. Skřivánek of the State Conservation Office headquarters, Dr. Vaněk and Ing. Stoklasa, both renowned experts of the Academy of Sciences Institute of Landscape Ecology, and others. They all endorsed the continued existence of the chateau.

With minor variations, the detailed surveys below Jezerka, at Černice and Horní Jiřetín produced findings similar to those from the Jezeří survey. The mountainsides and their bases were modified by tectonic fault zones up to several dozen metres thick. Within them, the crystalline rocks were crushed or even disintegrated into a sandy-clayey earth. The basin strata series at the edge of the basin was also disrupted by various fault and non-fault deformities.

Now the problem was how the mine planners and operators would cope with that, because they still insisted on their original plan, striving for full depletion of the seam up to the edge using the large-scale opencast method, albeit at the cost of disproportionate expenses and special precautions, the technical and energy intensity of which would clearly outdo any profit from the coal mined.

Design ideas verging on fantasies were developed, including stabilization of the Ore Mountain massif using a series of pretensioned anchors up to 80 m long, bored from slope sections cut into terraces. Another was to remove the entire exposed section of the crystalline complex so that the end slope of the opencast coal mine would face mountain slopes dressed at a stable incline of approx. 35°. Obviously, that would have required the previous complete removal of the forest, the groundcover, the protruding rock formations, and naturally, Chateau Jezeří. The latter version was even elaborated into an implementation design, undersigned by Ing. Kubricht, former chief architect of Most and designer at Báňské projekty at that time. To that end, the mine management, Brown Coal Research Institute in Most and Báňské projekty in Teplice filed a joint application with the Ministry of Culture in 1982, calling for cancellation of the heritage conservation status of Chateau Jezeří and the adjacent Ore Mountains hillsides.

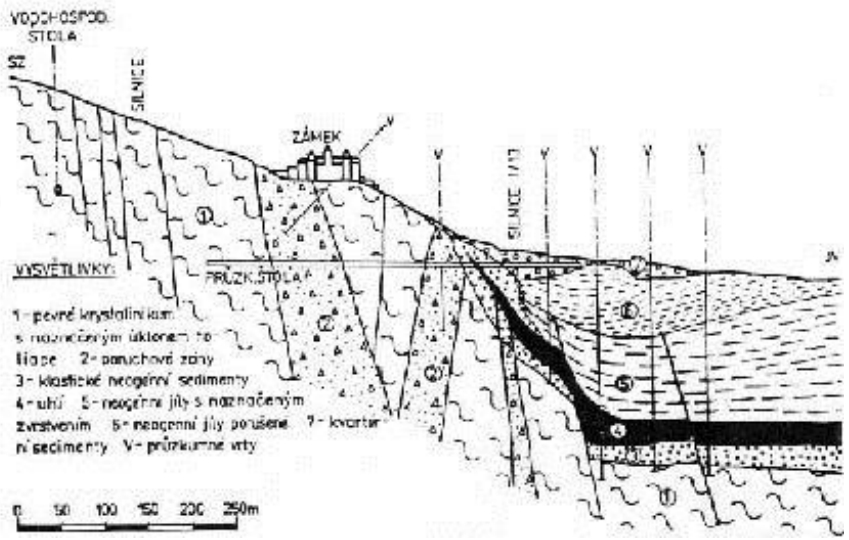
I learnt about the meeting summoned by the Ministry of Culture to discuss the matter the night before, during the discussion with Ing. Stoklasa at the “Quite Small Theatre” in Litvínov. Following the discussion weighing the relative importance of the coal on the one hand and the local scenery, cultural heritage and health of the population on the other, which drew out until midnight, I set off for Prague in my 4WD. I was going to wash and change at home and attend the crucial meeting the next morning. On the way, driving through a February night snowstorm, I missed the elevated onramp leading to the new bypass at Panenský Týnec and had a crash in the ditch. I left the overturned car through the rear window before the running engine exploded and the car caught fire. I managed to settle the accident with Louny police, catch the first bus to Prague from Louny, attend the meeting at the Ministry, and intervene in the discussion. The miners’ proposal to lift the conservation status off Jezeří and expand the mining district up to the summit portions of the Ore Mountains was not approved.

However, the meeting had a tragic aftermath: Ing. Kašpárek, director of the Regional Office of State Cultural Heritage and Nature Conservation in Ústí nad Labem, had a heart attack and died the next day.

The miners’ plan to destroy Chateau Jezeří and the adjacent mountainsides provoked a long-lasting and frequently passionate polemic in daily press and other media as well as at various professional conferences in 1981-1987.

Disapproving positions were expressed by leaders in culture, history, nature and heritage conservation, representatives of the local population, youth environmental movements, and journalists alike. I initiated the production of a monographic issue of the popularization journal “Památky a příroda” dedicated

to the Jezeří issues. It was published in 1983, and the editors still refused to include a paper by Dr. Líbal, the country's leading expert on heritage buildings, who resolutely defended the conservation of Jezeří.



Geological cross-section of the Ore Mountain slope and the edge of the North Bohemian Coal Basin near Jezeří. The result of the detailed engineering geological survey conducted in 1977-1981. This picture circled the entire professional world.

SZ = NW

VODOHOSP. ŠTOLA = HYDRAULIC TUNNEL

SILNICE = ROAD

ZÁMEK = CHATEAU

V = B

SILNICE I/13 = I/13 TRUNK ROAD

JV = SE

PRŮZK. ŠTOLA = SURVEY GALLERY

VYSVĚTLIVKY = NOTES

1 – solid crystalline complex with foliation incline indicated; 2 – fault zones; 3 – clastic Neogene sediments; 4 – coal; 5 – Neogene clays with stratification indicated; 6 – disrupted Neogene clays; 7 – Quaternary sediments; B – survey bores

The village of Albrechtice fell prey to the mining preparations below Jezeří in 1985. As was the custom in the area, the houses to be demolished were plundered. At that time, my fellows and me were arrested at Jezeří and charged with plundering the chateau at Most police station. The event was probably stage-managed by the mining activists. A lengthy report was made after a long interrogation; no persecution followed but I was still stalked by the police even at home in Prague.

In the eyes of the mine authorities, Chateau Jezeří was becoming an increasingly hated structure, allegedly an obstacle to further advances of the coal mining, although it is situated outside the coal seam. The official caretaker of the building – the Regional Conservation Office in Ústí nad Labem, which had no means even to do the basic maintenance – was reluctant to invest its limited resources into a building endangered by demolition, the design for which had already been made. It made several efforts to get rid of the decayed building: by assigning it to the mine corporation! It even dismissed the only employee – the chateau custodian. Therefore, the presence of myself and my six colleagues in the field office, which we refused to abandon, was the only obstacle to carrying out the demolition design.

In the meantime, the Jezeří issue made it to the international forum. It was talked about at geological, hydrogeological, engineering geological and geotechnical conferences all over the world (Melbourne, Washington, Nuremberg, Granada, Moscow, etc.), but mostly by others. After I submitted my final research report, there were suddenly scores of ambitious experts willing to declare the results, conclusions and interpretations were their own, and boast them abroad. I was not even allowed to read out my paper at the World Geology Congress in Moscow in 1984. However, I produced a short film about the stability issues of the Ore Mountains slopes due to the coal mining for Washington D.C. and a paper on a similar issue for Melbourne. Ing. arch. Zdeněk Stáhlík of Terplan and I became expert advisors for another, more artistic short film on the issues around Jezeří and the Ore Mountains.

During the harsh political "Normalization", however, positions published in "Rudé právo" – the supreme press medium of the all-governing Communist Party – were the most momentous ones. Editor Jindra Čekalová played an exceptional role there. She was not afraid of publishing opinions that evidently went against the existing ideological positions and guidelines of the ruling Party, whether under her own name or undersigned by apparently non-conforming individuals, irrespective of the disapproval of the then editor in chief, comrade Kojzar, and risk of her own existence.

Editors of dailies and popular periodicals visited the critical area around Jezeří in a group in 1985. The editorial office of "Věda a technika mládeži" celebrated me as the winner of a nation-wide competition of discoverers and inventors.

Regional, district and municipal secretaries of the Communist Party made a field trip to the Jezeří area in 1986 with the aim of giving political support and assurance to the uninterrupted operation of the coal mining. Rudé právo editor Čekalová elbowed her way into the field trip (and could not be refused based on her position), and brought me along as her expert advisor (otherwise I could not have attended such a meeting, being a branded opponent to the regime). I provided the board of secretaries with a comprehensive explication of the issue, took them to the dam of the then emptied Lake Dřínov, guided them around the derelict chateau, and attended the final discussion at the House of Culture in Most. Out of the 12 Party exponents, originally biased in favour of continuing the coal mining, eleven eventually voted for limiting the mining and preserving Chateau Jezeří. Comrade Šenkýř, a regional Party secretary, formulated the final statement.

The right wing of the chateau rests on solid granite gneiss; the left wing stands on a fault zone, in which the rock is disintegrated into a sandy-clayey earth.

Deputy Prime Minister Rudolf Hegenbart, a pro-reform secretary of the Central Committee of the Communist Party and head of the Interdepartmental

Committee, visited Jezeří in 1987. He arrived with several ministers and in the company of General Manager of North Bohemian Mines, dressed up in an incomplete miner's uniform. On the terrace of the chateau, overlooking the coal basin, he listened to the General Manager's lecture on the advances, continuing success and bright prospects of the coal mining. Then he listened to my lecture. After that, he asked me for my published works to study and kept holding on to my elbow throughout the rest of the guided tour. Before the end of the excursion, he made me sit in one of the two chairs available in the chateau courtyard, himself sitting on the other one, while the team of ministers and the General Manager of the mine corporation had to look on standing in a semicircle around us. I think everyone present must have been clear about the fact the decision had been made.

I have no doubt that Rudolf Hegenbart then had to overcome opposition of the conservative members of the Central Party Committee and negotiate with representatives of the international Comecon, directed from Moscow. No definitive and formal decision arrived for a long time. That was why I appeared in the popular TV show "Vysílá studio Jezerka" in October 1987 and demanded a political decision. The response of Prague Municipal Committee of the Communist Party was rancorous, and I was again deleted from the list of nominees for the State Awards. Jana Fořtová, the TV show host, preferred emigration. Nevertheless, the Government decision was published in the spring of 1988: Chateau Jezeří would be preserved and renovated. The coal mine had to ensure the stability of its underlying slope. The Government earmarked special lottery funds for the renovation.

The mine managers and planners were thus forced to a solution they did not welcome: they had to leave intact the portions of the basin strata series below the most critical parts of the main Ore Mountains side, including the coal seam, which could not be extracted through an opencast mine. Those areas were to act as pillars, having to secure the stability of the tectonically disrupted mountainsides and thus the safety of operation in the open mine pit. The pillar below Jezerka contains approx. 10 million tonnes of coal; the one below Jezeří has 20-30 million tonnes of coal. Naturally, the pillars and their surroundings had to be under supervision of geomechanical and geodetic monitoring. The village of Albrechtice could not be saved: it had been destroyed shortly before that (quite pointlessly, as it turned out).

The victorious celebrations quickly gave way to having to sort out who would undertake the overall renovation of the intricate building. A bid was made by Průmstav Pardubice, Chomutov operation, a large and well-established company, but its general manager forbade the commission. The first money that arrived in the Jezeří account was used for erecting a metal scaffold around the main building, and a small construction team from Žalany u Teplic co-operative farm started fixing the roof. When they found out it was beyond their capacity, they passed the task on to Most state farm.

A small group of lasting campaigners to save Jezeří with a larger circle of supporters established itself as the "Association to Save Jezeří" in 1988. It registered itself with Ministry of the Interior when a mild political thaw came. Later on, the citizens' association name was changed to the "Association to Restore Jezeří" in order to better express its current goals and efforts. The purpose was not only to save the historic building but also to restore its surroundings and remains of the original scenery. A notable paradox happened then: the Association exponents who were experts on various scientific disciplines and land use, previously in opposition to the governing political team, now became an informal advisory board to the Secretary of the Central Committee of the Communist Party! The one who took up the task of resolving long neglected and truly pressing environmental problems: Rudolf Hegenbart. We were summoned as needed and met in Prague, usually in Terplan basement. An exceptional meeting was held in the little-known Ore Mountains hamlet with a long mining tradition, Hora Sv. Kateřiny, in October 1988, when we celebrated the birthday jubilee of the environmental activist Petr Pakosta and myself.

Soon afterwards, however, the party and government began bursting at the seams, and it collapsed in November 1989. That had serious implications for

Jezeří. The former all-governing position of North Bohemian Mines lost its political support and, soon after that, its economic power. They were forced to reduce the mining activities to a fraction of the previous volume, making the advance of the Čs. armády opencast mine slower. They had to start acting at least a little “environmentally”, since that was the universal imperative of the new era.

Jezeří was receiving multiplying visits by new statesmen, ministers, deputies, Prime Minister Petr Pithart, and President Václav Havel. William Lobkowicz, the grandson of the last pre-war owner, arrived from the USA in 1990, took up permanent residence in Prague and requested the chateau returned to him. One of my fellows at Jezeří, Dr. František Jeniš, left for the expedition “Driving a Tatra Round the World” and died in the mountains of Pakistan.

In 1991, the former Crown Prince Charles and Princess Diana made their first official visit to Czechoslovakia. The schedule for the end of the visit by the pro-environmental Prince, arranged with the Presidential Office, was a visit to Most district, hallmarked by the large-scale destruction due to coal mining, and Chateau Jezeří, which had barely escaped its demolition order. Princess Diana left for England, and Prince Charles and his entourage arrived by plane – piloted by the Prince himself – to the disused military airfield at Žatec. In place of President Havel, he was accompanied by Chancellor Schwarzenberg, the British Ambassador, Federal Minister of the Environment Josef Vavroušek, Czech Minister of the Environment Ivan Dejmal, and journalist Pavel Tigrid. During the tour of the coal basin, I made a general lecture on the dam of Lake Dřínov and the torso of the cut-off road below Jezeří. Then the convoy arrived at Jezeří, where the Prince was welcomed by Chairman of the Parliament Milan Uhde and the Lobkowicz family in the upper garden. I presented an overview of the chateau history in the courtyard, and the terrace overlooking the mine pit provided the esteemed guests with a vista of the gaping mine pit and the country that was being devoured by the demanding power industry. The Prince was sincerely shocked. After I introduced the activists of the Association to Restore Jezeří, he said, “I do not envy your job,” and registered himself as a member of the Association. So did Milan Uhde and Pavel Tigrid.

Of course regional, national and international media informed about the visit. Only after that could the Jezeří area and its adjacent mountainside be considered to be saved in the new political era: the topic had been made popular enough by the media.

The Prince promised to contribute towards the restoration of Jezeří with money from global funds. In order to be able to accept any such donations, the Association to Restore Jezeří set up the Foundation to Restore Jezeří with economist Ing. Jaroslav Stoklasa as the chairman, and opened an account with a bank in Most. The first deposit was made by Prague-based architect Karel Císař, who designed the chateau renovation project. No other money arrived, though. The Prince did fulfil his promise, but the money never made it past Prague. It was used for renovating the Baroque gardens under Prague Castle and perhaps the replacement of several of the Charles Bridge statues. Money from the special funds, allocated by the State through the Regional Authority, only kept arriving until its dissolution in 1993. Then it dried up.

By way of Ing. Stoklasa, who had become an advisor to Minister Vavroušek in the meantime, we tried to push forward making Jezeří a national centre for studies of possible rehabilitation of extremely devastated landscape. Something similar exists in Austria, where the state has given Chateau Laxenburg, confiscated from the Habsburgs, to international environmental projects. Ing. Stoklasa brought up the proposal in various ministerial and environmental circles, including abroad, but did not succeed.

Chateau Jezeří lost its exceptionality as a heritage building saved just before destruction under the new political conditions. Other regions too began making funding claims for renovating their dilapidated heritage buildings, such as Brno did for its Špilberk. Facing that situation, the Government gladly complied with former owners’ claims, and restored Chateau Jezeří to the Lobkowiczs.

The former economic hinterland for the Chateau – the Jezeří and Nové Sedlo nad Bílinou dominion – fell prey to the large-scale coal mines. The restored owners

were given no compensation for it. Only the forest properties in the Ore Mountains remains; they had degraded due to the pollution and climate change as a result of coal combustion in power plants. They were given back about 10 more buildings, most in a devastated condition and without their economic hinterland. They soon concluded they could not sustain Jezeří. William Lobkowicz offered to transfer the chateau to us free of charge. I had to decline that generous offer politely, both for myself and for the Association that I chaired. It was unclear how we would provide the dilapidated building with security, fire safety, drinking water and other essentials. None of us had enough money for renovating it.

Some risk emerged at the other end: The Lobkowicz family were in dire need of funds for renovating their other restored properties. In order to raise some funds, they offered Chateau Jezeří for sale. Given the situation resulting from the coal mining, it was obvious that the coal miners would be the only potential buyer. The intention would not be to locate their managerial offices in it or convert it to a holiday resort for their workers, but to finally erase the despised building. No one could prevent them from doing so as the legitimate owners, meaning all the previous efforts to save it would be in vain.

So we had to fight on. I approached the Lobkowicz family with a long letter in which I invoked their moral obligation towards the building that they had owned for more than 300 years, and its liability for the history of the Czech Lands, with which it often interfered significantly from its seat at Jezeří. I argued that as it were, the chateau must not be sold but returned to state ownership. The old Czech nobility obeyed! The government authorities had to be convinced again that they ought to take over the building, which they had left to rot, and complete its renovation. It was not easy, but it worked out. The case was partly supported by my renown in the heritage and environmental conservation circles, partly by the fact Milan Uhde and Pavel Tigrid were members of the Association to Restore Jezeří, and definitely by Prince Charles having visited.

Nevertheless, Prince Charles was not the only crowned head to visit Jezeří. In another official state visit, Queen Beatrix of the Netherlands and her husband, Prince Klaus, arrived in the company of the Dutch Ambassador, Chancellor Dobrovský and Minsters Dlouhý and Benda in 1994. In the Presidential Office concept, the welcome in the chateau garden was be followed by a view from “Charles’ Vista” and a presentation by the North Bohemian Mines manager. Local environmental activists protested against that. They convinced Chancellor Dobrovský that the presentation should only be made by me. The mine manager would then be allowed to boast the mining successes in the basin below. I handed the likeable Queen the commemorative essay “Krušné hory, Jezeří and related matters” and a handful of raw Bohemian garnets. The Queen said she “would like to be as helpful in saving Jezeří and the landscape as possible”. Unfortunately, her willingness was not exploited due to a flood of other events. Ministers Benda (environment) and Dlouhý (industry and trade) said nothing and would make no perceptible effort for Jezeří later on.

Queen Beatrix with her husband at Jezeří, 1994.

Following the totally exceptional case of the State taking back over a property that had been restored to its legitimate owner, the State invested some money in its renovation, but far less than the demanding project required. So works only proceeded slowly. Nevertheless, 10 years later, it can appreciated that the chateau gleams into the distance with its new roofing, repaired chimney heads, copper-plated cupolas, and gilded balloons on the spires. Parts of the chateau have been made accessible to the public. The warden is Hana Krejčová, a local native and a former singer at Teplice Theatre, who has a warm attachment to the place and the chateau. We may yet see the renovation completed.

The Foundation to Restore Jezeří has been dissolved. The Association to Restore Jezeří has not, and although the effort to restore Jezeří has been accomplished, there are still problems around it in which it has to be involved or which it has to pick up under the pressure of current events. Although there are no regular meetings, the Association is still capable of mobilizing its active core members and bring its bank of knowledge and experience wherever it is needed.

The saving of Jezeří became a battle won among the several large battles that individuals and environmental groups waged against megalomaniac projects pushed by the Party and those in power at that time. They prevented the construction of a large dam on the Berounka near Křivoklát and a high-rise hotel on the top of Sněžka. The only thing they failed to prevent was the development of the car racing circuit in the suburban forest near Brno, which totally ruined the notion of the idyllic setting of Mrštík's "May Fairytale". That can be regarded as a fair success during the totalitarian era.

The Struggle for the Arboretum

After the detailed engineering geological survey at Jezeří was completed in 1981, its results urged the management of North Bohemian Mines to require a speedy clarification of the conditions in the similarly critical section at the base of the Ore Mountains hillside below Jezerka. There is no chateau protruding from the mountainside, but the slope is even steeper and taller than at Jezeří. It was affected by a massive rock collapse in the recent geological past; its manifestations had been identified and confirmed. The Čs. armády large-scale opencast coal mine was scheduled to intervene with this area even before Jezeří.

Describing the details of the survey would be too lengthy. It too employed mining works, a shaft and two galleries. A landslide occurred during the survey; it went about 60 m deep and made further works impossible. The results were similar to those at Jezeří. The existence of a massive tectonic fault zone at the base of the mountains was confirmed. Another fault zone higher up the slope caused a collapse of the exposed front part of the massif while it was being raised in the early Quaternary period (which has not yet occurred at Jezeří).

People from the area voiced their opinion on a bus shelter below Jezeří: Save Jezeří!

The coal miners were thus forced to leave a small pillar under this mountainside too, containing approx. 10 million tonnes of coal. Nevertheless, they proceeded as originally planned throughout the adjacent area up to Jezeří (crossing a distance of about 2 km) in 1982-1990. They interfered with the mountainsides with a number of earth removal cuts that they referred to as “load-lifting”.

From the engineering geological perspective, they thus cut down a long section of the mountain base, disrupted by tectonic zones. The cuts went up to 70 m above the mountain base level. The rock formation protruding from the side of Jánský vrch in a position similar to that of the block below the foundations of Chateau Jezeří was removed in advance to provide mining security. However, this meant removing the firmest element of the mountainside, leaving behind not very firm or even entirely disintegrated crystalline complexes, disrupted by tectonic discontinuities and zones in several geometric systems. These conditions were only waiting for a trigger, which might be a longer rainy period or a detonation due to the blast works in the mine pit, to start another disastrous landslide.

The section of the Ore Mountains side between Jezerka and Jezeří affected by mining in the 1980s. Cutting down the mountainside has caused landslides, which have continued to this day in some places.

The local section of the new Ore Mountains trunk road, I/13, which was rerouted closer to the mountainside in 1975, was removed again by the mining not 13 years later. Discontinuous fragments were left below Jezerka and Jezeří. Later on, two mining railways for removing debris from the slopes below Jezerka and Jánský vrch were laid parallel to the road fragment below Jezeří. These access

roads plus a mine buffer drainage ditch cut the “lower chateau park” with valuable tree stands and a great cultural and historical value apart from the stands on the mountainside around the chateau, the “upper chateau park”. A mine railway station was nearly built and the slope below the chateau, spanning approx. 50 m height, was nearly removed as scheduled. Fortunately, the plan was not carried out following a wave of protest by both experts and the public. The mine railways were dismantled after several years of minimal traffic in 1990.

Before it was decided in the early 1990s that the stabilization pillar would be preserved below Jezeří, an advanced demolition was performed wiping out the village of Dřínov, complete with a treasured Baroque chapel, and the village of Albrechtice, and draining Dřínov Reservoir, the largest in Bohemia to have ever been terminated. The preparation of the forefield for the advance of Čs. armády mine destroyed tree stands in the southeastern part of the chateau park lining the former Jezeří-Dřínov road, including an ancient “King George’s Oak”, associated with a historically documented legend that the forces of King George of Poděbrady camped under it in the mid 15th century while protecting the area from efforts to separate it and joint it to Saxonia.

Under the situation, the Ministry of Culture succumbed to the concentrated pressure of North Bohemian Mines management, and believing that the coal miners had no other option than to continue below Jezeří in the same way, it lifted the heritage status off the “lower chateau park” (incorrectly referred to as the “arboretum”).

The “arboretum” itself forms the central core of the former park, reduced in size over time. In its heyday in the mid 19th century, the park was considered to be the most beautiful in Europe; it contained ancient trees from the indigenous stands on the shores of former Lake Komořany. The last of them, the “Albrechtice Oak” at the northern edge of the arboretum, was registered in the medieval Cadastre as one of the 12 ancient “boundary oaks” along the Ore Mountains hillside. Its age was estimated to be over 1000 years. Admittedly, it was hollow, but still alive. When the coal miners were forced to leave an untouched section of land below Jezeří in order to ensure stability of the Ore Mountains side, the pointlessness of the advanced destruction of Albrechtice became clear. When the Government of the Czech Republic determined the territorial limits for the mine advance in 1991, the extent of the protected area was geometrically bound to the tree. Perhaps in an act of revenge on the environmental movements, which caused the restriction on the mine advance in the eyes of the pro-mining activists, it was set on fire repeatedly in 1993 and then torn down. The report of a crime committed by an “unknown offender” has never been acted upon.

The arboretum, being the remaining core of the “lower chateau park”, has admittedly been gnawed off on all sides but still covers a relatively large area below Chateau Jezeří, contains valuable stands, and might become the core for restoring the devastated landscape once the coal mining is terminated or the mining fronts shift. Professors Surý and Fic of the Lednice Agricultural College Horticultural Faculty have made a pilot project for the restoration.

Despite the above mentioned adverse interference, the arboretum has a bright prospect to be saved, because it rests within the extent of the pillar securing the stability of the Ore Mountains side below Chateau Jezeří. The heritage status of the arboretum was restored immediately after the decision that the coal miners had to respect the pillar was made, and Ing. Pavel Hušek, Director of the Heritage Conservation Authority in Ústí nad Labem and expert on chateau parks, defined a broad enough buffer zone for it that has to be respected by the coal miners.

A view from the Ore Mountains of the stabilization pillar below Chateau Jezeří with the arboretum preserved. The coal mine is in the background.

The section of the mountainsides between Jezerka and Jezeří, about 2 km long, has been undercut by earth removal cuts due to the mine in the 1980s. The affected slopes started sliding down as a result, just as predicted by my engineering geological mapping final report 10 years before. The stabilization pillar below Jezerka was equipped with monitoring devices and a automated registration centre, yet a sudden collapse of about 4 million m3 occurred in the immediate vicinity of the monitored pillar in 1984. Further slides were released progressively towards Jezeří. They affected a large number of earth removal storeys and threatened mining equipment at the mine pit bottom.

As I write these pages in June 2005, another large slide off the edge of the stabilization pillar below Jezeří into the mine pit has occurred. It is not clear at the moment how much the arboretum or its buffer zone has been affected, or how the landslide will be stabilized to prevent its progressive spreading.

However, the arboretum has suffered another harm. The mine management decided to build underground sealing walls in the mountain stream valleys to prevent landslides in the earth removal and extraction cuts. They were intended to prevent shallow groundwater from penetrating the mine pit. As already mentioned, the surface waters of the mountain streams had already been transferred from the mining forefield to different catchment areas. Sealing walls were built in the valley of the Vesnický brook below Jezerka and another by the Šramnický brook below Jezeří before 1989. The other planned barriers, north of Jezeří and at Albrechtice, were not built due to the shift in the political conditions. As a result of the technical interventions, the Šramnický brook no longer runs through the arboretum, and the arboretum was also rid of most other surface and groundwater feed. The former water reservoirs in the arboretum are therefore nearly dry. Demanding technical measures will have to be implemented to restore the aquatic regimen. The Ministry of the Environment initiated an effort in 1993, but then the action dropped off somehow. Perhaps they are waiting for the mine pit to move farther away from the arboretum.

In the early 1990s, I attended a meeting with mine representatives at the Most District Authority Culture Department, concerning the adjustments by the edge of the end slope of Čs. armády mine against the arboretum. It was agreed that the mine must not disrupt the root systems of the protected trees within the buffer zone. On behalf of the Association to Restore Jezeří, I consented to the establishment of a composting plant between the northern edge of the arboretum and the road running through former Albrechtice. The composting plant is to be used in the final landscaping of the mine end slope.

The future of Černice and Horní Jiřetín

After the coal on the site of former Dřínov Reservoir east of Jezeří (except the stabilization pillar below the chateau) has been extracted, a narrow stripe between the base of the Ore Mountains and the pit of the disused Obránců míru mine is left towards Litvínov. Čs. armády mine (ČSAM) is planning to break into that area. It remains a mystery why the mine management decided to terminate

Obránců míru mine (OMM) in the late 1980s and let ČSAM extract the rest of the coal reserves in its forefield instead. It was a fundamentally erroneous decision, as OMM would have much less trouble advancing than ČSAM.

The opencast mining zone ahead of ČSAM is similarly difficult to that between Jezerka and Jezeří. The crystalline massif in the mountainside is segmented by tectonic fault zones into a system of fragmented blocks and sheets. There is a gallery of bizarre rock outcrops in the slope above Černice, tectonically isolated lengthwise on either side.

The slope is segmented into terraces above former Albrechtice; one of the outcrops bears the remains of a medieval castle. The historic underground coal mining activity has affected sites near the mountain base, and parts of the area are undermined and otherwise disrupted. The area is made narrower not only by the pit of the disused OMM, being backfilled, but also by the body of its external spoil bank. Two hydraulic tunnels run lengthwise under the mountainside: they transfer the waters of the Šramnický and Černický brooks into a reservoir at Záluží. Any disruption of these tunnels due to a shift in the rock massif resulting from mining at the mountain base might have a serious adverse impact on the stability of the slopes. Another adverse element is the existence of a layer of clayey sheet wash several metres thick at the mountain base under the Quaternary cover layer, showing reduced shear characteristics. The sum of these adverse effects renders the plan to extract the remaining reserves by the opencast method extremely difficult.

A frontal view of the coal mine in mid 2005, when a massive landslide of about 3 million m3 of basin sediments was released off the front of the stabilization pillar below Jezeří.

The whole area had been covered by both a detailed engineering geological mapping and comprehensive surveys employing numerous vertical and horizontal core holes, dug probes and other works before 1987. Two sections by Černice and Horní Jiřetín, especially critical as concerns stability, had been examined by way of demanding mining works: shafts and galleries. The stability was examined in a great number of geological cross-sections using various methods. The set of final reports on the difficult area of Černice-Horní Jiřetín-Janov was signed, on behalf of Stavební geologie Praha survey organization, by an experienced mining engineer whose loyalty to the existing (Normalization) political establishment was absolutely unquestionable. In the course of the 1980s, works under the state

research project took place in the same area, focusing on stability issues of large-scale opencast mining at the base of a mountain massif.

The findings and interpretations lead to a conclusion that mining in a deep open pit would come up against problems difficult to resolve, would be dangerous and devastating to the landscape. It would be more appropriate to exploit the remaining coal reserves in the zone using other mining techniques, which would also be more considerate to the landscape and the existing settlements.

These conclusions contributed to the fact that Government Resolution no. 444 on territorial limits on coal mining at the base of the Ore Mountains was passed in 1991. The territories of Černice and Horní Jiřetín were protected by these limits until 2005. The expectation was that alternative methods of exploiting the coal seam would have been developed and tested in practice in the meantime. It has not been the case. ČSAM has been advancing in the same method, which has admittedly proven useful in the central basin area but has come up against problems at the base of the Ore Mountains that I have mentioned above.

I sent a motion to the Office of the Government of the Czech Republic on behalf of the Association to Restore Jezeří in 1994, demanding that the territorial limits on opencast coal mining at Černice and Horní Jiřetín remain in force past 2005. A reply never came.

I responded to the renewed effort of the Czech Mining Authority in 1998 to break through the territorial limits with a piercing article “Brown coal mining and territorial limits at the base of the Ore Mountains” published in the expert journal “Uhlí – rudy – geologický průzkum” in October that year. I elaborated a criticism of a number of articles by mining experts justifying the large-scale opencast method, as well as opinions of the mining guru Prof. Josef Hojdar, former technical manager of North Bohemian Mines for many years, and I pointed out the geological risks in the area again. Prof. Hojdar would not speak to me for the rest of his life; the other pro-mining activists have been evading me again.

The new massive landslide of approx. 3 million m3 in former Albrechtice in June 2005, which has affected the edge of the protected arboretum, is probably going to significantly influence the thinking of the future of Černice and Horní Jiřetín.

PRESENT SITUATION

Ing. arch. Martin Říha, *ing. Marie Lafarová, Petr Pakosta*

(updated and expanded by Ing. arch. Karel Beránek)

Much has changed for the better in the settlement patterns, landscape and environment of North Bohemia as well as in the minds, souls and hearts of the people in the 20 years since the Velvet Revolution. However, so little of the natural and cultural wealth present in the region before 1938 has survived that it is imperative to conserve all that remains.

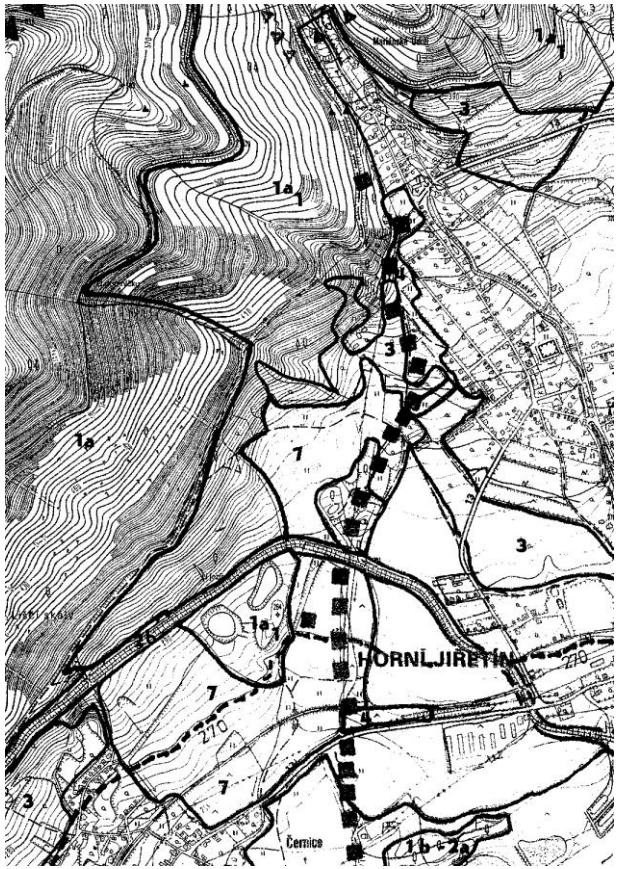
Uninterrupted portions of the North Bohemian Basin (NBB) that have not been affected by mining or its consequences are difficult to find today. The main, central part of the Basin with the thickest and best-quality seam had largely been exhausted by underground mining. Open-cast mining has returned to those areas and has been destroying the last remains of natural soils on a large scale with its open pits and spoil banks. The natural structures have long been reduced below a tolerable minimum.

The adjacent Ore Mountains hillside and the connecting territory at and below its base bear all the more natural, ecological and landscape significance for the Basin. There is an entire extant enclave of landscape following the original path of the Jiřetínský brook, encompassing the settlements of Černice and Horní Jiřetín, and stretching as far as the edge of the spoil bank of the Obránců míru opencast mine.

The most valuable section of the Ore Mountains hillside borders on the section of the Basin between Jezeří and Horní Jiřetín, where the ČSA Mine is in operation. The steepest hillside gradient, its rich segmentation and the broad climatic span have resulted in a high habitat diversity. At the same time, the steep hillside gradient and the intricately segmented terrain have historically precluded any intensive economic exploitation and disruption of the natural structures, so it is the best preserved section. The extant broadleaved forest stands are better at coping with the pollution burden than the summit plateau of the Ore Mountains, where the woodland composition has been modified since the Middle Ages, as a result of economic activity, to spruce monoculture, resulting in a destruction of the stands due to the pollution burden. The hillside is home to the best preserved stand of the beechwood zone of supraregional importance, which has been delineated as a territorial system of ecological stability. A substantial portion of the area, stretching up to and below the hillside base, is classified as part of the beech gene pool. The entire stretch of the contact zone between the oak and beechwood zones is dense with additional natural vegetation of the tree, shrub and herb layers, the composition of which is very diverse and constitutes the chief sources of the Ore Mountains gene pool. There are also other important gene pool areas with a high species diversity at the forest edges, merging into the adjacent open areas. Important vegetation elements accompany the mountain streams flowing into the open country out of deep furrows in the mountainside.

A little affected landscape enclave (the only one along the Basin) has survived at the mountainside base. In spite of some inappropriate interventions (ploughing up parts of the grassland, an intensive orchard on black earth), the area still concentrates a gene pool of the entire range of meadow and wet grassland vegetation (mesophilic, thermophilic, halophytic, swampland), oak-hornbeam groves, vegetation accompaniment of watercourses and water bodies with an outstanding effect on ecological stability, as attested, for example, by the spontaneous regeneration processes taking place along the contact line with the territory disrupted by mining, or the various succession stages along the Šramnický and Albrechtický brook channel both at the mountainside beechwood zone base and further down below the mountainside, in connection with the adjacent mesophilic meadow vegetation. The connection between the Ore Mountains and the central basin via the Jiřetínský brook has not been broken. The entire enclave acts as a reserve for renaturalizing extensive tracts of the adjacent territory depleted by mining.

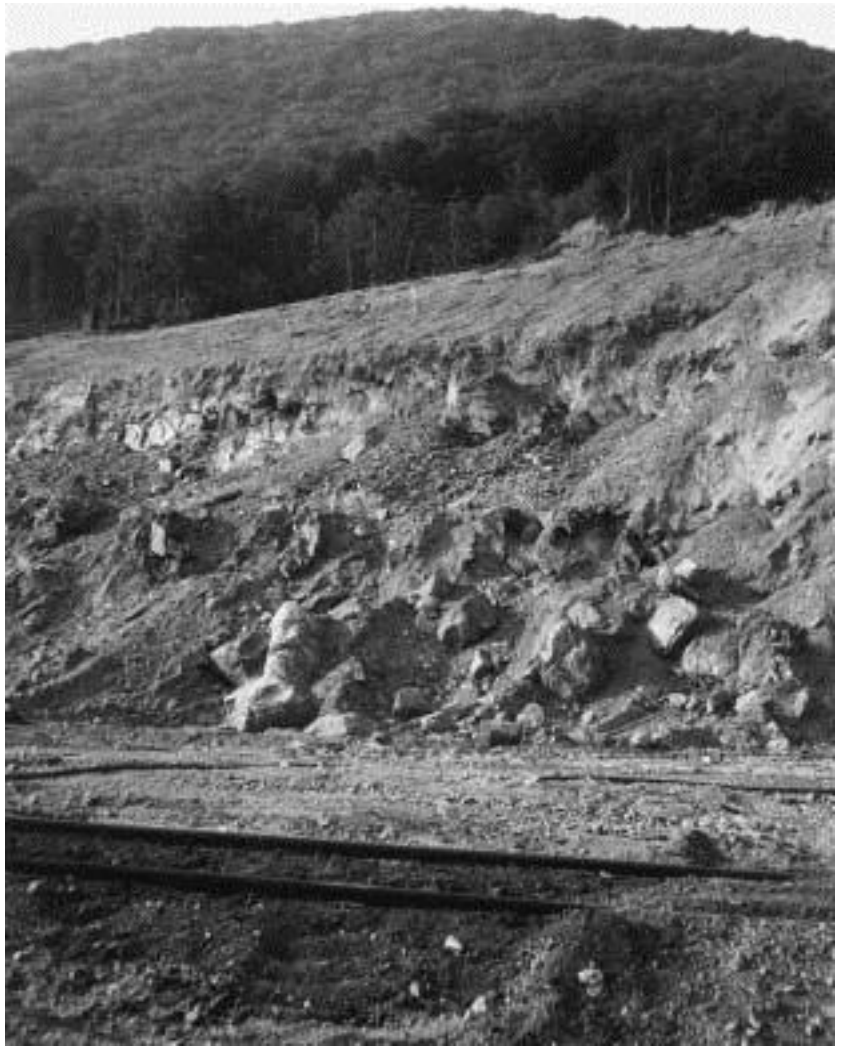
Over the 20+ years since 1989, many of the historic towns and heritage buildings have shown that the local people and governments are well aware of the change. The historic centres of many of the towns have come back to life, signs of dereliction have disappeared, and heritage buildings have shone forth with restored beauty in Klášterec nad Ohří, Kadaň, Vejprty, Chomutov, Jirkov, Horní Jiřetín, Hora Sv. Kateřiny, Litvínov, Osek, Duchcov, Teplice, Dubí, Krupka, Chabařovice, and Ústí nad Labem. Chateau Jezeří, once on its last legs, is being restored slowly but steadily, and Červený Hrádek has been preserved, although they offer views dramatically different from those they once commanded. However, we have also inherited huge housing estates built in all the larger towns in the socialist era; due to the shoddy workmanship, some short-lived components and neglected maintenance, they will require massive investment in repairs, lagging on perimeter walls and roofs, refurbishment of windows, elevators and installations. Many of the municipalities have inherited, and some have created new, small-scale Chánovs – Romany ethnic ghettos, which also have to be dealt with alongside the growing numbers of unemployed, homeless and those living below the poverty line.



In the NBB, we have inherited thousands of illicit or legal but historically poorly managed waste dumps, many of them with industrial and hazardous waste, contaminated areas, abandoned industrial buildings and areas – brownfields – that need revitalization or reclamation to natural areas. True, huge areas have been reclaimed, including some very successful cases (Lake Barbora near Teplice, Most Hippodrome; former opencast mines at Chabařovice and Most are being reclaimed, etc.), but many of the reclamations of external and internal spoil banks and fly ash repositories are still unstable and will require many more years

of management before they become normal sites again. The undermined areas and old mines are another threat; parts of them are unknown, some are known but inadequately secured and taken care of. There are lots of things that will have to be “put in order” after both the historic exploitation (early industrialization in the region 150 years ago) and the recent “management” to make it a good place for safe, healthy and rewarding living.

While local people have finally established a new attachment to the area and wish to improve it for themselves and their children, the political and economic changes after 1989 have produced some new problems and brought a new generation of “prospectors” to the Basin, involved in privatizations of the mines as they foresaw the potential profit from continued reckless plundering and sales of the natural resources in the area. “Grab as much as you can, as quick as you can, who cares. We don’t live here and we can arrange for ourselves a good environment and holiday settings in the tourist paradises of the world that are accessible to us, so why should we have regard for the environment in the NBB? You’re saying the coal reserves beyond the set protection limits to mining ought to be saved for future generations? What for? You’re saying it is pointless to burn coal, a future potential chemical raw material, in today’s poor-efficiency power plants? Let future generations mind their own business. You’re saying the combustion still produces millions of tonnes of carbon dioxide (CO_2) in spite of all the desulphurization and denitrification in place, thus contributing to the greenhouse effect and global warming of the Earth’s atmosphere, along with destruction of the planet’s ozone layer due to the other combustion products? This causality has never been convincingly proven by anyone, and even some scientists doubt it. Why would we – just we – stand back when our “contribution” to the global emissions is negligible compared to the big industrial powers? You’re saying we are exporting one third of the coal and one third of the power made from the remaining coal, thus exporting our non-renewable resources and our environment? So what, everyone exports something. It’s not against any law or other regulation!” That is their attitude in a nutshell.



That is how the miners and power engineers think; unfortunately, that is also the short-sighted way of thinking of many other people and consumers, and even public servants up to the ministries, paid for protecting public interests, not

partial interests of lobby groups. That is the situation today: that is where the past becomes the present.

The mining activity is approaching the territorial ecological mining limits at the fastest pace where the Čs. armády mine comes up to the southern slopes of the Ore Mountains near Chateau Jezeří and the settlements of Černice and Horní Jiřetín (to reach them after 2020). At the same time, some of the giant machines and spreaders doing the overburden removal and the extraction are nearing the end of their service life. Logically, their owners (or potential buyers) need to know whether these devices will allow them only to complete the extraction up to the set mining limits or whether they will be permitted to break through them at least in some places. Based on that, they will decide whether to expend funds only on extending the service life of the existing mining machinery or invest in new equipment with a prospect of return. Seen from their perspective, their pressure to challenge and lift the territorial ecological limits is understandable.

The Libouš mine near Chomutov will approach the territorial ecological limits some time later (2035). The situation of Bílina large-scale mine, operating near Mariánské Radčice, Louka a Lom, is somewhat special. It has been resolved by the passing of a Government Resolution in 2010 in connection with the construction of the new Ledvice power plant (660 MW): it adjusted the territorial ecological mining limits by land swapping (the miners gave up some land and acquired some other), which permitted a more rational mining advance and extending the mine operation until 2035-2040. Vršany mine near Most will remain in operation for the longest period among the North Bohemian Basin mines: the extraction is scheduled to continue until 2060.

The current legal status of the land-use planning documentation intended to regulate these processes is at a crossroads. The North Bohemian Basin Large Territorial Unit Master Plan (NBB LTU MP), amended by its Second Amendment, approved by the Regional Council in 2001, is still in force now, but will only remain so for one year. It respects the mining limits. A new land-use planning document, the Territorial Development Principles for Ústí nad Labem Region (TDP ULR), has been developed and is awaiting approval by the Regional Council. The new document has been drafted in accordance with the new Building Act no. 183/2006 Coll.

The territorial ecological mining limits are a cardinal problem with the TDP ULR. A new form of land-use planning document, this is a more legal and less conceptual paper than previously, and the integration of the territorial ecological limits in the draft documentation is unambiguous in this respect. Their validity is grounded firstly on a 1991 Government Resolution (corrected in 2010), and secondly on the approved Second Amendment to the NBB LTU MP (pursuant to Act no. 183/2006 Coll., the Master Plan was analyzed in 2007 and the territorial ecological limits were identified as its up-to-date and valid component). Furthermore, the territorial ecological mining limits are anchored in the TDP ULR with respect to the TDP ULR assignment, approved by the Regional Council in 2007. The requirement to respect the limits is not listed enumeratively, but the set land-use planning goals and tasks could not be reached without respecting the territorial ecological mining limits.

The draft TDP ULR was discussed with affected state administration authorities in 2008-2009, and they accepted the integration of the territorial ecological limits almost without comments. However, many comments were raised during the public hearing of the TDP ULR held in the autumn of 2010. The territorial ecological limits were applauded on the one hand, and attacked by the Mining Authority, coal mining companies and some municipalities, chiefly due to concerns of losing job opportunities. A proposal for settling the public objections and comments has now been submitted to the Regional Council along with the TDP ULR documentation for approval and publication.

As concerns the interest in question (prevent further devastation of the area and ensure permanent observance of territorial ecological mining limits), the situation is seemingly complicated by the fact that working districts were defined for practically all the coal seams in the area long before the territorial ecological mining limits were defined and anchored in the land-use planning documents.

The two layers of administrative deeds are therefore seemingly contradictory. However, the Government Resolution on Mining Limits charged the Minister for Economic Policy and Development to *"respect limitations as per point I when drafting the State Energy Policy of the Czech Republic until 2005"* and also to *"adjust the defined working districts beyond the binding limit lines in an adequate fashion and write off the reserves"*. Although the current amended version of the Mining Act still contains a lot of "socialist relicts" (such as the public interest in priority extraction of reserves contained in a seam over other functional uses of a territory), the extraction can be restricted or prohibited completely in the following proceedings with mining authorities concerning the approval of Mining Commencement and Advancement Schedules (MCAS) even without the Government Resolution "due to other prevalent public interests". Likewise, mining can no longer be regarded as a positive public interest: firstly, the coal is mined not by a state enterprise but by private companies, which can handle the raw material in any way that is the most convenient for them in respect of profit – mine, not mine, sell to any buyer including abroad (see the dispute between ČEZ, a.s., and Vršanská uhelná, a.s., concerning a long-term contract for supplying Počerady power plant with coal from Vršany mine, "without which the power plant is a mere pile of scrap"). Moreover, the public interest in saving the resource for future generations may be of equal weight, especially if it can be legitimately assumed that they will be able to make more of its chemical, energy and, after all, economic potential than its current consumers can. The public interest in conserving natural or manmade cultural values may also prevail.

It is desirable to try to handle the issue not in a blanket manner, but on a case-to-case basis, considering local and broader contexts. However, that ought to be decided at the land-use planning documentation level. That is the proper arena for the conflicting interests, including those defined in legislation as "public". There, having heard all the dispute parties, experts, state officials and local governments, compromise solutions may be agreed, and priorities set for the component public interests respecting the ultimate public interest, that is, to make the area good and wholesome for living, working and resting, to preserve fundamental preconditions for the life of other organisms that exist in the area, to pass it on to the next generation in the same state in which we inherited it, preferably better, and under no circumstances to allow the state to become worse. That would conflict with Act no. 17/1992 Coll. on the Environment, Act no. 114/1992 Coll. on Nature and Landscape Protection, and Act no. 100/2001 Coll. on Environmental Impact Assessment, all as amended, and after all, with Act no. 183/2006 Coll. on Land Use Planning and Building Rules, as amended.

Miners must not be allowed to have the final word in this tournament. The reason is simply because coal reserves of any size in the area are a transient phenomenon for the generation of the area's economic profile even if the annual yield should decrease and their exploitable life be extended; while other natural resources and qualities, including cultural heritage, may and must be preserved as a permanent component of the area's economic profile even after all the coal has been depleted.

When the year 2005 was determined as the horizon for the current state energy policy in 1991, it did not mean to say that the trend would only go up to that year, and the Government Resolution says nothing of that sort. The authors at the Ministry of the Environment built the document and the Government Resolution on the assumptions that:

- the municipalities and residents protected by the limits had to be given, once and for all, an assurance of their continued existence, otherwise nobody would want to invest in them and they would continue decaying as they had when all new construction was banned in them under Socialism due to the mining;

- in addition to the built-up territories of the municipalities, their certain natural hinterland had to be protected as well: the surrounding country that allows the residents' everyday recreation and recovery and ensures a sufficient distance of the mining activities as sources of noise and air

pollution, causes of falling groundwater levels and any other adverse environmental and public health impacts;

- other segments of the original terrain and vegetation cover had to be preserved along with a certain hydraulic network in the country, which make up the elements of an interconnected system of ecological stability in the country, increase its diversity, liveability and permeability for fauna and flora, and may form a starting "warp" for the future reclamation of intermediate sites devastated by the mining at present;

- in order to produce an energy policy for the next period after 2005, it would be clearer in 15 years' time whether the new political and economic conditions and the new mining and environmental management legislation have compelled the mining and power companies to faster, more extensive and better land reclamation, returning a larger portion of the country for cultural uses, or whether the mining technologies and protection of areas from its consequences have improved so much that the public might have a different perception of, and "tolerance" for mining approaching closer to inhabited settlements due to it being performed by a method different than opencast;

- the new economic profile of the area would have to begin forming immediately and concurrently with the mine phase-out, so that workforce released from the mining and power industries might fluently transit to new jobs without social upheavals. It would be necessary to guarantee stable settlement and reclaim the country in order to attract new business entities; continued devastation would discourage them.

Nevertheless, when the last valid version of the State Energy Policy (2004) was discussed and its environmental impacts assessed, it turned out that not one of those assumptions had been met, in spite of some advances. Nor had the Mining Act changed in the desired direction.

The reclamation of land after mining is slow (especially in the central and western parts of the NBB); the extent of the devastated land remains gigantic; no effort is perceptible towards faster development of new, more material and energy-efficient technologies and products, conserving energies in all areas of activity,

and developing and expanding renewable energy sources. The energy potential of lignite is still being exploited at a maximum efficiency of 30-40% in the final consumption. The “environmental revolution” in the energy industry is still ahead of us. It is difficult to guess what it may bring. Undoubtedly, it will produce desirable positive changes but also new problems (such as risks associated with tumultuous development of renewables: giant farmland occupation by photovoltaic power plants, saturation of the Ore Mountains with wind power plants, tens of kilometres of new high-voltage power lines, danger of pumped storage hydropower plants in the Ore Mountains, etc.). At any rate, the necessary pressure has to be exerted on the identification of savings and definition of limits to mining. In a market economy, the price of a raw material only increases when it becomes less easily available, inspiring the seeking for alternative solutions. But that is too late: it will be no use if, metaphorically speaking, “the last quintal of coal is priced fairly” as a precious raw material while the rest will have been frittered away at an “ecodumping” price that ignores externalities (induced costs of other entities not paid by the miner).

KNOWN PROSPECTIVE PLANS AND AIMS

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(updated and expanded by Ing. arch. Karel Beránek)

The power industry and deciding on it have become a political issue; all advanced countries regard power generation as a strategic area of priority interest, interfere with the industry and try to control it. The energy infrastructure of Ústí nad Labem Region has to be interpreted as part of the Czech Republic’s energy system and the entire European community (EU). Securing the Czech Republic’s energy future is unthinkable without European integration, co-operation with national governments of EU states and other energy-prominent countries of the world, and with power utility companies.

Numerous recent emergency situations abroad and in the Czech Republic have proven instability and crises. Based on the nuclear disaster in Japan in March 2011, the German government halted the operation of older nuclear power plants and decided to stop using nuclear power for electricity generation in foreseeable future. The critical situation of gas supplies in the winter of 2009 resulted in immediate measures being taken to secure the essential minimum gas supplies to the affected EU countries. A spontaneous (uncontrolled) development of renewable energy sources (chiefly photovoltaic power plants) has forced the adoption of legislative regulation measures to prevent a risk of disintegration of the Czech Republic’s electrical energy networks. Central authorities of the Czech Republic (Ministries of the Environment and of Industry and Trade) have tried to resolve the critical issue of distributing the available lignite mined in Ústí nad Labem Region (Vršany mine, in operation until around 2055) primarily to heating plants – sources providing heat supplies for central heating systems.

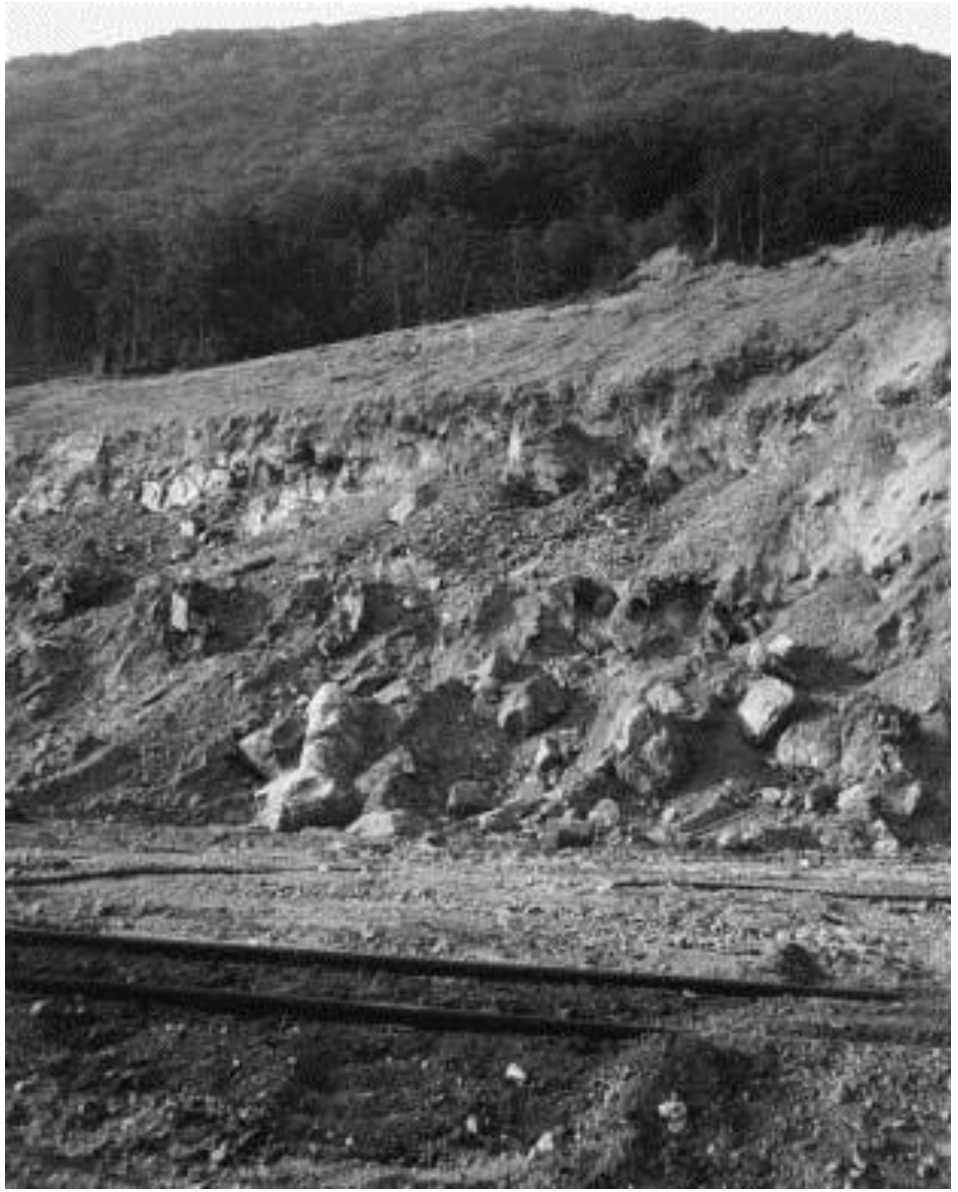
The existence of still extensive lignite reserve in Ústí nad Labem Region ranks the region among the most important in this respect. The current situation and increasing complications may even aggravate the pressure on expanding the lignite mining in Ústí nad Labem Region, not only by power industry companies but also government authorities at the national or supranational level, which is related to the issue of territorial ecological limits (TEL) to lignite mining defined by the Government of the Czech Republic in 1991. The conflict between the national (or supranational) level requirements on the area and its own needs and capacities, between coal mining and power generation interests and environmental concerns may thus continue to escalate.

For the purpose of this commentary, the issue of open plans and aims concerning expansion of lignite mining in the North Bohemian Basin can be factually narrowed down to ČSA mine: the question has not been asked or is not an issue for the other mines in operation. The mining and power industries are working towards breaking through the limits, and it is not clear where their claims will eventually lead. In this context, it is useful to recall the **old mining plan for**

advancing the extraction in ČSA mine as it was formulated at the turn of the 1980s, while the ecological limits were being formulated at the same time.

Without a compromise, the mining plan aimed at depleting the entire coal reserve up to the seam apex by advancing ČSA opencast mine up to the side of the Ore Mountains. At the apex, the coal seam is dragged up into a precipitous position immediately parallel to the mountainside, where the Ore Mountains fault line runs. The stability of the mountainside would be compromised in case the extraction went up to the seam apex. Like on Jánský vrch in front of Jezeří before, the stability should be secured by modifying the hillside above the apex, intervening with the crystalline complex high up the mountainside after removing the forest, the groundcover, and the scree. This would entail an irreversible damage to the most valuable section of the landscape and nature of the Ore Mountains side, a selected beech gene pool and a defined higher-order territorial system of ecological stability. In addition to the direct destruction of the vegetation, the vegetation wall would be opened and groundwater would sink above the upper edge of the bared mountainside; the hydraulic character of the area can therefore be expected to shift towards drier habitat types and an onset of degraded vegetation.

The mine advancement would cut through the existing relaid brooks that were canalized out of the mining area at Jezeří (the Šramnický and Albrechtický brooks). At present, the relay is via tunnels between the two brook valleys and then northeast, emerging above Černice. From there, it takes an open-air bed along the slope towards Horní Jiřetín, where it joins the Jiřetínský brook. Mining up to the seam apex between Černice and Horní Jiřetín is conditional upon relaying the two brooks in the southwestern direction, for a change. The tunnels would have to be cut through the most valuable sections of the mountainside above Jezeří and via Jánský vrch and Jezerka into the Vesnický brook. Relaying the streams would entail a deep horizontal drainage for running the tunnels in the tectonically disrupted zones of the mountainside, an intervention with the mountain valleys and streams, this time high up above the base of the mountains, plus building dams, gravel beds, access roads and areas for depositing



materials during the dam and tunnel construction, and building guard structures at the valley ends to capture periodic waters from the extensive secondary catchment areas. Further continuation of the mining east of Horní Jiřetín would require both tunnelling and construction of an open-air water conduct running through the Ore Mountain that would collect all the mountain streams between the Jiřetínský brook and Hamr, with consequences for the secondary catchment areas similar to those of the existing relaying of the Šramnický and Albrechtický brooks.

In order to achieve stability, material should be removed from the Ore Mountains side up to an elevation above 400 m a.s.l., while the deepest point of the mine at Horní Jiřetín is 60 m a.s.l. Even if the hillside was partially extended with internal spoil heaps (probably not higher up than 280 m a.s.l.), a considerable portion of the hillside would forever remain bare and would connect – on a much larger scale – to the exposed hillsides of Jánský vrch and Jezeří. At the same time, the extensive supraregional biocentre encompasses the entire Ore Mountains side from Mariánské valley in the northwest via Jánský vrch to Jedlová in the southwest. The landscape of the mountain base zone, now occupied by Černice, Horní Jiřetín and the Jiřetínský brook, would be replaced by an internal spoil bank of a technically limited height, leaving the tall rocky precipice between Jánský vrch and Jezeří exposed as a permanent hindrance to successful rehabilitation of the basin landscape and settlement. So much as a reminder of the historic intention to advance mining at ČSA.

The new Ústí nad Labem Region Master Plan mentioned above, which was not finalized for legislative reasons (2005 draft) comprised two alternatives based on the commission. In addition to the recommended one, respecting the ecological mining limits set by the 1991 Government Resolution, there was another alternative: breaking through the limit and removing the mountainside up to a contour line around 300 m a.s.l. In that alternative, the mining would not directly interfere with the mountainside. Nevertheless, the valuable beech stands at the edges of the mountainside (the beech gene pool) would still be disrupted by the rerouting of the relaid Šramnický and Albrechtický brooks above the mountain base. Should it not be possible to route the relaid brooks above the mine edge, they would have to be routed high up the mountainside in the same way and with the same devastating consequences as in the case of mining up to the seam apex. The entire surviving landscape below the mountain base, including Černice and Horní Jiřetín, would be destroyed in either case.

Thus, the alternative that the Regional Authority requested to have examined but the master plan authors advised against would have identically destructive effects on the landscape and the settlements and would restrain the potential for subsequent rehabilitation of the country.

The current regional land-use planning documentation, the TDP ULR (as mentioned above, currently ready for publication by the Regional Council), respects the territorial ecological limits set in 1991 in full (with a correction in the form of land swaps in Bílina mine). However, Act no. 183/2006 Coll., based on which the TDP ULR are produced, requires that the documentation be made on the highly schematic scale of 1:100,000. The issues of ČSA mine are thus presented on a tiny spot 10 by 5 cm and could therefore not include important details, such as the water management design, the land reclamation and revitalization concept. Issues of mining impacts on the landscape and the settlement have thus nearly fallen below the resolving power of the documentation.

The ecological limits to mining set by the Government Resolution protect the nature and landscape of the mountainside, its base and the landscape enclave below it, including the settlements of Černice and Horní Jiřetín. It has been confirmed that the set territorial ecological limits to opencast mining are based on objective knowledge of reality in the area (which is, in addition, being enhanced with new experience with the instability of the hillsides and the adjacent mountain base) and have to be respected without exception and as definitive. What is more – as demonstrated by the several landslides in the recent years (including one comprising 3 million cubic metres), with cracks and drops interfering with the buffer zone in the Chateau Jezeří arboretum – it is desirable

to stop earth removal for ČSA mine even before it reaches the delineated limit. The alternative that respects the limits rules out any direct or indirect adverse interference with the most valuable portion of the Ore Mountains side and threatening of the territory below it. It enables the preservation of the existing network of watercourses in the territory along with the adjacent ecological stabilisation elements, and shifts the pit that will remain after ČSA mine to an acceptable distance from the mountainside. The area intact by opencast mining comprises the entire natural surface area between the Ore Mountains side and former Obránců míru mine, including the margins of Albrechtice spoil bank.

Preserving and developing the enclave in the mountainside forefield in the immediately vicinity of Chateau Jezeří will save the settlements of Horní Jiřetín and Černice and the irreplaceable natural and landscape pool and potential for renewing the devastated landscape of the Most section of the Basin. What is more, its connection with Chateau Jezeří may make it (as it was historically) an important cultural and tourist centre of the Basin, and a place from which the country rehabilitated after the mining one day may be managed. Černice and Horní Jiřetín are priceless not only for their inhabitants, but also for the future settlement in the entire Basin: they maintain its continuity. Respecting the territorial mining limits will also preserve the existing access route to Chateau Jezeří and, even more importantly, to the municipalities of Hora Svaté Kateřiny and Nová Ves v Horách and the mountain summit area.

Admittedly, due to pressures from the MoE, the regional and municipal authorities and the public, the State Energy Policy (SEP) in force, passed in 2004, did not contain a provision that the limits ought to be lifted. On the other hand, it did not confirm their continued – not to mention permanent – validity. Quite the opposite is true: it called for their rational review, albeit while respecting environmental concerns. A draft updated SEP is expected to be presented to the Government for discussion by the end of 2011: it will influence the further development in the Ústí nad Labem Region. The position of the updated SEP on the territorial ecological limits (TEL) cannot be foreknown. The Programme Announcement of the Government does not rely on breaking through the limits, but it does say that, should the mining company and owners of the properties reach agreement, an administrative process may start that may (and may not) lead to commencing extraction in the area.

It is evident that the major players in the mining and power industries continue to rely on breaking through the mining limits in their designs, and associate their business and political plans with that. Approximately since 2005, the mining companies in the affected areas have led a campaign aimed at convincing the populations of Horní Jiřetín and Černice about the advantages of their potential willingness to leave their homes. The offers they have been receiving from the miners are much more generous than before, because obviously the ridiculous amounts based on official assessments and substitute flats in a prefab housing estate in a faraway town can no longer be offered seriously nowadays.

The value of the coal reserves beyond the mining limits allows them to make much more attractive offers. Private companies do not have to respect property pricing regulations as state or semi-state enterprise once did. Therefore, they

come up with offers of higher property purchase prices, offer to build new family houses in substitute on land not affected by the mining, even entire new villages, to preserve the entire civic community. They will offer to build technical infrastructures and civil amenities, perhaps even a church. They will try negotiating: not through municipal councils, but in person with the property owners, on a "divide and conquer" principle. They will take advantage of the old age of some of the people, who no longer manage to maintain and repair their cottages, get firewood for the winter, have the septic tank emptied, care for the property. They will talk sweetly of rental flats with remote central heating, hot and cold running water, sewers, telephone and shared cable TV connection, being just what they need in old age. And some will certainly succumb.

This system has been known and tested in the Ostrava-Karviná coal mining district, where this has long been the method in areas threatened by land sinking. The people, resistant at first, suddenly see the next-door neighbours' purchased house being demolished, then another one… It breaks the morale. People refuse to live in uncertainty, and even if the municipal representatives promise that if they stand united they will withstand, suddenly the grocery shop shuts down, because it goes into loss as the population decreases; the kindergarten or primary school closes down because there are not enough children any more. People start having to commute elsewhere for shopping, to school, to see a doctor. And then the whole village is uprooted and the miner gets what he wants. Another village complete with flowering orchards slides down into the mine.

There is more, though. Irreplaceable emotional attachment to places where people were born and lived are lost, because those places no longer exist. Social and cultural relationships built by generations, notions of community where neighbours had known each other for several generations, are lost. Alongside, irreplaceable natural relationships are lost, hydraulic conditions change unpredictably, and so do groundwater levels, vegetation and fauna. People, whose mental capacity has been arranged by genetic evolution so that they only tolerate a certain degree of changes in the world around them without mental and physical traumas, are divested by such violent uprooting of parts of themselves and their mental health, orientation and landmarks on their mental map of their path through life. The miners' plans or Ministry of Industry and Trade policies say nothing about that. You have to experience it; otherwise you are reluctant to believe. Only a silly person will learn through their own errors where identical experience of others exists and is told. Believe us, in our job we have spoken with several hundred victims of mining, power plant and dam construction, border and military zones – and there is no way back. Some people have moved up to three times to escape mining. Can you imagine the hell?

However, the advance of ČSA mine beyond the set limits in the northwest is destructive not only for Černice and Horní Jiřetín, but also for access to Chateau Jezeří, and access from the interior to the villages on top of the Ore Mountains such as Hora Sv. Kateřiny, Nová Ves v Horách, and Brandov. Another significant negative aspect of such designs is that, some 40 years from now, they would cause increasingly worsening living environment in the western part of Litvínov (Janov, Hamr), to which the mining would come as close as 500 metres. That would further aggravate the situation: Janov housing estate is already known for conflicts between right-wing radicals and local Romany ethnic communities. Major adverse impacts would affect the important biocentre and its attached biocorridors in the beech forests on the southern hillsides of the Ore Mountains between Jezeří and Litvínov-Janov. Continued mining would have destructive effects on the hydraulic conditions in the area between the remnants of the arboretum below Jezeří via the remnants of Dolní Jiřetín to the remnants of Komořany, because the area would be devoid of waters flowing down from the Ore Mountains, feeding the Jiřetín brook and the groundwater horizons around it. These waters would have to be captured on the mountainsides above the mining limit and rerouted along the perimeter just as the Loupnický brook waters, probably all the way to the Bílý brook valley in the east. These are substantial interventions in the settlement, nature and landscape that cannot be offset in any way, and should not be permitted under any circumstances.

The existing line of the territorial ecological limits for ČSA mine (the most controversial mining site in the NBB) should be declared permanent (the question has not been asked or is not an issue for the other mines in operation).

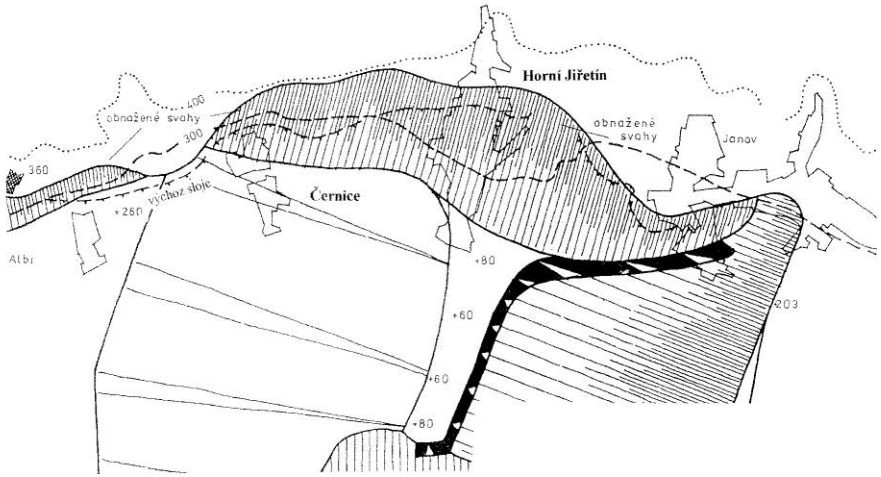
Sensible people with a vision have different plans with the region: continue the current opencast method to mine only those reserves localized before the delineation of the territorial ecological mining limits that can be depleted without compromising the settlements, the landscapes and the safety of the miners, and reclaim the territory devastated by the mining as soon as possible. Stop earth removal and mining in ČSA towards the east, and stabilize mountainsides in risk of landslides, including by loading their bases by spreading interior spoil banks below them.

At the same time, start building a different, substitute, long-term sustainable economic structure in the region, not as dependent on the depletable coal reserves but based on new manufacturing types and technologies that are less energy and material-intensive, with higher added value of human skill, qualification and craft in proportion to the market prices achieved. As the coal becomes less prevalent, it will become more valuable and will have to be conserved. We should not export nearly one third of it as electricity abroad, because our descendants will lack it. Coal-based hydrocarbons may be the base for more sophisticated applications in the future chemical industry, qualified chemistry and pharmaceutical industry. The coal reserves are already reducing our dependence on oil and natural gas imports, but with their reserves in the world diminishing, the coal reserves might become much more important to our descendants.

Following a “general cleaning” of the Ore Mountains and the Basin, farming and forestry, aquaculture, spas and tourism, forced into defence by the mining and power industries for decades, will again become profitable businesses. In contrast to coal mining, they can be run for centuries as long as our mining, power industry and emissions from them do not destroy the natural resources: the arable land, thermal springs and mineral water springs, and remnants of wildlife. In time, the remaining historic towns and villages, as well as new settlements, may be spick and span amid landscape close to its natural state. Instead of discouraging new potential business and population, the restored activities may again tempt them into thinking, “this is where I would like to live and work”. By making the turning point in 1989/1990, defining the mining limits in 1991, and restoring settlements and reclaiming land while reducing the extraction, we have already made the first steps on the path towards our dream.

For that matter, if the miners themselves identify and are able and willing to employ a different method of depleting and using the coal reserves, more considerate to the settlements, wildlife and population than they are exhibiting using the existing method and scale of opencast mining, who knows, perhaps the generations that will come may even permit mining beyond the territorial ecological limits in a different form, in some places of a restricted extent. In this sense, the requirement to write off the reserves beyond the limits contained in the 1991 Government Resolution is perhaps somewhat questionable. Maybe

parts of the reserves can be extracted underground using the stowage method, which would not cause so much land sinking as the current methods; maybe parts of the coal can be gasified and exploited as gas without disrupting the functional uses of the surface areas and the environment. Maybe yet another considerate method of using and mining the coal will be found. However, the current "opencast madness" has to stopped within the set limits. It is in fact astonishing why researchers have not been dealing with that and offering socially acceptable solutions.



It is no secret that considerable intact lignite reserves (about 500 million tonnes) are deposited below the Litvínov chemical plant complex. Already in the 1980s, as part of examining the so-called "big mining version for the NBB", authorities considered the option of discontinuing investment in the complex and build another somewhere else before this one reaches the end of its service life: build it somewhere outside the coal seam so that the lignite reserves below it could be depleted. The plan was abandoned after all, but the mining sword of Damocles has been hanging over it in the form of the substantial lignite reserve. The miners have not denied it; quite to the contrary, they argue that their obstinate struggle to break through the protective limits at Jezeří, Černice and Horní Jiřetín is also in order to win the opportunity to continue mining in the chemical complex area.

It would probably be impossible to do that from the east, from Bílina mine via Lom, Mariánské Radčice and Louka u Litvínova, via Růžodol spoil bank and the already shut-down former underground mines Koh-i-noor II and Pluto II, while the mine front of the ČSA mine would come right up to the chemical plant from the west if it advanced all the way to Záluží. Of course, the prospective relocation of the chemical plant and releasing the coal reserve in this way would be much more profitable for the miners than having to access the seam via a new mine of limited territorial expanse. That path of progress would have truly catastrophic regional consequences: it would sever the twin cities of Most and Litvínov by digging up the isthmus that connects them. Litvínov (population 30 thousand) would end up amidst mining activities, without any good connection to the interior, with environmental, social and economic consequences. The city of Most (population 60 thousand) would again be besieged by mine operations. ČSA mine would be approaching from the north, degrading the suburban landscape. Digging up Kopisty spoil bank would harm the area around Lake Vrbenský, and the mining would have significant impacts on the recreational area in former Most-Ležáky mine, currently developed by turning it into a 300-hectare lake.

The potential decision leading to breaking through the TEL, expansion of mining and extensive development of conventional power industry is a risk for the region in connection with handling the Czech Republic's energy and economic problems. It would be a short-sighted solution with long term adverse impacts on the social structure, cohesion and social integration of the population, not to mention the environment. Regardless of any difficulties that may arise in the immediate future, the only chance for the region is to continue attempts to change its public image, improve its aesthetic and environmental qualities, implement measures to improve the population's education, adaptability and business spirit, and create favourable conditions for investment.

In place of a conclusion: Goal 1 of the TDP ULR assignment, approved by Ústí nad Labem Regional Council on 7 November 2007

Revitalize the landscape and restore its ecological stability

A cardinal improvement of the environment – both the landscape and the settlements in it – is a priority objective of the TDP ULR because it is a precondition for achieving all the other goals and sub-programmes. Without a substantial, easily noticeable environmental improvement, we cannot achieve a stable population, especially of skilled workforce, have any realistic expectation of growth in any desirable business activity that would contribute to the necessary restructuring of the economic base outdated by the development. Without a generally perceived excellent environmental quality, we cannot plan rehabilitation of the traditional spa industry or development of tourism. The handicap in the form of poor environmental quality cannot, in the long term, be offset even by massive investment in infrastructure, which may easily become uneconomic, or even redundant, in an area of perceived adverse environmental quality.

RECAPITULATION AND CONCLUSION

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One of the first steps of the new government after November 1989 concerning the environment was to define priorities which, among other things, resulted in a definition of "affected areas", for which "environmental improvement programmes" were successively adopted. The one for the North Bohemian Basin was passed already in 1990. However, the document, conditioned by its time of making, essentially only "improved" the situation without changing the continuity of the life in the area. Besides preserving the compensations (dubbed "death allowance" in the previous epoch) and making an anachronistic requirement for "priority supplies of fruits and vegetables to the area", it was manifested by channelling investment only to mitigate and eventually eliminate the harmful impacts of the economic exploitation instead of its reduction and adjustment to local conditions.

Such an approach could only be adopted in 1991, when energy policy was devolved from the federal government to the republic level. The federally adopted plan to desulphurize coal power plants required tens of billions of crowns in investment and the Czech National Council (CNC) had to authorize the necessary state credit guarantee for the Czech Government. For the Government to be able to justify the sheer cost of the operation to the CNC, it needed a credible prediction of electricity consumption. It turned out, however, that it could not obtain one, because all the scenarios were based on the assumption that the task for the power industry is to "provide enough cheap energy for economic development", and the scenario values – differing by up to two orders of magnitude – were only the result of different estimates of the intensity and nature of the expected development.

Starting from the fact that the most serious damage to the country's environment was due to developing the power sector, The Pithart Government decided to reverse the existing attitude to power generation, and define how much energy the country can acquire from its own resources in an environmentally acceptable manner, and what amount of energy it can import under the same conditions, and adjust the direction of the economic development to that energy limit and stimulate its continued growth only by more efficient use rather than increasing the total amount of energy available, and invest not in energy sources but in research and development that would lead to efficient energy uses and planning and supporting energy savings.

Admittedly, the Ministry of Economy headed by Karel Dyba never produced an energy policy based on the above instructions, but the Government as a whole followed them. Its first step in this direction was to define and adopt territorial limits to opencast lignite mining in the North Bohemian Basin. It did so at one of the Government sessions in June 1991, where the Ministry of the Environment had the task imposed on it.

The first Government Resolution on mining limits (Resolution no. 331/1991) was made in September 1991 and concerned Chabařovice mine. The town of the same name, written off by the previous regime, was preserved as a result of the binding mining limits. The mine was liquidated in 1996 and reclaimed as a recreational lake, which is just being filled with water.

In November 1991, the Government passed Resolution no. 444/1991, defining "territorial ecological limits to lignite mining" including "binding delineation for mining and spoil bank restriction". Among others, the limits saved the settlements of Spořice, Droužkovice, Březno, Černovice, Chomutov, Jirkov, Černice and Horní Jiřetín, which were to fall prey to approaching extraction. By ruling out the establishment of Bylany mine, they additionally saved the settlements of Havraň, Koporeč, Lišnice, Nemilkov, Polerady and Saběnice, situated over the Bylany seam, unexploited so far.

It all started with the power industry and its current impacts on the environment, landscape and settlements, but the definition of the limits was not primarily grounded on current environmental protection issues but on the need to preserve the elements of the underlying ecological and settlement structure of the region, which contain the natural and cultural memory of the area, for its continuity and wholesome future development. That is a totally generic principle, exceeding the specific situation of a single region. The Ministry of the Environment had tested it in Northern Moravia, where it used the same method to define limits for underground mining at the southern edge of Karviná Basin.

However, both the cases showed that land-use planning, which employs territorial limits as a normal tool, did not have adequate tools to direct miners in a seam in more detail and operatively. It also turned out that many other tools can be used for enforcing the territorial mining limit principle: in addition to an extraordinary step in the form of a Government Resolution, these include the Mining and Building Acts. Neither of them, however, was systematic. That was why a bill of an "Environmental Mining Supervision Act" was being developed in order to set the rules.

We were assuming that even if the Act would be delayed, it would certainly be in force before the time horizon of the Government-set limits. It was not the case. The Czech National Council did not have the time to pass the bill, and Minister František Benda withdrew the bill from repeated discussion after the elections, saying the relevant provisions would be incorporated in the new Mining Act. However, that Act has not been produced to this day.

The landscape, the people and their homes are thus still in a danger, which cannot be reasonably legally resolved without the miners' goodwill. The Basin municipalities are therefore struggling to preserve the limits essentially as their privileges, which the new ruler is not hasty to confirm. Many municipalities situated over seams of other reserved mineral resources, such as ceramic clays, are even worse-off than that. They are not known, they have no Act or limits. That is why Černice and Horní Jiřetín must not fall for their sake, for their hope. Sustainable development can take place on a desolate body, but not on a shiny new grave of cultural landscape.

The territorial ecological mining limits have thus become the first milestone on the (currently) abandoned path towards sustainable development. It is turning out, however, that saving the areas beyond them is not enough. The recent landslide below in Čs. armády mine Chateau Jezeří and its arboretum as well as earlier ones below Hněvín, in Čepirohy, below Jezerka and elsewhere have shown that the miners are incapable of guaranteeing the observation of their promises on the safety of spoil banks and slopes, which are still active decades later. That is why the eastward progress of at least ČSA mine has to be stopped, and the mountain base has to be loaded with extra weight by making an internal spoil bank instead of continuing the mining, even at the cost of writing off the reserves beyond the edge of the current opencast mine. That does not rule out its more considerate depletion in future using stowage underground extraction, gasification, or another method more considerate to the landscape and the settlements.

For the above reasons, the territorial ecological mining limits in the North Bohemian Basin, especially concerning Československé armády mine but also elsewhere, should be confirmed as permanent. Otherwise, the desirable turn in territorial development in the NBB is not going to happen. The economic base is not going to shift desirably from energy and material-intensive, low added value industries to more sophisticated production with a greater added value, higher prices per unit of weight, at lower input costs. The radical environmental improvement in the region is not going to occur; it consists not only in air quality improvement, which has been achieved in part, but also in a regeneration of the settlements and reclamation of the land, restoration of consumer industries and services, including small and medium-sized businesses, farming and forestry, aquaculture, recreation and tourism, which are the only long-term profitable activities as opposed to mining coal and a power industry based on burning it. That desirable psychological shift in the people's minds is not going to happen: it would allow us to shake the leash of the recent past and focus on establishing a better future.

We regard the recent landslide of 3 million cubic metres in Čs. armády mine below Chateau Jezeří and its arboretum as a memento whereby nature reminds us of our past sins and warns us against continuing the hazardous practice. Unless we learn from it, we are destined to live to see a true disaster. Historically initiated imbalances, consisting in lifting weight off the mountainsides prone to landslides on the one hand and loading the natural ground with spoil banks on the other hand, will tend to restore balance unstoppably and logically by plastically remodelling the terrain perhaps for decades or centuries, or perhaps in a single jump. That depends on the structure and nature of the masses that these indigenous and novel formations make up, on the hydraulic conditions, climate, and other factors that are difficult to forecast, and ever more difficult to influence. The only systemic solution in order to avoid such risks is not to undertake any more of such adventures.

We are convinced, and we hope along with the region's people, that the short-term profits of a small group of businessmen and the non-essential public utility resulting from it cannot counterbalance the irreversible destruction of cultural and natural values, loss of the people's roots and identification with their communities, their home country, where three generations have been born and "taken root" since the War and where people no longer want to, and are allowed to, act like if it was a freshly conquered territory. Moreover, we can no longer delay the start of building the different economic base for the region than the one dependent on the diminishing coal reserves, and continue discouraging new, progressive business from becoming established in this area, which continues to be devastated and is therefore of little attraction and unclean at present.

We call for help in this effort on all who can identify with such a programme, who like the area, and who can see beyond their own nose.

The large-scale open cast is a permanent threat to areas beyond the mining limits, as attested by the slide of about 3 million m3 of earth in the arboretum protective column in June 2005.