Parliamentary **Assembly**
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COUNCIL OF EUROPE CONSEIL DE L'EUROPE

Doc. 10845
3 March 2006

The future and regeneration of coalfields in Europe

Opinion[1]
Committee on the Environment, Agriculture and Local and Regional Affairs
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Summary

The decline in coal production in Europe, which began in the middle of the last century, raises the tricky question of the regeneration of mining areas. This inherently complex issue is not only of the utmost importance, but one that covers a long time span, providing scope for constant improvement.

The purpose of this opinion is to describe the features characteristic of this type of regeneration, concentrating in particular on the environmental and local and regional aspects, which are key aspects of the problem.

I. Regeneration of mining areas is essential[2]

1. As more and more mines were closed[3], a growing number of "mining aftermath" problems arose, and it came to be seen as essential to regenerate these areas.

i. Halting mining production causes environmental problems

2. There are four types of problems, and they have caused accidents, some more spectacular than others.

[1] See Doc. 10825, tabled by the Committee on Culture, Science and Education.
[2] The geographical areas selected are in **Germany** (Cologne basin, central German basin and Lower Lausitz basin), **Great Britain** (Dearne Valley, Grimethorpe, Betteshanger), **France** (Lorraine and Nord-Pas-de-Calais) and the **Czech Republic**.
[3] French production has been in serious trouble since the 1960s; in 1994 the "Coal Pact" provided for a halt to extraction by 2005.

3. First, there is the problem of **abandoned or contaminated sites**: these include coalmines, slag heaps and the sites of other coal-based industries. In Britain the closure of coalmines and plants for the chemical processing of coal and coke left hundreds of abandoned and contaminated sites. There was little or no planning for the restoration of these sites before they closed down. Several were left in a state of abandonment for years.

4. Slag heaps are a special problem, since they also concern sectors other than the coal-mining industry, and are just as dangerous. In South Wales, for instance, the rehabilitation of coal tips has taken on greater importance since the Aberfan disaster in 1966, in which 144 people – including 116 schoolchildren – were engulfed when a tip of coal waste slid on to the village.

5. Secondly, there is the **risk that ground will subside and become unstable**. There are three main types of risk:

a. Sinkholes: the sudden appearance, on the surface, of a funnel a few metres deep with a radius of a few metres. These are dangerous mainly because they appear suddenly

6. One of the most recent examples of this type of phenomenon was a sinkhole 5 to 6 metres deep, with a diameter of 2 to 3 metres, discovered in Ottange (Moselle, France) on 8 August 2003.

b. Gradual subsidence: formation, on the surface, of a depression with a diameter of a few dozen to a few hundred metres

7. Two mining communities had to be evacuated from Auboué on 15 October and 18 November 1996 because of gradual subsidence.

c. Sudden collapse: subsidence in the space of a few seconds

8. The third risk is the **danger from mine gases**, caused by evaporation. The presence of mine gases (firedamp) entails a risk of explosion and suffocation. More gas is released if shafts are present.

9. The fourth problem is **hydraulic disturbances**. The cessation of coalmining generally causes a hydraulic imbalance. The natural rising of mine water in old mines can cause flooding and aquifer disturbances.

10. In addition, the rising mine water can put the firedamp under pressure. Furthermore, mine water has sometimes been used to supply communities with drinking water, and when the flow stops because coal production has been halted, there is a drinking water supply problem.

11. To take an example of a hydraulic disturbance, mining at Hambach-Garzweiler in Germany[4] caused the water table to subside over an area of more than 3,000 km², to a depth of 300 metres. The fall in the water table caused the wetlands to dry out and small local rivers to dry up. While the fact that the wetlands had dried out was, for a long time, considered to be a beneficial repercussion, in that it made it possible to extend crops to areas initially unsuitable because of the hydromorphy of the soil, it is now seen more as an unfortunate consequence, in that it has damaged habitats where it is hoped to preserve the original fauna and flora.

12. The list of risks and latent environmental problems is enlightening: sites where mining has stopped are dangerous to both the biological and the human environment.

[4] It is a lignite mine, and therefore an open-cast mine.

ii. Halting mining production leads to irreversible landscape changes and regional planning problems

13. Apart from causing environmental damage, coalmine closures radically alter the landscape, giving rise to two problems.

14. The first is that the **original natural landscape is destroyed,** becoming artificial, with slag heaps[5], slush pits, brownfields and giant shovels[6]. These remains are eyesores that are all the more irreversible as they are generally large-scale.

15. The second problem concerns **regional planning**: the area is laid out in a way that no longer seems appropriate once production has stopped. Mining areas are planned in such a way as to ensure that the industry operates as effectively as possible. The surrounding villages and towns depended on the industry. As production is abandoned, these areas find themselves organised on the basis of an economic sector that no longer exists. There is therefore a particular need to regenerate them.

16. From both the local/regional and the environmental viewpoint, the regeneration of coalfields is an absolute necessity. Once mines have closed down, it is necessary both to address the disturbances underground and at ground level, which are responsible for soil stability problems, hydraulic disturbances and the presence of toxic gases, and to take regional planning measures.

II. Regeneration is complicated to carry out

i. Different approaches to coalfield regeneration in Europe

17. If it is to be successful, regeneration must conform to certain criteria. Three objectives can be assigned to the regeneration of coalfields:

- improve the environment of the sites;
- encourage a return to their natural state;
- breathe new life into the economic and social fabric.

18. On the basis of these criteria, two main types of regeneration, which often complement each other, have been chosen in Europe.

a. Re-naturalisation of coalfields

19. On the basis of the German model in the Ruhr, the idea is to restore the "natural" appearance of sites that have become totally artificial, by planting a forest or making a lake. There are many examples of this "Rekultivierung" (reconstitution of the landscape), which is widely practised in Germany, in particular because of the existence of former lignite mines[7].

20. The area covered by lakes has, in particular, increased in all the basins, to the extent that regions totally devoid of lakes, such as the area south of Leipzig, are becoming lake districts, "reminiscent of the glacier landscapes of Mecklenburg"[8], since in the space of a few years a dozen lakes, some of them very big, were to take shape in the old lignite mines. In the long run these lakes should take up no less than 35% of the mined area in the Halle-Leipzig basin. The first of these new lakes had been completely filled with water by May 2000: it is Lake Cospuden on the southern edge of Leipzig. This 420-hectare lake has now become a recreational area

[5] There are 329 slag heaps in the Nord-Pas-de-Calais region.
[6] A feature of lignite mines.
[7] One feature of which is giant shovels.
[8] Mr Deshaies.

highly appreciated by the inhabitants of Leipzig. Designated as a Hanover EXPO 2000 project, Lake Cospuden has been outstandingly laid out, with a contrast between the southern and western shore, which has been designed as a "natural" area suitable for bird-watching, and the north-east and northern shore, near the edge of Leipzig, where leisure amenities for the city's inhabitants have been sited. These include a huge area laid out for walks, a large sandy beach, a windsurfing area, a pier with a marina and a restaurant on the water's edge. Lastly, a 35-metre-high panoramic tower has been built at the southern end of the lake, with an unrestricted view of the Cospuden "Landschaftspark" and the neighbouring Zwenkau mine, which has just been closed and will likewise become a (900-hectare) lake by 2012. Property development schemes are under way to build villas with a view over the lake, and the lakeshore will become a desirable residential area.

21. Apart from these lake districts, the "naturalisation" of coalfields has involved planting deciduous forests on the old plateaus. Again in Germany, the Sophienhöhe is a vast artificial plateau 200 metres above the Bay of Cologne. It was formed in the 1980s and 1990s from the accumulation of excavation residues from the Hambach mine and is now covered by a mainly deciduous forest. Similarly, in Grimethorpe, in Britain, some 66 hectares of polluted soil have been decontaminated to create an area of over 30 hectares on which to plant 40,000 trees.

b. setting up leisure parks on former coalfields, once they have been naturalised

22. In addition, the existing infrastructure is re-used to give new impetus to the region's economy. France has been a pioneer in this respect. At Noeux-les-mines the black mining landscape has, since 1994, given way to a leisure complex in which slag heap 42 has been converted into … a ski run. Inaugurated in 1996 this 320-metre-long polyethylene slope is the first of its kind. Similarly, at Blaye-les-mines[9], the mine that was closed in the 1980s has been converted into a leisure park with facilities for skiing, water skiing and devalkarting[10], a giant Tyrolean traverse bridge, a skate park, and so on.

23. It should be pointed out that, while only the predominant models have been described here, other mining areas have chosen to convert themselves into large-scale business parks, examples being Trentham Lakes at Stoke-on-Trent, which has been converted into a 162-hectare business park including, in a naturalised area, both businesses (HSBC, CFM Kinder, Volkswagen, etc) and private housing, and Betteshanger in East Kent, where both a business park and a nature park are being set up.

24. Europe's coalfields are thus being regenerated in different ways, but there is usually a desire to re-naturalise the target areas first.

ii. Regeneration still incomplete because of continuing difficulties

25. The coalfield regeneration process is complex and therefore encounters many obstacles which need to be overcome.

- First of all, **regeneration work is a major undertaking and is expensive**. There may therefore be a financial obstacle, exacerbated by a possible lack of financial motivation. When the purpose of the operation is "merely" to re-naturalise the target area, the financial incentive is lacking. Central government and local authorities can only be encouraged to shoulder expenditure of this type, for no one else is able to do so. It is worth quoting the example of Nottinghamshire, where the lack of investment has held up the area's economic redevelopment.

[9] In the Tarn.
[10] A type of go-karting on a slope.

- Secondly, **it is necessary to guard against believing in "miracle" solutions, particularly that of re-naturalising mining areas**. While it is true that the redevelopment of coalfields generates landscapes that are not lacking in aesthetic quality, some of which have even become protected "natural" areas, they are fundamentally different from the landscapes that were destroyed. The "Kulturlandschaft" forged over the centuries by successive adjustments, by generations of farmers, gives way to a "Bergbaufolgelandschaft" (literally, an after-mining landscape), planned and generated in virtually one fell swoop by engineers, even if there is a degree of collaboration with nature. The "Heimat" landscape of the old communities is becoming a local recreational landscape (Naherholungsgebiet) and a consumer commodity for the inhabitants of nearby towns. On completion of the rehabilitation process, a new "after-mining landscape" (Bergbaufolgelandschaft), with original features, has emerged. It is still substantially different from the original landscape forged by centuries of continuous farming.

- Lastly, and this particularly concerns the Czech Republic, **there is no system for assessing beforehand whether or not re-naturalisation will be a success**. There is a manifest lack of criteria, which prevents the approach from succeeding. Standard criteria therefore need to be devised and, accordingly, Europe-wide environmental legislation needs to be developed.

26. Special attention should be paid to environmental and regional/local problems, which are the main obstacles to successful regeneration. It should be possible to overcome them by pooling past experience and involving governments more closely.

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Reporting committee: Committee on Culture, Science and Education

Committee for opinion: Committee on the Environment, Agriculture and Local and Regional Affairs

Reference to committee: Doc. 10006, Reference No. 2911 of 26 January 2004

Opinion approved by the Committee on 28 February 2006

Secretariat of the Committee: Mr Sixto, Mr Torcatoriu, Ms Trévisan