



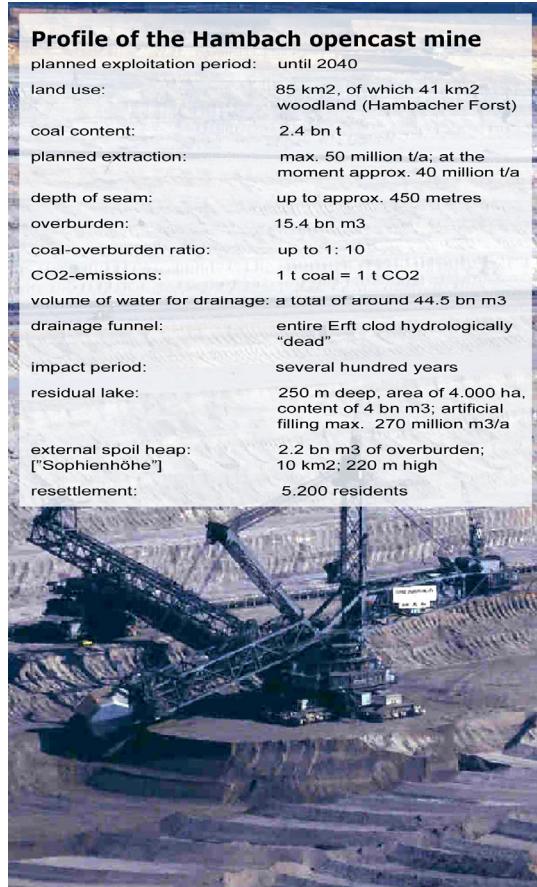
Background information, FoE Germany Mai 2008

# Example Hambach opencast lignite mine: Energy production versus natural heritage – how lignite destroys an entire region

*Background information in the course of the COP9, Bonn, Mai 2008*

by Dirk Jansen

The policy of the host of the 9th meeting of the Conference of the Parties to the Convention on Biological Diversity is characterized by a sobering discrepancy between claim and reality. Whereas the conservation of biodiversity is campaigned for worldwide, the reality on site looks disastrous in Germany, and in particular, in North Rhine-Westphalia (NRW). Only 8.2 % of the area of the federal state is registered as Natura 2000 site. In a comparison of Germany's federal states only Berlin fares worse than NRW.



The German failures in the area of biotope protection and protection of species are nowhere else as apparent as they are in the case of opencast lignite mining. This climate-damaging fossil energy source is not only Germany's biggest contributing cause of climate change and the loss of biodiversity associated with this, it also destroys to a great extent the last areas of unspoiled nature of the Lower Rhine Basin.

Despite the legal requirements for the protection of rare habitat types and species of European importance, opencast lignite mining in the Rhineland is always given priority over nature protection. A particularly serious example is the Hambach opencast lignite mine.

## The Hambach opencast mine, "Europe's biggest hole"

In 1978 the exposure of the Hambach opencast lignite mine started in the Lower Rhine Basin near Cologne. Since then "Europe's biggest hole" has been dug between Bergheim and Jülich. In an area of 85 square kilometres the diggers advance into depths of more than 450 metres to extract coal. By the end of 2007 4876 hectares of landscape were already destroyed.

The RWE Power AG plans to mine a total of 2.4 billion tons of lignite by 2040 in Hambach. For developing the coal seams with a maximum thickness of 70 metres, 15.4 bn t of overburden will have to be removed. In 2007 mining amounted to

approximately 40 million t/a making it the biggest opencast mine in the Rhineland.

Since 1976, in order to keep the pit dry, a large-scale lowering of the groundwater ("dewatering") has been carried out. The lowering of the groundwater and the drainage of up to 450 million m<sup>3</sup>/a will lead to the region largely drying out. It will take centuries for the groundwater to reach a normal level after the opencast mining is finished.

Since the Hambach opencast mine is a new exposure, 2.2bn m<sup>3</sup> of overburden have had to be dumped since first starting (in 1978). An artificial low mountain range was created with the external spoil heap – the Sophienhöhe – with an area of 10 km<sup>2</sup> and a height of more than 280 m above sea-level.

After completion of the opencast mine a gigantic lake shall be created in the worked-out open cut. This residual lake shall take up an area of 4000 ha; have a depth of 250 m and a volume of more than 4bn m<sup>3</sup> water. But the pollutant run off from the spoil heaps located directly beside it could acidify the lake. For decades it would have to be artificially filled with up to 270 million m<sup>3</sup> treated Rhine water per year which would have to be conducted there through a pipeline.

### The forest Hambacher Forst will be destroyed

By 2040 the Hambacher Forst, once a forest area with more than 4100 ha with a 12,000 year old history will make way for the Hambach opencast lignite mine leaving just a few patches. The forest is one of the last areas of the so-called Bürgewälder which received an early mention in a document by emperor Otto II in the 10<sup>th</sup> century. These are semi-natural forests whose development has hardly been disrupted since the reforestation after the ice age. A particular botany "specialty" of this forest is the natural population of small-leaved limes which migrated there during the warm period of the Atlantic period about 3,000 to 6,000 years ago.

#### Importance of the Hambacher Forst as habitat for the middle-spotted woodpecker

Up to the beginning of the logging operation for the Hambach opencast mine in 1977 the Bürgewälder accommodated the only significant population of the middle-spotted woodpecker (*Dendrocopos medius*, Linnaeus 1758) in the Lower Rhine Basin. This population was at the same time the last big population in front of the western border of the range.

It is one of the 5 biggest breeding populations in NRW and moreover, the population density is one of the highest in Germany. The all-year insectivore middle-spotted woodpecker depends mainly on old oaks for food, such as they are found in the Hambacher Forst. It is a leading or index species of this habitat type.

The middle-spotted woodpecker is one of the most endangered species in North Rhine-Westphalia (Red List 2); and is listed in annex I of the EC Birds Directive. According to this directive North Rhine-Westphalia is obligated to meet all necessary measures to ensure the conservation status of the middle-spotted woodpecker. Part of it is e.g. setting up nature reserves as well as maintaining the habitats.

The extension of the Hambach opencast mine and the consequent loss of old oak trees led to a population decrease of more than 20 % during the last 25 years. Between just 1995 and 1998 approx. 500 ha of the Hambacher Forst were logged. The number of proven territories of the middle-spotted woodpecker was reduced from 52 to 34 within that same period.

In short, a further extension of the Hambach opencast mine and the gradual logging of the Bürgewälder within the next 20-25 years would lead largely to the extinction of the middle-spotted woodpecker population in the area.

table: Occurrence of species from annex IV of the Habitats Directive in the Hambacher Forst/Steinheide (selection)

Occurrence of species	
yellow-bellied toad	<i>Bombina variegata</i>
natterjack toad	<i>Bufo calamita</i>
agile frog	<i>Rana dalmatina</i>
Brandt's bat	<i>Myotis brandti</i>
Natterer's bat	<i>Myotis nattereri</i>
Bechstein's bat	<i>Myotis bechsteinii</i>
greater mouse-eared bat	<i>Myotis myotis</i>
common pipistrelle	<i>Pipistrellus pipistrellus</i>
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>
noctule bat	<i>Nyctalus noctula</i>
Leisler's bat	<i>Nyctalus leisleri</i>
brown long-eared bat	<i>Plecotus auritus</i>
common dormouse	<i>Muscardinus avellanarius</i>

refuge places of these species listed in annex IV of the Habitats Directive according to art. 12 of this directive is prohibited. The Hambacher Forst is also of utmost importance for the middle-spotted woodpecker (see box 2), protected according to annex I of the EC Birds Directive.

The habitat of these protected animal species is being destroyed by the ongoing opencast mining; exceptions are the few small island-like refuge areas (Lörsfelder Busch, Dickbusch, Steinheide, Lindenberger Wald). In addition, these scattered retreat areas will be permanently affected by the follow-up plans for the opencast mine (relocation and extension of the autobahn BAB 4, relocation of the Hambach Kohlebahn (coal rail line).

Certainly a total of 1168 ha opencast mining area was successfully reforested by the end of 2007 ("Sophienhöhe"), but this can in no way ecologically make up for the permanent loss of irreplaceable ancient woodland.

## No Habitats Directive report made

The ancient woodland population with a high share in deadwood is of extraordinary natural historic importance from both the point of view of forest history and phytosociology as well as animal-geography ecology. The great importance of this Directive habitat 9160 (common oak-hornbeam woodland) from a supraregional conservation standpoint is also evident in the presence of numerous populations of woodpeckers including middle-spotted woodpecker, black woodpecker, tawny owl, long-eared owl, and other diverse bat species and amphibia.

Even though the forest area corresponds without any exception to the criteria of the European Habitats Directive, except in the case of two areas of 33 ha (Lindenberger Wald) and 189 ha ("Steinheide"), respectively, no report was made to the European commission registering the site as a Natura 2000 site. This is a direct breach of European regulation.

Thus, the government of the federal state cleared the way for the destruction of the former 4100 ha forest in the name of lignite mining.

This is justified with the alleged binding force of the lignite plan from the year 1976, from which the mining licences for the continuation of the opencast mine could be derived until the year 2040. Yet, an environmental impact assessment (EIA) has never been conducted either for the original lignite planning process or for the mining licence for the continuation of the opencast mine from 1995-2020. All attempts on the part of the BUND (Friends of the Earth Germany) to enforce such an EIA have failed so far.

At the moment a suit dealing with the illegality of the relocation of the autobahn BAB 4 for the opencast mine taken by the BUND is pending at the Federal Administrative Court in Leipzig. Extension and relocation of the BAB 4 were approved even though the planning massively infringes on the provisions for the protection of species, particularly regarding the Bechstein's bat. The RWE Power AG failed to present the required proof that this plan is unavoidable, serves mainly public interest and does not threaten the conservation status of the population.

None of this changes the fact that despite these numerous violations against nature conservation legislation, the opencast mine continues little by little to destroy the unique Hambacher Forst, and inspite of the pending suit, the construction of the autobahn will start soon.

### Bechstein's bat on the verge of extinction

Only the BUND with its investigations was able to shed a light on the importance of the Hambacher Forst as a habitat for the Bechstein's bat (*Myotis bechsteinii*) which is protected strictly according to annex II and IV of the Habitats Directive. In North Rhine-Westphalia this species is "critically endangered". The few populations can be found in the low mountain ranges and its borders. Hardly any populations are proven on the plains. Eight maternity roosts as well as two important colony roosts are known of in North Rhine-Westphalia.

In the whole region of the Lower Rhine only two maternity roosts of the Bechstein's bat are known. One in the Hambacher Forst and one in the Steinheide situated at the rim of the opencast mine. The social structure and the space utilization pattern of the reproduction communities of female Bechstein's bats suggest the existence of further maternity roosts, in particular in the still existent Hambacher Forst with its high percentage of old trees. These territories will cease to exist in the future as a consequence of lignite mining since the forest will be completely destroyed.

The refuge area of the Steinheide will also be affected by the open-cast mining planning, in particular due to the relocation of the autobahn BAB 4. An export opinion commissioned by the BUND from the Institute of Zoology of the Friedrich Alexander University Erlangen-Nuremberg found that the relocated autobahn A4 would be a "death trap for the Bechstein's bat". In view of the unique ecologically valuable importance for the Bechstein's bat colony in the area of the Steinheide the combination of the negative effects due to the relocation of the A4 would not only lead to a clearly higher extinction risk, but the population size of the Bechstein's bat in the natural geographic unit Lower Rhine lowlands and the Cologne Bight would also be impaired to such an extent that the species in the whole natural landscape unit would be on the verge of extinction.

## Lignite and climate protection

A total of 99.8 million tons of lignite were extracted in the area Rheinische Braunkohlervier in 2007 and primarily used for power generation at the four RWE large-scale power plants. Despite the worldwide discussion on global climate change, coal extraction increased by 3.7 % compared to 2006. But of all energy sources lignite is the most climate-damaging. Concerning raw lignite approximately 1 t carbon dioxide is released per fired ton.

The four RWE lignite-fired power stations in the Rhineland still belong to the most climate-damaging plants in Europe. Ten of the 30 dirtiest and most inefficient European power stations are located in Germany, all four RWE lignite-fired power stations in the Rhineland are among them. If the total CO<sub>2</sub> emissions are measured, the power station in Bergheim-Niederaußem, supplied with coal from the Hambach opencast mine, is Europe's dirtiest. 29.5 million tons of greenhouse gases are produced by this power station alone. In a worldwide comparison this "climate killer" takes 10<sup>th</sup> place.

43.3 % of the gross power generated in North Rhine-Westphalia comes from lignite. This alone is responsible for the creation of about 100 million tons of carbon dioxide per year – more than a third of all greenhouse gas emissions in North Rhine-Westphalia.

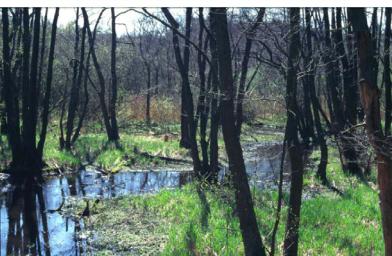


The power station Niederaußem is fired by lignite from the opencast mine Hambach. It is responsible for 29.5 million tons of CO<sub>2</sub> per year.



## Climate change and biodiversity

In addition to the direct loss of biodiversity and habitats through the opencast lignite mines, climate change is expected to have indirect medium-term effects on this area. Carbon dioxide is by far the most damaging greenhouse gas and electricity generation using lignite is Germany's biggest contribution to the man-made greenhouse effect.



To make statements on the possible future development of the climate in North Rhine-Westphalia, a statistical regional climate scenario, commissioned by the NRW Ministry for the Environment, was calculated for large landscapes in North Rhine-Westphalia for the period from 2046-2055. For the chosen scenario an increase of the average annual temperature by up to +1.9° C was calculated for the state. In the winter months there would be a warming up of up to 3 degrees and in the summer months of up to 2.7 degrees compared with reference figures from the period 1951-2000.



Fotos: Jansen

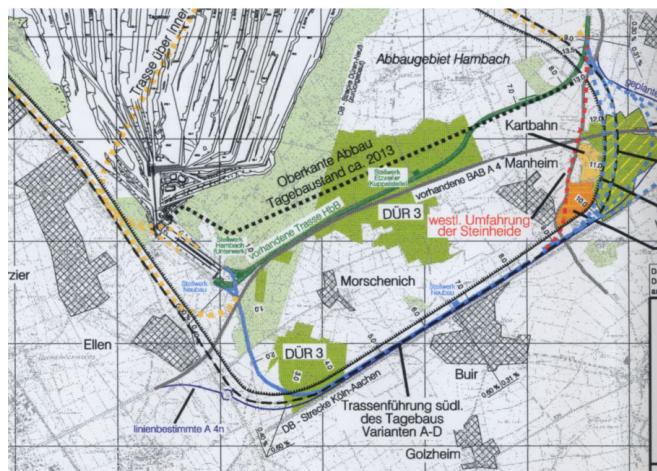
The expected changes in temperature and precipitation as well as the increasing occurrence of extreme events have a direct impact on biodiversity. Species which have a narrow ecological range of tolerance, mainly animals preferring cold and humidity as well as species with a limited ability to migrate, are primarily affected. When it comes to ecosystems, water ecosystems, wetlands and forest ecosystems are considered to be extremely susceptible.

Between 5 and 30 % of the existing species in Germany could be threatened with extinction according to calculation models. In the medium to long term climate change will have a significant impact on the composition of communities with a decline in biodiversity expected.

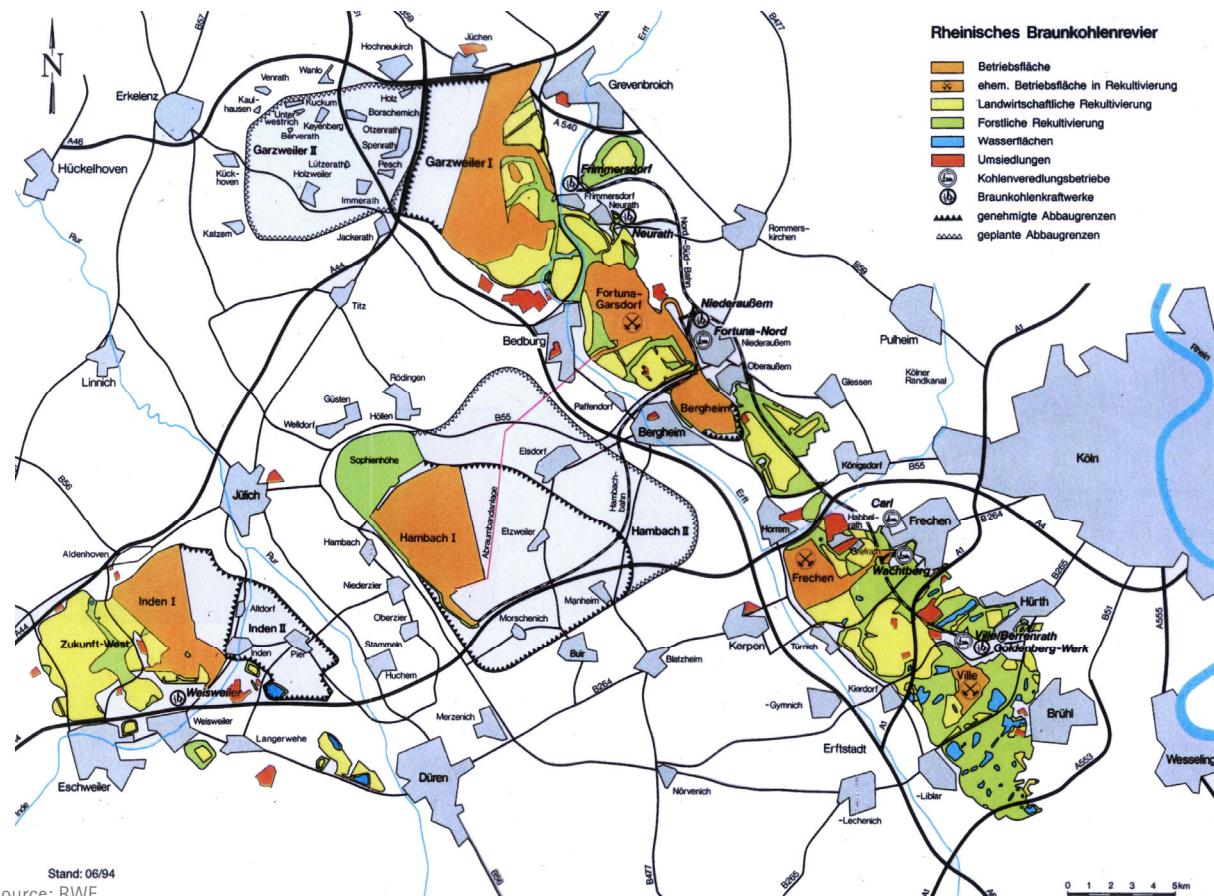
Thus, what remains of ecological diversity after the opencast lignite mining, will almost certainly be further impaired by climate change.

If we do not stop the overexploitation of lignite mining and curb climate change by a radical change in the power generation structure, then our natural heritage will be irreversibly damaged.

For more information on lignite go to: [www.bund-nrw.de/braunkohle](http://www.bund-nrw.de/braunkohle)



By 2040 the Hambacher Forst, once a forest area with more than 4100 ha with a 12,000 year old history will make way for the Hambach opencast lignite mine leaving just a few patches. In addition, these scattered retreat areas will be permanently affected by the follow-up plans for the opencast mine (relocation and extension of the autobahn BAB 4, relocation of the Hambach Kohlebahn (coal rail line).





### About us:

The BUND (German Federation for Environment and Nature Conservation) is the largest German environmental citizens' organisation. It has more than 4000.000 members. The federal organisation was founded in 1975. Some member organisations at the federal state level have an even longer history such as the Bavarian branch of BUND, the BN, founded in 1913. BUND's roots are both in the nature conservation practised in the twenties as well in the ecology-movement of the seventies. While large, the organisation maintains a strong grassroot orientation: more than 2100 local groups, 250 groups for young people and 450 children's groups, all of which are trying to solve environmental problems at local and regional levels. Parallel to this structure, there are about 20 voluntary working groups dealing with specific environmental issues, i.e. waste management, genetic engineering, energy, agriculture, chemicals, transport, etc. Lobbying on the federal level is mainly done by the federal office.

BUND is the German member group of "Friends of the Earth International" (FoE), an international federation of over 55 independent, national environmental organisations committed to preservation, restoration, and rational use of the environment.

**For more information: [www.bund.net](http://www.bund.net),  
[www.foe.org/](http://www.foe.org/)**

**Published by:**

Bund für Umwelt und Naturschutz Deutschland Section Northrhine-Westfalia, Merowingerstr. 88, 40225 Düsseldorf, phone: 0211/302005-0, fax: -26, e-mail: [bund.nrw@bund.net](mailto:bund.nrw@bund.net) [www.bund-nrw.de](http://www.bund-nrw.de) • text, photographs: Dirk Jansen • copyright BUND NRW e.V., Düsseldorf, mai 2008 •