Ecology & Reclamation: Life after mining! – Rhineland (Germany)

Thursday 31 December 2015, by SAGEL Rüdiger (Date first published: 1 December 2015).

Open pit mining transforms functioning ecosystems into tailings of sand, overburden, rock and potentially dangerous chemicals.

Contents

"Open pit mining", sometimes called "open-cast mining", involves digging up the surface of the earth to get to the mineral.

"Overburden" is the material that is dug up that comes from above the mineral that is being mined.

At the end of the life of the mine, the ravaged landscape must now be made productive again for people and for nature, through expensive projects. But in fact reclamation projects have less to do with protecting nature, and rather more with promoting commercial interests. Mining companies want to keep costs as low as possible.

Mining lignite coal

In the Rhineland, in the west of the Federal Republic of Germany - between the cities of Cologne, Aachen and Moenchengladbach - mining of the largest lignite deposit in Europe is taking place over roughly 300 km2. Fifteen percent of the country's electricity is produced in RWE Power AG's power stations. They burn a brown coal made from compressed peat, called lignite coal. Carbon dioxide emissions from lignite coal are higher for each megawatt generated than emissions from black coal.

In East-Germany, for economic reasons, most open pit mines were closed down after the reunification of Germany. So were the accompanying refining facilities and power stations. With the closing of the lignite coal mines, extraction of coal dropped in Eastern Germany from 300 million tonnes per year to about 80 million today. At the same time, the number of mineworkers decreased from 135,000 to 12,000 today. This part of Germany still produces 10% of the total electricity consumed.

The lignite coal seams in Germany are sometimes buried under several hundred meters of thick, loose layers of sediment, built up over more than 60 million years. So the lignite can only be mined in open pits, several hundred meters deep. They are kept dry by removing billions of cubic meters of

groundwater. In the process, the landscape changes drastically, but restoration is prescribed by law.

Rehabilitation methods

Rehabilitation has been done in different ways. Because they are relatively cost effective, lakes are constructed by ending the pumping of groundwater. The rehabilitation of forests and agricultural soils is comparatively expensive but has to be done because of the scarcity of land in Germany. The reforestation was carried out initially for economic reasons: the main goal was the production of wood. Over time, the aims have changed, leading to a more holistic ecological approach. Today's forest restoration has to create living spaces that offer future generations natural diversity.

However, this is a difficult process. What usually happens instead is an artificial landscaping of nature.

Reclamation in the Rhineland

Until the end of 2012, the West German lignite coal mines produced on 31,500 hectares in the Rhineland. Of this, 9,300 hectares are still in operation and22,000 hectares have been reclaimed:

• 12,000 hectares were rehabilitated for agricultural purposes

• 8,500 hectares were reforested

• 820 hectares of water surfaces were provided.

However, the result still lacks an overall ecological balance. What existed before the mining started? What has been lost through the open pits? What losses could be compensated? In addition to the loss of land with fertile, irreplaceable soil, the companies have intervened profoundly in the groundwater balance. Between 1969 and 1985 alone, 25 billion cubic meters of groundwater were pumped up. Rivers dried up or were completely excavated and others artificially recreated, like the Inde river.

Reclamation has not been a solution

In the opinion of ecologists, the serious impact on nature and the landscape have not been resolved. So, for example, the most valuable soil-forming substrate - the "loess" – is extensively eroded and may only be partly used in the creation of new soils. It will inevitably lead to loss of natural soil biodiversity. The new land surface is a long way from providing the agricultural and environmental potential which was there before. When this land is used for agriculture, even after decades it doesn't compare with the quality of the land before. Organic farming is impossible for a long time.

Nor is there is any solution for the loss of forests. There had already been attempts before 1920 to reforest the lignite mines. However, after the 2nd World War about 2,000 hectares were not reclaimed. The introduction of non-site-specific pioneer tree species, such as poplars, alders and acacias, was characteristic of the afforestation of this period. Soil compaction and waterlogging often harmed reforestation. Only in the late 50s did the reclamation start to take place on a scientific basis.

The target was to develop site-specific forests. So foresters planted predominantly oaks and beeches on the outer tip of the open pit in Hambach (Sophienhöhe). Other areas were left to develop over

time.

Despite the undisputed development of reclamation technology, the retroactive settlement of reclaimed forest areas for all species is not possible. Hambacher was a one thousand year-old oak forest spreading over 4,500 hectares. It has been destroyed except for a few remaining areas. Only these provide a refuge for rare animals such as Bechstein's bat or the middle spotted woodpecker. They should be a starting point for future recolonisation. Whether the populations will ever survive the severe loss of habitat is more than questionable.

Ultimately, for the foreseeable future, reclamation will not be able to replace the lost old-growth forest ecosystems. Also, the minimum goal of at least establishing new forests in the same area will be missed. There is a serious loss of land. More than 7,400 hectares of open pit "rest holes" will become waterscapes whose ecological value is doubtful. Artificial river landscapes like the "new Inde" are planned and acclaimed by the RWE designers as better than the original. Can artificial landscapes be better than nature?

No need for lignite mining

The primary objective must therefore be to avoid lignite mining. Today there is no need for an energy policy which has such effects on our natural ecosystems.

A complete phase-out of coal production is inevitable, mainly because of the ecological dangers. But it is clear that an immediate exit is not a realistic demand, especially if the currently planned phase out of nuclear power in Germany remains or even accelerates. Energy efficiency and energy saving measures take time and have initial costs.

The phasing out of lignite is urgent to protect the climate and for environmental and social reasons. Therefore, a new policy decision for lignite coal mining and an exit strategy are necessary. Without an exit decision for all open pit mines, destructive coal mining will continue unhindered. Mining companies must participate economically and financially in the structural change and take the responsibility. This can be realized in the medium term.

Reclamation best practice

Current objectives for a well-planned reclamation of the mining sites can be summarised as follows:

• Design a landscape typical of the area. It should vary in surface structures, and be oriented to what was on the land before.

• Create diversely usable, coherent surfaces.

• Reclaim typical soils as a prerequisite for the development of natural vegetation, using fast-growing species as structural elements.

• Select site-specific tree species.

• Create a system of special habitats for the conservation of rare species, such as moist forests.

• Leave some areas for natural development.

• Provide a network of habitats

• Separate nature conservation and recreation areas

There must be sufficient investment for the entire reclamation process. These “eternity costs” must to be calculated as precisely as possible by experts in advance. Legal measures by the appropriate political bodies are necessary to enforce this type of rehabilitation of former mining sites.

Rüdiger Sagel

P.S.

* From Amanda! – http://amandla.org.za
ISSUE No. 43/44 DECEMBER 2015

* Rüdiger Sagel is a mining engineer and ecologist and member of Die Linke in Germany.