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Mining - a Challenge for Environmental Security
Lessons learned in East Germany

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1. Background

Mining operations have considerable potential to seriously impact the environment. In relation to the theme of this Forum, mining is often the cause of structural changes to land as well as land degradation and instability and also tends to result in soil contamination from treatment residues. In the light of these hazards, mining has always been a challenge for environmental governance. If mining operations are to be supervised effectively, there have to be proper control mechanisms and a sound legal framework. That is the bottom line. And that has certainly been our own experience in post-unification Germany. Before unification the GDR was the world's largest lignite coal producer and one of the most important suppliers of uranium to the former Soviet Union. Mining was one of its major industries and was run with scant respect for the environment.

The collapse of the GDR regime coupled with the opening up of markets, falling energy consumption and new environmental legislation prompted wholesale changes in the use of primary energy resources. This resulted in the rapid closure of most lignite mining sites and all uranium mines, leaving a legacy in the Lusatian and Central German mining

districts of more than 1,500 km² littered with unstable slopes, residual holes, dumps including also toxic waste and a gravely disturbed water-balance. Remediation is particularly difficult as the overburden consists of sand and gravel, with no topsoil to speak of, so that the mined-out land resembles a ‘lunar landscape’. The residual pits, moreover, pose a human and ecological hazard due to the physical properties of their slopes. The dump areas are geotechnically unstable and there is a permanent danger of land slides. The mining industry has left behind over 1,250 toxic waste dumps (including tar lakes), a major hazard for soil and groundwater.

2. A costly legacy

As a consequence of unification, the Federal Government took over the GDR's state-owned lignite mines and had to decide what was to be done with them. A major restructuring was called for: the competitive sites were privatised and a new government-owned company – the LMBV - was set up to take charge of sites that had already closed down and unprofitable sites due to be phased out.

Year	**1989**	**2006**
Coal Production (million t)	301	78
Opencast Mines	39	6
Briquetting Plants	49	2
Industrial Power Plants	45	4
Employees	138,800	11,523

Figure 1: Structural Changes in the East German Mining Industry

As Figure 1 shows, only 6 of the 39 opencast mines operating in 1989 could be sold to private investors and are still in operation. Those that could not be sold off remained in state hands, and had to be closed down and secured at public expense.

There was another problem, too, with this legacy. Particularly during the 1970s and 1980s mining operations were expanded on such a scale that the reclamation of devastated mined-out land fell far behind. Given the prevailing economic constraints, the GDR's political leaders were intent on exploiting the rich deposits in the mining areas as intensively as possible with little concern for the environment, the ecological consequences, the health of the population or the quality of life in the region. Although also in the GDR the state-run mining companies had a clear legal obligation to carry out remediation and reclamation work, they were denied the funds to meet this obligation. I suspect this was partly due to the prevailing view of mining in the past, which held that the mine operator was performing an activity which served the public interest and therefore the burden of restoring exhausted sites to an acceptable condition should be borne by the whole country, i.e. the state. A common result of this view was that nothing very much was done at all.

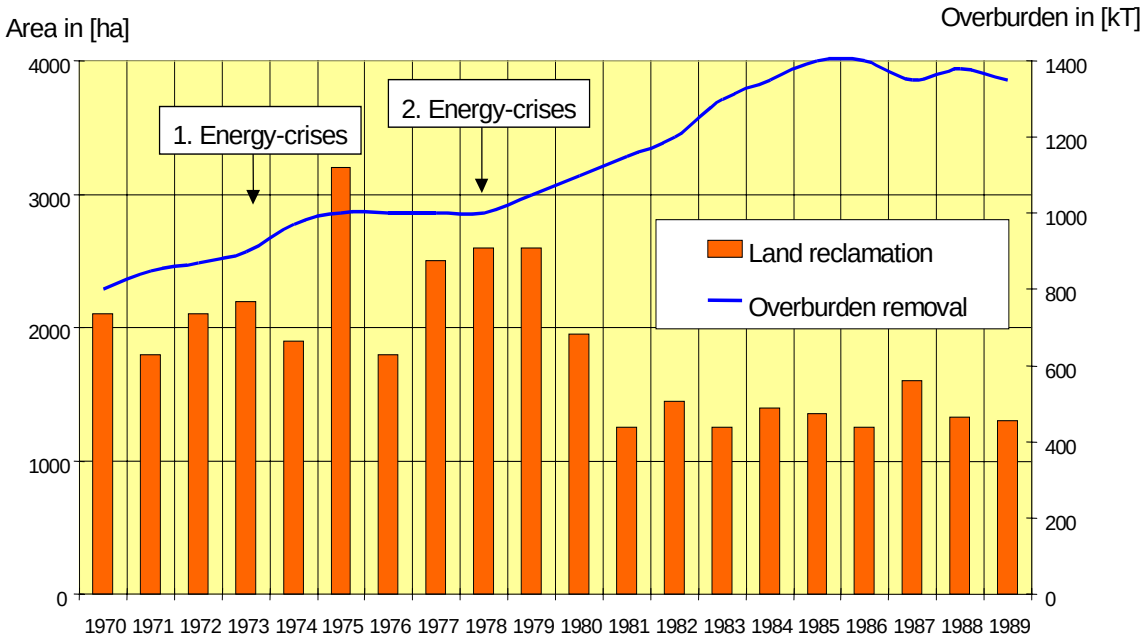

Figure 2 : Reclamation deficit in the GDR lignite industry

By 1989 there were over 65,000 ha of former mining sites still awaiting reclamation. The residual pits posed a particular human and ecological hazard, since some 770 km of pit slopes were deemed geotechnically unstable. These negative impacts were further

aggravated by the standing temptation to treat such devastated un-reclaimed sites as a convenient dumping ground for toxic or other waste.

By the early nineties all these mine-related problems had reached truly staggering proportions. According to a 1992 estimate, a clean-up programme would require the unprecedented sum of € 16.3 billion.

The case I have described illustrates one very simple truth. If governments neglect to integrate environmental concerns, remediation and reclamation into the actual mining process, the technical and financial effort required to tackle the subsequent problems is far greater than what would have been needed earlier on.

The unsustainable exploitation of their natural resources, mismanagement and ignorance with regards to environmental damages were increasing the political instability that in 1989/ 90 led to the collapse of the GDR regime.

I would now like to briefly discuss the legal background.

2 Legal liability

On unification all legislation enacted by the "old" Federal Republic of Germany - the Federal Mining Act, for example - became applicable in the eastern part of the country, too. Under this Act the mine operator is required to ensure that after closure the mine poses no risk to life or health and the surface can be returned to appropriate uses. This means that after closure the land must be properly restored with due regard for the public interest. What this involves in practice is a matter for the mining supervision authority, which is of course guided by the relatively high general standards of German environmental legislation. These general environmental standards are seen as part and parcel of the "public interest" to which due regard must be given.

The detailed definition of these standards takes place at local level, typically in the form of regional planning and local zoning laws. These provide for the establishment of regional planning committees representing local and district authorities as well as relevant interest groups. In lignite mining areas such planning committees play an important role in the

whole mining and reclamation process, for they are responsible for the so-called "reclamation plans" spelling out how abandoned sites should be recultivated and utilised in future.

Yet local bodies alone cannot be the answer. To tackle such a large and complex task, an organisation of a different calibre is required. Since there were no obvious historical precedents, something entirely new had to be established.

3 Taking up the challenge

The first step was to secure the necessary financial resources. Under three agreements concluded since 1992 between the Federal Government – which now owned the mines - and the Governments of the four lignite-producing federal states (Bundesländer), a total of € 8.3 billion was earmarked for the remediation programme up to the end of 2007. Three quarters of this sum is provided by the Federal Government and one quarter by the affected federal states. It is being spent on safety measures in disused opencast mines and residual holes, cleaning up toxic waste dumps and restoring the water-balance as well as rehabilitation and land reclamation.

Given the enormous sums of public money at stake, it was vital to create an organisation that could guarantee it was being spent efficiently. The goal was to create a transparent organisation which would ensure that the respective responsibilities and concerns of the various actors involved (funding agencies, project management bodies and contractors) remained separate and distinct. This resulted in a three-tier structure:

Overall responsibility for supervising remediation plans and the use of funds lies with the **Steering and Budgetary Committee for Lignite Remediation**. The Federal Government is represented on the Committee as well as the affected federal states.

Project management is the task of the Lausitz and Central German Mining Administration Company **(LMBV)**. The LMBV is responsible for remediation plans, tendering and awarding contracts for remediation work.

Private businesses under contract to the LMBV are responsible for implementing individual remediation projects.

All remediation project components are tendered (mostly Europe-wide). Small- and medium-sized companies based in the mining areas benefit particularly from such contracts. Competition among the companies as well as co-operation with R & D capacities has inspired innovation and this has resulted in significant cost reductions. New innovative technology was developed like the vibro-compaction method to efficiently stabilise slopes.

The figures speak for themselves. Over the 14 years we have been implementing this programme, our estimate of total costs has fallen from € 16.3 to € 9.2 billion. This has not involved any lowering of environmental standards, which have even been improved in many ways. To achieve such cost reductions in investments funded with public money is a quite remarkable feat.

4 Investing in a sustainable future

It soon became apparent that the goal of our reclamation programme could not be the traditional one of restoring sites to their original state. We realised, that the large-scale rehabilitation and reclamation work was a tremendous opportunity to create a new and different landscape that would in future support and boost sustainable development in the region. Such a totally new landscape would serve, we hoped, as a catalyst for regional development. This proposal gained widespread support. Both local and district authorities as well as relevant interest groups are now involved in planning the future use of former mining sites. By the time all rehabilitation schemes are completed, the pattern of land use in the region will have changed considerably.

Today in many areas that looked like a lunar landscape at the time of reunification in 1990, you will find many new lakes with water of bathing quality and you will also see thousands of hectares of young forests, new agricultural land and areas protected for wildlife, and you will find more and more private companies that are investing in the former mining areas. Yearly between 5,500 and 20,000 people found a job in the governmental program itself but the economic stimulus likely to be generated by the potential new uses of the post-mining landscape will lay the basis for a more sustainable employment situation in the region as well as a brighter future.

Here a "simply green" reclamation strategy is not enough. What is needed is a strategy that ensures the reclaimed area has a real future, a strategy that supports structural change designed to promote sustainable development.
Apart from the governmental remediation program the privatised active mining companies have to use their own revenues to finance their reclamation activities. The positive results of the governmental program have improved the image of the total mining sector and are seen as a encouragement for good environmental governance.

As a result of this huge rehabilitation programme, we have developed in Germany a new industry that has become an international benchmark for best remediation practices. Our remediation industry is keen to cooperate with OSCE partners.

Furthermore the costly experience in Germany can be used as lesson by the OSCE partners.

6 Lessons that can be learned from the East German experience

The East German example illustrates on the one hand what enormous rehabilitation problems occur in the absence (during GDR times) of adequate environmental governance in the mining industry and, on the other, what can be achieved with an effective government rehabilitation programme.

1. Mining operations have great potential to seriously impact the environment and there is a corresponding need for appropriate forms of control.

2. If governance is not successful in integrating remediation and reclamation into the mining process, the technical and financial effort required subsequently will increase rapidly over time.

3. Multiplying the negative impacts: bad environmental conduct is “contagious”. Devastated un-reclaimed mining areas tend to be used as a dumping ground for other (also toxic) waste, which of course exacerbates the problem.

4. The mining industry's image and reputation is greatly enhanced when it adopts best practices of environmental governance.

5. As a reclamation strategy "simply green" is not enough. Reclamation must be seen as an opportunity to promote structural change that will help the reclaimed area achieve sustainable development.

6. As a result of this huge rehabilitation programme, we have a new industry in Germany that has become a world-wide benchmark for best remediation practices. This remediation industry is keen to cooperate with OSCE partners.

7. Mining impacts on the environment may also have transboundary effects. This may cause serious tensions and even security problems in the affected regions. The economic and environmental aspect of mining operations can therefore be regarded as an important aspect of OSCE’s comprehensive approach to security.

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