

Regional Environmental Governance: Interdisciplinary Perspectives, Theoretical Issues,
Comparative Designs (REGov)

Structural change in former mining regions: problems, potentials and capacities in multi-level-governance systems

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Abstract

The paper discusses remediation and regeneration processes in former mining regions in Eastern Germany. Research focuses on the multi-level governance system in which the environmental rehabilitation processes were set in. The paper discusses certain difficulties of the system, which can be characterized as problems of interplay, fit, scale and path dependency (Young). Results highlight the importance of enhancing regional capacities, in order to allow actors in former mining regions to find appropriate rehabilitation solutions and to connect them with new development approaches.

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Keywords: Structural change; Environmental problems; Multi-level governance; Capacity building; Regional development.

1. Introduction

Most discussions on regional environmental governance focus mainly on cases concerning certain natural landscape features or specific *ecoregions*, such as mountains, river catchment areas, and seas. Specific, often transnational governance arrangements are entrusted with managing the shared problems of such environmental systems. Typical examples are agreements on water and river systems (water commissions, the European Union Water Framework Directive, agreements on mountain ranges such as the Alpine and Carpathian Convention)(Balsiger & VanDeveer 2010). This paper sheds a different light on the discussion of regional environmental governance systems. It considers the example of governance arrangements for dealing with the difficult environmental legacy of the mining industry in Central and Eastern Europe. This example is based not on a unifying landscape feature but on problems stemming from industrial labour, which have had a profound environmental and social impact on many Central and Eastern European regions.

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The focus is on the nature and problems of the specific multi-level governance system established in Eastern German mining regions after reunification in 1990, highlighting the structures set up to manage remediation. Research examines changes in such multi-level governance and looks for ways to foster regional capacities allowing former mining regions to develop new, sustainable perspectives (as described by Ostrom, 1990). This paper considers the general question of dealing with the mining legacy by addressing the rehabilitation of environmental damage and adaptation of economic structures. The second chapter gives an overview of structural changes in European mining regions and the political responses adopted to tackle these processes. The specific situation in the Eastern German mining industry after reunification and the political approach towards its environmental legacy and rehabilitation issues are then examined. Chapter four focuses on the successes and problems of these policies, especially with regard to the multi-level governance system introduced, addressing problems of interplay, fit, scale and path dependency (Young, 2002). The conclusion reflects on these findings and draws lessons for other systematic approaches, stressing the importance of building local capacities in multi-level governance processes.

2. Structural change in European mining regions

Mining is a part of the European history. In the development of the European nations mining has often been an important development factor. Raw materials such as copper, iron, silver, salt, coal, and uranium provided the basis for technical, as well as social progress at different stages along this path. Probably the most important and impressive innovation in mining was the mass exploitation of coal, which was closely associated with the technical revolution and industrialisation in the 19th century. There is still a great deal of mining going on in Europe. Although this paper does not set out to review these activities, we wish to stress the unbroken importance of solid energy feedstock mining. No less than 226 areas in Europe were affected by this type of mining in Europe. In 121 sites mineral excavation continues, while elsewhere operations have ceased entirely - generally since 1990 (see also table 1). This suggests that rehabilitation and development have played an important role in most of the regions under consideration. Differences are especially apparent with regard to the various raw materials: In most cases mining continues in brown coal/lignite areas, while nearly all uranium mines in Europe have closed down in recent years.

Table 1: Coal and Uranium mining areas in Europe (Wirth & Lintz, 2007)

	Hard Coal	Brown Coal/Lignite	Uranium	Total
Number of areas in operation	30	84	7	121
Number of areas closed	26	23	56	105
Total number of areas	56	107	63	226

These changes have had a profound impact on European mining regions and towns, which had been shaped by these industries over decades if not centuries. The end of mineral exploitation often meant de-industrialisation, high unemployment and out-migration. Such regions often face a difficult environmental legacy stemming from mining and related industries in the form of persistent pollution of water, soil and air. Overall, such regions and their inhabitants face enormous challenges to their economic, social and environmental future. Owing to the lack of economic alternatives, the organisational, financial and conceptual resources of such regions are generally regarded as extremely sparse (Lintz & Wirth, 2009).

The combinations of multiple problems on this level often overtax local and regional decision makers. In many cases this requires national or European resources to cope with the outcomes of restructuring. In the past, the European Union in combination with national governments has tackled specific structural problems in mining regions through programmes like RECHAR and RESIDER, which supported the restructuring of coal and steel

regions from 1989 to 1999. Regions such Wallonia in Belgium, the English Midlands and the German Ruhr District have benefited from this external support and have been able to develop alternatives for the declining mining sector. Nevertheless such direct, sectoral policy approaches for weaker regions have lost in importance since the late 1990s. Mining regions now face severe competition from other underdeveloped regions (such as rural areas) for support from the Europeans funds (e. g. ERDF).

The regional scientific and especially planning literature offers broad discussion of change in former mining regions. Numerous empirical studies describe the problems and the solutions adopted in Western European mining regions (e.g. Hesse, 1988; Cooke, 1995; Baeten et al., 1999). Theoretical concepts have emerged in the scientific literature to describe and explain such structural change in Austria, Belgium, Germany, France, Great Britain, Norway and Spain (e.g. Steiner, 2003).

The framework conditions we find today in Central and Eastern European countries are completely different. Structural changes in most mining industries in Western Europe occurred already in the 1970 and 1980s. This took place under a specifically Fordist mode of cooperative production involving often substantial political trade-offs and long term phasing out scenarios for the affected areas (e.g. Baeten et al., 1999 for Belgium; Hassink, 1993 or Wissen, 2000 for the Rhine-Ruhr area). In contrast, the former Eastern Bloc states experienced a period of radical transformation after the political upheaval of 1989 and 1990. Here the tempo of change was extremely high and existing economic structures were not able to cope with a free market economy in a globalised world. Individual industrial sectors accordingly shrank radically (Gorzela, 1998, 2002; Müller et al., 2004). While a great deal of knowledge is available about the general transformation process and policy-making in Central and Eastern European countries, the interplay of actors, strategy building, and institutional framework conditions involved in internal rehabilitation and development processes in mining regions have rarely been investigated (e.g. Eckart, 2003; Geißler, 2005; Rumpel & Waack, 2004).

The structural problems described were also to be found in the mining regions of the former German Democratic Republic (GDR). Here, under new framework conditions, often characterised as a post-Fordist environment with general up and down scaling of governance (Brenner 2004), the multiple problems of the Eastern German mining regions after unification 1990 and their magnitude called for swift intervention. As the former mining companies were unable to solve the various problems of rehabilitation, the situation triggered a comprehensive, state-led rehabilitation process unique in Europe. It was based on national government funding, initiating a specific, multi-level governance process that was task-specific, rather flexible in design, and without authoritative co-ordination (as described by Hooghe & Marks 2001).

3. Rehabilitation of Eastern German Mining regions

One of the major political aims of economic policy in the former German Democratic Republic was to secure sufficient supplies of energy and raw material to make the state independent of imports. This made the energy and raw material production sectors especially important for the country. With few other fossil fuel reserves on hand, energy production depended mainly on the extraction of brown coal. Around 70% of the GDRs energy output rested on this source by 1990. In the late 1980s the GDR was accordingly the world's biggest brown coal producer with an output of 300million tons per year. The coal was mined mainly in the districts of Halle-Leipzig and Lusatia in open-cast workings (BMU, 2009; von Bismarck, 2004). Another mining sector of strategic importance was the extraction of uranium ore from deposits in Saxony and Thuringia. The most important sites were Ronneburg, Schlema, and Johanngeorgenstadt. After processing the ore was exported to the USSR. The deposits made the GDR the 3rd biggest uranium ore producer in the world (BMWi, 2009).

Figure 1 shows the principal mining regions in Eastern Germany. Apart from the lignite and uranium mining areas, copper ore deposits in the Mansfeld district were especially important. The hard coal mining region around Zwickau had already ceased production due to unprofitability in the late 1970s.

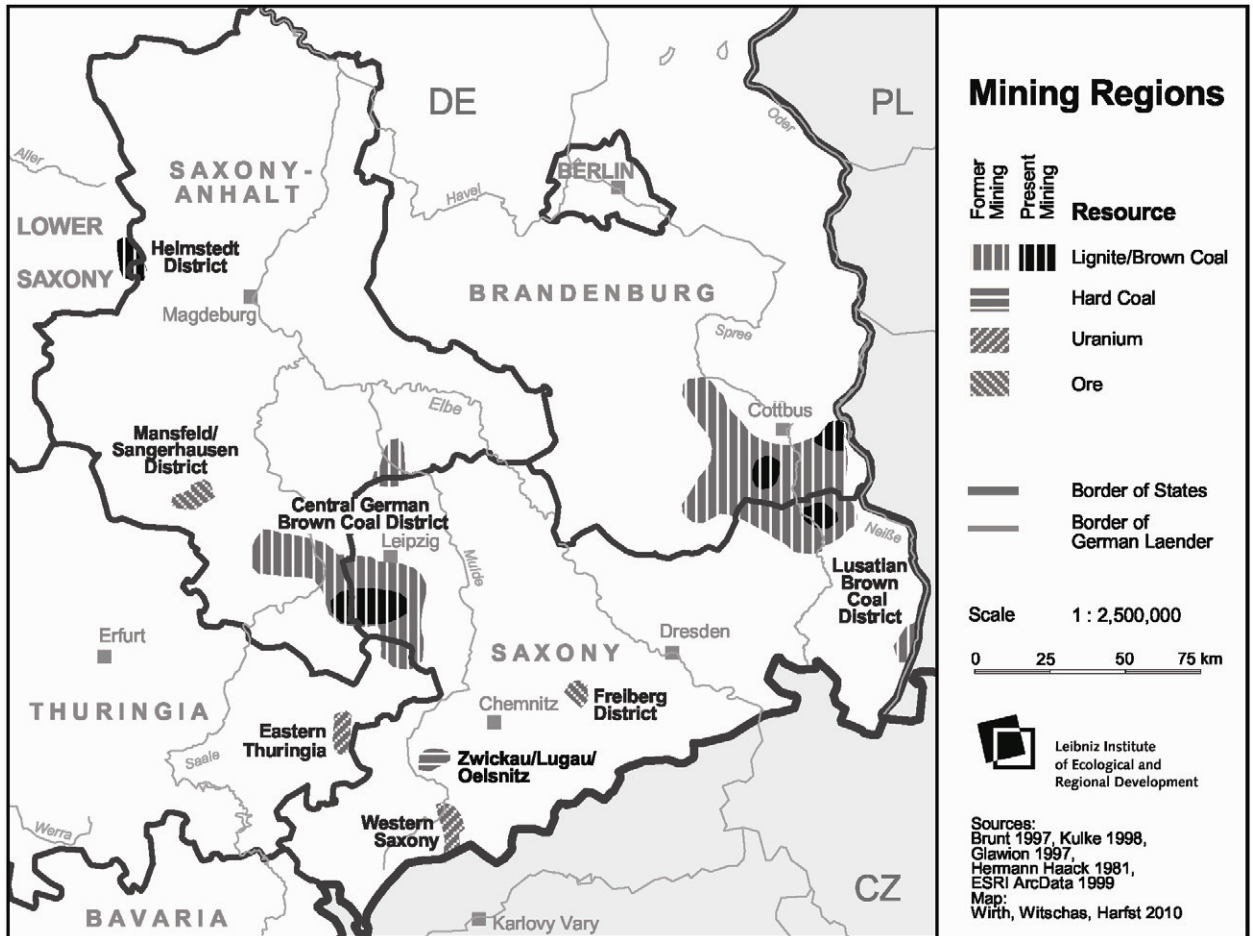


Figure 1: Mining regions in Eastern Germany

3.1. Environmental damage and structural changes after 1990

Although the rehabilitation of mining landscapes was required by GDR law, a huge remediation backlog accumulated. This was due to the overall importance of the productive mining sector, which demanded the rapid and highly industrialised expansion of mining activities and a general lack of funds for remediation. These deficits resulted in huge, abandoned brown coal pits (“lunar landscapes”), radioactive pollution in the uranium mining areas and the contamination of air, water and soil by mining industries, such as power and coking plants, as well as carbon chemistries (Wirth & Lintz, 2006).

The situation in Eastern German mining regions differed from that in many other former COMECON states, in that they experienced no significant phasing out period in the 1990s. With currency reform and reunification in 1990, Eastern German mining industries became almost worthless over-night due to the general lack of productivity and high costs. In this situation most of the facilities and formerly state-owned mining companies were unable to compete on the national, let alone world market and were subsequently eliminated from competition. As a result, ore

mining in Mansfeld, as well as uranium mining in the Ore Mountains, were shut down immediately after reunification. Of the 39 open-cast brown coal pits existing in 1990, only 7 were still active in 2009 (EURACOAL, 2008), shedding most jobs through rationalisation. Most of the related mining industries collapsed with the end of mining.

The whole restructuring of the Eastern German mining regions therefore resulted in massive deindustrialisation of the regions and a subsequent loss of jobs. For many of these mono-structured regions, this posed enormous challenges. The social and economic outcomes of the transformation threatened the very existence of entire regions. Without jobs and perspectives for the future, many of these areas experienced a severe outmigration of young and skilled labour, triggering a downward spiral of job losses, outmigration and decline in unprecedented dimensions. In the former “Energy region” around Cottbus many of the “GDR development towns” such as Hoyerswerda, which were boosted in the 1950s and 1960s to house workers from the lignite industry, saw dramatic population losses (Pfeiffer et al., 2000). Additionally to these developments the mining communities also faced the hazardous legacy of unmediated mining sites, which often posed a danger to human health and environment in densely populated areas.

3.2. Rehabilitation – The institutional setting

The German Federal Mining Act (as well as the Federal Soil Protection Act, applicable for most of the mining related industries) is, like legislation in all developed countries, based on the “polluter pays” principle, which holds the polluter liable for all damages and rehabilitation costs. Nevertheless, in the case of Eastern German mining, most mining operators were out of business or unable to afford remediation. The basis for state intervention was the reunification treaty and the German Constitution. Both documents stipulate the aim of equal (economic and social, as well as environmental) living conditions across the whole nation state (Unification Treaty, 1990; German Constitution §3 (3) § 143 (3), 2009).

After 1990 there were two main cases in the process of state-led rehabilitation in Eastern Germany. One was the rehabilitation of uranium mining sites in Saxony and Thuringia. The German state took over the responsibilities of the former joint venture between the GDR and the USSR for uranium mining in several areas, mainly in Eastern Thuringia and Western Saxony (figure 1). The first act of the new owner was to close down all mines, with the German state taking over the ensuing rehabilitation obligations. The Federal Government founded the Wismut Ltd. (Wismut Act, 1991) to organise rehabilitation under the premise that costs and ecological benefits be kept in balance. A total of € 5.3 billion had been spent by 2009, with around 80% of projects being completed. In total € 6.4 billion have been earmarked for the whole process, which is supposed to run until 2020 (BMW, 2009).

The second case of state involvement was in the lignite mining industry. In 1992 an organisational rearrangement saw active mining separated from closed down mining facilities and sites in the two biggest lignite mining areas (Halle-Leipzig and Lausitz/Lusatia region). The Lausitz and Central-German Mining Administration Company (LMBV) took over all decommissioned mines and property. The company is based on agreements between the federal government and the governments of the four affected states (Saxony, Saxony-Anhalt, Thuringia, Brandenburg). The LMBV assumed responsibility for former mining lands and is in charge of planning and implementing remediation. Under regional planning law, the company is to rehabilitate former mining land and to sell it off to potential investors or municipalities. In total the state enterprise committed a sum of € 9.2 billion to rehabilitation, of which the federal government assumes 75%, while the rest is co-financed by the four affected states (BMU, 2009).

Both cases constitute specific institutional systems involving all major levels of the German executive system through the creation of rehabilitation companies. The German government takes the main share of rehabilitation costs in funding the two state-owned rehabilitation companies. In the case of the lignite mining regions, the affected states also provide a share of rehabilitation. Both rehabilitation companies WISMUT and LMBV, act under state planning law and consult regional and local planning authorities about local remediation. As local municipalities are responsible for the planning framework for rehabilitated land, they have an opportunity to set their own

development agenda. Nevertheless the use of Federal money binds rehabilitation to strict spending rules, so that the whole process focuses predominantly on site remediation and only to a lesser degree on local development issues. This also explains why sites are remediated under this even if there is no immediate after-use for the rehabilitated areas (Wirth & Lintz, 2006).

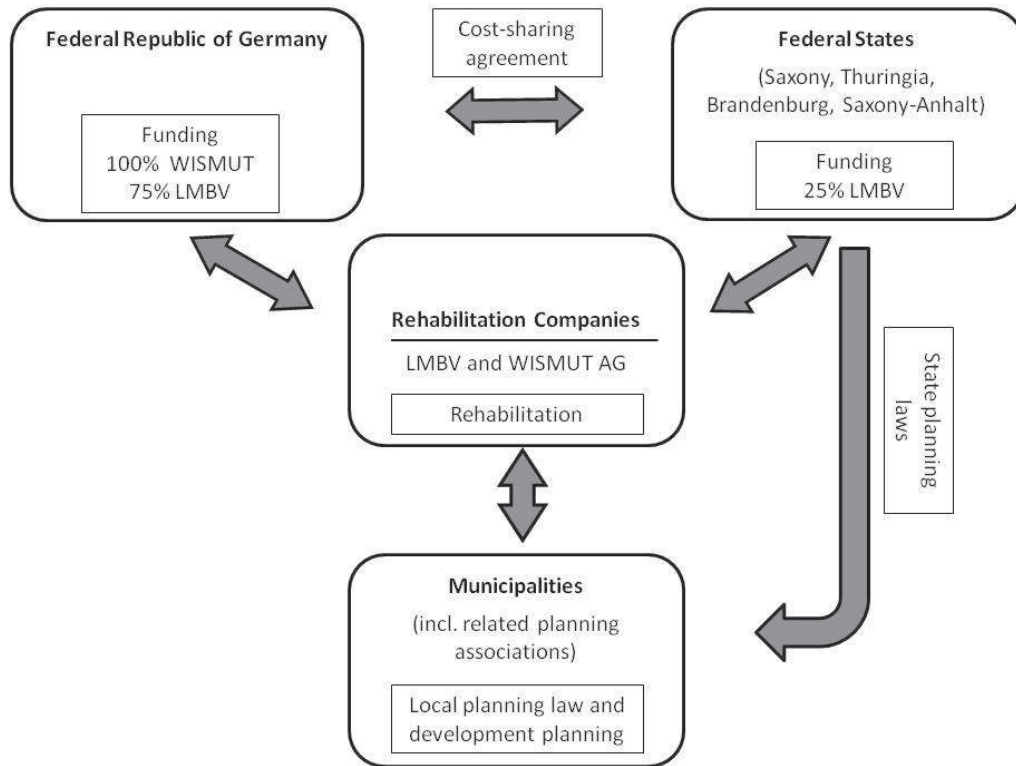


Figure 2: Main actors in the multi-level-governance system for Eastern German mining regions

4. Successes and problems of the multi-level-governance system in Eastern German mining regions

To cope with the environmental problems stemming from the former mining activities, two multi-level governance systems were established based on a model of cost-sharing between federal and state governments to cover the extremely high costs of uranium and lignite mining site rehabilitation. An impressive € 16 billion has been committed to the task. Since the start of rehabilitation, alone 120,000 ha of lignite brown field sites had to be dealt with. The remediation process focuses closely on rehabilitating land and on the imminent dangers to human livelihood. In this process countless sites had to be checked for possible contamination and new technical solutions found for the often unprecedented rehabilitation measures, especially regarding uranium mining (BMU, 2009; von Bismarck, 2004). The result is a complex system of multi-level governance set up to cope with the enormous rehabilitation tasks in Eastern German mining regions. The process has some impressive success stories to tell in rehabilitating and developing former mining regions. One such example is the transformation of Bad Schlema, once the site of uranium extraction, into a spa resort, while the establishment of a regional event venue in Gräfenhainichen in the lignite district of Halle-Leipzig is generally regarded as another positive case (Lintz & Wirth, 2009). But the established governance system of federal government, states and regional/local actors also shows typical difficulties of such structures, identified by the academic literature as problems of interplay, fit, scale and path dependency (Young, 2002; Folke et al., 2007; Gailing & Röhring, 2008).

4.1. Problems of interplay

Research usually identifies problems of interplay as arising between different levels of policy making. It describes mismatches between these levels (vertical linkages, i.e. between national and local policy), as well as problems of interlinking actors on the same policy level (i.e. regional-regional) to establish a common position on certain problems or opportunities (horizontal linkages) (Young, 2002; Moss, 2007).

In the multi-level governance system established to cope with the outcomes of Eastern German mining industries, such problems of vertical interplay are particularly evident. A general problem was the use of federal government funding for rehabilitation purposes. The aim of this funding has been explicitly to rehabilitate – in the strict sense – former mining land. This led to a paradoxical situation: while rehabilitation companies produced “top class” post-mining landscapes in a technical understanding of the term, there was little incentive for further regional development. Wismut Ltd. and LMBV are both bound by tight rules on spending federal money, which, among other things, hampered the elaboration of integrated development strategies on regional and local level especially in the 1990s.

Associated with this issue are horizontal problems of interplay. In many cases local actors – particularly in small towns – are unable to initiate a powerful process involving key local actors to shape their own future. Strategic planning is often lacking and it is not surprising that local authorities are impotent in the face of vast, strong, and rich state companies. Successful examples such as Bad Schlema and Gräfenhainichen have been the exception. While this is due partly to the restrictive funding practice in rehabilitation, it also indicates a lack of local capacities for generating common development goals to influence the process in the local interest.

4.2. Problems of fit

These issues of interplay are also mirrored by those of fit, the spatial fit of problems, institutions and measures, which are often defined by administrative borders, sectoral policy agendas and informal constructions of space/regions (Young, 2002; Folke et al., 2007).

In the case of the rehabilitation of Eastern Germany’s mining regions, federal funding is not available for all areas. Other mining areas, such as the old hard coal mining district Zwickau or the ore mining region around Mansfeld are not involved in the state financed programmes, though there are also mining sites that have not or not sufficiently been rehabilitated. These regions are mainly left to cope with unfavourable conditions for economic development and persistent environmental dangers (i.e., polluted brown field sites and ground water; insecure dump sites; unclear status of ground water level) on their own, although in some regions the rehabilitation of heavily contaminated mega-sites (“Ökologische Großprojekte”) was paid in a 75%-25% cost-sharing agreement between Federal and State governments. Another aspect of spatial fit is that mining regions and according development and rehabilitation issues have to be established across existing administrative borders, on the municipal, district and state levels. This complicates the elaboration of common visions and agreements on the future development of the regions. For example the Lausitzer Seenland project, which aims to establish a touristic lake region in Lusatia, involves 2 states, 3 districts and 10 municipalities, a setting of actors with different problem perceptions, heterogeneous interests, and – in the case of the two German states Brandenburg and Sachsen – different legal conditions, particularly in regional planning.

4.3. Problems of scale

Problems of scale involve differences in perception/policy aims between different scales in multi-level governance systems (Young, 2002; Gailing & Röhring, 2008).

In the Eastern German case there are clear differences in what various levels of the multi-level system seek to achieve with funding. There was a general agreement on the rehabilitation approach, with the state funding of measures seen as a “gift” to local authorities. But after the full economic and social consequences of mine closure

became apparent, additional demands were made on the local level concerning the development of local economies and structures following rehabilitation. But with the enormous sums already earmarked for rehabilitation, both central and state government were reluctant to allocate new funds for the areas. Nevertheless, cooperation between rehabilitation companies and municipalities on local development aims has improved in recent years, as the example of the Lausitzer Seenland (Lusatian Lake District) shows (Lintz & Wirth, forthcoming).

4.4. Problems of path dependency

Problems of path dependency describe the difficulties of the inherited development path of regions, which can hamper future regional development options (negative returns, lock in etc.) (Gailing & Röhring 2008).

In the case of Eastern German mining regions, this problem has not occurred in the true sense as the complete breakdown of the mono-structured industries was a fact, without a realistic alternative. Problems in the sense of path dependency in this case could be best described as conflicting strategic development options between “erasing all traces” and “building on potentials” (Dale 2002). In many cases, the rehabilitation approaches in Eastern Germany favoured a technical “erasing all traces” option, which was often combined with the touristic after-use of the new landscapes (for example water-filled pit sites from the lignite mining as leisure and recreation areas – Südraum Leipzig, Lausitzer Seenland). Other development options included using the industrial past as an element for development, such as the establishment of “energy landscapes” with a focus on renewable energies or even the use of the last intact remains of the industrial heyday, such as the remaining active brown-coal pits and power plants as an element for further industrialisation (e.g., in the Cottbus area). These different development options often have potentially conflicting policy implications for regional development.

5. What can we learn? – Building local and regional capacities for action

As the paper has shown, problems with changes in mining industries and their environmental legacy can be found across Europe. While in most Western European countries restructuring mainly took place under specifically Fordist conditions in the 1970s and 1980s (i.e., state intervention, agreement on long term “phasing-out” scenarios), most Eastern European countries underwent a rapid and radical reorganization of this sector in the 1990s. The problems in Eastern Germany exemplify many of the challenges faced by mining regions all over Europe. But the chosen solution of large-scale, long-term rehabilitation by the state is unique in Europe. The approach is closely associated with the specific political and economic circumstances in Germany after reunification in the 1990s: the economic crisis after the collapse of the industrial basis in the former GDR, mass unemployment and a dramatic environmental situation in large parts of the territory. The huge gap in living conditions between the Eastern part of Germany and the “old” Federal Republic made it possible to launch these state-led rehabilitation programmes.

In response to this situation, a particular multi-level governance system has been established for the affected areas involving national and state government, as well as regional and local communities. Considering the main aim of this state-led system, the rehabilitation of former mining land, the arrangement can be considered a success story, as it tackled many of the acute problems and risks that remained after the end of active mining. The environmental situation was improved step by step and many former miners found employment as “rehabilitators”. Nevertheless, the approach has faced certain difficulties, which can be attributed to the very nature of a multi-level governance system. Rehabilitation at large did not focus on the most important development problem: changes in the local economy. By focusing on the technical requirements of rehabilitation, the system failed to take adequate account of the needs of local/regional communities in mastering structural change by drawing up their own development agendas. Generally speaking, the overall process did not empower municipalities and regions to build their own capacities for mastering change (on capacity building see Amin 1999).

These problems led to changes in the rehabilitation and development concept in the late 1990s, especially in lignite mining regions. In addition to the rehabilitation budget, a special budget was made available for regional development measures. Since then this money has largely been used for improving the tourist infrastructure (marinas, landing places, beaches). In the Lusatian Lake District most of the money was used to build navigable

canals between the new lakes. This means that the nature of the system has changed in the last ten years: it has now become a more integrated system of local development and mining site rehabilitation.

The Eastern German example thus provides useful insight into issues of regional environmental governance and local capacity building in mining regions. The case study teaches us the following:

- Intensive state support is needed to master environmental rehabilitation issues on this large scale when the “polluter-pays-principle” does not work. There is no alternative to such state involvement particularly in densely populated areas. The case of Eastern German mining rehabilitation also shows the uneven spread of such arrangements with some mining regions benefitting from the rehabilitation funds and others being “forgotten” by the large scale programmes.
- The state led rehabilitation approach meets the needs of local authorities in questions of rehabilitation but does not explicitly cover the aspects of regional development in areas with multiple environmental, economic and social problems. Especially in the 1990s, rehabilitation companies focused on technical solutions for site remediation and did not take adequate account of the broader interests of the municipalities affected. Since 2000 this approach has shifted in some regions towards greater coordination between rehabilitation and development activities, integrated development and planning processes involving various local and regional actors working together regional development options with the rehabilitation companies (i.e., Lausitzer Seenland, see Lintz & Wirth, forthcoming). Without the empowerment of affected municipalities to master their future, the established multi-level governance system can be described as a process where “place matters, but scale decides” (Swyngedouw, 1997, p. 144) and thereby reflects unequal power relations between the different scales. The research thus underlines Swyngedouw’s statement that “scale is not socially or politically neutral, but embodies and expresses power relationships” (1997, p. 140).
- Although all of the affected areas are less favoured regions lacking resources and with multiple problems, some were able to use the rehabilitation process and create new options for development. This suggests that there are different capacities at the local level for influencing the governance system in the local interest. This places local and regional capacity building in the focus of research: How are some places able to raise their capacities to use existing potentials and policy options to create new development options? Research points towards the importance of actors and networks, while important levers in capacity building can be regional identities (“mining past”), shared problems (“administrative cooperation”), or the availability of funding sources and projects (EU funding, such as INTERREG) (see also Bieker & Othengrafen, 2005; Healey, 1998).

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