

Institutional Change in East German Water Management Systems

Christian Schleyer

**Humboldt University Berlin,
Department of Agricultural Economics and Social Sciences,
Division of Resource Economics
Luisenstr. 56, D-10099 Berlin, Germany.
Tel: +49 30 2093 6209, Fax: +49 30 2093 6497.
E-mail: christian_schley@hotmail.com**

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Abstract

Like in many fen land regions in East Germany, long-standing intensive arable farming -enabled by reclamation - has caused soil deterioration and high water runoff in the Schraden region. More than ten years of economic and political transformation that followed the breakdown of the socialist regime has worsened the situation and even added new problems. The visible consequences are droughts in the summer, waterlogged plots in the spring, and worn-down water management facilities that operate in an uncoordinated or unauthorized way.

Given the local public good character of some features of the fen land, the common-pool character of the intermittently scarce resource water within the ecosystem, and the conflicting interests of regional stakeholders, it is argued that the reallocation of property rights over reclamation systems, together with ineffective coordination mechanisms, have caused the physical and institutional failure of the water management system and thus impeded appropriate land use. More precisely, the combination of legal insecurities accompanied by enforcement problems, fragmented land ownership structure, and a high number of short-term lease contracts have reduced the incentives for the majority of farmers to maintain the reclamation works. Due to limited statutory rights in conjunction with limited financials, the present water association appears to be an inadequate local coordination mechanism. Furthermore, the complete and time-intensive restructuring process at all levels of water administration has resulted in cumbersome or even nonexistent interrelations between various governmental layers as well as in rare transboundary contacts.

JEL Codes: H 41, P14, P32, Q15, Q25

Keywords: East Germany, water management, transition, institutional change, property rights, governance structures

1. Introduction

Like in many fen land regions in East Germany, long-standing intensive arable farming - enabled by reclamation - has caused soil deterioration and high water runoff in the Schraden region in the south of the state of Brandenburg. More than ten years of economic and political transformation that followed the breakdown of the socialist regime has worsened the situation and even added new problems. It has resulted in a physically and institutionally dysfunctional system of water regulation. The visible consequences are droughts in the summer, waterlogged plots in the spring, and worn-down water management facilities that operate in an uncoordinated or even unauthorized way.

This paper aims to explore the reasons for the physical and institutional failure of the present water management system in the Schraden. The paper is based on twelve qualitative, semi-structured interviews that were conducted with farmers, local environmentalists, and the regional Water Association (WA) as well as with representatives of the agricultural, environmental, and water administration at the district and at the state level. Furthermore, notes taken during seven meetings of a regional Agri-Environmental Forum (AEF) - a round table initiated by a R&D project that regularly assembled 19 regional actors to discuss options in overcoming the problematic situation of water management (Müller et al., 2002) - were analyzed. Also, available planning materials, regional statistics, and other local information available were consulted.

In order to analyze institutional change, Hagedorn et al. (2002) suggest an explorative concept focusing on four groups of determinants: The first group consists of the features and implications of the transactions – such as excludability, rivalry, and complexity related to nature and the ecosystem. The second group comprises the characteristics and objectives of actors – such as the values, attitudes, and social embeddedness involved in those transactions. These two groups of determinants in turn affect the third group – namely, the design and distribution of property rights on nature attributes – as well as the fourth, which pertains to the corresponding

governance structures necessary in guaranteeing the rights and duties and their use in coordinating transactions. This analytical framework will be used to structure the empirical material and to explore the causalities that led to the physical and institutional failure of the water management system.

2. Ecosystem Characteristics and Land Use

The Schraden fen land is a 15-km-long section of the moderately sloped Breslau-Magdeburg glacial valley located 89 m above sea level in the West and rising to 94 m above sea level in the east; it covers approximately 11,400 ha. The first reclamation measures in this former wetland were carried out in the fourteenth century and consisted of small ditches equipped with weirs. Reclamation activities intensified in the second half of the nineteenth century, mainly for the extension of grassland farming in an area that was still dominated by inaccessible alder forests and swamps. The major watercourses were straightened and diked, small water arms back-filled, and extensive drainage works (ditches) built. But because the water table almost immediately sank by about one meter and because there were no more annual floods in the spring bearing fertile sediments, the grassland yields rapidly decreased. Most of these dry plots were now turned into arable land (AVP, 1998).

In the 1960s and 70s, reclamation measures reached their peak in the so-called complex melioration carried out in the German Democratic Republic (GDR). Large drainage systems – mostly open ditches up to three meters below ground – were installed to lower the ground water table. This system of ditches and channels was also equipped with weirs and pumping stations to enable irrigation by flood and even by infiltration, if necessary. By 1997, there were 330 various ditches totaling approximately 300 km in length and equipped with about 170 weirs, which were able to regulate the water table within the entire Schraden.

Presently, as much as 88% of the area is used as agricultural land, 78% of which is used for arable farming. Forests cover only about 3% (AVP, 1998 pp. 33ff). As a consequence, the long-

standing and intensive arable farming of the fen land has led to an increasing, nearly irreversible degradation of soil. The soils run dry during arid periods, losing more and more fertile soil and organic matter due to wind erosion. In 1998, the authors of a so-called agri-structural preplanning study (AVP) concluded that continued intensive drainage and arable farming would make agricultural land use impossible in the medium or long run.

From an economic standpoint, the environmental problems described are strongly related to both the fact that certain components of the resource 'fen' can be regarded as a local public good and to the existence of external effects. For example, a farmer nonintensively using his (wet) grassland also 'produces' a habitat that is home to diverse plants and animals typical for this type of (wet) grassland, which in turn might please visiting hikers or be valuable for biologists. On the one hand, excluding hikers or biologists from these benefits is costly, if not impossible. On the other hand, long-standing drainage and intensive arable farming of the same plot could result in external costs simply by depriving future generations of their 'stock of fen land.' The biodiversity 'produced' or retained by farming the fen land in a habitat-adapted manner might be highly valued by society. Due to its public good character, however, biodiversity cannot typically be allocated appropriately by price mechanisms on markets. Here, a farmer maximizing the return on his asset 'fen land' might prefer arable farming and a low water table, thus reducing the biodiversity and further degrading the fen's soils.

The AVP also pointed out that degradation combined with soil compaction from the use of heavy machinery has resulted in the soil's almost complete inability to hold water; thus, a high level of water runoff will be experienced if not held in check by well-functioning and coordinated weirs (AVP, 1998). However, water management facilities in the Schraden are often degraded and operate in an uncoordinated way. Of 108 weirs examined more closely in 1998, 42 were found to be out of order (AVP, 1998 appendix 10). Thus, plots with a relatively low (natural) ground water table frequently suffer from drought periods in the summer, resulting not only in negative income effects for farmers, but also in negative environmental effects for the

plants and animals that depend on a particular ground water level. The issue of a (at least temporary) scarcity of water enables a recasting of elements of the observed problem as a common-pool resource problem often connected with irrigation systems. Distributional issues become important, as common-pool resources have limited flows of resources and one person's use subtracts from the quantity available to others (Ostrom et al., 1994).

3. Stakeholders' Characteristics

In the GDR, one of the central objectives was the intensification of agricultural production in order to reach (national) subsistence farming targets. The logical consequence was therefore "to eliminate obstacles that slow down (agri-)industrial production" (AVP, 1998 pp. 8f, author's translation), such as the annual flooding or water logging of land, and to turn wetlands often used as grassland into more productive, arable land. The reclamation infrastructure that was installed in the Schraden was designed to cover the entire area and to meet the needs of large agricultural firms farming very large plots. Indeed, there were only four large agricultural cooperatives farming the agricultural land in the Schraden by 1976 (Hanspach and Kißro, 2001). All interests regarding the management of the reclamation system were dominated by agricultural production goals defined by the central planning system up until the unification in 1990.

The interests, however, became significantly more diverse after unification. First of all, the respective requirements primarily concerning the ground water table of the newly restructured and reorganized agricultural firms have become quite heterogeneous and now greatly depend on farm size and location, crop structure, and economic performance. Apart from a few part-time farmers with small plots, there are 13 different agricultural enterprises with various legal forms and ownership structures predominantly farming on leased land. Here, farm size varies between 320 and 1,870 ha (AVP, 1998 pp. 78, 102).

Second of all, interests regarding nature conservation have become much more prominent since 1990. These interests are predominantly represented by the respective environmental

administrations at the state level and district level. Nongovernmental environmental associations, however, are still of lesser importance at the regional or local level. Nevertheless, these environmental interests are not homogenous. For some environmentalists, the dominant strategy is to bring the degradation of the fen land to a halt or even to reverse the process. Another group aims at preserving the species and habitats typical for extensively used (wet) grassland; they demand a comparatively high ground water table during the winter, too, but only moderate water levels during the summer, thus allowing for extensive grassland farming. Other interest groups – such as forestry, industry, housing, construction, and transportation services – also demand ‘safe’ ground water tables to avoid flooding and other damages.

4. Property Rights on Land and Reclamation Systems

Apart from big landowners, whose land had been appropriated during Soviet occupation in the years before 1949, as well as some exceptional cases, land belonging to a vast majority of East German private farmers and landowners was not formally expropriated during collectivization; they were, however, forced to bring their assets into collectively organized production units (Laschewski 1998). Hence, these agricultural firms were only allocated usage rights and were integrated into the central planning system. This essentially meant that landowners had little or no influence regarding their own interests (Schüler 1991). Furthermore, formal property rights became meaningless, as land rent went unpaid. As a result, the formal ownership of land remained fragmented – almost as it was in the 1950s – while the agricultural firm structure underwent immense changes (Laschewski 1998). These changes were often linked to comprehensive land consolidation measures and extensive reclamation measures. In other words, plots that had had little infrastructure were suddenly considered ‘enriched’ by ditches and weirs. These assets of the newly built reclamation systems were regarded as collective property.

Shortly after unification, collectivized land was restituted to the legal owners, who received full property rights. This step revived the fragmented land ownership structure. Most of the new/old

landowners quickly leased their land to the newly restructured cooperatives; these are now joint stock companies, limited liability companies, or producer cooperatives. In 1994, the Brandenburg Water Act (BbgWG) finally replaced the GDR Water Act, formally reorganizing the responsibilities and rights for rivers, channels, and ditches and dividing them into two categories. Only those few bodies of water belonging to the (new) first category were declared state property. That which remained – i.e., all open waters of the second category including the weirs – were to become legal property of the owners of the bordering properties.

However, the future legal status of the reclamation system – and hence the rights and responsibilities for maintenance and operation – were unclear following unification. The Brandenburg Water Act was introduced in 1994 but did not solve the problem. First, the related Federal Law on Melioration Plants (MeAnlG) of 1994 explicitly ruled only on the property rights of *drainage* works at waters of the second category, which now belonged to the respective landowners whose property bordered on these open waters. Most weirs, however, were intended and built for *irrigation* use not covered by this clause (Pollack 1991). The same law determined that the ownership of these *irrigation* works should only be turned over to the landowners in the year 2000. Second, water authorities are as yet unable to enforce the related duties and responsibilities, because land owners cannot be held legally responsible for assets found on their land – such as ditches or weirs – that they neither wanted nor built. Here, the issue of ‘successors in interest’ to the organizations and administrative authorities once responsible for the reclamation infrastructure before 1990 was and still is unresolved.

Furthermore, after the restitution of land in the Schraden, the majority of owners decided to lease their land to the new agricultural enterprises instead of starting their own farming business. Yet, most landowners do not know about the reclamation works on their land or are not aware of the related (legal) rights and duties. What is more, many owners no longer live in the region, have nothing to do with the farming business, and own only very small plots. There are also cases in which the owners are not known, cannot be found, or ownership is legally disputed. In

all cases, however, the owner of a section of the reclamation infrastructure, such as a weir, would have to explicitly agree to any maintenance or operating measures to be carried out.

5. Governance Systems: The Local Level

The reclamation works that were built in the GDR in the 1960s and 70s were regarded as collective property. Nevertheless, firm responsibilities and rights for specific system categories – rather than formal property rights – had been allocated to different organizations and administrative levels. Planning, building and, in part, financing responsibilities were predominantly aggregated at administrative levels above the local. In contrast, most of the maintenance and operation activities were delegated to local reclamation cooperatives with compulsory membership for all agricultural firms. As members of the reclamation cooperative and with the support of the Water Management Directorates (WWD) and the Departments of Water Management at the district level, these large-unit firms could easily provide the necessary technical infrastructure, human resources, and financial means to maintain and operate the lion's share of the infrastructure. Increasing agricultural production was the overriding goal defined by the central planning system and was binding for all firms alike. In addition, a well-functioning reclamation infrastructure safeguarded high production yields. As a result, the interests among firms regarding maintenance and operation were rather homogeneous. Coordination of such activities was also facilitated by the large size of the production units.

After 1990, the large agricultural cooperatives disintegrated into smaller and more focused enterprises with different legal forms and ownership structures (Laschewski 1998). Consequently, the reclamation cooperatives – interfirm organizations of enterprises that began competing directly on the market – were soon dissolved without substitutes. In order to ensure the necessary water runoff, and to avoid damage by floods or a high ground water table, the maintenance and cleaning duties of second category ditches were formally assigned to the regional WAs in 1995. These WAs had been established shortly after the unification. The WA

Kleine-Elster Pulsnitz is responsible for the Schraden area and is supervised by the Brandenburg Environmental Agency. Membership in the associations is compulsory for all municipalities representing those landowners subject to land rates. Effectively, however, the tenants pay the membership fee as an implicit part of the rent.

However, the activities of the regional WA are financed solely by membership fees, as there are no regular subsidies from the state. The available funds are only sufficient for the compulsory tasks – i.e., maintaining and cleaning the *ditches*. Noncompulsory measures, such as maintaining or operating the *weirs*, are only carried out occasionally and if auxiliary funds are available. Means to mitigate the problem include state support programs, which can be used for project-related maintenance tasks but not for basic operating costs. Another way to ease WAs' financial limitations would be to increase membership fees in order to make the care of the weirs financially 'profitable' as well. However, contributors perceive these fees as elevated for the region, and a further increase seems politically unacceptable. This is especially true since membership fees do not correspond to the actual distribution of benefits from the association's activities. While the Federal Water Associations Act (WVG) allows for this differentiation, a solidarity principle was adopted for the Brandenburg Water Act; in other words, the membership fees can only be proportionate to land size.

6. Governance Systems: Governmental Organisations

In 1994 the Brandenburg Water Act established a new administrative structure for water management and planning, which follows the example of the former West German states and emphasizes self-government at the communal level. However, the restructuring was described as a drastic, complete, and bumpy process. Almost all relations among the various levels of the newly established water authorities had to be rebuilt from scratch. This process has not yet been completed and still reduces interauthority communication to the absolute minimum. Interviewees described the process of long-standing and new civil servants acquiring competency with newly

established laws and rules and exploring new space for maneuvering as time and energy consuming. The same holds true for the relations among the water authorities and water users, water associations, interest groups, other administrative agencies, the municipalities, and the general public.

Furthermore, the restructuring followed completely new political and administrative borders. One might suspect that this impedes or even hinders the efficient and coordinated handling of a complex, transboundary biophysical system like the landscape water regime. Then again, one should not underestimate the implications of introducing or strengthening river basin management for existing institutional configurations and organizational structures (Göhler, 1997). In fact, the water regime of the Schraden is greatly determined by the water inflow from the neighboring district. However, there are almost no joint activities, informational exchanges, or coordination meetings among the respective water authorities.

The LWA operates at the district level. Hence, nearly all decisions related to water management are made from the viewpoint of the district as a whole; thus, this field's eventual decision-making power rests with the (political) head of the district administration. The LWA, which is responsible for the practical work and professional input, is organizationally subordinate to the district's Lower Environmental Agency, which is in turn subordinate to the district's Department of Economics and Environment. With regard to statements made by the LWA, this organizational structure is somewhat delicate in its conduciveness to executive decisions that are politically opportunistic rather than purely professional. This also holds true in the choice of key issues, thus largely reflecting political priorities. Accordingly, this constellation might have contributed to the water authorities' prioritizing of "more urgent" issues, such as improving the public wastewater disposal system and ensuring the public water supply, which would have required substantial financial, human, and technical resources.

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Appendix: Short Description of Poster Layout

In the poster, there will be *short sentences or groups of words (organized with bullet points) in text boxes*, separate for any of the following *categories*: research problem, methods/empirical basis/analytical framework, ecosystem characteristics and land use, stakeholder characteristics, property rights, governance structures (the latter four will be grouped in an appropriate way since they comprise the results/the main body of the institutional analysis), summary of results highlighting the essential findings.

In the upper part of the poster there will be a *small but clear map* locating the research region Schraden in Germany.

There will be *three clear and concise figures* to visualise parts of the text:

- 1) Allocation of responsibilities with regard to reclamation systems in the GDR;
- 2) Allocation of responsibilities with regard to reclamation systems after unification;
- 3) Administrative layers of Brandenburg's water authorities and water agencies in relation to the district Elbe-Elster

Two illustrative pictures at appropriate positions on the poster will provide a visual impression of the dominant landscape and land use in the region as well as of characteristic features/parts of the reclamation infrastructure (ditches and weirs)