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**Institutional Change and Collective Action:
The Case of Reclamation Systems in Northwest Poland**

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Abstract

This paper examines two drastic changes in the performance of local water associations in providing local public goods – appropriate levels of water table – in the reclamation system in the Powiat Pырzyce in the Voivodship Zachodniopomorski in northwest Poland. Employing an institutional economics approach shows the results of processes of revalorisation of the interrelated property objects land and reclamation infrastructure that have been triggered and shaped not only by the drastic political, economic and administrative changes after the breakdown of the socialist regime in Poland in 1990, but also by the prospect of joining the European Union and the proactive leadership of the director of the Powiat Department of Environmental Protection, Forestry and Agriculture. More precisely, both processes – the discontinuation (from 1990 onwards) and revival (from 2002 onwards) of the local water associations – were mainly determined by changing market conditions together with variances in the ability of state authorities to effectively control and facilitate these associations. Further, the delay in overcoming the period of collective inaction was fostered by the time-delayed and cumulative effects of neglecting the cleaning and the maintenance of secondary ditches.

Keywords and JEL codes

Collective action; institutional change; reclamation systems

JEL codes: H 410; P 320; Q 150

1 INTRODUCTION

Agricultural production depends on the management of the natural resources land and water. In many regions with naturally high water tables, various forms of drainage or reclamation infrastructure have been applied to provide water tables that allow for (efficient) agricultural land use. These reclamation infrastructures are hydro-melioration systems that usually consist of networks of canals, ditches and subsurface tiles that collect, transport and dispose of gravitational water from soil. This agricultural land drainage eliminates or mitigates the adverse effects of excess soil moisture on crops and cropping operations. Thus, crop yields are usually higher, and costs and risks of farm management are reduced, on drained soils (SPALING and SMIT 1995). Further, these systems of secondary (small) and primary (large) arterial drains are often equipped with weirs and pumping stations that enable irrigation by flood or infiltration. With these facilities, the water table can be regulated, excessive water runoff can be avoided and the risk of droughts in summer can be reduced.

In this paper, reclamation infrastructures are conceived of as typical examples of rural infrastructures that provide various forms of public goods (OSTROM et al. 1993). As well as flood protection, they also provide more spatially restricted (i.e. local) public goods: ‘appropriate’ levels of soil moisture and water tables conducive for agricultural land use. Actors farming outside the reclaimed area are technically excluded from this local public good. Access to the benefits of the reclamation system is only possible if an actor has – at least – use rights on land within the reclaimed area. In turn, it is technically hardly feasible to exclude actors farming land within the reclaimed area, thus, they may have incentives to free-ride which can lead to under-investment in the provision and maintenance of reclamation infrastructures (SCHEUMANN and FREISEM 2001). Due to the technical interdependence of the reclamation infrastructure, insufficiently cleaned segments of the network of ditches can severely hamper water runoff for larger parts of the reclaimed area. This can result in local spots of land with excessive soil moisture that are not restricted to the land in the immediate vicinity of the poorly cleaned ditch.

Some form of collective action and coordination between the actors within the reclaimed area is necessary to ensure the provision of appropriate levels of this local public good. Despite theoretical scepticism about the ability of self-interested individuals to coordinate collective action for providing public goods (OLSON 1965), there is substantial empirical evidence that various forms of local self-organised resource governance systems are indeed able to reduce the probability of free-riding and to manage common resources sustainably (OSTROM 1990). While there are many studies focusing on collective action within commonly managed irrigation systems (e.g. OSTROM 1992), there is only a small body of research addressing collective action and property regimes within reclamation or drainage systems (e.g. SCHEUMANN and FREISEM 2001; PANT 2002).

In this paper, the reclamation system in the Powiat (district) Pyrzyce, in the Voivodship (Poland’s largest administrative unit) Zachodniopomorski in northwest Poland, which has to a large extent been managed by local water associations, is examined. Two drastic changes in the performance of the local water associations in providing the local public good – appropriate levels of water table – observed since 1990 are presented and analysed:

1. The discontinuation from 1990 onwards of the activities of the local water

associations, which led to neglect of the secondary reclamation infrastructure.

2. The revival of the local water associations from 2002 onwards.

Section 2 introduces the concept of property rights and governance structures and relates it to the specific context of reclamation systems. In Section 3, the empirical research methodology and the research region, the Powiat Pyrzyce, is presented, focusing on the development of land use and reclamation infrastructure until 1990, the distribution of property rights among actors, and the governance structures in place. Section 4 presents and analyses two drastic changes in the performance of the local water associations in producing the local public good that could be observed since 1990. Finally, Section 5 summarises and discusses the results.

2 PROPERTY RIGHTS, GOVERNANCE STRUCTURES AND RECLAMATION SYSTEMS

In this paper, an institutional economics perspective is taken to analyse the determinants of the rural changes observed. Here, property rights are conceived of as bundles of rights and duties (e.g. SCHLAGER and OSTROM 1992). In agricultural production systems, property rights on land are often correlated with other property objects that constitute different social relationships (LASCHEWSKI and PENKER 2009). Reclamation systems usually consist of the main property objects 'land' and 'reclamation infrastructure', while the latter can be further divided into its components canals, ditches, subsurface drainage tiles, weirs and pumping stations.

Rights and duties related to the various property objects – and, thus, the involved benefit streams and costs for meeting the connected obligations – can be assigned to the very same actor or actor group, or they can rest with different social actors. In particular in the latter case, suitable governance structures are necessary to make property rights effective, since individual land users within a reclaimed area may be tempted to neglect their duties to avoid the costs involved. Similarly, neighbouring farmers may be deprived of their benefits from the reclamation infrastructure if some farmers free-ride and do not stand up for their duties. Overall, the distribution of *de facto* property rights on any property object within the reclamation system and the ability of the governance structures in place to enforce the related rights and duties (de)motivate the economic decisions of individual actors to engage in collective action. This is because they determine the – admittedly subjective – actors' expectations about the actual costs and benefits of their decisions.

3 THE RECLAMATION SYSTEM IN PYRZYCE UNTIL 1990

This paper is based on empirical material collected in the Voivodship Zachodniopomorski in northwest Poland, largely in the Powiat Pyrzyce. Here, 12 qualitative, semi-structured interviews were conducted, among others, with farmers, representatives of the agricultural and the reclamation administration at Voivodship, Powiat and Gmina (municipality) level, and members of the local water associations. Moreover, legal documents and regional statistics were consulted.

3.1 Land use and reclamation infrastructure

Pyrzyce is a flat agricultural region with a large number of small lakes, ponds and rivers that covers 726 km² and is situated about 50 km southeast of Szczecin, the main city in

the most northwestern Polish Voivodship Zachodniopomorski. Before the beginning of the political and economic transition period, around 1990, state-owned agricultural firms (PGRs) were farming about 52% (30,000 ha) of agricultural land in the region; the rest (about 27,000 ha) was used by a very high number (ca. 2,000) of small family farms. In contrast to most other Central and Eastern European countries, a dual farm structure (state and private) developed during socialist times in Poland; private family farms continued to have a substantial share in agricultural production.

In the PGRs in Pырzyce, intensive livestock production (pigs and cattle) was the dominant form of agricultural production. Agricultural land was mainly used for intensive grassland farming and for growing maize, cereals and sugar beet to ensure a sufficient supply of animal fodder. However, mixed farming (crops and livestock) was also characteristic for the family farms in the region. Soil quality can be classified as good to very good.

Reclamation activities in Pырzyce started as early as 1300 and were intensified during the 17th/18th century by the building of many of today's primary canals and ditches. During socialist times, in particular since the 1960s, the network of secondary ditches and subsurface tiles was extended greatly. About 90% of the land farmed by the PGRs was reclaimed, while this was only the case for about 50% of the family farmland. By 1990, there were about 900 km of canals, ditches and subsurface tiles (of which 600 km are secondary) that drained 30,000 ha of agricultural land; of which 20,000 ha were arable lands. This system of canals and ditches was also equipped with many weirs and nine pumping stations to enable irrigation by flood and even by infiltration, if necessary.

3.2 Property rights and governance structures

While family farms usually farmed own land, PGRs exclusively farmed state-owned land. Building of the reclamation infrastructure had been – largely – centrally planned by the state; yet, building of secondary ditches and subsurface tiles was not compulsory for family farmers. Only if farmers in a village felt the need for land drainage they founded a village water association that coordinated the building activities with state authorities. Specialised state-owned reclamation firms would then construct the drainage works. This was mainly financed by the members of the village water association themselves, but co-financed by the state.

Secondary ditches, subsurface tiles and weirs on family farmland were private property of the owners of the (bordering) land, coming along with the legal responsibility to maintain and clean ditches and subsurface tiles on a regular basis and to maintain and operate weirs. Practically, these activities were usually carried out by specialised state-owned enterprises assigned by the village water associations. Here, farmers who were members of the respective water associations paid small fees according to the length of ditches and subsurface tiles on their land. Starting in the 1970s, all village water associations in a municipality, Gmina, merged to form larger local (or Gmina) water associations. Furthermore, in 1986, all six local water associations in the region – which later (in 1999) became the Powiat Pырzyce – organised under the roof of an umbrella association (związek spółek wodnych). Here, a general manager (honorary post), an accountant and a small technical team were supposed to coordinate the activities of the local water associations in the region as well as to collect the farmers' fees.

Unlike the secondary ditches and weirs, primary canals and ditches as well as primary

weirs and pumping stations were legal property of the state. Building activities, cleaning and maintenance of the ditches, and maintenance and operation of the weirs and pumping stations were planned and organised by respective state authorities at Voivodship level and the respective regional branch office. Specialised state-owned reclamation enterprises carried out all these activities.

4 PROCESSES OF CHANGE IN THE RECLAMTION SYSTEM IN PYRZYCE AFTER 1990

In this section, two drastic changes in the performance of the local water associations in the Powiat Pyrzyce in producing the local public good – appropriate levels of water table – observed since 1990 are presented and analysed:

1. The discontinuation from 1990 onwards of the cleaning and maintenance activities at secondary ditches and subsurface tiles of the local water associations.
2. The revival of the local water associations and their resumption of cleaning activities at secondary ditches and subsurface tiles from about 2002 onwards.

Since local water associations have only been active on family farmland, developments in the formerly state-owned areas are largely excluded from the subsequent analysis.

4.1 Discontinuing activities of local water associations after 1990

From about 1990 onwards, the local water associations in Pyrzyce largely suspended cleaning and maintenance activities at secondary ditches and subsurface tiles. The liberalisation of food prices (1989) and prices for goods and services (1990) together with the abolition of input-related subsidies (1991) resulted in a systematic decline of agricultural production in Poland and severely worsened the agricultural terms of trade. In particular, there was a strong decline in cattle numbers and milk production, reflecting the shrinking demand for milk products as a consequence of the declining real incomes of major social groups in Poland and the abolition of food subsidies, which led to higher consumer prices. While part of this decline was due to the process of liquidation of PGRs that began in 1990 and the resulting drastic reduction in agricultural production, the development in private family farms followed the same trend. In 1990/91, for example, private family farms in Poland suffered an overall income loss of about 60%, which was only partly compensated by a higher non-agricultural income (OECD 1995).

Despite these developments, the structure, size and number of family farms in Pyrzyce remained rather stable after 1990. Presently (2005), there are more than 2,200 family farms, of which about 22% are classified as semi-subsistence and subsistence farms, farming more than 61% of the agricultural land in the Powiat. Many farms still practise mixed farming (crops and livestock), although a growing number of larger family farms specialise in crop farming. Cereals (wheat, rye and barley) are the dominant crops, but triticale, potatoes and sugar beet are also grown (MAJEWSKI 2005). The drastic decline of animal production was considered by all interviewed actors as the main reason that led to a revalorisation of the property object land. As a consequence, a significant share of the grassland in the region was either turned into arable land since crop farming had become more profitable or, more often, was simply abandoned. In particular in the latter case, drainage of these large plots of land was hardly needed anymore and most farmers stopped paying their fees.

In 1990, the control and facilitation of the activities of the local water associations were transferred to the regional state administrations (urzędy rejonowe). Yet, control and enforcement was hardly active. Reportedly, this often resulted in representatives of local water associations taking the family farmers' fees, but not carrying out any cleaning. To some extent, this lack of effective control and support was due to limited financial resources and a shortage of competent personnel available at the communal level but also due to some remaining ambiguities concerning the (new) distribution of – in particular financial – responsibilities for reclamation issues between the regional state administrations, the Gminas, local water associations and the state water administration.

At the same time, there was only very limited political interest in reclamation issues. The state budget for maintaining and cleaning primary canals and ditches has been reduced drastically since 1990 (OECD 1995). Many primary canals and ditches were only cleaned every third year, or even less often. In 2005, for example, the budget of the regional branch of the state water administration in Pyrzyce was only sufficient to ensure the professional cleaning and maintenance of 4-18 km, i.e. only up to 6% of all primary canals in the Powiat. By and large, cleaning activities on secondary ditches and subsurface tiles became largely ineffective since the water drained from the soils could not flow freely in the primary arterial drains. This effect was exacerbated by the almost non-existent coordination between local water associations and the state water administration.

Apart from these market and state authority related factors, the interviews highlighted another important determinant that contributed to the long duration (over one decade) of inactivity of the local water associations. This factor relates to a specific feature of drainage systems, i.e. that neglect of cleaning and maintenance activities does not necessarily cause flooding problems in the short run. Ditches and subsurface tiles only gradually lose their ability to transport excess water. Thus, due to a succession of dry summers in the 1990s the decreasing ability of secondary ditches to reduce soil moisture was not perceived as a problem.

It is argued that the first two factors together – (1) changing market conditions and the abolition of input-related subsidies, which resulted in the abandonment of most of the remaining grassland plots, and (2) the inability of the state authorities to effectively control and facilitate the activities of the local water associations and to enforce the formal property rights on secondary reclamation infrastructures – were the main driving forces in this process. Both factors complemented each other in significantly altering the level of benefits farmers could expect to derive from respective property objects and from a well-functioning reclamation infrastructure and, thus, from their individual contributions. These primary factors were exacerbated by the insufficient cleaning of primary canals. Further, the time-delayed and cumulative effects of neglecting the cleaning and maintenance of ditches have also reduced actors' incentives to contribute to the provision of the local public good.

4.2 Revitalising local water associations from 2002 onwards

From about 2002 onwards, more and more local water associations in Pyrzyce were revitalised, and cleaning activities at secondary ditches and subsurface tiles were resumed. Probably, most important was an administrative reform in Poland in 1999 that introduced Powiats as intermediate units – between Gminas and Voivodships – of local

self-government and administration. At the same time, the number of Voivodships in the country was reduced from 49 to 16. In the course of the administrative reform, administrative responsibility for secondary reclamation infrastructure and, thus, also the control and facilitation of the activities of local water associations was transferred to the head (Starosta) of the newly created and more potent Powiat administrations. In the Powiat Pyrzyce, the director of the Powiat Department of Environmental Protection, Forestry and Agriculture has indeed been very active in tackling the reclamation problems in the region. Among other things, he succeeded in convincing many farmers to revive the local water associations. In some Gminas, farmers elected new representatives and started to pay their fees again.

From the perspective of the Powiat administration, encouraging and supporting local water associations to organise cleaning activities at secondary infrastructures was the most convenient and efficient way to guarantee effective drainage. The alternative would have been to enforce the obligations directly at the level of the individual farmers. Given the sheer number as well as the limited and very heterogeneous capabilities of individual family farmers in the region, this approach would not have guaranteed effective drainage. Starting in 2004, the director also initiated cooperation with the local employment centre in the context of a state programme to reintegrate long-term unemployed people: the employment centre pays the salaries for teams of workers that have started to maintain and clean secondary ditches. In turn, the Powiat administration together with the respective local water associations coordinates and supervises the work and provides the technical equipment. Furthermore, cleaning activities at secondary ditches are closely coordinated with the regional state water administration and its respective activities at primary canals.

Two other factors need to be mentioned. First, while the general agricultural terms of trade did not improve much until 2005 (EC 2002), Poland's accession to the European Union (EU) in 2004 and integration into the Common Agricultural Policy (CAP) substantially changed the market conditions and also the ways of generating farm income for the family farmers. In this context, the EU premiums paid to farmers for the extensive use of grassland were often mentioned in the interviews as a strong incentive to start using the formerly abandoned grassland plots; cutting the grass on those plots at least once per year is compulsory. Due to this revalorisation of the property object land, drainage regained importance since related farming operations are only possible if there is no excess soil moisture. Second, although the state budget available for cleaning and maintaining primary canals was not increased, several EU co-financed programmes to take care of necessary activities for rural infrastructures had recently been initiated. This is expected to allow for an intensification of cleaning activities at primary canals, which in turn would make individual contributions to keep secondary ditches clean more worthwhile.

Further, the revival of the local water associations has also been triggered by a succession of rainy summers that caused widespread flooding since many secondary ditches and subsurface tiles had become totally dysfunctional.

All in all, the formal and effective change in authority to control and facilitate the reclamation activities in Pyrzyce increased the farmers' readiness to stand up for their own duties with respect to the secondary infrastructure. This process was facilitated substantially by the active support of the head of the responsible department within the

Powiat administration. The importance of the latter factor becomes even more apparent if one takes into account that the revival of local water associations has not been successful in many other Powiats in the same Voivodship. Further, the market-related changes and the introduction of the CAP that followed Poland's accession to the EU, leading to a revalorisation of the property object land, also fostered the process of revalorisation of the property object secondary reclamation infrastructure

5 CONCLUSIONS

In this paper, two drastic changes in the performance of local water associations in providing local public goods – appropriate levels of water table – in the reclamation system in the Powiat Pyrzyce in the Voivodship Zachodniopomorski in northwest Poland were presented and analysed. Both processes – the discontinuation (from 1990 onwards) and revival (from 2002 onwards) of the local water associations – were mainly determined by market-related changes, alterations in the structure and performance of state administrations and specific characteristics of the resource system. It was argued that changing market conditions and the abolition of input-related subsidies that resulted in the abandonment of most grassland plots, together with the inability of the state and communal authorities to effectively control and facilitate the activities of the local water associations and to enforce the formal property rights on secondary reclamation infrastructures were the main driving forces for the deterioration of collective action. These primary factors were exacerbated by the insufficient cleaning of primary canals by the state water administration. In turn, the process of revitalisation of local water associations from 2002 onwards was facilitated by the formal and effective transfer of the authority to control and facilitate the reclamation activities in Pyrzyce to the Powiat administration as well as by market-related changes and the introduction of the CAP that followed Poland's accession to the EU. Further, the process of revitalisation was also positively triggered by the pro-active leadership of a key actor, the director of the Powiat Department of Environmental Protection, Forestry and Agriculture. Finally, it was found that the time-delayed and cumulative effects of neglecting the cleaning and maintenance of secondary ditches fostered the delay in overcoming the period of collective inaction.

These findings are in line with a growing body of scholarly work arguing for a stronger and more differentiated emphasis on factors determining the external environment, or context, for understanding (dis)incentives for actors to cooperate and to engage in collective action for natural resource management, and for a more detailed account of the physical features of the respective natural and technical resource systems (e.g. AGRAWAL 2001; OSTROM 2009). In addition, leadership has been identified as a key factor in collective action situations by many other authors. Here, competent and charismatic leaders and key actors can foster cooperation (e.g. MEINZEN-DICK 2007; HURRELMANN et al. 2006; MARELLI 2009); yet, 'bad leadership' may also have destructive effects (e.g. THEESFELD 2009). Investigating the role of these factors proves to be particularly important in post-socialist countries where transition processes are characterised by fast, substantial and often simultaneous changes of many elements of the economic, social, administrative and political context (e.g. THEESFELD 2004; SIKOR 2006) and where similar processes of revalorisation in reclamation systems can also be observed (e.g. SCHLEYER 2004).

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