

### Knowledge in rural transitions: formal and informal underpinnings of land governance in Khorezm

Assche, Kristof van; Hornidge, Anna-Katharina

Veröffentlichungsversion / Published Version

Arbeitspapier / working paper

#### Empfohlene Zitierung / Suggested Citation:

Assche, K. v., & Hornidge, A.-K. (2012). *Knowledge in rural transitions: formal and informal underpinnings of land governance in Khorezm*. (ZEF Working Paper Series, 98). Bonn: Universität Bonn, Zentrum für Entwicklungsforschung. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-323302>

#### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier: <https://creativecommons.org/licenses/by/4.0/deed.de>

#### Terms of use:

This document is made available under a CC BY Licence (Attribution). For more information see: <https://creativecommons.org/licenses/by/4.0>



Zentrum für Entwicklungsforschung  
Center for Development Research  
University of Bonn

ZEF

# Working Paper Series 98

Kristof van Assche, Anna-Katharina Hornidge

Knowledge in rural transitions  
Formal and informal underpinnings of  
land governance in Khorezm



universität**bonn**

ISSN 1864-6638

Bonn, July 2012

ZEF Working Paper Series, ISSN 1864-6638  
Department of Political and Cultural Change  
Center for Development Research, University of Bonn  
Editors: Joachim von Braun, Manfred Denich, Solvay Gerke, Anna-Katharina Hornidge and  
Conrad Schetter

### Authors' addresses

Kristof van Assche  
1241, 8<sup>th</sup> Avenue N  
56303 St. Cloud, MN, USA  
E-mail: [kristof.vanassche@wur.nl](mailto:kristof.vanassche@wur.nl)

Dr. Anna-Katharina Hornidge  
Center for Development Research (ZEF), University of Bonn,  
Walter-Flex-Str. 3  
53113 Bonn, Germany  
Tel. 0049 (0)228-731718; Fax 0228-731972  
E-mail: [hornidge@uni-bonn.de](mailto:hornidge@uni-bonn.de)  
[www.zef.de](http://www.zef.de)

# **Knowledge in rural transitions**

## **Formal and informal underpinnings of land governance in Khorezm**

Kristof van Assche, Anna-Katharina Hornidge

## **Abstract**

We analyze the shifting selections and roles of knowledge in rapidly evolving rural governance, exemplified by the complex transition of land governance in Khorezm, a province of Uzbekistan. Through a study of the evolution of various organizations involved in land governance at different spatial scales, we reconstruct the changing patterns of formality and informality in the organization and management of land in this irrigated rural area. These patterns, we argue, are crucial in understanding which forms of knowledge could and can play a role in spatial decision-making. It is further argued that a widening gap between formal and informal institutions, aggravated by the rhetorical persistence of Soviet planning mythologies, makes it increasingly hard to discern which knowledge plays a role in spatial decision-making. This situation is bound to hinder planning and development attempts involving the development and application of knowledge. While many observed mechanisms of knowledge selection seem specific to post-Soviet transition, we argue that they are present in every situation where planning mythologies and path-dependencies mark the evolution of rural governance, and that they ought to be studied in their own context before deciding which knowledge could drive development.

Keywords: Knowledge, Formalities/Informalities, Land Governance, Uzbekistan, Central Asia.

## **Acknowledgements**

The authors would like to thank Nodir Djanibekov and Lisa Oberkircher from the ZEF/UNESCO project for helpful comments and discussions while writing the paper.

# 1 Introduction

Uzbekistan is one of many transition countries that has grappled with the rural question, the question on how to reorganize rural areas regarded by the Soviets as production space, and dominated by collective farms that, for all practical purposes, represented local government (Ioffe et al 2006, Humphrey 1998, Kandiyoti 2002; Wegren 1989). After independence, Uzbekistan took its own path of rural reform, with an emphasis on the already important cotton sector, and a new accent on wheat production to improve food safety. A gradual and controlled privatization of land took place, leading to the replacement of the kolkhoz-sovkhoz structure with a myriad of successor organizations and several types of farms and farmers. A process that has been described in detail by Veldwisch & Spoor (2008), Trevisani (2008, 2007), Wall (2006, 2008), Abdullayev et al. (2008), Abdullaev and Mollinga (2010), Yalcin and Mollinga (2007), Oberkircher et al. (2010, forthcoming b), Djanibekov et al. (2010), Shtaltovna et al. (forthcoming), Subramanian et al. (forthcoming), Nizamedinkhodjayeva et al. (forthcoming) and others.

We build on their insights in the mapping of the evolution of land governance in one largely rural region, Khorezm province. Here, in the frame of an interdisciplinary research project on sustainable landscape change<sup>1</sup>, we conducted interviews with officials at the regional level (Khorezm) and local level, as well as with a variety of other actors involved or formerly involved in the organization of land and land use. In the following, we will call the network of organizations involved in the coordination of policies and practices affecting the organization of space ‘the planning system’.

We reconstruct the changing roles of knowledge in the evolving planning system, with a focus on organizations as actors. Theoretically, we lean on the social systems theory of Niklas Luhmann (1984, 1990a, 2000) and institutional economics in the line of Douglass North (1998, 2005), Avner Greif (2006) and Thrain Eggertsson (2005). The notion of ‘knowledge’ we define along the lines of Peter Berger and Thomas Luckmann who regard everything as knowledge that is perceived as such in and by society (1966). While broad, this definition underlines the socially constructed character of knowledge, being defined, redefined, used, instrumentalized or abandoned by social actors. It encompasses all types of knowledge mobilized by actors (i.e. everyday versus expert knowledge, routine and formulaic knowledge, tacit versus explicit, local versus global knowledge, etc.). As such, it is compatible with social systems theory, rooted in constructivist epistemologies, and can be re-specified using a systems framework (cf Luhmann 1990a). Taking these multiple forms of knowledge that influence decision-making in the participating organizations as starting point, we reconstruct the evolution of both formal and informal institutions in the planning system.

Sarah Amsler assesses the politics of knowledge in post-Soviet Central Asia and states: “...the discrepancy between ideological and lived reality continues to complicate the cultural meaning

---

<sup>1</sup> This research was conducted under the ZEF/UNESCO Khorezm project “Economic and Ecological Restructuring of Land- and Water Use in the Region Khorezm (Uzbekistan): A Pilot Project in Development Research” funded by the Federal Ministry of Education and Research (BMBF), Germany (Project Number 339970D) and implemented by the Center for Development Research / Zentrum für Entwicklungsforschung (ZEF), University of Bonn, Germany. The authors would like to thank the project and the funding ministry for the ongoing support that made this research possible.

of ‘truth’” (2007:145). We will argue that this gap between the ideological and lived reality or, as we call it, the formal and informal institutions in the planning system is widening and consequently, the gap between formal and informal knowledge requirements and channels of mobilization in decision-making. This situation increases opacity in the system, and raises hurdles to planning reform by means of knowledge management, by means of recommendations involving shifts in the knowledge streams.

Before we get to these policy implications, we introduce selected concepts from social systems theory and institutional economics that will play a role in the case analysis. After this, we analyze shifts in Uzbek rural land governance, focusing on organizational change, and the capacity of the planning system to reshape any policy that enters the system as input. In the analysis of the Uzbek case, the overhaul of rural governance starting from the collective farm system is treated as a process of de-institutionalization and re-institutionalization (cf Ruble 1995, Elster et al. 1998, Verdery 2003), as a pattern of shifting roles and consequently, knowledge streams (Van Assche et al. 2010, Hillier 2002, Gunder & Hillier 2009).

## 2 Method

Our field research took place in the province of Khorezm, south of the Aral Sea, from July to November 2010. Our Khorezm investigations were framed by interviews in Tashkent, with Uzbek and foreign experts at various academic institutions and at international organizations. In Khorezm, we tried to take a comprehensive approach, and talk to employees and former employees of many organizations with a present or former role in land governance: former kolkhoz management, people at architecture departments (district and regional level), district and regional cadastre people, building inspectors, others working in natural resource management, in the various water organizations, forestry departments, and at Urgench State University. At the local level, we conducted interviews in Ashirmat, Shavat, Kushkupyr, Amir Timur, with retired kolkhoz management and representatives of kolkhoz successor organizations (machine tractor parks, water user associations, cadastre office). In Urgench, we also interviewed, and had many more informal conversations with the Uzbek and foreign experts from the above mentioned ZEF-Unesco project, in order to capitalize on their accumulated experiences in the region.

Altogether, 85 interviews were conducted over a period of five months. Thus, the research can be presented as a nested case study, involving three levels – village, region, state – with an emphasis on the regional level as a site of observation, on organizations as object of analysis, and embedded in a project history. Interviews took place at the ZEF-Unesco project office, in the offices of the organizations studied, and in the field. They took from one to three hours each, were conducted in Russian or Uzbek, with the help of a translator, semi-structured, with topic lists, and coded for emerging narratives on organizational change. We will not quote people or use quotes in the text, to respect the privacy of respondents and to avoid the impression that the reasoning is based on the quotes only. Although we originally intended to collect Soviet-era and more recent plans and planning-related documents, this proved difficult to a degree that a representative sample could not be gathered.<sup>2</sup>

---

<sup>2</sup> The difficulties and challenges faced by social science research in Uzbekistan are well documented by Wall and Mollinga (2008), Wall and Overton (2006) and Oberkircher (forthcoming c).



### 3 Theoretical frame: organizations, knowledge, and land planning

Organizations are the main unit of analysis. We understand organizations, in the line of social systems theory and the organization theory inspired by it, as self-reproducing social systems (Luhmann 2000, Seidl 2005). Thus, organizations re-create themselves by communicating (Luhmann 1984). More precisely, they do this by taking decisions, the form of communication specific to a particular organization. Organizations have external and internal environments. The internal environment exists of sub-organizations (departments), the external environment of other organizations and, maybe counter-intuitively, by people. People for Luhmann are psychic systems, co-evolved with social systems and sharing the medium of meaning. Because of that shared medium, people can participate in organizations and organizations can easily include people (Luhmann 1984, Dziewas 1992, Schemann 1992: 217ff).

As to the external environment, organizations in modern society cannot function without embedding in what Luhmann, in this case leaning on Talcott Parsons (1967), calls the function systems: law, politics, economy, science, education. Organizations train their own people, need specific knowledge- and skill-sets, get involved in legal procedures, are touched by legal and political requirements, cannot afford to ignore financial bottom lines. Each function system operates on the basis of specific distinctions in its internal reconstruction of external environments: law e.g. sees the world through the selective glasses of the legal/illegal distinction.

An organization, then, has access to many images of the world, of other organizations, of its physical environment (Hernes & Bakken 2003, Schimank 2000). This can be ascribed to its embeddings in many function systems, because of its internal differentiation in specialized sub-organizations, because of the people working for them, all capable of shifting between discourses, between different systems of communication (Seidl & Becker 2005). This diversity of internal perspectives increases the flexibility and hence adaptability of organizations. Flexibility is further enhanced by the possibility to reflexively change the self-image, guiding decision-making and adaptation. One could say that flexibility is dramatically increased by reflective capacity (Van Assche et al 2011). Reflexivity allows an organization to reconsider at any given point which criteria are important in decision-making, to re-configure the decision-making premises. It allows it to change decision-making procedures, to redefine the boundaries of the organization, to change the selection of relevant environments, to create new departments or roles in the organization (Czarniawska 1997, Brunsson 2002). Every consequence of reflexivity mentioned here, entails a shift in the knowledge streams in the organization (Hopwood 1983, Flyvbjerg 1998). A new organizational boundary, a new department, a new type of manager, all these will imply a different selection of knowledge in decision-making. Which type of knowledge is allowed to enter the equation, to shape the calculations of decision-making, hinges on these organizational features that can be altered in self-reflection (Gunder & Hillier 2009, Van Assche et al 2010).

On the other hand, an organization is also marked by path dependence and interdependence, in other words by rigidities (Van Assche et al 2011b, Seidl 2005).<sup>3</sup> Even the most flexible and most

---

<sup>3</sup> Sehring (2009) discusses the strong degree of path dependencies and institutional bricolage observable in post-Soviet water governance in Central Asia.

self-reflexive organization has to operate within a frame of rigidities. These rigidities stem from the history of the organization (path dependence) and its environment (interdependence) (Van Assche et al 2011a). In the evolution of an organization, it developed features that are hard to change. A history of earlier decisions does shape the field of transformation options that is available to an organization (Seidl 2005). This is the case because certain investments are hard to undo, existing stocks of knowledge hard to unlearn (Scott 1998), because certain shifts in the self-image would dissociate, rather than transform the organization (Czarniawska 1997), and also because self-reflection is not comprehensive, it can never grasp every feature of the organization and its pathway of transformation (Hernes & Bakken 2003, During et al 2009). Nor is the grasp of the environment complete, e.g. the understanding of the dependence on other organizations or on certain legal, political, educational environments (King & Thornhill 2003).

Knowledge in a social system's perspective is not restricted to scientific knowledge, produced in the scientific system and based on the distinction true/ false (Luhmann 1990a). Knowledge in an organization has to include legal, economic, political knowledge, because of its necessary embedding in various function systems (Seidl & Becker 2005). That means that not only the distinction true/untrue acquires relevance in decision-making, but also legal/illegal, profitable/not profitable, learned/not learned. The medium of power comes into play, in the sense of internal power-games, but also in the sense that organizations will try to affect the collective decision-making in their environment (Flyvbjerg 1998, Luhmann 1990b). Within the scope of science, diverse disciplines can be selected to play a role in the organization.

So, the decision-premises in an organization, including the selectivity of knowledge in decision-making, are produced in the history of the organization, the history of interactions with its internal and external environments (Luhmann 2000). Organizational identity is guiding the decision-making, but not exclusively. Some of the decision-premises are not reflected upon, others are not openly or formally recognized (Seidl 2005, During et al 2009). In the case of decision-premises that can be described as coordination mechanisms, not recognized as such in the externally and internally communicated self-image, we can speak of informal institutions. The term is derived from North (1998) but adapted to a systems theoretical environment. The dialectics between formal and informal institutions can be highly complex (Greif 2006, Brunsson 2002, Oberkircher et al. 2010), sometimes to the extent that formal and informal cannot be clearly distinguished (Mielke et al. forthcoming, Hodgson 2006)<sup>4</sup>, but we argue, in line with North (2005) and Ledeneva (2005) that a distinction between formal and informal is a key ingredient for the self-reproduction and adaptation of each organization.

Informal institutions are coordination mechanisms that differ from what is regarded as the official procedure of coordination (cf Ledeneva 2005, Allina-Pisano 2008, Van Assche et al 2010). They can be reflected upon, as alternative rules and codes of action, and they can be unconsciously reproduced, as traditional ways of coordination. Informal institutions necessarily have implications for the self-image, the goals, the use of resources in an organization. And they have implications for the selectivity of knowledge and the precise roles of knowledge in decision-making (Dobbin 1994, Gunder & Hillier 2009). Under informal institutions fall so-called

---

<sup>4</sup> It has been argued elsewhere that formal, strategic and discursive practices are employed locally to fulfill the formal, while at the same time achieve the actually needed. The disparity of the two is disguised and legitimized by discursively referring to the fulfillment of the formal, while deviating from it. These discursive practices are seen to provide the ground for the ongoing system stability disguising the widening gap between the formal and the informal (Oberkircher et al. 2010: 10-14).

meta-rules, rules to apply or to break, rules deciding when to resort to formal coordination, when to avoid those or when to pretend to use them (Ledeneva 2005, Collins 2006).

With these alternative coordination options come different selections and roles of knowledge (Van Assche et al 2010). In the evolution of an organization, formal and informal institutions co-evolve, as do their selections of knowledge considered relevant (Greif 2006, Verdery 2003). Formal institutions adapt to informal institutions and vice versa; both of them adapt to external environments. If a set of organizations co-evolved, in so-called tight coupling (Seidl 2005), it affects the interplay of formal and informal, e.g. by making it easier or harder for an organization to fulfill its official role (cf Allina-Pisano 2008).

### **3.1 Organizations and space**

Many organizations impact space, the organization of space. This can be part of the formalized goal of an organization, or not. An organization focused on water management can alter the physical landscape, and the same is true for an economic development authority, first of all geared towards increasing tax revenues. In case spatial organization is the official focus of an organization, as in an architecture or planning department, then the spatiality of decision will be fore-grounded, while for other organizations, this will be an implication of other concerns, an implication that can be consciously considered, or not (Allmendinger 2002). Which forms of knowledge come to play in spatial decision-making, thus depends on the role of the organization, formally and informally. The specific functional embedding of the organization plays a role: should the resulting space be beautiful, ecologically diverse, profitable, legal?

Many forms of knowledge have a spatial impact because of the simple fact that everything happens somewhere. Legal, economic, and political decisions have spatial implications, as do the decisions of a myriad of organizations with the most diverse self-descriptions. Since that resulting space is relevant for future decision-making, it is not strange to see that in the history of state formation, attempts emerged to coordinate various policies and practices with spatial impact (Scott 1998).

Spatial planning thus implies a multiplicity of organizations, each harboring a multiplicity of images of space, and a complex interaction of formal and informal coordination modes. Planning then can never be direct steering, and the interpretation of the resulting space can never be entirely predicted (Van Assche & Verschraegen 2008). In the following sections, analyzing evolving land governance in Uzbekistan, we will build on these initial insights. We will observe the Uzbek situation by means of the systems theoretical distinctions introduced, and elucidate the shifting roles of knowledge there. This analysis, we will argue, has wider implications regarding the role of knowledge in organizations and in governance transitions.

## 4 Evolving land governance and its players in Khorezm

### 4.1 Three overlapping planning systems

Soviet spatial planning was not the same everywhere and for everyone (French & Hamilton 1979, Van Assche et al 2010). One can distinguish three planning systems with overlapping authority. On paper, three forms of spatial coordination had potential primacy. There was the *gosstroï* system, originally aimed at production targets for housing, but expanded into a system producing and requiring comprehensive plans (*genplans*) for neighborhoods, cities, regions, republics, for urban and rural areas. In practice, the *gosstroï* system, including the district and regional architecture departments, became the primary planning system in the more western and more urbanized parts of the Soviet Union (Van Assche et al 2009).

Then there was the agro-water cluster that took over spatial planning in some of the more agricultural areas, especially where highly technical land reclamation projects were needed to establish agriculture, like in the irrigated areas in Uzbekistan (Ioffe 2006, Trevisani 2007, Wall 2006). There, little competition from the other steering systems existed, and once the agro-water system was established, the continued need for water management, including irrigation maintenance and monitoring, favored a continued primacy of the organizations involved. There, the *gosstroï* steering system became important only in the larger cities, such as Urgench, in Khorezm province.

Then, as a third steering system, there are the building and construction norms (also formulated in *gosstroï* institutes). There are so many norms (SNIP's – *stroitel'niï normi i praveli*; construction norms and rules) that, if taken at face value, spatial decision-making would not be necessary anymore, but reduced to a mere application of the norms (Van Assche et al. 2009). Some norms concern construction quality of buildings, others typologies of buildings, streets, neighborhoods. Some indirectly shape the options for planning and urban or rural design, others directly touch on them (eg. the norms regarding green space requirements and the clustering of buildings). If taken literally, planning as context-sensitive envisioning and as coordination of interests and knowledge, would not be possible anymore (French & Hamilton 1979, Van Assche et al. 2010). In practice, regions, cities and planners with connections could avoid many norms and develop stronger, more comprehensive and adaptive visions.

We want to underline that the concept of 'plan' has to be understood in the context of this governance with overlapping steering systems and ever shifting power relations (cf Trevisani 2008, Kanidyoti 2002, Wall 2006, Sievers 2002). If a city lost prominence, it could shift from plan-making to norm-application; if rural districts gained power, the agro-water cluster, or the *kolkhoz* powers behind its façade, could avoid the directives of district and even regional planners and architects. Plans, as formalized visions for the future spatial organization of an area, could then become more or less important in factual decision-making, and their strategic role would differ over time and place (Verdery 2003, Humphrey 1998). Showing who is really taking initiative in formulating a vision or deciding on spatial organization was therefore a risky business; reducing visibility through façade planning a way of hedging bets and entrenching interests. The façade of top-down control from Moscow was useful for many parties to cover up the actual power struggles between factions, departments and steering systems (cf Ruble 1995, Ledeneva 2005, Van Assche et al. 2010).

What counts as a plan then is the most final, most technical version of a plan, and the author of the plan is the whole hierarchical list of approving organizations. Or, if pressed, interviewees point at the organization drawing that final version. Our and others' investigations showed that the vision behind the technical detailing could come from several places, both now and in Soviet days (cf Allina-Pisano 2008, Van Assche et al. 2009, French & Hamilton 1979, Ruble 1995). Kolkhoz managers, district party leaders, mahalla (neighborhood) leaders, village elders and others could come up with ideas, even in fairly detailed sketches, that would work their way up the hierarchy, received stamps along the way, and would be claimed by the collective later on (cf Humphrey 1998, Sievers 2002). If we talk about knowledge in spatial governance, this is already a major distinction between formal and informal institutions that has to be kept in mind: it is not always clear if the plan had an impact (and not merely being a document emanating from the other steering systems), and it is not always clear what the real authorship, the real considerations and the real knowledge behind a plan had been.

## 4.2 Evolving land governance

Uzbekistan was a part of the USSR, and Khorezm is largely the result of Soviet-era land reclamation and irrigation projects (Trevisani 2008, Djanibekov 2008). Indeed, Khorezm has an irrigation history spanning back several millennia, and some political unity can be ascribed to the region in ancient and medieval times, but the current physical landscape, as well as the population levels it sustains, are for the most part the result of decisions taken by Soviet organizations in a Soviet command structure.

Soviet kolkhoz construction started in the early 30s, the development of a knowledge infrastructure for cotton in the early 20s. In the Khrushchev era, land reclamation efforts were speeded up, and the current landscape was formed (Collins 2006). Soviet topographic maps of the early 60s already show a region virtually covered by the straight lines of irrigation canals and kolkhoz roads. Only the settlement structure is more scattered than the present pattern that emerged with a consolidation wave in the 70s (interviews, observation).

Cotton was a Soviet priority since the beginning, and a desire for independence from US cotton production inspired a search for suitable cotton areas internally (Collins 2006, Djanibekov 2008). The new republic of Uzbekistan came up as the only feasible area, and large scale irrigation and land reclamation schemes took off under the auspices of Moscow. Within the Ministry of Agriculture and the Ministry of Water Resources and Land Reclamation, a host of organizations were involved in the land reclamation projects (Wegerich 2010). For our present purposes, it is sufficient to point out that land in Khorezm province was reshaped by organizations all geared towards cotton production. The regional *vodkhoz*, responsible for water management, its subsidiary *uzgiprovodkhoz*, responsible for irrigation design and SANIIRI<sup>5</sup> based in Tashkent and trusted with applied water and land reclamation research for Central Asia worked together on the general plans for irrigation and on kolkhoz establishment within the new frame of canals. *Uzgiprozem* mapped out land but also planned for new land reclamation projects (interviews).

In other words, water and agricultural organizations, and their knowledge, decided on the physical planning of the province (cf Wall 2006, Trevisani 2007, Hornidge & Ul-Hassan 2010). In both types of organizations, tied together in an agro-cluster with one goal – cotton – an

---

<sup>5</sup> Russian Acronym for Central Asian Irrigation Research Institute.

engineering approach dominated. Planning problems for the rural areas were routinely reduced to engineering problems asking for an engineering solution. This in turn reinforced the vision of the countryside as a space for mono-functional land use, allowing easy optimization within a narrow set of goals (Djanibekov 2008, Shtaltovna et al. forthcoming, Rudenko 2008; Lerman 2008a, b).

Once the kolkhoz were in place, this reliance on engineering knowledge in planning even increased. In kolkhoz management, roles were consolidated that identified entirely with engineering knowledge: the agronomist, hydro-technician, land surveyor (*zemlemer*) (Allina-Pisano 2008, Wegerich 2010). Also the director, the *rais*, usually had an engineering background (Wall 2006). For a further career in the communist party hierarchy, an engineering education was considered the best (interviews). At the same time, the kolkhoz offered shelter from the higher levels of decision-making, and the single-minded approach to the countryside emanating from Moscow could be softened and diversified within the kolkhoz (Humphrey 1998, Sievers 2002, Verdery 2003, interviews). As long as cotton targets were approached, the internal functioning of the kolkhoz was largely independent from the rest of the state apparatus. That implied, among other things, that land use could be much more varied than higher level documents suggest; that spatial planning could be much more comprehensive, integrative, and also sensitive to local knowledge and local conditions (Allina-Pisano 2008, Van Assche et al. 2009, Ruble 1995, Ioffe 2006, interviews).

Kolkhoz management could take the initiative to reclaim new land, design that land, argue for new canals with higher-level organizations, for a new kolkhoz, for resources for village construction. As soon as the necessary resources were available to the kolkhoz, it could organize its territory however it liked. Longer term plans for the kolkhoz, so-called *genplans*, did reflect higher-level considerations and preferences more strongly, but those *genplans* were either ignored, or constantly altered after the facts, with new landscape interventions retroactively interpreted as planned (interviews, observation).

### 4.3 Evolving roles

The starting point of Khorezm as a blank slate, the pre-eminence of engineering knowledge in its Soviet planning, and the cost and functional importance of its water infrastructure set the tone for its land governance in the future (Wegerich 2010, Trevisani 2007, Wall 2006). During the whole Soviet period, and even now, rural Khorezm is planned by water and agricultural organizations, at least on paper (Abdullaev & Mollinga 2010). Whereas under the Soviets the dominance of regional and national expert organizations was softened in the kolkhoz, the collapse of the collective farm system led to a new configuration of formal and informal institutions (Abdullaev et al. 2008, Sievers 2002, Trevisani 2009). In other words: the scattering of organizations that replaced the kolkhoz requires different powers of interpretation, new skills to determine who is really doing what.

The cotton targets remained, and the water infrastructure remains crucial for survival in Khorezm. Water dependence implies dependence on water knowledge (Wegerich 2010). In Soviet times, the local government under the Kolkhoz system brought together enough expertise at the local level to manage, expand and plan local agriculture, and to integrate different local needs and different desirable land uses in a comprehensive and reasonably flexible plan. Individual farmers, or kolkhoz workers, did not need much expertise and did not

have much responsibility, since spatial decision-making was taken care of by the kolkhoz management, and integration of interests and of knowledge took place at that level. At the district and regional level, administrations could rely on kolkhoz management for the bulk of spatial decision-making, and could restrict themselves to watching the economic bottom line and to listening to and deliberating the lobby activities of kolkhoz managers.

#### **4.4 The hakim and associates**

Since independence, the district administration, led by the district hakim, took over much of the practical planning power from the kolkhoz directors, even if on paper, that planning power is scattered in a more complicated pattern over kolkhoz successor organizations. Regional water and agricultural organizations have even less impact on spatial organization than in the past, because of the power assigned to district hakims, and since the kolkhoz dissolution made coordination at the local level more difficult (interviews, observation).

With the shift of power from kolkhoz to district level, district cadastres were created and the already existing role of the district architect gained prominence. Land reclamation did not occur so often anymore, but land administration is in the hands of the cadastre. The kolkhoz surveyors (zemlemers) who de facto were also taking care of land use planning in the whole kolkhoz, together with agronomist and rais, were moved to the district cadastres, under direct supervision of the hakims, thus of representatives of higher level politics. In the case of agricultural land use changes, the cadastre is still involved in planning, in proposing solutions to land use conflicts and formulating long-term strategies. This is a legacy of the old zemlemer role, and not surprising since many cadastre people were previously kolkhoz zemlemers.

The proximity of cadastre and the district architect, in fact a district planner, in theory favor an integration of agricultural and other land uses in a more comprehensive plan. In some districts, this potential synergy is realized, while in others, a dominance of the persisting cotton targets and a struggle over land tenure marginalize all other considerations and make the articulation of long term visions for integrated land use very difficult. District architects on paper are responsible for any proposed land use change in the district, but in practice, many things go unnoticed, while other changes are judged by colleagues at other organizations (cadastre, machine tractor park, mahalla), or directly by the hakim. That means that comprehensive planning, a deliberation of the best possible combinations of land uses in a certain spot, sometimes takes place, sometimes not.

Since 2009, a new Institute of Rural Design (or Institute for the Villages), based in Tashkent but with a Khorezm branch in Urgench, is supposedly responsible for large scale building projects in the villages, in order to increase building densities and save agricultural land. The activities of that new institute at this point are limited, due to financial limitations and apparently also different positions of the district hakims. If this new institute nevertheless would take off in the near future and fulfill its official role, then the local planning that slowly re-crystallized since independence, will be entirely reshuffled once again. It would entail a redistribution of responsibilities and financing options in favor of large projects by district architects affiliated with the new rural design institute.

## 4.5 The farmers

Frequent changes in land tenure (Oberkircher et al. 2010, Djanibekov et al. 2010) created an unstable class of farmers that eludes easy coordination. Since 1991, the country has experienced a chain of agricultural reforms beginning with the subdivision of former collective farms (*kolhozs* and *sovhozs*) into joint stock companies (*shirkats*) between 1991 and 1998 (Wehrheim et al. 2008). Between 1998 and 2003 these were then 'privatized' and subdivided into small individual farms (Veldwisch 2008, Lehrman 2008, Trevisani 2008). In November/December 2008 as well as early 2011, nevertheless, farmland (under the cotton and wheat state plan) was re-consolidated again, merging several individual farms (of 10-25ha) into bigger farm enterprises (of 75-150ha).

The selection of farmers allowed to continue farming hinged on performance in the production of state-ordered-crops (cotton and wheat), according to official records. In practice, connections and favors were helpful to keep the land (Hornidge et al. forthcoming).

The actual role of the farmers in land management thus heavily depends on political connections; the better connected one is, the more autonomy in choosing crops (rice being the most desirable; Veldwisch 2008, Trevisani 2007), in negotiating parcels, re-designing them or pushing local organizations to do it for you. Local power distributions differ, but being close to the hakim is always helpful. District architects and cadastre men might more easily overlook a new house for the son, built in an inappropriate place or rice planted on land under state plan. While all these decisions and interventions might be minor, it does seem that, with the growing size of farms, the political clout of a farmer, and their influence on land-use decisions is slowly growing.

## 4.6 Local organizations: MTP, mahalla, WUA

In this rural economy with high levels of uncertainty regarding land tenure and a wide gap between the formal and real impact of organizations involved in land and water management, many organizations are weak and barely functioning. Water User Associations (WUA's), supposedly cooperative organizations for local water management, and Machine Tractor Parks (MTP's), supposedly providing all necessary machines to farmers, are chronically underfunded, and hardly play a role in the formulation of planning strategies, or in their implementation (UI-Hassan & Hornidge 2010, Hornidge et al. 2011).

Whereas WUA's are, in most cases, empty shells, the MTP's offer a more varied picture (Shtaltovna et al. 2011). Farmers are formally cooperating on water management in and through the WUA's. Yet in practice, farmers are not inclined to pay their fees, regard WUA's as extensions of the state arm and therefore not responsible (UI-Hassan & Hornidge 2010). Some MTP's, on the other hand, do have a real impact on land use. Sometimes the MTP agronomist still exerts influence on cropping and land use decisions by and for the farmers, while in other cases the MTP does what it is supposed to do, providing machines. In yet other cases, it just vegetates and exists because it is planned to exist.

Mahalla's are traditional neighborhood associations that were reinvented under the Soviets and recently formalized (Sievers 2002, Collins 2006). Under the Soviets, despite the several overlapping planning systems and the power of the kolkhoz, the mahalla did play a role at the



neighborhood level. In most respects, their activities did not touch land use but focused on conflict mediation, enforcement of laws and traditions and welfare provisions. But they did coordinate at the neighborhood level residential development and renovation activities, and, in some cases, infused kolkhoz planning with the perceived justice of traditional property relations. Since independence, they continue to slightly contribute to local planning in the sense that housing needs are detected and passed on to the district hakims, but also there, the careful deliberation of land use that took place in the kolkhoz organizations did not materialize. Traditional tenure and property relations seem to play a role in some decisions and lobbying regarding land use, but we could not reconstruct this in detail.

For both the spatial planning system and the system of agricultural service organizations (including agricultural extension services; Bekchanov et al 2009) one can speak of a de-institutionalization after the collapse of the Soviet Union, followed by partial re-institutionalization (Ioffe 2006, Morgounov & Zuidema 2001, Shtaltovna et al. forthcoming, Van Assche et al. 2010). We say 'partial' because the collapse of the kolkhoz system did not produce a new system where resources, knowledge and responsibility for spatial decision-making were re-distributed in an unambiguous and functional way. Taken as a whole, the countryside, in this case the villages in Khorezm, is still productive (Rudenko 2008, Djanibekov 2008), villages are expanding, and many functions of land administration are operative. Yet, in each locale, the distribution of roles and knowledge differs significantly.

The coordinating role of the kolkhoz managers in all matters regarding land use, is replaced by different combinations of players in each village and district. In some places, the mahalla leaders formulate visions for the spatial development of a village, and hakims and their administration give them the stamp of approval, whereas other places show a stronger role of district architects, chairs of machine tractor parks or agronomists, or even retired kolkhoz management. As to the distribution of knowledge, the same applies: the continued functioning of agriculture, relying more than residential land use on different forms of specialized knowledge, is dependent on different combinations of people everywhere. In other words, the necessary expertise is much more personalized now than in the Soviet days (cf Wall 2006, Hornidge et al. 2010, 2011, Sehring 2009). This has a series of implications we will explore further in the next section.

## 5 Knowledge streams, formal and informal couplings

The evolving land governance in Khorezm can be described as a co-evolution of organizations. Up to the present day, these organizations are coupled by the technical requirements of irrigation agriculture, and by the shared goal of reaching cotton targets. The knowledge streams affecting spatial decision-making follow that co-evolution. Which forms of knowledge play a role in the coordination of decisions on space, changes over time as a correlate of shifting roles in the network of organizations involved in land governance (Gunder & Hillier 2009, Van Assche et al. 2010).

Since after independence formal and informal institutions tended to diverge in decision-making, the difference between formal and informal knowledge requirements and selections was bound to increase. In other words, which knowledge comes into play in real deliberations on use and future use of space will probably be very different from the knowledge that is deemed influential in the official self-descriptions of the participating organizations. Which knowledge really counts is different from what officially counts. If the interplay between formal and informal institutions shapes how organizations evolve, the interplay between different forms of knowledge, central to formal and informal institutions, should not escape the attention of anyone interested in organizational change.

In system terms, organizations are social systems, and as such operationally closed. This means that an organization is sensitive to change in its system environment, but can only indirectly be affected by and respond to that change (Luhmann 1984). All changes in the environment are interpreted through the lens of organizational identity, procedures and other decision-making premises (Hernes & Bakken 2003). All responses to change have to emerge from within the organization, as a response to that internally reconstructed change in the external environment. Organizations construct images of their environment and respond to these images by means of new images resulting from internal procedures and distinctions (Seidl 2005). This entails that knowledge cannot be directly 'shared' by organizations. As soon as it enters a different organizational environment, it is restructured and reinterpreted. The roles delineated in an organization can be considered catalysts in the shaping of a path for knowledge selection, modification and use (Van Assche et al. 2010). Once a certain set of roles marks an organization, the selectivity of knowledge tends to be more and more shaped by that role set and knowledge that is not recognized as useful in this set is sifted out over time (Dobbin 1994, During et al 2009).

With regards to the role of the organization, one can make similar remarks. Even if the organization is part of an agro-water cluster that has been designed by higher level planners, with designated roles for each, as soon as the organizations come into existence, they will start to reinterpret their role in that cluster, and thus shift the selections of knowledge it incorporates into its decisions. In this sense, operational closure, the self-reproduction out of self-produced elements favors the divergence of formal and informal institutions, since it enables the emergence of internal semantics (regarding role and knowledge) that can be different from the semantics attached to it by higher level planning organizations. The organization can develop its own identity and develop a level of reflexivity that enables it to strategically deploy external descriptions to attain goals that come up in internal deliberations starting from different self-descriptions (social systems can easily pretend to be something else). In the Soviet system, officially adhering to a top-down planning ideology, the strategic use of the appearance of top-down coordination was to be expected; pretending that things work as on paper was both

necessary to operate in the Soviet state and useful to mobilize the resources of that state while maintaining a level of autonomy (French & Hamilton 1979, Sievers 2002, Collins 2006).

Formal and informal institutions, reiteratively strengthening the discrepancy between the ideological and lived reality to use Amsler's words, cannot have then but a highly complex evolutionary pattern. If organizations are tied together in a manner that is practically not feasible, and if organizations all developed informal strategies to operate in this environment, one can predict that formal and informal institutions adapted to each other in one organization (Brunsson 2002), and to formal and informal institutions in the neighboring organizations (Czarniawska 1997, Dobbin 1994, Friedland & Alford 1999). In Khorezm, all this could be observed. In the most general terms, we can say that both now and in the past, knowledge of power relations and economic opportunities is far more important than the scientific (hydro-engineering) knowledge that dominates the official self-descriptions in the hydro-agro cluster (Abdullaev & Mollinga 2010, Turaeva-Höhne 2007; cf Eisenstadt & Roniger 1990). Legal knowledge does not seem highly relevant, since the law is not differentiated from politics, and legal threats and shifts are interpreted as political maneuvering, often for economic gain.

## **5.1 Informal coordination of decisions and knowledge selection**

We argue that in present-day Khorezm, despite all changes, many Soviet planning mythologies still pervade spatial governance, both formally and informally. Informal institutions cannot be captured under the labels of corruption or tradition or local knowledge (Ledeneva 2005, North 2005, Greif 2006). What we observed and reconstructed reveals the diversity of informal institutions, and the most diverse relations between scientific knowledge and other forms of knowledge in practices of spatial organization. Even players that clearly do not operate according to their formal role, not using the officially expected knowledge in the officially expected manner, often still selectively believed in the power of (natural) science to ground an optimally organized modern state (cf Scott 1998, Sievers 2002, Elster et al. 1998, Pusca 2009). And they often use scientific knowledge on purpose to achieve other goals, either inspired by self-interest or by a collective interest deemed out of reach by official means.

Across the board, with water and agricultural organizations, a belief can be traced that after independence, the formal and informal uses of knowledge diverged, but, in parallel, a belief that the scientific knowledge that is still present in the system, and that can still be applied, is enough to keep agriculture running. Thus, bits and pieces of scientific knowledge present in the agro-water cluster, often in places where they are not supposed to be, still together enable a minimum coordination of agriculture, including the land governance required for its functioning.<sup>6</sup> Pressure from above, from higher level politics, is highly selective: as long as cotton and wheat targets are reached or approached, through a mix of formal and informal institutions, there is room for other informal institutions to perform other functions (cf Collins 2006). Only sometimes and usually related to cotton production, formal coordination mechanisms kick into action, and even then, informal coordination is often needed to achieve the results desired by

---

<sup>6</sup> Evers and Wall (2006) and Wall (2008) nevertheless point to the phenomenon of 'knowledge loss' with significant stocks of pre-Soviet times knowledge being lost and the existing stocks of largely Soviet agricultural knowledge increasingly losing relevance.

the top (Veldwisch 2008, Wall 2008). At the local level, this is visible most clearly, since the distance from the top, officially dominating the steering system, is most obvious.

In the villages, it is clear that cotton production can only survive because many organizations do *not* do what they are supposed to do. If water user associations would indeed be self-governing and affecting decision-making on water and land, the focus on cotton would shift and the knowledge relevant for cotton production would disappear from local land governance (Oberkircher, forthcoming a; Oberkircher & Hornidge, forthcoming). If machine tractor park chairs, mahalla chairs and surveyors would stick to their official job description, in a de-institutionalized environment where knowledge is scarce and in unexpected places, and where local government has not been fully replaced after the kolkhoz, then local agriculture as such would come to a grinding halt. It is only because many organizations at the local level are flexible, i.e. rely on informal coordination, so that road, canal, tractor, school maintenance still takes place, that people working for these organizations stay with them, because of extra tasks and a parallel system of exchange and payment (Shtaltovna et al. forthcoming, Trevisani 2007, 2009).

In the villages, it was also clear that the kolkhoz system was in several ways more flexible than the present governance system. Local knowledge, as the non-scientific knowledge of people intimately familiar with the land, and as the scientific knowledge of the same people, could come to the surface much more easily in the kolkhoz system, and could be integrated more easily in successive revisions of a comprehensive plan. Both, sensitivity to local knowledge, and coordination capacity, are reduced now, and this renders the system less adaptive (cf Seidl 2005, Van Assche & Verschraegen 2008). Local water and soil conditions as well as cultural symbolism attached to certain landscapes<sup>7</sup> were and are often not grasped by the maps and plans officially coordinating spatial decision-making (interviews).

## 5.2 Planning mythologies and their legacy

We argue that the present situation and the present pattern of divergences between formal and informal institutions in land governance largely derives from Soviet planning mythologies. Soviet planning systematically overpromised, in several ways. It overpromised with regards to the power of science to predict the future and draw plans representing an optimal spatial organization (Ruble 1995, Ioffe 2006). It also made big promises regarding the coordination power of that state, its steering power through the levels, and the capacity of all state organizations to articulate and guide themselves by long-term visions (Van Assche et al. 2010, Verdery 2003). In all these aspects, the Soviet state could not function the way it said it worked (Hough & Fainsod 1979). This does not mean it did not work; many informal institutions de facto remedied the inflexibility and faulty predictions of the official planning system, thus had a positive role (cf Ledeneva 2003, Van Assche et al. 2009, Verdery 1996). Informal coordination made things work, and in the countryside, much of this informal coordination fell under the umbrella of the collective farms. Thanks to the kolkhoz (and to a lesser extent the sovkhoz) local development became more adaptive, first of all to local needs, but in many cases also to

---

<sup>7</sup> Oberkircher et al. (forthcoming) outline the emic value attached to lakes in Khorezm as ecosystems, resources and cultural sites in an interdisciplinary case study of Shukul Lake, Khorezm.

expectations from higher up (Humphrey 1998). The actual role of the collective farm as local government summarizes this shift to informal institutions at the local level; most actors had a different role than on paper, since the kolkhoz had absorbed many functions supposedly lying with district administrations and with specialized water, agricultural and architectural organizations.

So, the planning mythology had its own hidden flexibility. This means that important mechanisms of coordination had to remain invisible to maintain at least rhetorical compatibility between theory and praxis. Aggravating the mythological character of Soviet planning was the Soviet assumption of a unified social body (Sievers 2002, Hough & Fainsod 1979). If party, state and the collective were one, then a concept like civil society, or a concept of productive difference and productive tension in society could not be espoused openly (Hahn 1988, Sievers 2002). The very real competition between state actors in spatial governance, and the concomitant shifts between steering modes, between organizational and discursive dominations in a certain place, could therefore not be acknowledged openly. With regard to land governance, the three steering systems mentioned above were simultaneously acknowledged as dominant, an assertion that cannot hold for obvious reasons. For the Soviet ideology, the kolkhoz was a very convenient black box that could introduce flexibility and local competition in the system, without openly abandoning the appearance of collectivity and planning. The planning myths and the myth of the cohesive collective reinforced each other, since a unified social body, without conflicting interests and desires, could be mapped, surveyed and predicted and steered more easily.

Rendering the picture more complex, we can say that the myth of long-term planning, the myth of a unified administration, the myth of superfluous local knowledge, the myth of scientific steering not only reinforced each other but also produced new myths in this policy arrangement. With regards to land governance in Khorezm, the most notable example of this has to be the official dominance of the concept of 'bonitet' in spatial decision-making.

### **5.3 The planning power of 'bonitet'**

Bonitet, or soil bonitet, is a number indicating soil quality, or, more precisely, potential productivity after using the appropriate inputs (Karmanov 1980). It is a synthetic construct integrating various parameters, including agro-climatic data, irrigation, soil cover, land use, soil density, humidity, nitrogen absorption capacity, salinity, groundwater depth, soil organic matter. On paper, this number reinforces the coupling between all the organizations involved in rural land governance (cf Brooks 1991). Officially, the number summarizes a complex web of information derived from different disciplines, a summary that only became possible in the history of Soviet experimentation and implementation. The single number was supposed to represent objectively the essence of the soil, in such a way that all organizations of the agro-water system could be linked in coordinated decision-making (Kienzler 2010).<sup>8</sup> Uzgiprozem and its expeditions produced the maps of soil and water quality, these maps would be used by water organizations, kolkhoz management and district administration. Today they are supposed to play a similar role. Soil bonitet is supposed to decide which lands are taken out of agricultural

---

<sup>8</sup> As such, the notion of 'bonitet' can be regarded as boundary concept in the terms of Mollinga (2008, 2010), facilitating agricultural planning and implementation.

production and made available for other land uses, such as residential development. The number is supposed to be the deciding factor in setting production targets for cotton, in establishing local drainage and irrigation regimes and (re-)designs. And it is expected to inspire comprehensive planning efforts at the district levels, where bonitet-informed surveyors tell district architects how to conceive of residential and infrastructure development.

In practice, both past and present, the measurements underlying mapping, and the mapping itself were very uneven in quality (interviews; Kienzler 2010). Some areas were mapped much more accurately than others, and certain aspects of maps were much more accurate than others – since other organizations were involved in supplying the data for these aspects. The measuring and mapping was also much too generic (one measure per 25ha), and too old (up to 25 years) to be applied in agricultural management. In Khorezm, in fact part of the extended Amu Darya delta, marked by a highly dynamic landscape history (Tsvetinskaya et al. 2002), the values of bonitet will differ significantly within one field, and can change quickly (interviews). Thus, it is not surprising that both now and in the past, the numbers were rarely used to coordinate decision-making. The semantic coupling of organizations by means of the concept of bonitet, in theory enabling implementation of a large body of scientific knowledge, functions as a convenient façade behind which the real planning games take place. After independence and certainly after privatization (started slowly in 1998), the informal coordination behind the façade did change.

While the first narrative encountered in the various planning organizations is usually one of minimal change compared to Soviet times, a second layer of narrative usually reveals that overall, there is less coordination now of land use decisions, less impact of scientific knowledge in these decisions (cf Allina- Pisano 2008 for Ukraine and Russia). In the Soviet kolkhoz, the internal hierarchy routinely ignored the official soil quality maps and the policies derived from them. Local knowledge could come to the surface easily, and did guide land governance. Sometimes this led to a lobbied change in the mapping of bonitet and derived policies, more often to ignoring these policies. Scientific knowledge did enter the equation, since the kolkhoz management, even the sub-top, usually had science and engineering degrees, and since the official production targets could not be totally dismissed. In fact, efficient production in the most appropriate sites would help the kolkhoz to produce enough cotton in a smaller area. Thus, more space would be available for other land uses, and more different combinations of land uses could be envisioned in a comprehensive planning process.

## **5.4 Shifting informalities and knowledge selections**

After kolkhoz dissolution, the bonitet rhetoric has been maintained, but the old alternative coordination mechanism is, as said, not fully replaced. Individuals and organizations stepping outside their formal duties keep the production machine running and avoid calamities in a fashion that is only coordinated minimally and at the most local level. That, we argue, is also why so much pressure is seemingly randomly exerted on low level officials, because local ad-hoc fixes are the only remaining response to gaps in a largely un-coordinated process. This implies, among other things, that scientific knowledge is quite randomly included in spatial decision-making.

A second shift in informal institutions in land governance is the virtual disappearance of long-term perspectives with local and regional actors (cf Wall 2006, Trevisani 2007, Hornidge et al.

2009). Certainly, lip service is paid to the survival and improvement of Soviet planning instruments, mechanisms and strategies, but for very few actors there are reasons and possibilities to envision the long-term, let alone to coordinate their long-term perspectives with those of other actors. Insecure land tenure for farmers, insecure tenure of power for hakims and other high level administrators, unpredictable access to water because of high and low level politics, uncertain access to scarce resources, including knowledge, all combine to produce a situation where the long term disappeared out of sight. The coordination problem here is aggravated by the increased opacity of the land governance system: organizations know less and less what the others are doing, which knowledge they possess, how they envision the future, and, more basically, what they want. In present conditions, it is absolutely not certain that an economic development authority is interested in economic development, or that a nature protection agency cares for nature protection. (cf Shtaltovna et al. 2010).

## 6 Conclusion

In land governance, coordination of decision-making and long-term perspectives have to be present to solve community issues and create synergies (Hillier 2002, Allmendinger 2002, Van Assche & Verschraegen 2008). Both factors presume and implicate each other. If far time horizons are accepted as relevant for decision-making and for calculating organizational benefits, then coordination of decision-making and planning will be more easily accepted. If long-term perspectives and more comprehensive plans are accepted, then it will be accepted more easily that different forms of knowledge are needed in the organization of space (Scott 1998). Currently, the implications of lacking long-term perspectives are most visible at the local level, where insecure land tenure, frequently changing regulations, shifting alliances with unstable political powers, and suspicion of the banking system reduce the incentives for local actors to learn, to invest, to collaborate (Wall 2006, Hornidge et al. 2009, Trevisani 2009). Learning, investing and collaboration are all prerequisites for the forms of self-organized coordination we would call community planning. Community planning, under the names of participatory governance, participatory planning, or implied under local capacity building, even integrated water resource management, is often strived for by the international development community.

With the gradual disappearance of long-term perspectives, the de-institutionalization of scientific knowledge and the increased simplification of top-down steering attempts to cotton procurement (as opposed to comprehensive planning) came the widening of the gap between formal and informal institutions. Planning and the implied forms of knowledge mean less and less when the participating organizations – and we include the farms here – have largely a paper existence. In system terms, Soviet society was not marked by functional differentiation, but at least organizations were differentiated under the umbrella of the state. After independence, many organizations in fact stopped to be organizations. A mere formal existence does not guarantee an actual self-reproduction through decisions (Luhmann 2000, 1990b). If formal and informal institutions diverge to such an extent that it becomes impossible for an organization to frame new decisions in terms of old ones, guided by a self-description (though not necessarily the official one), then it ceases to be an organization. Then the informal institutions might still coordinate certain decisions, but independent of the frame of the organization. And indeed, this is something one can observe at many levels in the Uzbek administration: informal institutions render organizational boundaries and identities virtually meaningless. Individuals, in the environment of organizations, can maintain through personal connections a semblance of purposefulness for the organization.

Knowledge streams then are not shaped by the decision-premises of organizations but rather by individual adherence to formal goals and individual identification of whatever (formal/informal) mechanisms are needed to achieve them. The highly selective top-down steering attempts and the lack of interest at lower levels in community development and public goods further undermine the self-reproduction of the organizations inherited from the Soviets.

If it is clear to all participants that the whole planning machinery of coupled organizations is not really necessary to achieve cotton targets, that more comprehensive planning, involving a deliberation of many different targets is not high on the agenda of any influential actor, then the incentives to maintain the knowledge base and decision-making procedures of all these organizations are slight.



This does not mean that the formal institutions and the paper organizations have no role. Organizational presence can be selectively faked and formal rules and procedures can be selectively reactivated and enforced. Economic actors can take on positions in administration for the access to state resources, or to avoid harassment by other state organizations. In those cases, political and economic knowledge dominates individual and hence organizational calculations.

These developments, taken together, reduce the transparency of the planning system in all directions. From bottom to top, from top to bottom, and in between organizations involved in land governance, the mist is dense. A rhetoric of absolute planning and coordination veils a situation where very few things are planned and coordinated, and where the grounds of many decisions are unclear to even people in the same organizations. For Luhmann, many of those decisions are not taken in the organization, are not part of its self-reproduction, but in overlapping networks that sometimes can be described as organizations themselves (Fuchs 2001)

In terms of development efforts, of possible improvements, one can draw several conclusions. First of all, one can say that any development strategy cannot take the formal institutions at face value, can start reasoning as if they were close to reality (cf Easterly 2006). This applies to the existence of organizations, the distribution of knowledge in those organizations, and the existence of forms of coordination, e.g. in planning procedures (Van Assche et al. 2010). Any imported model of planning that relies on functioning formal institutions is bound to fail. Secondly, we argue that a focus on inserting knowledge into the existing planning games, into the existing fragmentary informal coordination of land use, will resort effects that are entirely unpredictable, even to insiders (cf Luhmann 1990b, King & Thornhill 2003). Thirdly, and on a more positive note, we believe that the remarkable persistence of knowledge and physical infrastructure in the planning system and the landscape still allows for a reinvention of coordinated land governance, of spatial planning. If legal, political, and economic space can be created at the local level, then those scattered resources can be brought together and re-institutionalized. This is possible as long as there are spaces where local actors can identify where their interests lie and which expertise is useful in pursuing them.

## **6.1 Broader implications**

Uzbekistan is a peculiar country and Khorezm is a rather marginal region in Uzbekistan (cf Collins 2006). It has been established many times that each post-socialist country shapes its own developmental path (e.g. Verdery 2003, Allina- Pisano 2008, Ruble 1995, Kornai et al. 2004, Elster et al. 1998), emerging from and further shaping a specific dialectics between formal and informal institutions (e.g. North 2005, Ostrom 2005, Easterly 2006, Ledeneva 2005). What is there to learn then? We argue that the observed mechanisms of shifting knowledge selections in a process of organizational change affecting land governance, lead to several further observations with broader implications.

If improved land governance can be assumed as a potential driver of rural development, and if some form of planning, involving coordination of policies and practices and a long-term perspective, are presumed necessary ingredients, then the study of the dialectics of formal and informal institutions that mark land governance in a given place cannot escape the attention of

anyone interested in development. If we further assume that the streams of knowledge, scientific and otherwise, in the web of organizations that affects land governance are relevant in attempts to improve land governance, then one cannot escape the study of that same dialectics of formal and informal institutions, in its implications for organizational reproduction and change, and for the selectivity of knowledge in this ongoing reproduction.

Knowledge management in land governance, we argue, is a key ingredient of successful rural transitions (Vellema 2011), and the Uzbek analyses make it clear that knowledge streams have to be studied against the backgrounds of specific patterns of formal/informal dialectics, where formal institutions emerge from, and later undermine or reinforce informal institutions, and where informal institutions can do the same in the other direction (cf Van Assche et al. 2010, Hornidge et al. 2010). The interactions between formal and informal institutions are marked by a variety of path-dependencies that need to be understood before attempts are undertaken to insert new knowledge in the land governance system of interacting organizations (North 2005, Ostrom 2005, Easterly 2006). Two forms of unpredictability can then be distinguished: the unpredictability regarding the effects of knowledge in a system of interacting organizations where informal institutions are not well understood, and the unpredictability regarding the effects of knowledge in an environment where path dependencies, and thus transformation options, are not well-understood (Seidl & Becker 2006, Van Assche et al 2011).

One of the most significant path-dependencies appears to be the rigidity introduced by roles, roles of organizations and roles in organizations (Ferlie et al 2005). Rigidity here applies to the capacity to change and the capacity to absorb new knowledge and incorporate it into decision-making. The Uzbek case showed that, even in an environment with a wide gap between formal and informal roles, once-established organizations and positions within an organization can still play a highly complex role, influencing the adoption and implementation of knowledge. Unraveling the many ways apparently paper positions and organizations can still impact land governance (and its knowledge base) thus becomes an important task for development (cf Allina-Pisano 2008, Ledeneva 2005). Formal roles, and hence formal rules and expected knowledge, can be reactivated selectively, in patterns defined by informal institutions. Formal roles can be reinvigorated by a revival of other formal institutions, by a revival of specific informal institutions. Such revival can be momentarily, a part of tactical games among stakeholders, and it can be more sustained, embedded in a more structural shift in informal games.

Thus, if one, despite the limitations of a transition management approach (Smith & Stirling 2010, Van Assche et al. 2011b), is still interested in case-specific investigations regarding the limits of steering and the possibilities of context-guidance (Easterly 2006, Van Assche & Verschraegen 2008), then a precise reconstruction of the developmental path of the planning system, its path-dependencies, roles, knowledge selections and formal/informal dialectics should be considered a prerequisite of any attempt to rural development. Indeed, knowledge, in its many forms, can change the world, but without an understanding of the world as it is, not as it is supposed to be, the world will probably be changed in highly unexpected manners, for the better, or for the worse.

## 7 Bibliography

- Abdullaev, I., Mollinga, P. 2010. 'The socio-technical aspects of water management. Emerging trends at grass roots level in Uzbekistan', *Water*, 2: 1 : 85–100.
- Allina- Pisano, J. 2008. *Post- Soviet Potemkin Villages. Politics and Property rights in the Black Earth*. Cambridge: Cambridge University Press.
- Allmendinger, Ph. 2002. *Planning theory*. London: Palgrave MacMillan.
- Amsler, S., 2007. *The Politics of Knowledge in Central Asia – Science between Marx and the Market*. London and New York: Routledge.
- Bakken, T., Hernes, T. 2003. *Autopoietic organization theory*. Copenhagen: Liber/ Copenhagen Business School.
- Bekchanov, M., Kan, E., Lamers, J.P.A. 2009. 'Options of Agricultural Extension Provision for Rural Development in Central Asian Transition Economies: the Case of Uzbekistan', in *Research for Sustainable Development*. Tashkent: Westminster International University.
- Berger, P. L., Luckmann. T. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City: Doubleday.
- Brooks, K. 1991. Price adjustment and land valuation in the soviet agricultural reform: A view using Lithuanian farm data, *European review of agricultural economy* , 18: 1: 19-36.
- Brunsson, N. 2002. *The organization of hypocrisy: talk, decisions and actions in organizations*. Oslo: Copenhagen Business School.
- Collins, K. 2006. *Clan politics and regime transition in Central Asia*. Cambridge: Cambridge University Press.
- Czarniawska, B. 1997. *Narrating the organizations. Drama's of institutional identity*. Chicago: University of Chicago Press.
- Djanibekov, N. 2008. *A Micro-Economic Analysis of Farm Restructuring in the Khorezm Region, Uzbekistan*. Ph.D. diss. Bonn: Bonn University.
- Djanibekov, N., Lamers, J.P.A, Bobojonov, I. 2010. 'Land Consolidation for Increasing Cotton Production in Uzbekistan: Also Adequate for Triggering Rural Development?' In: Labar, K., Petrick, M. and G. Buchenrieder , eds. *Challenges of education and innovation. Proceedings of the Fourth Green Week Scientific Conference. IAMO Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 56*. Halle: IAMO, 140-149.
- Dobbin, F. 1994. 'Cultural models of organization: the social construction of rational organizing principles', in D. Crane, ed., *The sociology of culture*. Oxford: Blackwell, 117-142.
- Duineveld, M., Beunen, R., Van Assche, K., During, R. 2009. 'The relation between description and prescription in transitions research', In K. Poppe, C. Termeer, M. Slingerland, eds. *Transitions towards sustainable agriculture and food chains in peri- urban areas*. Wageningen: Wageningen Academic Publishers, 309-324.
- During, R., Van Assche, K., van der Zande, A. 2009. 'Culture, innovation and governance in Europe. Systems theory and the analysis of innovation in INTERREG programs'. In K. Poppe, C. Termeer, M. Slingerland eds. *Transitions towards sustainable agriculture and food chains in peri- urban areas*. Wageningen: Wageningen Academic Publishers, 163-188.

- Dziewas, R. 1992. "Der Mensch - Ein Konglomerat Autopoietischer Systeme?." In W. Krawietz, M. Welker, eds. *Kritik Der Theorie Sozialer Systeme. Auseinandersetzungen Mit Luhmanns Hauptwerk*. Frankfurt a.M.: Suhrkamp, 113-32.
- Easterly, W. 2006. *The white man's burden*. London: Penguin.
- Eisenstadt, S., Roniger, L. 1990. *Patrons, Clients and Friends*, Cambridge: Cambridge University Press.
- Elster, J., Offe, C., Preuss U. 1998. *Institutional design in post- communist societies: rebuilding the ship at sea*. Cambridge: Cambridge University Press.
- Evers, H.-D. and Wall, C. 2006. *Knowledge Loss: Managing Local Knowledge in Rural Uzbekistan. ZEF Working Papers Series 15*. Bonn: ZEF
- Ferlie, E., Fitzgerald, L., Wood, M., Hawkins, Ch. 2005. 'The nonspread of innovations: the mediating role of professionals', *Academy of management journal*, 48: 1: 117–134.
- Flyvbjerg, B. 1998. *Rationality and power*. Chicago: University of Chicago Press.
- French, R., Hamilton, F. 1979. *The socialist city. Spatial structure and urban policy*. Chichester: Wiley.
- Friedland, R., Alford, R. 1999. 'Bringing society back in. Symbols, Practices and institutional contradictions', in W. Powell, P. DiMaggio, Eds., *New insitutionalism in organizational analysis*. Chicago: University of Chicago Press, 232-266.
- Fuchs, S. 2001. *Against essentialism*. Cambridge: Harvard University Press.
- Greif, A. 2006. *Institutions and the path to the modern economy. Lessons from medieval trade*. Cambridge: Cambridge University Press.
- Gunder, M., Hillier, J. 2009. *Planning in ten words or less. Lacanian entanglements with spatial planning*. Aldershot: Ashgate.
- Hahn, J. 1988. *Soviet grassroots. Citizen participation in local Soviet government*. London :I.B. Tauris.
- Hillier, J. (2002) *Shadows of power. An allegory of prudence in land use planning*. London: Routledge.
- Hodgson, Geoffrey M. 2006. "What are Institutions?", in: *Journal of Economic Issues* 40: 1: 1-25.
- Hopwood, A. 1983. 'On trying to study accounting in the context in which it operates', *Accounting, organizations and society*. 8: 2: 287-305.
- Hornidge, A.-K., M. Ul-Hassan and P. P. Mollinga. 2011. Transdisciplinary Innovation Research in Uzbekistan – 1 year of 'Following The Innovation'. *Development in Practice*, 21: 6: 45-64.
- Hornidge, A.-K., Ul Hassan, M. & Mollinga, P. 2009. *Follow the Innovation: A Joint Experimental Approach to Transdisciplinary Innovation Research, Working Paper 39*. Bonn, ZEF.
- Hornidge, A.K., Ul-Hassan, M. 2010. "From 'Plausible Promises' to Transdisciplinary Innovation Research in Uzbekistan – Process Outline and Lessons Learnt", *Rural Development News*, 2, 1: 53-63.
- Hornidge, A.K., Turaeva-Höhne, R., Ergashev, A.K. 2011. "The Making of Agricultural Policy in Uzbekistan – Policy Research for Innovation Diffusion," in Manschadi, Ahmad, John P.A. Lamers (eds.) *Restructuring Land- and Water Use in Khorezm Region, Uzbekistan*, Bonn: ZEF.
- Hough ,J., Fainsod, M. 1979. *How the Soviet Union is governed*. Cambridge: Harvard University Press.

- Humphrey, C. 1998. *Marx went away. But Karl stayed behind*. Ann Arbor: University of Michigan Press.
- Ioffe, G., Nefedova, I., Zaslavsky, J. 2006. *The end of peasantry? The disintegration of rural Russia*. Pittsburgh: University of Pittsburgh Press.
- Kandiyoti, D. 2002. *Agrarian Reform, Gender and Land Rights in Uzbekistan, Social Policy and Development Paper 11*. Geneva: United Nations Research Institute for Social Development.
- Karmanov I.I. 1980. *Soil Fertility in the USSR (Natural Regularities and Quantitative Assessment)*. Moscow: Kolos. [In Russian]
- Kienzler, K. 2010. Improving the nitrogen use efficiency and crop quality in the Khorezm region, Uzbekistan (Ecology and development series, 72) (Bonn: ZEF/ Bonn University)
- King, M., Thornhill, C. 2003. *Niklas Luhmann's theory of politics and law*. Houndmills, Basingstoke, Palgrave.
- King, M., Thornhill, C., eds. 2006. *Luhmann on law and politics. Critical appraisals and applications*. London: Hart.
- Kornai, J., Rose- Ackerman, S., eds. 2004. *Building a trustworthy state in postsocialist transition*. New York: Palgrave Macmillan.
- Ledeneva, A. 2005. *How Russia really works*. Ithaca: Cornell University Press.
- Lerman, Z. 2008a. *Agricultural Development in Uzbekistan: The Effect of Ongoing Reforms, Discussion Paper 7.08* Jerusalem: Department of Agricultural Economics and Management, Hebrew University of Jerusalem.
- Lerman, Z. 2008b. 'Agricultural Development in Central Asia: A Survey of Uzbekistan, 2007-2008', *Eurasian Geography and Economics*, 49: 4.
- Luhmann, N. 1989. *Ecological communication*. Chicago: University of Chicago Press.
- Luhmann, N. 1990b. *Political theory and the welfare state*. Berlin: de Gruyter.
- Luhmann, N. 2000. *Organization und entscheidung*. Frankfurt: Opladen.
- Luhmann, N. 1990a. *Die Wissenschaft Der Gesellschaft*. Frankfurt a.M.: Suhrkamp.
- Luhmann, N. 1984. *Soziale Systeme - Grundriß Einer Allgemeinen Theorie*. Frankfurt a.M.: Suhrkamp.
- Mielke, K., Schetter, C., Wilde, A. forthcoming. *Dimensions of Social Order: Empirical Facts, Methodological Concept and Boundary Notion. ZEF Working Paper Series*. Bonn: ZEF.
- Mollinga, P. 2008. *The Rational Organisation of Dissent. Boundary concepts, boundary objects and boundary settings in the interdisciplinary study of natural resources management. ZEF Working Paper Series No. 33*. Bonn: ZEF.
- Mollinga, P. 2010. 'Boundary Work and the Complexity of Natural Resources Management'. *Crop Science* 50: 1-9
- Morgounov, A., Zuidema, L. 2001. *The legacy of the Soviet agricultural research system for the republics of Central Asia and the Caucasus; ISNAR report, 20*. The Hague: ISNAR.
- North, D. 2005. *Understanding the process of economic change*. Princeton: Princeton University Press.
- North, D. 1998. 'Economic Performance Through Time'. in M. C. Brinton, V. Nee, eds. *The New Institutionalism in Sociology*. Stanford: Stanford University Press, 247-257.
- Oberkircher, L. forthcoming/a. On pumps and paradigms. Water scarcity and technology adoption in Uzbekistan. *Society and Natural Resources*.

- Oberkircher, L. forthcoming/b. „Stay – we will serve you plov“. *Puzzles and pitfalls of water research in rural Uzbekistan. ZEF Working Paper Series*. Bonn: ZEF.
- Oberkircher, L., Hornidge, A.K. forthcoming. 'Water is Life' - Farmer Rationales and Water Saving in Khorezm, Uzbekistan. A Lifeworld Analysis'. *Rural Sociology*.
- Oberkircher, L., Tischbein, B., Hornidge, A.K., Schorcht, G., Bhaduri, A., Awan, U.K. and Manschadi, A.M. 2010. *Rethinking water Management in khorezm, Uzbekistan. Working Paper Series, Vol. 54*. Bonn: ZEF.
- Ostrom, E. 2005. *Understanding institutional diversity*. Princeton: Princeton University Press.
- Parsons, T. 1967. *Sociological Theory and Modern Society*. New York: The Free Press.
- Pusca, A. 2008. *Revolution, democratic transition and disillusionment: the case of Romania*. Manchester: University of Manchester Press.
- Ruble, R. 1995. *Money sings. The changing politics of urban space in Post- Soviet Yaroslavl*. Washington-Cambridge: Woodrow Wilson Center Press and Cambridge University Press.
- Rudenko, I. 2008. *Value Chains for Rural and Regional Development: The Case of Cotton, Wheat, Fruit and Vegetable Value Chains in the Lower Reaches of the Amu Darya River, Uzbekistan*. Ph.D. diss. Hannover: Hanover University.
- Schemann, A. 1992 "Strukturelle Kopplung - Zur Festlegung Und Normativen Bindung Offener Möglichkeiten Sozialen Handelns." In W. Krawietz, M. Welker, eds.. *Kritik Der Theorie Sozialer Systeme. Auseinandersetzungen Mit Luhmanns Hauptwerk*. Frankfurt a.M.: Suhrkamp, 215-29.
- Schimank, U. 2000. *Theorien Gesellschaftlicher Differenzierung*. Opladen: Leske & Budrich.
- Smith, A., Stirling, A. 2010. 'The politics of social-ecological resilience and sustainable socio-technical transitions'. *Ecology and Society* 15:1: 11. [online] URL: <http://www.ecologyandsociety.org/vol15/iss1/art11/>
- Scott, J. 1998. *Seeing like a state. How certain schemes to improve the human condition have failed*. New Haven: Yale University Press.
- Sehring, J. 2009. Path dependencies and institutional bricolage in post-Soviet water governance. *Water Alternatives* 2: 1: 61–81.
- Seidl, D. 2005. *Organizational identity and self- transformation: an autopoietic perspective* (Aldershot: Ashgate)
- Seidl, D., Becker, K., Eds. 2005. *Niklas Luhmann and organization studies*. Kopenhagen: Liber/ Kopenhagen Business School.
- Shtaltovna, A., Hornidge, A.-K., Mollinga, P. P. (forthcoming). *The Re-invention of Agricultural Service Organisations in Uzbekistan – A Machine-Tractor-Park in Khorezm Region. ZEF Working Paper Series*. Bonn: ZEF.
- Sievers, E. 2002. 'Uzbekistan's Mahalla: From Soviet to Absolutist Residential Community Associations', *The Journal of International and Comparative Law at Chicago-Kent*, 2: 2: 91-184.
- Subramanian, S., Oberkircher, L., Kudryavtseva, A., Hornidge, A.K. (forthcoming). "Irrigation Water Management in Uzbekistan – Making Strides in Troubled Times" in Manschadi, A., J.P.A. Lamers, eds. *Restructuring Land- and Water Use in Khorezm Region, Uzbekistan*, Bonn: ZEF.
- Trevisani, T. 2007. 'After the Kolkhoz: Rural Elites in Competition', *Central Asian Survey*, 26: 1: 72-91.

- Trevisani, T. 2009. 'The reshaping of inequality in Uzbekistan: reforms, land and rural incomes', in M. Spoor (Ed.) *The Political Economy of Rural Livelihoods in Transition Economies; Land, Peasants and Rural Poverty in Transition*. London: Routledge, 123-37.
- Trevisani, T. 2008. *Land and Power in Khorezm. Farmers, Communities and the State in Uzbekistan's Decollectivisation Process*, Diss. Berlin: Freie Universität Berlin.
- Turaeva-Hoehne, R. 2007. Max Planck Institute for Social Anthropology, Halle, Germany. Speaker at Anthropological Workshop. Title of the paper: *Bound without Ropes: interdependence in Khorezmian migrant communities in Tashkent*. Halle. January 23.
- Tsvetinskaya, E., Vinaberg, B., Glushko, E. 2002. 'An integrated assessment of landscape evolution, long term climate variability and land use in the Amudarya Prisyrykamish delta', *Journal of arid environments*, 51: 3: 363-381.
- Ul-Hassan, M. and A.-K. Hornidge. 2010. 'Follow the Innovation' – *The second year of a joint experimentation and learning approach to transdisciplinary research in Uzbekistan*. ZEF Working Paper Series. Vol. 63. Bonn: ZEF.
- Van Assche, K, Duineveld, M., Verschraegen, G., During, R., Beunen, R. 2011b. 'Social systems and social engineering: Niklas Luhmann', in M. Vellema, (Ed.) *Transformation and sustainability in agriculture: connecting practice with social theory*. Wageningen: Wageningen Academic Publishers, 35-49
- Van Assche, K., Beunen, R., Jacobs, J., Teampau, P. 2011a. 'Crossing trails in the marshes. Rigidity and flexibility in the management of the Danube Delta', *Journal of Environmental Planning and Management*. (forthcoming)
- Van Assche, K., Verschraegen, G., Salukvadze, J. 2010. 'Changing frames. Expert and citizen participation in Georgian planning', *Planning practice and research*, 25: 3: 263-283.
- Van Assche, K., Salukvadze, J., Shavishvili N., eds. 2009. *City culture and city planning in Tbilisi. Where East meets West*. Lewiston- Lampeter: Edwin Mellen.
- Van Assche, K., Verschraegen, G. 2008. 'The limits of planning. Niklas Luhmann's social systems theory and the analysis of planning and planning ambitions', *Planning theory*, 7: 3: 277-295.
- Veldwisch, G. J. A., 2008. *Cotton, Rice & Water. The Transformation of Agrarian Relations, Irrigation Technology and Water Distribution in Khorezm, Uzbekistan*. Phd Diss. Bonn: Bonn University, ZEF.
- Veldwisch, G.J.A , Spoor, M. 2008. 'Contesting Rural Resources: Emerging 'Forms' of Agrarian Production in Uzbekistan', *Journal of Peasant Studies*, 35: 3: 110- 121.
- Verdery, K. 1996. *What was socialism? What comes next?* Princeton: Princeton University Press.
- Verdery, K. 2003. *The vanishing hectare. Property and value in Post- Socialist Transylvania*. Ithaca: Cornell University Press.
- Wall, C. 2006. *Knowledge management in rural Uzbekistan*. Dissertation. Bonn: Bonn University/ ZEF.
- Wall, C., Overton, J. 2006. Unethical Ethics?: Applying Research Ethics in Uzbekistan. *Development in Practice* 16: 1: 62–67.
- Wall, C., 2008. Barriers to technological change and agrarian reform in Khorezm, Uzbekistan. In Wehrheim, P., Schoeller-Schletter, A., Martius, C. eds. *Continuity and change: land and water use reforms in rural Uzbekistan. Studies on the agricultural and food sector in Central and Eastern Europe*, 43. Halle/Saale: Leibniz-Institut für Agrarentwicklung in Mittel- und Osteuropa, 145-164.

- Wall, C., Mollinga, P.P., eds. *Fieldwork in Difficult Environments – Methodology as Boundary Work in Development Research*. Münster: Lit Publishing.
- Wegerich, K. 2010. *Handing over the sunset, External factors influencing the establishment of water user associations in Uzbekistan. Evidence from Khorezm province*. Gottingen: Cuvillier.
- Wegren, S. 1989. *The Half Reform: Soviet Agricultural Policy and Private Agriculture, 1976-1989* Ph.D. dissertation. New York: Columbia University.
- Wehrheim, P., Schoeller-Schletter, R., Martius, C. 2008. *Continuity and Change: Land and Water Use Reforms in rural Uzbekistan - Socio-economic analyses from the region Khorezm*. Halle/Saale: IAMO.
- Yalcin, R., Mollinga, P. 2007. *Institutional Transformation in Uzbekistan's Agricultural and Water Resources Administration: The Creation of a New Bureaucracy. ZEF Working Paper Series. Vol. 22*. Bonn: ZEF.



1. Evers, Hans-Dieter and Solvay Gerke (2005). Closing the Digital Divide: Southeast Asia's Path Towards a Knowledge Society.
2. Bhuiyan, Shajahan and Hans-Dieter Evers (2005). Social Capital and Sustainable Development: Theories and Concepts.
3. Schetter, Conrad (2005). Ethnicity and the Political Reconstruction of Afghanistan.
4. Kassahun, Samson (2005). Social Capital and Community Efficacy. In Poor Localities of Addis Ababa Ethiopia.
5. Fuest, Veronika (2005). Policies, Practices and Outcomes of Demand-oriented Community Water Supply in Ghana: The National Community Water and Sanitation Programme 1994 – 2004.
6. Menkhoff, Thomas and Hans-Dieter Evers (2005). Strategic Groups in a Knowledge Society: Knowledge Elites as Drivers of Biotechnology Development in Singapore.
7. Mollinga, Peter P. (2005). The Water Resources Policy Process in India: Centralisation, Polarisation and New Demands on Governance.
8. Evers, Hans-Dieter (2005). Wissen ist Macht: Experten als Strategische Gruppe.
- 8.a Evers, Hans-Dieter and Solvay Gerke (2005). Knowledge is Power: Experts as Strategic Group.
9. Fuest, Veronika (2005). Partnerschaft, Patronage oder Paternalismus? Eine empirische Analyse der Praxis universitärer Forschungskoooperation mit Entwicklungsländern.
10. Laube, Wolfram (2005). Promise and Perils of Water Reform: Perspectives from Northern Ghana.
11. Mollinga, Peter P. (2004). Sleeping with the Enemy: Dichotomies and Polarisation in Indian Policy Debates on the Environmental and Social Effects of Irrigation.
12. Wall, Caleb (2006). Knowledge for Development: Local and External Knowledge in Development Research.
13. Laube, Wolfram and Eva Youkhana (2006). Cultural, Socio-Economic and Political Con-straints for Virtual Water Trade: Perspectives from the Volta Basin, West Africa.
14. Hornidge, Anna-Katharina (2006). Singapore: The Knowledge-Hub in the Straits of Malacca.
15. Evers, Hans-Dieter and Caleb Wall (2006). Knowledge Loss: Managing Local Knowledge in Rural Uzbekistan.
16. Youkhana, Eva; Lautze, J. and B. Barry (2006). Changing Interfaces in Volta Basin Water Management: Customary, National and Transboundary.
17. Evers, Hans-Dieter and Solvay Gerke (2006). The Strategic Importance of the Straits of Malacca for World Trade and Regional Development.
18. Hornidge, Anna-Katharina (2006). Defining Knowledge in Germany and Singapore: Do the Country-Specific Definitions of Knowledge Converge?
19. Mollinga, Peter M. (2007). Water Policy – Water Politics: Social Engineering and Strategic Action in Water Sector Reform.
20. Evers, Hans-Dieter and Anna-Katharina Hornidge (2007). Knowledge Hubs Along the Straits of Malacca.
21. Sultana, Nayeem (2007). Trans-National Identities, Modes of Networking and Integration in a Multi-Cultural Society. A Study of Migrant Bangladeshis in Peninsular Malaysia.
22. Yalcin, Resul and Peter M. Mollinga (2007). Institutional Transformation in Uzbekistan's Agricultural and Water Resources Administration: The Creation of a New Bureaucracy.
23. Menkhoff, T.; Loh, P. H. M.; Chua, S. B.; Evers, H.-D. and Chay Yue Wah (2007). Riau Vegetables for Singapore Consumers: A Collaborative Knowledge-Transfer Project Across the Straits of Malacca.
24. Evers, Hans-Dieter and Solvay Gerke (2007). Social and Cultural Dimensions of Market Expansion.
25. Obeng, G. Y.; Evers, H.-D.; Akuffo, F. O., Braimah, I. and A. Brew-Hammond (2007). Solar PV Rural Electrification and Energy-Poverty Assessment in Ghana: A Principal Component Analysis.
26. Eguavoen, Irit; E. Youkhana (2008). Small Towns Face Big Challenge. The Management of Piped Systems after the Water Sector Reform in Ghana.
27. Evers, Hans-Dieter (2008). Knowledge Hubs and Knowledge Clusters: Designing a Knowledge Architecture for Development
28. Ampomah, Ben Y.; Adjei, B. and E. Youkhana (2008). The Transboundary Water Resources Management Regime of the Volta Basin.
29. Saravanan.V.S.; McDonald, Geoffrey T. and Peter P. Mollinga (2008). Critical Review of Integrated Water Resources Management: Moving Beyond Polarised Discourse.
30. Laube, Wolfram; Awo, Martha and Benjamin Schraven (2008). Erratic Rains and Erratic Markets: Environmental change, economic globalisation and the expansion of shallow groundwater irrigation in West Africa.

31. Mollinga, Peter P. (2008). For a Political Sociology of Water Resources Management.
32. Hauck, Jennifer; Youkhana, Eva (2008). Histories of water and fisheries management in Northern Ghana.
33. Mollinga, Peter P. (2008). The Rational Organisation of Dissent. Boundary concepts, boundary objects and boundary settings in the interdisciplinary study of natural resources management.
34. Evers, Hans-Dieter; Gerke, Solvay (2009). Strategic Group Analysis.
35. Evers, Hans-Dieter; Benedikter, Simon (2009). Strategic Group Formation in the Mekong Delta - The Development of a Modern Hydraulic Society.
36. Obeng, George Yaw; Evers, Hans-Dieter (2009). Solar PV Rural Electrification and Energy-Poverty: A Review and Conceptual Framework With Reference to Ghana.
37. Scholtes, Fabian (2009). Analysing and explaining power in a capability perspective.
38. Eguavoen, Irit (2009). The Acquisition of Water Storage Facilities in the Abay River Basin, Ethiopia.
39. Hornidge, Anna-Katharina; Mehmood Ul Hassan; Mollinga, Peter P. (2009). 'Follow the Innovation' – A joint experimentation and learning approach to transdisciplinary innovation research.
40. Scholtes, Fabian (2009). How does moral knowledge matter in development practice, and how can it be researched?
41. Laube, Wolfram (2009). Creative Bureaucracy: Balancing power in irrigation administration in northern Ghana.
42. Laube, Wolfram (2009). Changing the Course of History? Implementing water reforms in Ghana and South Africa.
43. Scholtes, Fabian (2009). Status quo and prospects of smallholders in the Brazilian sugarcane and ethanol sector: Lessons for development and poverty reduction.
44. Evers, Hans-Dieter; Genschick, Sven; Schraven, Benjamin (2009). Constructing Epistemic Landscapes: Methods of GIS-Based Mapping.
45. Saravanan V.S. (2009). Integration of Policies in Framing Water Management Problem: Analysing Policy Processes using a Bayesian Network.
46. Saravanan V.S. (2009). Dancing to the Tune of Democracy: Agents Negotiating Power to Decentralise Water Management.
47. Huu, Pham Cong; Rhlers, Eckart; Saravanan, V. Subramanian (2009). Dyke System Planing: Theory and Practice in Can Tho City, Vietnam.
48. Evers, Hans-Dieter; Bauer, Tatjana (2009). Emerging Epistemic Landscapes: Knowledge Clusters in Ho Chi Minh City and the Mekong Delta.
49. Reis, Nadine; Mollinga, Peter P. (2009). Microcredit for Rural Water Supply and Sanitation in the Mekong Delta. Policy implementation between the needs for clean water and 'beautiful latrines'.
50. Gerke, Solvay; Ehlert, Judith (2009). Local Knowledge as Strategic Resource: Fishery in the Seasonal Floodplains of the Mekong Delta, Vietnam
51. Schraven, Benjamin; Eguavoen, Irit; Manske, Günther (2009). Doctoral degrees for capacity development: Results from a survey among African BiGS-DR alumni.
52. Nguyen, Loan (2010). Legal Framework of the Water Sector in Vietnam.
53. Nguyen, Loan (2010). Problems of Law Enforcement in Vietnam. The Case of Wastewater Management in Can Tho City.
54. Oberkircher, Lisa et al. (2010). Rethinking Water Management in Khorezm, Uzbekistan. Concepts and Recommendations.
55. Waibel, Gabi (2010). State Management in Transition: Understanding Water Resources Management in Vietnam.
56. Saravanan V.S.; Mollinga, Peter P. (2010). Water Pollution and Human Health. Transdisciplinary Research on Risk Governance in a Complex Society.
57. Vormoor, Klaus (2010). Water Engineering, Agricultural Development and Socio-Economic Trends in the Mekong Delta, Vietnam.
58. Hornidge, Anna-Katharina; Kurfürst, Sandra (2010). Envisioning the Future, Conceptualising Public Space. Hanoi and Singapore Negotiating Spaces for Negotiation.
59. Mollinga, Peter P. (2010). Transdisciplinary Method for Water Pollution and Human Health Research.
60. Youkhana, Eva (2010). Gender and the development of handicraft production in rural Yucatán/Mexico.
61. Naz, Farha; Saravanan V. Subramanian (2010). Water Management across Space and Time in India.
62. Evers, Hans-Dieter; Nordin, Ramli, Nienkemoer, Pamela (2010). Knowledge Cluster Formation in Peninsular Malaysia: The Emergence of an Epistemic Landscape.
63. Mehmood Ul Hassan; Hornidge, Anna-Katharina (2010). 'Follow the Innovation' – The second year of a joint experimentation and learning approach to transdisciplinary research in Uzbekistan.
64. Mollinga, Peter P. (2010). Boundary concepts for interdisciplinary analysis of irrigation water management in South Asia.
65. Noelle-Karimi, Christine (2006). Village Institutions in the Perception of National and International Actors in Afghanistan. (Amu Darya Project Working Paper No. 1)
66. Kuzmits, Bernd (2006). Cross-bordering Water Management in Central Asia. (Amu Darya Project Working Paper No. 2)
67. Schetter, Conrad; Glassner, Rainer; Karokhail, Masood (2006). Understanding Local Violence. Security Arrangements in Kandahar, Kunduz and Paktia. (Amu Darya Project Working Paper No. 3)

68. Shah, Usman (2007). Livelihoods in the Asqalan and Sufi-Qarayateem Canal Irrigation Systems in the Kunduz River Basin. (Amu Darya Project Working Paper No. 4)
69. ter Steege, Bernie (2007). Infrastructure and Water Distribution in the Asqalan and Sufi-Qarayateem Canal Irrigation Systems in the Kunduz River Basin. (Amu Darya Project Working Paper No. 5)
70. Mielke, Katja (2007). On The Concept of 'Village' in Northeastern Afghanistan. Explorations from Kunduz Province. (Amu Darya Project Working Paper No. 6)
71. Mielke, Katja; Glassner, Rainer; Schetter, Conrad; Yarash, Nasratullah (2007). Local Governance in Warsaj and Farkhar Districts. (Amu Darya Project Working Paper No. 7)
72. Meininghaus, Esther (2007). Legal Pluralism in Afghanistan. (Amu Darya Project Working Paper No. 8)
73. Yarash, Nasratullah; Smith, Paul; Mielke, Katja (2010). The fuel economy of mountain villages in Ishkamish and Burka (Northeast Afghanistan). Rural subsistence and urban marketing patterns. (Amu Darya Project Working Paper No. 9)
74. Oberkircher, Lisa (2011). 'Stay – We Will Serve You Plov!'. Puzzles and pitfalls of water research in rural Uzbekistan.
75. Shtaltovna, Anastasiya; Hornidge, Anna-Katharina; Mollinga, Peter P. (2011). The Reinvention of Agricultural Service Organisations in Uzbekistan – a Machine-Tractor Park in the Khorezm Region.
76. Stellmacher, Till; Grote, Ulrike (2011). Forest Coffee Certification in Ethiopia: Economic Boon or Ecological Bane?
77. Gatzweiler, Franz W.; Baumüller, Heike; Ladenburger, Christine; von Braun, Joachim (2011). Marginality. Addressing the roots causes of extreme poverty.
78. Mielke, Katja; Schetter, Conrad; Wilde, Andreas (2011). Dimensions of Social Order: Empirical Fact, Analytical Framework and Boundary Concept.
79. Yarash, Nasratullah; Mielke, Katja (2011). The Social Order of the Bazaar: Socio-economic embedding of Retail and Trade in Kunduz and Imam Sahib
80. Baumüller, Heike; Ladenburger, Christine; von Braun, Joachim (2011). Innovative business approaches for the reduction of extreme poverty and marginality?
81. Ziai, Aram (2011). Some reflections on the concept of 'development'.
82. Saravanan V.S., Mollinga, Peter P. (2011). The Environment and Human Health - An Agenda for Research.
83. Eguavoen, Irit; Tesfai, Weyni (2011). Rebuilding livelihoods after dam-induced relocation in Koga, Blue Nile basin, Ethiopia.
84. Eguavoen, I., Sisay Demeku Derib et al. (2011). Digging, damming or diverting? Small-scale irrigation in the Blue Nile basin, Ethiopia.
85. Genschick, Sven (2011). Pangasius at risk - Governance in farming and processing, and the role of different capital.
86. Quy-Hanh Nguyen, Hans-Dieter Evers (2011). Farmers as knowledge brokers: Analysing three cases from Vietnam's Mekong Delta.
87. Poos, Wolf Henrik (2011). The local governance of social security in rural Surkhondarya, Uzbekistan. Post-Soviet community, state and social order.
88. Graw, Valerie; Ladenburger, Christine (2012). Mapping Marginality Hotspots. Geographical Targeting for Poverty Reduction.
89. Gerke, Solvay; Evers, Hans-Dieter (2012). Looking East, looking West: Penang as a Knowledge Hub.
90. Turaeva, Rano (2012). Innovation policies in Uzbekistan: Path taken by ZEFa project on innovations in the sphere of agriculture.
91. Gleisberg-Gerber, Katrin (2012). Livelihoods and land management in the Ioba Province in south-western Burkina Faso.
92. Hiemenz, Ulrich (2012). The Politics of the Fight Against Food Price Volatility – Where do we stand and where are we heading?
93. Baumüller, Heike (2012). Facilitating agricultural technology adoption among the poor: The role of service delivery through mobile phones.
94. Akpabio, Emmanuel M.; Saravanan V.S. (2012). Water Supply and Sanitation Practices in Nigeria: Applying Local Ecological Knowledge to Understand Complexity.
95. Evers, Hans-Dieter; Nordin, Ramli (2012). The Symbolic Universe of Cyberjaya, Malaysia.
96. Akpabio, Emmanuel M. (2012). Water Supply and Sanitation Services Sector in Nigeria: The Policy Trend and Practice Constraints.
97. Boboyorov, Hafiz (2012). Masters and Networks of Knowledge Production and Transfer in the Cotton Sector of Southern Tajikistan.
98. Van Assche, Kristof; Hornidge, Anna-Katharina (2012). Knowledge in rural transitions - formal and informal underpinnings of land governance in Khorezm.

## ZEF Development Studies

edited by  
Solvay Gerke and Hans-Dieter Evers

Center for Development Research (ZEF),  
University of Bonn

Shahjahan H. Bhuiyan  
*Benefits of Social Capital. Urban Solid Waste Management in Bangladesh*  
Vol. 1, 2005, 288 p., 19.90 EUR, br. ISBN 3-8258-8382-5

Veronika Fuest  
*Demand-oriented Community Water Supply in Ghana. Policies, Practices and Outcomes*  
Vol. 2, 2006, 160 p., 19.90 EUR, br. ISBN 3-8258-9669-2

Anna-Katharina Hornidge  
*Knowledge Society. Vision and Social Construction of Reality in Germany and Singapore*  
Vol. 3, 2007, 200 p., 19.90 EUR, br. ISBN 978-3-8258-0701-6

Wolfram Laube  
*Changing Natural Resource Regimes in Northern Ghana. Actors, Structures and Institutions*  
Vol. 4, 2007, 392 p., 34.90 EUR, br. ISBN 978-3-8258-0641-5

Lirong Liu  
*Wirtschaftliche Freiheit und Wachstum. Eine internationale vergleichende Studie*  
Vol. 5, 2007, 200 p., 19.90 EUR, br. ISBN 978-3-8258-0701-6

Phuc Xuan To  
*Forest Property in the Vietnamese Uplands. An Ethnography of Forest Relations in Three Dao Villages*  
Vol. 6, 2007, 296 p., 29.90 EUR, br. ISBN 978-3-8258-0773-3

Caleb R.L. Wall, Peter P. Mollinga (Eds.)  
*Fieldwork in Difficult Environments. Methodology as Boundary Work in Development Research*  
Vol. 7, 2008, 192 p., 19.90 EUR, br. ISBN 978-3-8258-1383-3

Solvay Gerke, Hans-Dieter Evers, Anna-K. Hornidge (Eds.)  
*The Straits of Malacca. Knowledge and Diversity*  
Vol. 8, 2008, 240 p., 29.90 EUR, br. ISBN 978-3-8258-1383-3

Caleb Wall  
*Argorods of Western Uzbekistan. Knowledge Control and Agriculture in Khorezm*  
Vol. 9, 2008, 384 p., 29.90 EUR, br. ISBN 978-3-8258-1426-7

Irit Eguavoen  
*The Political Ecology of Household Water in Northern Ghana*  
Vol. 10, 2008, 328 p., 34.90 EUR, br. ISBN 978-3-8258-1613-1

Charlotte van der Schaaf  
*Institutional Change and Irrigation Management in Burkina Faso. Flowing Structures and Concrete Struggles*  
Vol. 11, 2009, 344 p., 34.90 EUR, br. ISBN 978-3-8258-1624-7

Nayeem Sultana  
*The Bangladeshi Diaspora in Peninsular Malaysia. Organizational Structure, Survival Strategies and Networks*  
Vol. 12, 2009, 368 p., 34.90 EUR, br. ISBN 978-3-8258-1629-2

Peter P. Mollinga, Anjali Bhat, Saravanan V.S. (Eds.)  
*When Policy Meets Reality. Political Dynamics and the Practice of Integration in Water Resources Management Reform*  
Vol. 13, 216 p., 29.90 EUR, br., ISBN 978-3-643-10672-8

Irit Eguavoen, Wolfram Laube (Eds.)  
*Negotiating Local Governance. Natural Resources Management at the Interface of Communities and the State*  
Vol. 14, 248 p., 29.90 EUR, br., ISBN 978-3-643-10673-5

Martha A. Awo  
*Marketing and Market Queens - A study of tomato farmers in the Upper East region of Ghana*  
Vol. 21, 192 S., 29.90 EUR, br., ISBN 978-3-643-90234-4

William Tsuma  
*Gold Mining in Ghana. Actors, Alliances and Power*  
Vol. 15, 2010, 256 p., 29.90 EUR, br., ISBN 978-3-643-10811-1

Thim Ly  
*Planning the Lower Mekong Basin: Social Intervention in the Se San River*  
Vol. 16, 2010, 240 p., 29.90 EUR, br., ISBN 978-3-643-10834-0

Tatjana Bauer  
*The Challenge of Knowledge Sharing - Practices of the Vietnamese Science Community in Ho Chi Minh City and the Mekong Delta*  
Vol. 17, 2011, 304 p., 29.90 EUR, br., ISBN 978-3-643-90121-7

Pham Cong Huu  
*Floods and Farmers - Politics, Economics and Environmental Impacts of Dyke Construction in the Mekong Delta / Vietnam*  
Vol. 18, 2012, 200 p., 29.90 EUR, br., ISBN 978-3-643-90167-5

Judith Ehlert  
*Beautiful Floods - Environmental Knowledge and Agrarian Change in the Mekong Delta, Vietnam*  
Bd. 19, 256 S., 29,90 €, br, ISBN 978-3-643-90195-8

Nadine Reis  
*Tracing and Making the State - Policy practices and domestic water supply in the Mekong Delta, Vietnam*  
Vol. 20, 272 S., 29.90 EUR, br., ISBN 978-3-643-90196-5