Kai Wegerich

# *Handing over the sunset*

## External factors influencing the establishment of water user associations in Uzbekistan: Evidence from Khorezm Province

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# Foreword

Dr Kai Wegerich has built a prominent reputation in rural, irrigation and international studies in Central Asia. This book reflects the sound foundations built in Dr Kai Wegerich's earlier work.

The purpose of this book is to bring together a suite of studies that have illuminated the main features of the post 1990 political economy and political ecology of the Khorezm Province of Uzbekistan.

The first two case study chapters analyse the attempts to cope with disintegration of the complex former Soviet system which had integrated the management of water in Uzbekistan with that of neighbouring Aral Basin republics. This system also integrated the water sector with the energy sector, the agricultural sector and the economies of the Aral Sea states with the Soviet system more generally. The later case study chapters exemplify the role of meso level water bureaucracies, agricultural bureaucracy and state control as well as land reforms in Uzbekistan.

The main messages - conveyed very effectively - are that, first, the contested water resources are not being managed effectively. Agricultural water systems and the environmental services provided by water resources are being handled sub-optimally. Secondly, the attempts at institutional reform via Water users Associations and land reform have had very limited impacts. It is shown that embedded social networks and inherited systems of power relations have been able to capture both resources and processes. These social and political processes have often had negative impacts. Thirdly, the full agricultural potential of the land and water resources of many regions of Central Asia is not being realised. This outcome is a consequence of the absence of an effective international water management regime and presence of dysfunctional institutions at the local and national levels.

Each case study chapter has a relevant theoretical framework which enhances the communication of the individual and overall findings. Dr Kai Wegerich deploys theory from a number of social science disciplines. The theory is handled fluently and helps the reader to understand the complex political and social processes being analysed. The interdisciplinary approach to the topics has produced a coherent and authoritative analysis.

The book is of high quality. The description and analysis presented in it provide new perspectives on water management, water policy reform and land reform in Central Asia.

Professor Tony Allan

# Summary

The rationale behind this extensive study of physical, organizational, socio-economic, and political factors influencing local water management in Uzbekistan is to question the feasibility of the current Uzbek government policy of establishing water user associations (WUAs) nationwide and the large international agencies' (United States Agency for International Development: USAID; International Water Management Institute: IWMI) involvement in establishing WUAs. The onset of the policy seemed to be a rational development since the former state and collective farms (today called *shirkats*) were disintegrating and new private farming was emerging rapidly. However, it has to be questioned whether external factors facilitate or hinder the sustainability of WUAs. Hence, this study seeks to identify the current external factors and therefore enable the Uzbek government and the international agencies to address these wider factors in order to enable sustainable local water management organizations.

Chapter Two sets the overarching framework, by discussing triggering influences, objectives, external factors, as well as implementation strategies for irrigation management transfer (IMT). Even though since the 1980s there has been a general policy trend towards creating WUAs in the South, there is little discussion and agreement on (a) what constitutes an external factor, (b) how the external factors influence the success of IMT, (c) how an IMT policy should be implemented. The discussion of the different objectives and external factors identified represents an attempt to bring different approaches of policy advisors together, to deepen understanding and heighten awareness of the conditions that will contribute to a successful IMT policy.

In Chapter Three, the applicability of integrated water resource management (IWRM) principles to the Amu Darya basin in Central Asia is evaluated. During the time of the Soviet Union, water distribution management aimed to secure the needs of the expanding cotton production in the downstream riparian states of Uzbekistan and Turkmenistan. This policy disadvantaged the downstream Aral Sea and the upstream riparian states of Kyrgyzstan, Tajikistan, and especially Afghanistan. The current and future water demands of the riparian states are analyzed on the basis of water allocation agreements between the riparian states. The disappointing conclusion is that IWRM principles were not implemented. Water continues to be managed according to administrative boundaries, the environment is still not considered, and even the implementation of the water allocation agreements appears to be flawed.

Chapter Four focuses on the Amu Darya and Syr Darya basins. The chapter shows that neither the pre-existing problems of allocation, which were not resolved during the Soviet period, nor the problems of provision that only came into existence because of the disintegration of the Soviet Union, have been solved. Furthermore, it is argued that the disintegration has caused new

allocation problems. The riparian states are no longer integrated in the issue-linkage approach that had incorporated food, energy, and water. The policy of food self-sufficiency, developed since independence by all the individual riparian states, has led to increases in water demand upstream and therefore put pressure on the downstream riparian states as well as on the Aral Sea.

Chapter Five addresses problems of water resource management on the district and provincial level in Khorezm Province, Uzbekistan. The district water organizations are responsible for equitable water distribution to agricultural users. These organizations do not have the necessary logistical capacities to manage the water resources nor to control water utilization at the local level. Over-extraction and lack of control are leading to common pool resource problems at the district level. Furthermore, the concept of administrative management of water resources at the district level, instead of hydrologic management, increases the problems of equitable water distribution on the provincial, national, and international level.

Chapter Six focuses on the organizational problems of the State Department of Water Resources at the district level in Khorezm Province, Uzbekistan. The study opens the organizational 'black box' and looks inside the organizational structure of the Department of Water Resources. The analysis goes beyond the current studies and reports focusing on the duties of the organization, by analyzing the logistical capabilities and the constraining factors that resulted from the organizational structure after the merger in 1997 between the Ministry of Agriculture and the Ministry of Melioration and Water Management. The chapter utilizes organizational theory approaches to power in order to analyze the state Department of Water Resources. Even though the merger between the two ministries was supposed to create two equally important departments within one ministry, the analysis shows that the Department of Water Resources became submerged in the new organization. The water department lost its old organizational objective of distributing water 'equitably' to agricultural water users. The dominant objective of the whole organization became the old objective of the agricultural department, namely fulfilling the state-order target for procurement of wheat and cotton. In addition, the ability of the water resources department to manage and to control water resources was reduced during the merger. The merger reduced not only the resource power of the water department, but also its process power. The collected data show that the decisions on water distribution were strongly influenced by the agricultural department and the governors (hakims) of the districts.

Chapter Seven analyzes informal networks and their utilization in two districts in Khorezm Province during a period of water scarcity. The evaluation is based on an organizational theory approach to informal networks. Communication patterns between farm managers, district water departments, and district governors in a year with a sufficient amount of water and in a year of water scarcity are compared in relation to the utilization of informal network

structures. The analysis shows that in the year of water scarcity an informal network was utilized to receive water. The importance of the informal network increased with increasing experience and individual perception of water scarcity. The findings confirm the assumption that informal networks are utilized more frequently when formal networks fail or are not functional. The case study therefore confirms the importance of an informal network during a crisis.

Chapter Eight focuses on political aspects of water allocation between different sectors in Uzbekistan and the influence of civil society in decision-making processes. Data are presented that emphasize the rising power of the agricultural sector and the downgrading of urban water sector organizations in Uzbekistan since independence. The process of downgrading is reflected in a change of status of the organization, the level of dependency, and a change in funding. In addition, data are presented to show the top-down influence of the authorities on NGOs and *mahallas* (urban divisions or neighborhoods). It is argued that an increase in the influence of civil society is seen as a threat to the political system. It is concluded that the current authoritative structure does not allow horizontal platforms that could challenge the current political agenda, and the manifestation of the political structure as represented in the form of agricultural organization.

Chapter Nine focuses on informal networks and their utilization between different administrative levels. Since independence, the managers of former state and collective farms have changed on average every three years. According to one official Uzbek government statement, attaining the position of shirkat manager is based on bribes and networks. Chapter Nine exposes network links between shirkat managers and province and district governors in two districts in Khorezm Province. Furthermore it provides an analysis of the kinds of networks and links that are mainly utilized and that offer the most stability to the shirkat managers who hope to remain in their position.

Chapter Ten focuses on recent land reforms in Uzbekistan. These reforms differed significantly from land reforms in Kazakhstan or Kyrgyzstan. Whereas in the latter two states land was distributed to all former employees of the collective farms, in Uzbekistan land was supposed to be distributed to former farm employees with a high level of education and specialization. The data presented suggest that financial and physical assets were the main reasons for receiving land, rather than skills. The data suggest that social networks and political influence were utilized as well. Chapter Ten concludes that, first, the privatization process alienated the rural poor from the beginning and, secondly, privatization manifested or even increased the existing rural power relationships, thereby polarizing and perhaps further destabilizing the rural sector.

Finally it is concluded that none of the physical and basin, organizational, socio-economic, and political factors is conducive to the policy of IMT. The implication is that the policy of IMT will fail if the conditions of the external environment are not changed prior to introducing the policy of transferring

irrigation management to users. It appears that the policy is about neither efficiency, equity nor empowerment; it is about handing over the costs of rehabilitating and maintaining the irrigation system to the users, who under the current economic conditions will not be able to cover the costs. Specific conclusions are:

Developments on the basin scale will influence the level of relative water scarcity in Uzbekistan, and may lead to water allocation and provision being priced at the international level. Hence, developments in the basin will determine the strategy of IMT and the sustainability of WUAs in Uzbekistan.

Because of the large differences in economic viability within the two basins, one blueprint for IMT will not work. In addition, in some provinces such as Kashkadarya and Jizzak, and maybe even Bukhara, irrigation agriculture will not be feasible if the Uzbek government wants to recover the full operation and maintenance costs from farmers. However, a strategy of reallocating subsidies to users instead of directly to the irrigation agency could decrease rent-seeking.

The evidence presented suggests that currently the water agency has neither enough logistical capabilities nor organizational strength, and may not even be in a strong power position vis-à-vis other state bureaucracies and farmers. Even though logistical capabilities and organizational strength could be improved through investment and training, the state-order system, with its creation of vested interests on the various administrative levels, will continue to influence the distribution of water.

The evidence presented on network structure and its utilization suggests that a strong network structure is present. It seems that the factor of leadership could have positive as well as negative influences. While it could lead to the empowerment of one WUA, it could at the same time lead to the disempowerment of other WUAs at the tail-end within the larger hydraulic system. Hence, leadership leading to empowerment could be a zero-sum game among different WUAs.

Although the international and even some national pilot projects focus on hydraulic boundaries, the new wave of privatization and the large-scale creation of WUAs sticks to the administrative levels of the former shirkats. This puts into question whether lessons learned from the pilot projects could be transferred to the newly created WUAs.

The data suggest that the land reform created a large group of possible absentee landowners, or at least diversified farmers, who see farming only as one livelihood strategy, but possibly not as their main one. This may influence their willingness to participate in WUAs and to invest in the irrigation system.

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I am very grateful to my mother, who asked very innocently after the PhD thesis was published, "don't you have to write another book?"

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# 1 Introduction

## 1.1 Purpose

The rationale behind this extensive study of physical and basin, organizational, socio-economic, and political factors influencing local water management in Uzbekistan is to assess the merits and feasibility of the current Uzbek government policy of irrigation management transfer (IMT) and the establishment of water user associations (WUAs) nationwide, and to question the large international agencies' (United States Agency for International Development: USAID; International Water Management Institute: IWMI) involvement in setting up WUAs. The onset of the policy seemed to be a rational development since the former state and collective farms (today called *shirkats*) were disintegrating and new private farming was emerging rapidly. However, it has to be questioned whether the external environmental conditions facilitate the sustainability of WUAs or are a hindering factor thereby worsening the situation of the rural population. Hence, the study seeks to identify the current external conditions and therefore enable the Uzbek government and the international agencies to address the wider conditions for sustainable local water management organizations.

## 1.2 Structure

The book is divided into different groups of external factors, which do not coincide with any of the identified models (discussed in Chapter Two) structuring external factors influencing the success and sustainability of WUAs. The different groups come close to the three groups of factors identified by Meinzen-Dick et al. (1994), with their distinction between physical and technical, policy and governance, and social and economic groups. The groups distinguished here are: (1) the physical and basin environment, (2) the organizational environment, and (3) the socio-economic and political environment. The first group incorporates water availability at basin level, potential water conflicts over allocation and provision between the independent riparian states that share the Aral Sea basin, and the bias of the basin organization. The second group focuses on the logistical capabilities of the province and district organizations, organizational changes during the late 1990s, their consequences for equitable distribution, and the power of influential stakeholders to manipulate water allocation at the district level. The third group incorporates state policy towards empowerment of civil society and other sectors utilizing water, network structures of powerful stakeholders, and recent land reforms and their consequences for the rural population. As the explanation of

the different groups indicates, there seems to be a link between the physical and basin, organizational, and socio-economic and political environment. Hence, the distinction appears to be arbitrary. The individual chapters will show the relation between the different groups.

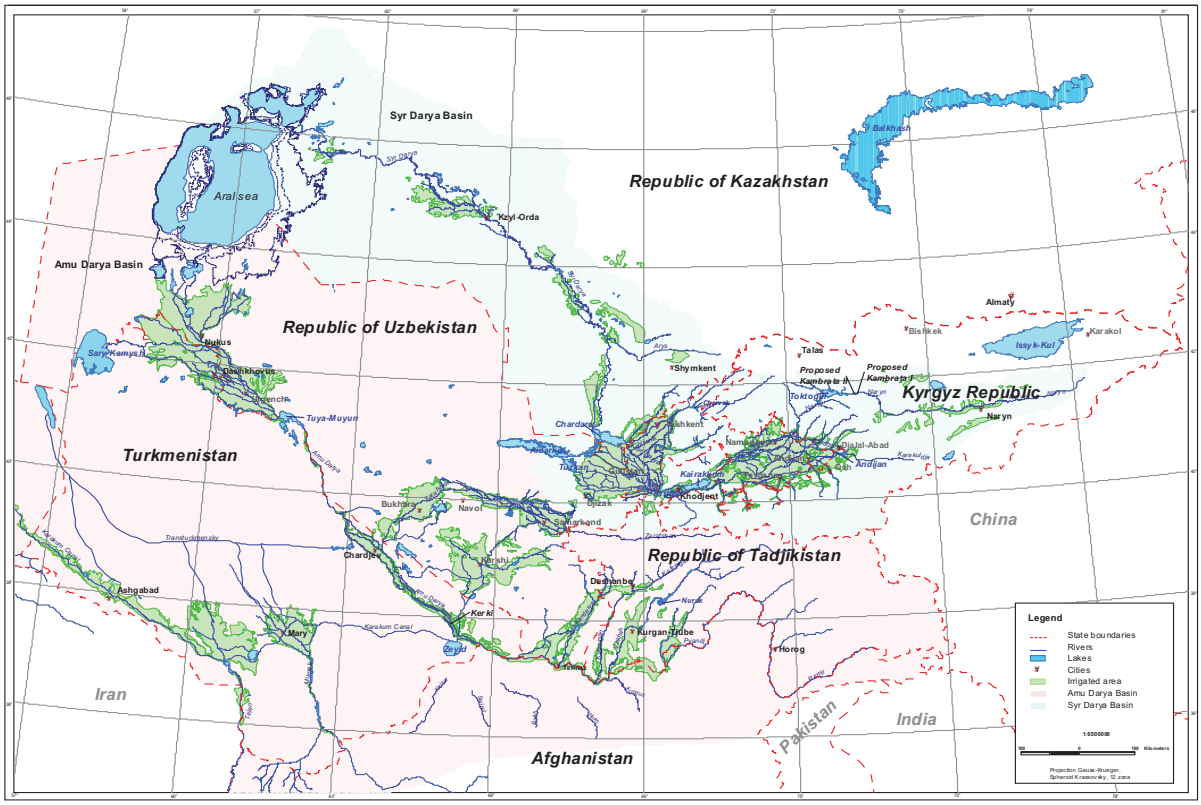
## 1.3 Methodology

The fieldwork was conducted in three different periods and with three different objectives in Khorezm Province, Uzbekistan. The first fieldwork period, from October to November 2002, emphasized the organizational problems of the district and provincial water management organizations in Khorezm. All district managers of the 11 District Departments of Water Resources were questioned in semi-structured interviews about logistical problems in relation to water control, as well as changes in organizational structures and their consequences for water management. The majority of these managers were interviewed twice to validate and crosscheck statements from other districts. Furthermore, technical control structures at the district level were visited, and staff at these control structures were interviewed to question the statements on overall water control. In addition, to crosscheck the perceptions of the organizational changes, similar questions were asked in the Province Departments of Water Resources in Kashkadarya and in the autonomous republic of Karakalpakstan.

The first research hinted at the importance of informal networks in influencing water distribution. To substantiate this suspicion, the second field research was conducted between March and May 2003. It was decided to geographically limit the research area to two districts in Khorezm Province. The research started off with semi-structured interviews of current shirkat managers. However, because of the political sensitivity of the topic it was not possible to receive background information on the deeper network structures, but only on the utilization of these networks. To gain a deeper understanding, former shirkat managers in the other nine districts were interviewed. It appeared that it was not possible to ask former shirkat managers about the basis of the network structure as long as they were still ‘within’ the system. Only former managers who had left the system were relatively open to speak about the system and how it functions. Once a deeper understanding had been achieved about the determinants of the network structures and how networks change, former shirkat managers in the two districts were asked to map the network structures between shirkat managers and district hakims (governors), as well as between shirkat managers and province hakims. In addition, during this fieldwork, data on water availability and water utilization at the basin level were obtained from the Amu Darya River Basin Organization (Basseynoe Vodnoe Ob’edinenie: BVO).

The third fieldwork was conducted in the period from October 2003 to May 2004. Whereas the first two visits were research focused, the purpose of the third and longest visit was development work aimed at strengthening the provincial Farmer and Dekhan Association (FDA) in Khorezm. Working within

the provincial farmer organization provided a deeper understanding of current land reform policies and implementations. The data used for the research were gathered through semi-structured interviews with key informants at the FDA and group discussions with FDA staff, as well as from a survey conducted in two privatized shirkats in Yangibazar District.




**Map 1-1: The Aral Sea basin**

*Source*: PA Consortium Group and PA Consulting 2002

## 1.4 Background to water management in Uzbekistan

### *1.4.1 Geographical background*

The Aral Sea basin (Map 1-1) covers about 1.8m km$^2$ and is located within six states: Afghanistan and the five Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) (Map 1-2). With the exception of Kazakhstan, the Central Asian Republics lie almost entirely within the Aral Sea basin. The basin can be described as a large drainage system that terminates in the Aral Sea. The western and central parts consist of plains (the Kara-Kum and Kyz-Kum deserts); the eastern part is occupied by large mountain ranges. The mountain ranges form the flow generation zone for Central Asia's main rivers, the Amu Darya and the Syr Darya, that cross the deserts and flow into the Aral Sea. The Syr Darya is the largest river in terms of

length. Measured from the Naryn headwater in Kyrgyzstan to the Aral Sea, its length is 3,019 km, with a catchment area of 219,000 km$^2$. The Amu Darya is the largest river in Central Asia. Its length is 2,540 km and has a catchment area is 309,000 km$^2$. (Dukhovny and Sokolov n.d.:3). The Amu Darya originates in Afghanistan on the glacier in the Vakjdjir Pass. On their way to the Aral Sea, the rivers not only cross international boundaries but are also used as boundaries between states.

While upstream, the Amu Darya forms the border between Tajikistan and Afghanistan, midstream it crosses the territories of Uzbekistan and Turkmenistan. The downstream regions consist of Khorezm (Uzbekistan), Dashovuz (Turkmenistan) and the autonomous republic of Karakalpakstan (Uzbekistan). The three downstream provinces receive their allocated water resources through the Tuyamuyun reservoir, which is located on the Amu Darya river before it reaches Khorezm. The research was conducted mainly in Khorezm Province (Map 1-3).


**Map 1-2: Uzbekistan**

*Source*: http://www.lib.utexas.edu/maps/commonwealth/uzbekistan.jpg


**Map 1-3: Khorezm Province**

*Source*: Ruzieva, ZEF GIS expert, German Uzbekistan project

Khorezm Province has 11 districts. The water from the Amu Darya is distributed through a complex system of canals starting in the upstream Pitnyak District. Even the districts adjacent to the Amu Darya receive water through these canals rather than pumping it directly from the Amu Darya themselves. Hence, the main canal and its branches are either inter-district or transboundary canals that bring water to Dashaguz Province in Turkmenistan. Within Khorezm, the administrative boundaries of the districts do not coincide with the hydrological boundaries of the canals.

### *1.4.2 The irrigation system*

As has been argued elsewhere, there is no absolute water scarcity in the Amu Darya and Syr Darya basins, only relative water scarcity (Wegerich 2003), or in the terms of Ohlsson (1999) and Turton (1999) second order resource scarcity. This is explained conceptually by Repetto (1986) through the concept of rent-seeking, and by Mollinga (2003), through his socio-technical approach, arguing that the choice of technology and infrastructure is not free of social, cultural, economic, and political influences. This has been confirmed in international reports (TACIS 1995a; Thurman 2001) on the constructed irrigation systems in Central Asia, which appear to have never been a 'black box' but a 'broken box' from the start.

The irrigation system in Uzbekistan was designed for large-scale farms and mainly for one particular crop (cotton). Even during the Soviet era, problems

with on-farm irrigation systems were apparent. “Maintenance was commonly neglected, especially within farms, and construction was often shoddy” (Bucknall et al. 2001:5). The TACIS (1995a:79 and 83) WARMAP report points out that often the most convenient method of irrigation for farm management was chosen. This implies low flow rates and long furrows. Furthermore, the report argues that the irrigation system is a supply rather than a demand system. To establish a demand system is “either organisationally impossible […] or the capital cost of installing such a system would be prohibitive”. It is questionable, therefore, whether it would be possible to successfully hand over the irrigation system to the users.

Irrigation systems are built with a specific political rationality and under economic circumstances (Mollinga 2003; Mollinga and Vincent 1996). During the Soviet Union, energy costs were low, and the government wanted to stabilize the rural communities, secure borders, and increase the production of cotton. This rationality explains why during this period large-scale pump stations were constructed to feed agriculture at high altitudes. These pump stations pumped water to irrigated areas up to a height of 130 meters. With independence, the situation has changed, and these large-scale irrigation systems are not financially viable anymore (Bucknall et al. 2001). According to Bucknall et al.’s survey for the World Bank, in Uzbekistan, Jizzak and Kashkadarya Provinces would have negative gross margins of 11 and 64 percent in their territory. If irrigation ceases to be subsidized in this region, a population of over 1.1 million in Uzbekistan will be negatively affected (Bucknall et al. 2001). However, current proposals to rehabilitate the pump stations in Kashkadarya Province insist that farmers can take over the full capital cost of the rehabilitation in addition to the full operation and maintenance costs of the irrigation and drainage systems. Senior Uzbek water management experts agree that this is not possible (informal interview, Sokolov 2003, Stockholm).

### *1.4.3 Water management*

During the Soviet Union, BVOs were created for the two main rivers; for example, by the 1980s the Syr Darya was managed according to hydrological boundaries (compare Sokolov, unpublished). Although the Soviet Union introduced a basin water management approach on the highest level, on the national level water was managed according to administrative boundaries, such as province, district, and state or collective farm (Figure 1-1) (Renger 1998; Wolff 2002). During the Soviet period and up until 1997, Uzbekistan had an independent Ministry of Melioration and Water Management (Minvodkhoz). This situation was altered in autumn 1997 when the ministry was merged with the Ministry of Agriculture and a new Ministry of Agriculture and Water Resources created.

The process of restructuring water organizations and changing the legal frameworks is ongoing, and relatively recent changes have not been

incorporated in this book, such as the resolution (N320) passed on 21 July, 2003 by the Uzbek Cabinet of Ministers, introducing water management according to hydrological boundaries on the sub-national level. The resolution is based on a decree of the President of Uzbekistan. The decree defined the main goals of the Ministry for Agriculture and Water Resources. It states: "Water resources management providing transition from administrative-territorial to basin management principles of irrigation systems, and introduction of market principles in irrigation water use at all management levels". (President's Decree: N УП-3226, 24.03.2003) Under the new water framework there are ten management boards for irrigation systems plus a management board for the main canal systems in Ferghana valley (Figure 1-2). The change in the water management system resulted in the closure of all the province and districts departments in Uzbekistan and in the opening of new departments. According to the resolution, all employees were made redundant and had to reapply for a new position in the new organizations.[1] Although at the provincial and district level the departments of the ministry have been separated, on the national level they are still combined.

Another change in water management has taken place on the local level due to the complete or partial privatization of the state and collective farms. The new private farms, as well as the *dekhans* (households with small plots), face the problem that they are considered to be secondary water users (according to the Law of the Republic of Uzbekistan "About Water and Water Use", 1993). The State Water Directorates do not commit themselves to deliver water to secondary water users because the state budget does not allocate any funds for this purpose. These circumstances have forced the secondary water users to unite into an organization and jointly use the irrigation and drainage infrastructure (personal communication, Ibraymov, Head of Department, Ministry of Agriculture and Water Resources, Uzbekistan, 2004). Even though the privatization process started in the early 1990s, it is only the Cabinet Ministry's decree № 8 of 5 January, 2002 that allows the establishment of a water users' association (Ibraymov 2004: Power Point Presentation of Winrock International, Tashkent.).

Hence, the Ministry of Agriculture and Water Management has been propagating the integration of all secondary water users into WUAs. The formation of these bodies is currently supported by international organizations,

[1] Preliminary observations and interviews carried out in spring of 2004 with the new managers of the inter-district irrigation systems show that the key personnel have not changed, nor is water managed according to hydrological boundaries. Arguably, these changes are so recent that they have been implemented but not yet operationalized. However, my development work in Khorezm with district lawyers revealed that legal frameworks and reality on the ground are very often very different. This would put into question the emphasis of international organizations on new laws or on upgrading the law – especially when these laws reflect international experience, but not local reality.

such as the IWMI and Winrock International. According to Ibraymov, in 2004 there were 562 WUAs in Uzbekistan, including 52,000 private farmers with a total of 1.7m ha of irrigated land.

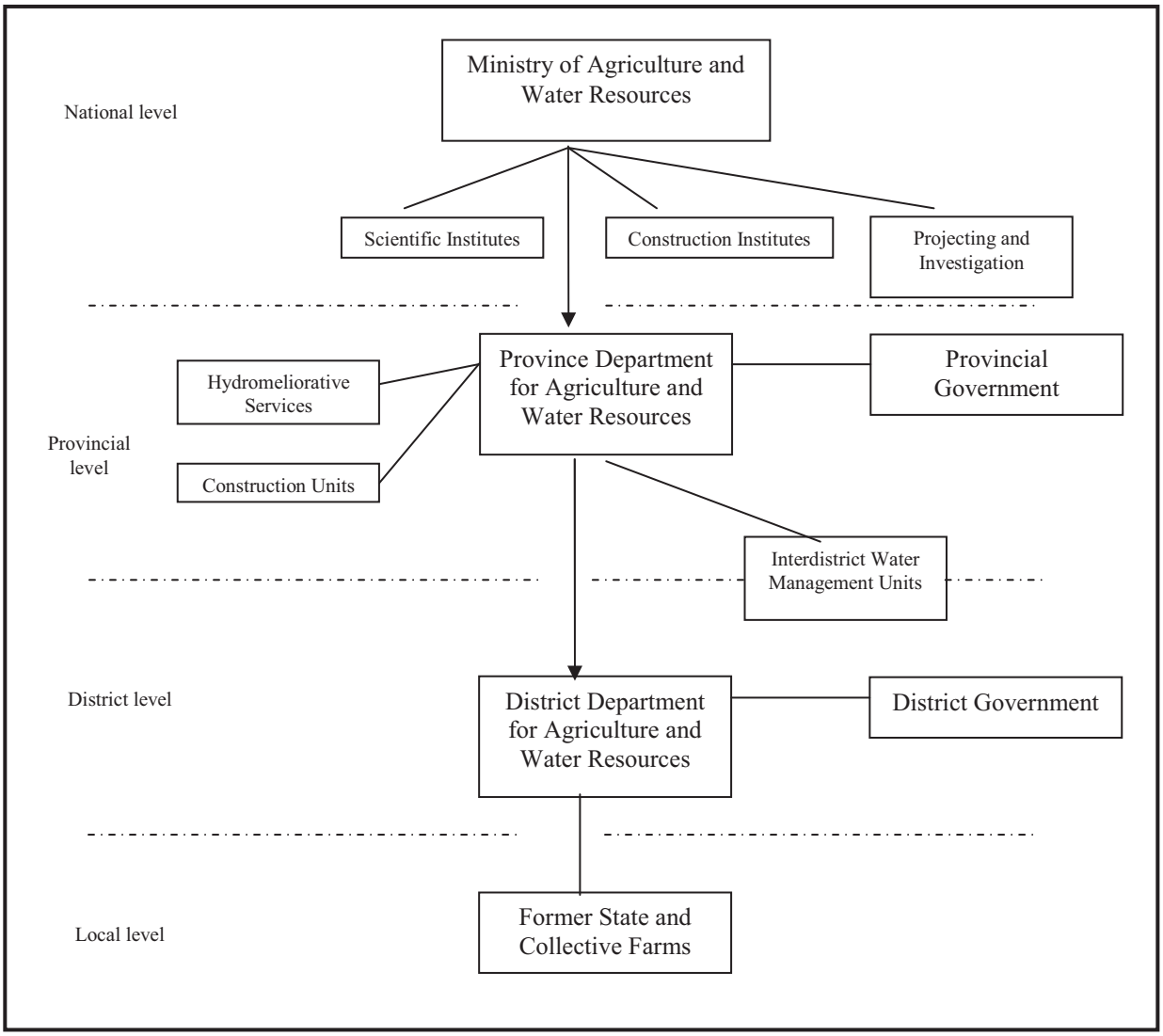



**Figure 1-1: Water management according to administrative boundaries**

*Source*: Renger 1998 (modified version)

There have already been studies on WUAs in Uzbekistan (Wegerich 2001a, 2002a) focusing primarily on the local level, on the heterogeneity of actors and the internal dynamics of the organizations. The recent Wegerich (2005) publication shows the interactions between different administrative levels facilitating and hindering the establishment of WUAs. Due to its theoretical focus on institutional change and the role of elites in facilitating the change process, the study does not give a broad view of wider factors influencing the establishment of WUAs in Uzbekistan.

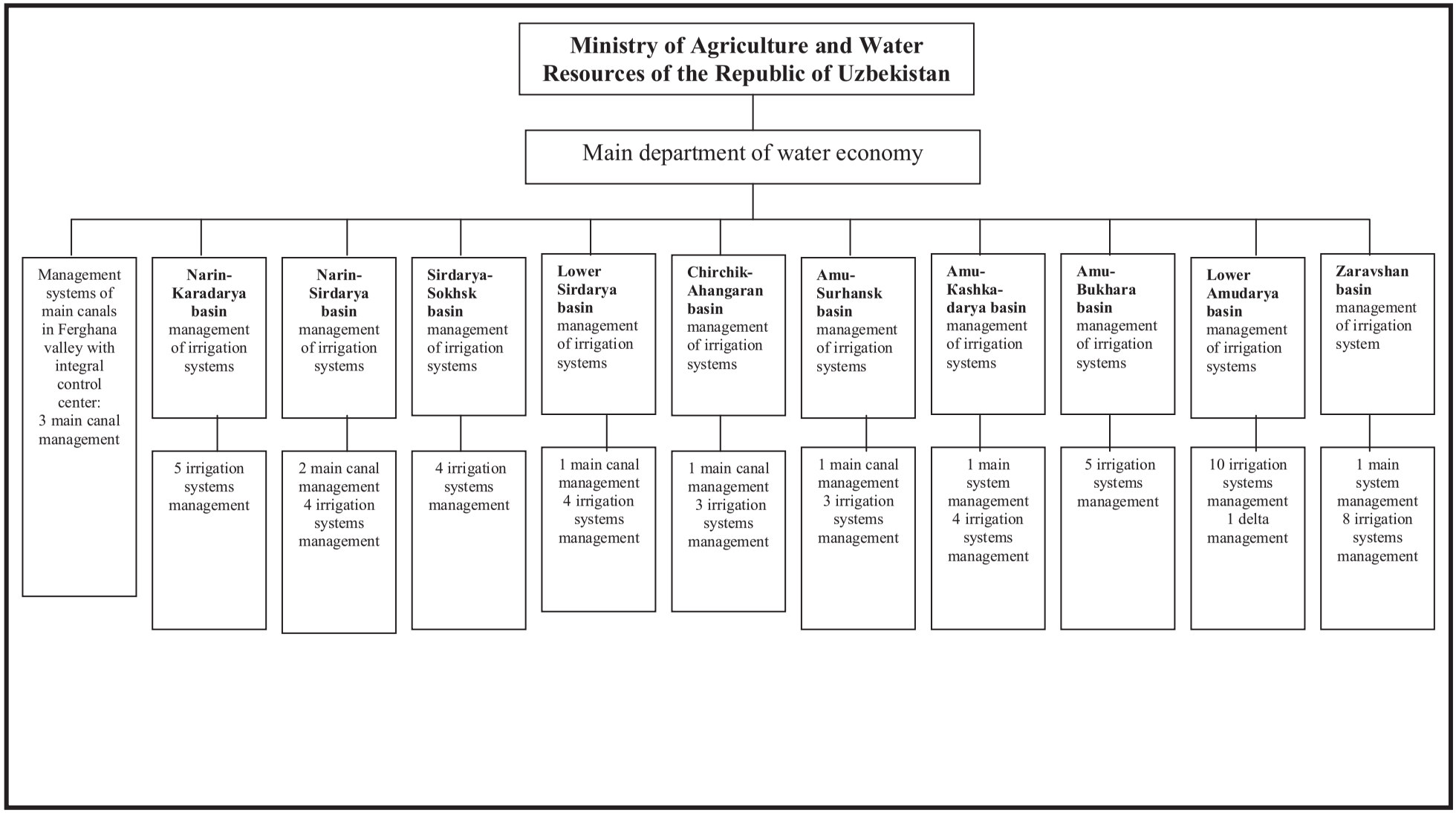



**Figure 1-2: Structure of basins with irrigation and canal management systems**

In a recent short study, Djalalov (n.d.a) focuses on internal and external factors influencing the sustainability of WUAs in Uzbekistan. Even though the study incorporates data collected from four provinces (Bukhara, Jizzak, Sirdarya, and Tashkent), the study is limited because it focuses only on water availability and financial aspects (access of farmers to credits) as external factors.

Another paper prepared by the USAID Natural Resources Management Project (NRMP) highlights different factors "that must be in place to insure a functioning WUA" (USAID n.d.:1). The study points to three factors that could be classified as external. These factors are (1) the ability to influence water delivery, (2) the legal basis on which WUAs can punish uncooperative members, (3) the financial viability of WUAs; and one internal factor, the origin of WUAs. On the basis of data collected from a district in Ferghana Province, the (USAID n.d.:3) paper argues that "there are virtually no funds available to cover the operation and maintenance costs of a WUA". In addition, it states that WUAs are organized by the local government, and therefore "farmers in general view the WUA as another branch of government, and do not view the organization as theirs". However, Djalalov (n.d.b:4) states that, in his case study area, elections were held and that "former chief hydraulic engineers of farms were elected as the WUA representatives". Whether elections can give an indication of the trust the community places on the organization is questionable. In the best case scenario, the electorate may have trust in the person elected though not necessarily in the organization. In the worst case, they may have had neither the choice of whether or not to have this organization nor the freedom to choose the potential candidates.[2] On the other hand, Djalalov (n.d.a:90&91) confirms the "lack of funds of members to pay membership fees and dues for the service" and also places the lack of funds in a wider context "the basic reason for nonpayment was the delay for grain on the part of the procuring organisations".

## 1.5 Background to the research idea

After the first field research trip, which focused on the organizational problems of water management, it became evident that concentrating on the organization in isolation does not explain the complexity of the system, the diversity of stakeholders, their actions, and the interactions between them. Presenting the flow chart (Figure 1-3) and the explanation to it (Box 1-1) to PhD students of the Uzbekistan Project at ZEF was supposed to gain deeper insights into the subject. In the discussion, it was argued that uncertain water delivery leads to water theft and that this increases water scarcity downstream. Hence, three consecutive stages were distinguished. Furthermore, it was argued that it would

[2] Compare with Chapters Seven and Nine.

be possible to cluster the factors identified in the first and second stages into internal and external groups. The debate took place prior to a literature review on internal and external factors influencing the success of IMT and the creation of WUAs. Hence, it did not reflect current debates on external and internal factors. Additionally, the debate did not have a social engineering focus (IMT and the creation of WUAs) but was meant to get a holistic picture of factors influencing water resources management. In the discussion, water management and the water management organizations were viewed as internal, and social, economic, and political factors as external.

In later discussions with other researchers at the School of Oriental and African Studies (SOAS) Water Issue Group in London, Urooj Amjad pointed out that external versus internal factors is only one dimension, and that there are other categories that could facilitate understanding of the situation. She proposed clustering the different factors into different dimensions, such as 1) structure versus process, 2) cause, effect, and catalyst, and 3) transformative change versus status quo keeping change (e-mail discussion 09.12.2002).

The discussions stimulated the idea of conducting further research on factors influencing water distribution and of joining the different research studies under one framework. However, as will become evident throughout the chapters, although the initial question had a strong focus on explaining the causes and consequences of 'uncertain water delivery', 'water theft', and 'increases in water scarcity', the research actually undertaken shifted more towards the socio-economic and political contexts. These are the areas that determine the setting in which water is managed, and therefore are relevant for IMT policy. They also address larger questions such as challenges of the established basin management frameworks, civil society's empowerment, poverty, rural stability, and interactions between different sectors in relation to water allocation.

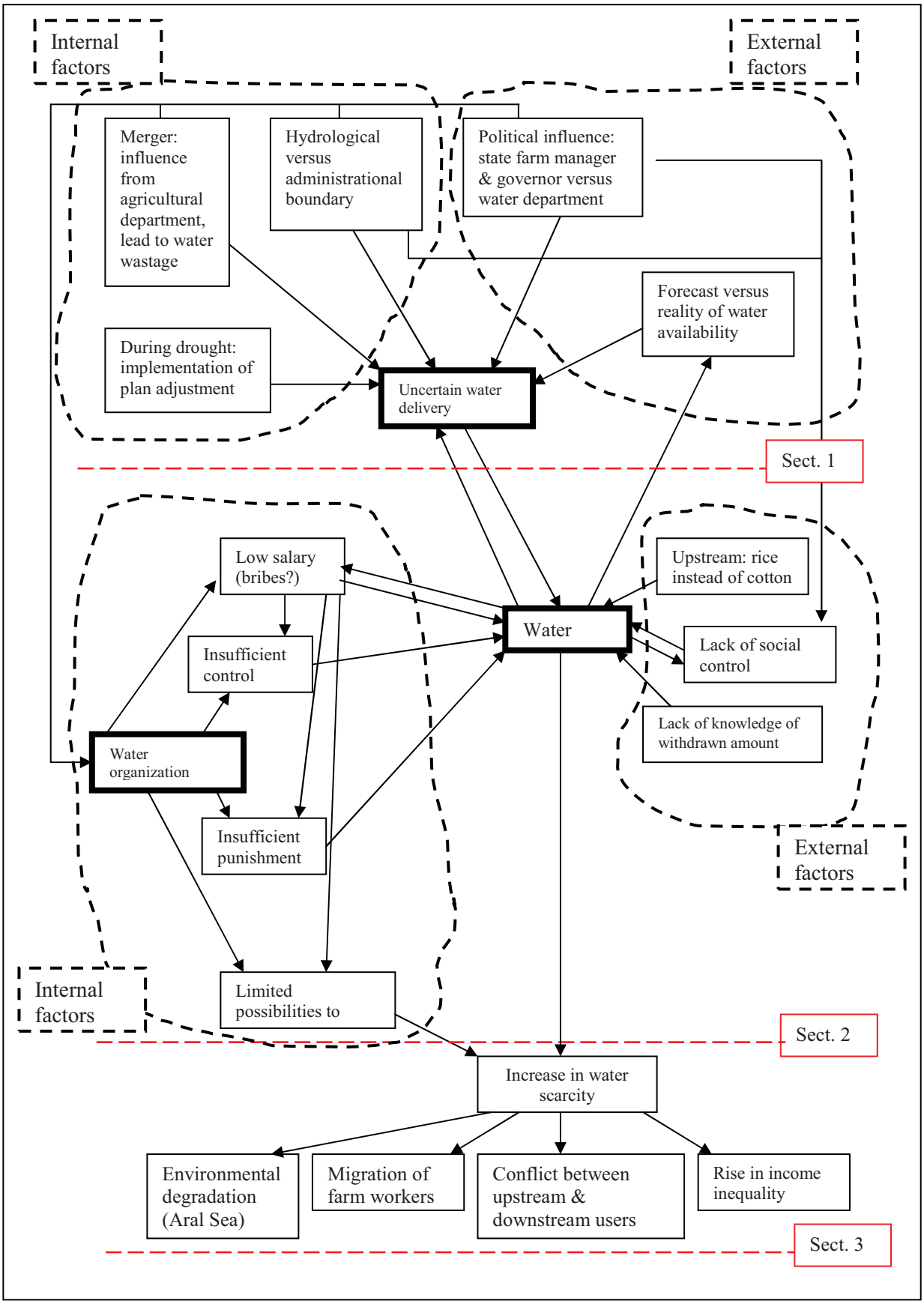



**Figure 1-3: Background to the research idea**

## Box 1-1: Explaining the model

Brief introduction to the problem of water distribution from the province to the district to the farm in Khorezm/Uzbekistan

Uzbekistan is an arid country. Agriculture is dependent on irrigation. Khorezm Province is downstream in the river basin, but upstream to one province in Turkmenistan and one last province in Uzbekistan, before the Amu Darya river reaches the Aral Sea. Water management in Khorezm affects directly the available water for downstream users (including the Aral Sea).

**Section 1: Different problems triggering uncertainty of water delivery**
External Dimensions:

1. During 2000 and 2001 there was a drought in Central Asia. While the available water was only reduced upstream (reservoir in Tajikistan) by 10%, it was reduced downstream (reservoir in Uzbekistan) by 50% (water theft on the way from different riparian provinces within Uzbekistan and Turkmenistan). The reservoir downstream is just the far side of the border of Khorezm Province, the area in which the ZEF project is located. The reduction of water availability due to the drought was forecast, the theft not. Hence water organizations downstream had to adjust to the problem of unpredicted water scarcity.
2. The organizations responsible for water distribution are not powerful; they provide only a service. The real players are former state and collective farm managers and governors of districts or the province. The position of these stakeholders depends on fulfilling the state production target; therefore they focus on their farm or district and pump more water for irrigation. The water organization has not the capability to stop them, and is even obliged to help in fulfilling the plan.

Internal Dimensions:

1. The area of responsibility of the water management organization units is determined by administrative boundaries, and not hydrological boundaries. This implies that they are only responsible for the users in the administrative unit. The interest of the administrative unit (amount and timing of water) does not coincide with the interest of all users in the hydrological unit.
2. In 1997 the Ministry of Agriculture and the Ministry of Water Resources merged. The merger had consequences for water management. Funding was reduced, equipment was not replaced, and staff were made redundant. The water department lost its power and influence. The agricultural department is influencing decision on water distribution, and this could lead to water wastage.
3. During the drought years there was the top-down policy of focusing on wheat and cotton instead of rice. It was prohibited to grow rice. In addition, because the water amount was reduced drastically (not as anticipated), not all areas were supposed to be irrigated. How was the plan adjustment implemented, was it implemented upstream in the province?

**Section 2: Different reasons for water theft**

External Dimensions:

1. The water delivery is uncertain. It is not guaranteed that the allocated amount of water will be distributed and that it will be distributed in time.
2. Whereas cotton has to be sold at state controlled prices, rice can be sold on the local market. Rice is more profitable.
3. At the local level there is no social control in terms of water theft. This is also encouraged by the influence of the power stakeholders and because of the difference of hydrological and administrative boundary.
4. The farmers do not know how much water they are extracting from the canal or river.

Internal Dimensions:

1. The salaries of the water organizations' employees are very low (16$ per months). Living costs are much higher. The low salaries could imply that the potential for theft is high. (assuming that job satisfaction is low)
2. The control over pumps is not sufficient. One person is supposed to control 10 pumps. The distance between the pumps is 1 km. One pump supplies 1,200 ha of land with water. The employee controlling the pump has neither car nor bicycle.
3. In the event of the pump controller noticing that someone was extracting more water than allowed, it is unlikely that the theft would be punished (fine or cut in water share).

**Section 3: Different consequences of water theft**

1. The amount of water available downstream decreases.
2. Increase in income inequality of upstream and downstream water users.
3. Severe water scarcity downstream in Karakalpakstan leads to migration of farm employees.
4. Rise in conflict potential between upstream and downstream users (farms, districts, provinces).
5. No water available for the environment (Aral Sea).

## 1.6 Significance of the framework discussion and case study

### *1.6.1 Theory*

Even though since the 1980s there has been a general policy trend towards creating WUAs in the South, there is little discussion and agreement on (a) what the objectives should be, (b) what the objectives are, (c) what the external factors influencing IMT are, (d) how they influence the success of IMT, (e) how an IMT policy should be implemented. In addition, it seems that guidelines of

international agencies and consultancy reports and academic papers of IMT policy advisors focus only on external influences. These documents are mainly based on case studies and draw their recommendations from small-scale irrigation systems experience. However, they do not discuss the different approaches and guidelines of other organizations. Hence, the review of the different reports and guidelines aims to open up the discussion on the different frameworks and therefore highlight strengths and weaknesses of the current approaches.

### *1.6.2 Case study*

All of the chapters have been submitted individually as journal papers or book chapters with their individual theoretical underpinning and therefore show already their individual weight and significance. The compilation of the data as different chapters in this book shows how all the different papers represent a piece within the larger jigsaw of external factors influencing the sustainability of WUAs in Uzbekistan. Hence, the compilation adds significant value to the value of each individual piece.

The material shows: (1) a detailed understanding of the political aspects of the water allocation and provision question within the basin framework, incorporating Afghanistan, and the new tendency towards utilizing water in upstream Kyrgyzstan and Tajikistan; (2) an analysis of the logistical and organizational problems of district and province water departments, which are furthering water disputes on the local level; (3) a detailed study of network structures, their dynamics, and their utilization to obtain managerial positions and access to water; (4) the attitude of the Uzbek state towards devolution of decision-making power to local stakeholders and therefore the state's fear of losing political control and the economic benefits of cotton production; (5) the problems occurring during the land reforms that seem to reinforce the local elite, but further inequality, rural poverty, and create the potential for local conflicts.

As the next chapter will suggest, the frame of the jigsaw is still not determined and therefore the data presented in the chapters will not complete the whole jigsaw. However, the compiled information already shows detailed information that will contribute significantly to understanding the factors influencing the policy of IMT and the creation of WUAs in Uzbekistan. Therefore, it may lead to a more cautious approach to IMT and the creation of WUAs in Uzbekistan and hopefully to greater scrutiny of IMT policy and to additional research on the feasibility of such a policy in other countries in transition.

**Acknowledgements**

I would like to thank Kevin Coutinho for editorial help.

# 2 Framework discussion: Finding a consensus or determining the difference: external factors influencing the creation of WUAs

## 2.1 Introduction

The main objective of this chapter is to provide a background on the different external factors influencing the success of an irrigation management transfer (IMT) policy. The chapter is based on a literature review of international agency guidelines for IMT, and consultancy reports and academic papers on water management and water management reforms. Even though since the 1980s there has been a general policy trend towards creating WUAs in the South, there is little discussion and agreement on (a) what constitutes an external factor, (b) how the external factors influence the success of IMT, (c) how an IMT policy should be implemented, and (d) whether it is possible to change the external factors to support IMT. The chapter discusses the first three questions.

The discussion of the different frameworks classifying external factors is an attempt to bring various approaches together, to further our understanding and to heighten awareness of the conditions that could contribute to a successful IMT policy. Even though there is often a distinction made between external and internal factors in international agency guidelines for IMT, it is questionable how appropriate this distinction is, and whether the internal factors are in fact a reflection of the external factors and vice versa; this leads to the conclusion that such a distinction is arbitrary.

The chapter is separated into six sections. The first identifies the different influences that triggered IMT policy. The second assesses the different objectives of IMT policy. This is followed by a review of the different models of external factors influencing the success of IMT policy. The fourth section debates whether and how these different models help to facilitate the implementation stage. The fifth section looks at the blind spots and critiques of IMT. This is followed by an assessment of the main conclusions of the review on IMT objectives, external factors, and implementation strategies.

## 2.2 What triggered the thinking about IMT?

In the literature, three different influences that triggered IMT policy are distinguished. The first was the recognition of the high performance of farmer-managed irrigation systems; the second was the fiscal crisis, widely experienced in many countries that led to the privatization of governmental organizations in other sectors; and the third was the poor performance of large irrigation systems.

### *2.2.1 Studies on small-scale irrigation systems*

Starting in the 1970s, small-scale irrigation systems were analyzed in respect of their organizational structures. These studies conducted by social scientists built the cornerstone for today's recommendations on and blueprints for the organizational structures of WUAs. The analyzed cases highlighted the importance of the size of the irrigation system, in terms of number of farmers and hectares in one management unit (mini-units), a shift from village systems to villagers systems (hydrological instead of administrative boundaries), the role of leadership, of local rules, and of technology (Coward 1977, 1980).

In addition, a theoretical debate started in the 1960s, which later led to the shift of emphasis from state management to user management of local natural resources. Whereas Olsen's (1965) work on collective action showed the possibility of groups coming and working together for one common goal, Hardin (1968) put forward a powerful statement on the 'tragedy of the commons'. He described common pool resources as open access resources and argued that they are therefore bound to be unsustainable. Somehow contradicting Hardin, Wade (1987) developed an approach in which a certain level of natural resource scarcity is seen as the major factor in explaining the existence of collective action. He argued that the relationship between physical scarcity and the level of collective action is understood as being akin to an inverted U-shaped curve, peaking at some medium level of scarcity. Later approaches on game theory (Ostrom 1990) argued that the assumption of the 'prisoners' dilemma', which was also utilized by Hardin, is not applicable for common pool resources because of the repetition of games. Other debates about the paradigms of accountability and rent-seeking (Wade 1982; Repetto 1986) influenced the debates on public versus local management and therefore further diminished Hardin's reasoning for a strong state governing local common pool resources.

### *2.2.2 Financial constraints*

Even though financial investment in large-scale irrigation systems led to a rise in agricultural production, since the late 1970s there has been a dramatic decline in donor support for irrigated agriculture. Hall (1999:26) states that "donor funding for irrigation has declined drastically over the last 15 years, for example, World Bank lending fell from US$ 2.2 billion in 1978 to US$ 0.75 billion in 1993". This is confirmed by Rijsberman (2003:401), who argues that "the annual lending for irrigation in Asia and the Middle East/North Africa by the major international donor agencies reached its peak in real terms in 1977-79 and by the mid-1980s it was less than 50% of the 1977-79 level". Some of the reasons for the slowdown are: physical limits to the further expansion of irrigation in most areas; increasing construction costs; continuing decline in real prices of grains; unsatisfactory performance of most large-scale systems; and increasing concerns over socio-ecological externalities associated with irrigation (Hussain and

Hanjra 2003; Dorward et al. 2004). In addition to the decline of external funding came the fiscal crisis of states in the South (Meinzen-Dick et al. 2002). Southern governments could no longer maintain the subsidies required for large-scale irrigation systems. Although a global problem, countries in transition (Eastern Europe and former Soviet Union countries) seem to be particularly affected by the financial crisis (SIC ECWC1999; Pavlov 2004; Roerink and Zhovtonog 2005; Theesfeld 2005; Ul Hassan et al. 2004)

The declining trends of investment in large-scale irrigation systems led to Rijsberman's (2003:401) statement that large-scale "irrigation once seen as a crucial stepping stone on the road to development and as a powerful tool to reduce poverty and hunger, has now become a sunset industry". However, the recent trend of declining budgets for water projects seems to have reversed. For example, the World Bank increased its spending on water projects. While in 2002 the expenditure was US$ 1.2 billion, in 2004 it increased to US$ 3.2 billion. Even though the larger increase is for drinking water supply and sewage, the amount spent on irrigation projects rose in 2004 to US$ 0.8 billion and in 2005 to US$ 1 billion. According to Welschof (2005), the rising trend in spending suggests that water is back on the agenda.

### *2.2.3 Studies on performance of large-scale irrigation systems*

Until the late 1970s, large-scale public irrigation systems were seen as a high priority for development, and massive resources were assigned to them. However, the performance of large-scale irrigation systems fell short of expectations (Repetto 1986). The performance gap was often attributed to faulty design and construction, neglected maintenance, and inefficient operation. Technological 'fixes' have been a common response to the performance gaps. "Many projects have incorporated engineering interventions without adequate consultation with local users, and project designers therefore lacked essential information about local conditions and needs" (Meinzen-Dick et al. 1994:14).

Vermillion and Sargadoy (1999) distinguish between impact performance and procedural or outcome gaps. They argue that "if the impact performance gap is minor and the procedural or outcome gaps are significant, then an enhancement strategy may suffice" (Vermillion and Sargadoy 1999:9). They propose enhancing strategy training, upgrading of procedures and repairs. Hence, the strategies do not change the organizational structure or technical framework, but focus on strengthening and streamlining the organization and the infrastructure. See Figure 2-1.

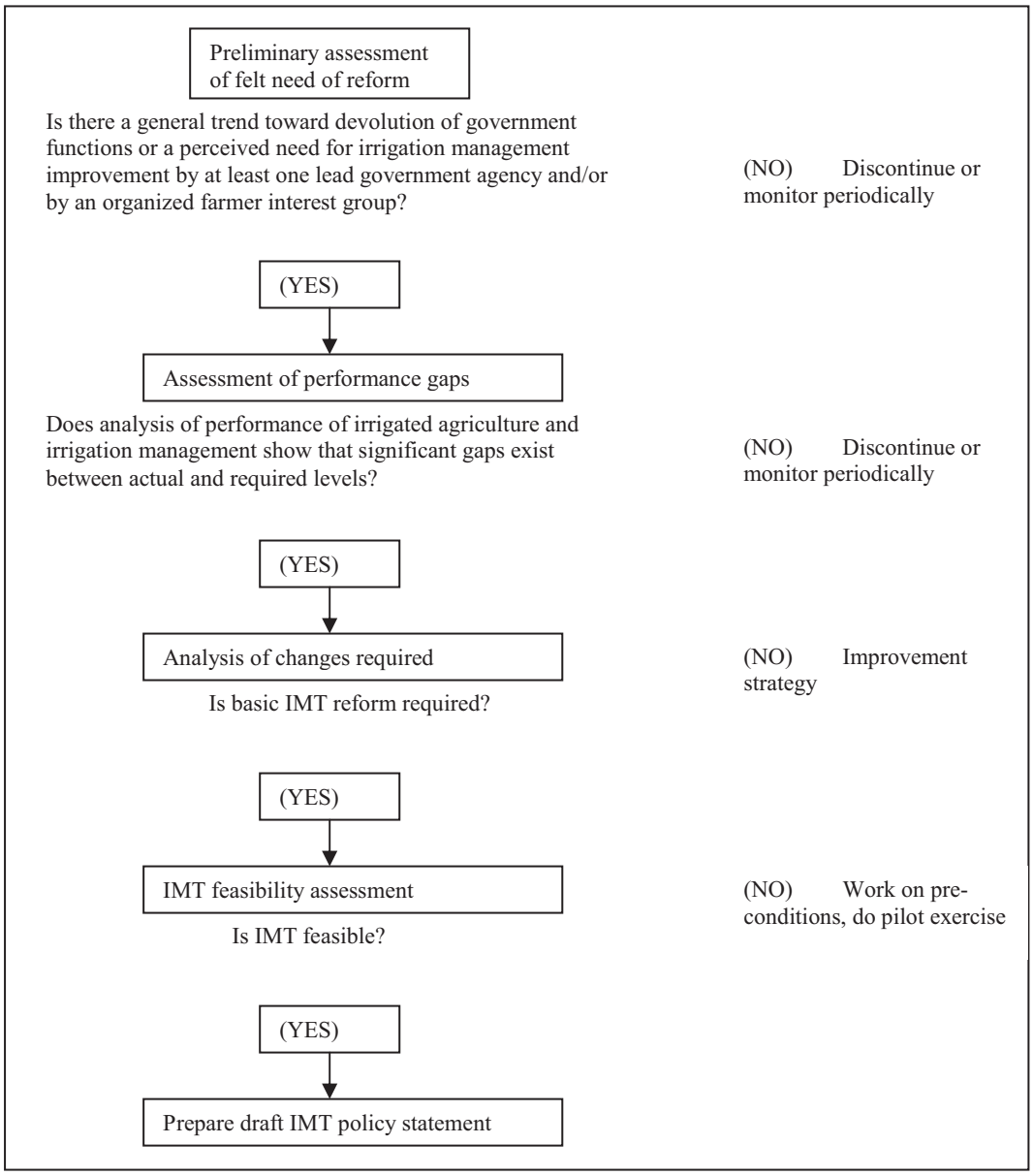



**Figure 2-1: Diagram of the pre-planning decision-making process**

*Source*: Vermillion and Sargadoy 1999:10

These strategies do not change the supply management approach of the water departments. It is questionable whether these approaches are successful, because they neither adequately address accountability nor could they enforce the accountability of the water agency. An example is given by Repetto (1986:25&26). He argues that "operators have reportedly opposed and circumvented efforts to publicize the operating rules and schedules of the system because publicity makes irregularities easier to detect and limits their discretion to reallocate water in exchange of favours". Therefore he argues that organizational streamlining "can have only limited impact unless the destructive

pressures of rent seeking are removed". Moore (1989:1739) explains rent-seeking behavior as "the deliberate introduction of uncertainty into the supply schedule with the intention of eliciting bribes from farmers for the delivery of water". More fundamentally, Zwarteveen (1999:10) argues that "the fact that irrigation agencies are normally dependent for their budgets on the central treasury, rather than on user fees, creates additional management anomalies. Since there is no direct link between the quality of the services provided by irrigation agency staff, and the amount they 'earn', they have no incentive to perform better".

According to Vermillion and Sargadoy (1999:9), a sign for the need of irrigation reforms is when "a series of improvement efforts has already been tried but achievement and impact gaps continue to widen significantly". In a similar vein, Meinzen-Dick et al. (2002) argue that only after technical fixes fail to lead to performance improvement is irrigation reform pursued.

## 2.3 Objectives of IMT and WUAs

The creation of local institutions and organizations for local water management has appeared under different names (e.g. community-based natural resource management, co-management, or management transfer) and with a range of objectives. Esman and Uphoff (1984) summarize the objectives of WUAs under three headings: 1) efficiency, 2) equity, and 3) empowerment. They argue that the three objectives become more controversial going from 1 to 3. Whereas in concrete policy making efficiency was emphasized most strongly, equity featured largely in policy statements but much less so in practice, and empowerment rarely featured on the government or donor's development agenda. Zwarteveen (1999:7) explains that "early 'participation' efforts merely consisted of consultation of farmers and the demand for farmers to contribute in construction". Byrnes (1992) goes further; he argues that farmer participation was often viewed only as a means to improve water management infrastructure at the tertiary level. Mollinga et al. (2003) cluster the different agendas into two time periods pre- and post-1990. The first period is called participation[3] and emphasizes efficiency. The second period is called self-governance and has as focus the empowerment of users. In their analysis of different dominant and sequential themes in rural development, Ellis and Biggs (2001:442) argue that the themes of participation and empowerment had already started in the mid-1980s. They distinguish between the period called "rising yields on efficient small farms", which started from the mid-1960s, and the period called "process,

[3] Whether participation is the right term is questionable. According to Arnstein (1969), participation can come in many forms. She distinguishes the different steps on a 'ladder of participation'. Hence participation can be viewed as a process that involves the participants at a minimum through information sharing and at a maximum in decision making. (For a critique of Arnstein see Tritter and McCallum 2006.)

participation, empowerment" starting in the mid-1980s. The change to a more farmer-based and farmer-orientated irrigation reform process is also noticeable in the shift in vocabulary utilized. Ambler (1994) argues that there has been a shift in key terms, such as farmer participation versus farmer management, beneficiaries versus partners, sense of ownership versus real ownership, and motivating farmers versus creating motivating conditions, although Meinzen-Dick et al. (2002:649) argue "that a common feature of the different programs is the emphasis on increasing the participation of resource users in the management of the resources". They distinguish between programs that "simply try to increase users' involvement in management as a supplement to state management (participatory management or co-management) [and] those that transfer full responsibility and control over resources to organized users". However, they do not link these two approaches to different time periods. This suggests that the participation as well as the governance approach coexist simultaneously. Hence, it seems that the approach taken and the objectives emphasized are country-and program-specific.

Whereas Esman and Uphoff (1984) focus on a ladder of objectives, Mollinga et al. (2003) emphasize changing objectives, and Meinzen-Dick et al. (2002) argue that there are different objectives possible. However, all of them seem not to emphasize the second trigger of IMT policies: the reduction in government spending. This is different in the approach of Vermillion and Sargadoy (1999), who focus mainly on the reduction in government expenditures. They distinguish between four typical objectives for IMT programs:

- Eliminate recurring government expenditures for operation and maintenance of all transferred irrigation systems;
- Establish financially self-reliant water service providers to replace the public agency in the management of irrigation systems;
- Reduce the rate of deterioration of irrigation infrastructure;
- Provide transparency in management and accountability of the service provider to water users.

According to the identified objectives, the first two are aimed at reducing government expenditure. The key terms of transparency and accountability could fall under the category of empowerment; however, it seems that these two terms are less politically dangerous than the term empowerment. Furthermore, it seems to be more of a passive than an active empowerment of water users. Interestingly, equity, the objective identified by Esman and Uphoff (1984), which might have been less contested than empowerment, is not mentioned. It could fall under the last mentioned objective (transparency and accountability); however, it is not necessarily implicit. It is striking that efficiency of the system is not identified as an objective. However, this might be related to the timing of IMT implementation.

If one keeps in mind that Vermillion and Sargadoy's (1999) first two objectives relate to reducing costs for government and that transparency and accountability came only fourth, then one could reason that their diagram of the pre-planning decision-making process (Figure 2-1) does not necessarily reflect the stated objectives of IMT. In addition, while the goal of the farmer organization might be an increase in transparency and accountability, the government might have the objective of reducing costs. Hence, there might be a misperception of what reforms are needed, their process, and therefore the outcome of the reforms.

## 2.4 External factors influencing the success of IMT

Although authors differ in their emphasis on the factors necessary to support IMT and the creation of WUAs, a common distinction is made between internal and external factors (Meinzen-Dick et al. 1994, 2002; Huppert et al. 2001; Jordans 2001). Saleth and Dinar (2005) distinguish between endogenous and exogenous factors. On the other hand, Vermillion and Sargadoy (1999) do not make a distinction, but argue that most of the factors in Box 2-1 will probably need to be in place in order for IMT to be feasible.

**Box 2-1: Factors necessary for IMT**

Capacity to create or alter local organizations to take over management;

Liberalization and openness of the political economy;

Supporting legislation and support services for local water service providers;

Clear water rights (especially for competitive and water scarce environments);

Absence of strong opposition to IMT by bureaucracies and local elites;

Irrigated agriculture that has modest costs and high profitability; and

Irrigation infrastructure that is suitable for management by farmer organizations or other non-governmental service providers.

*Source*: Vermillion and Sargadoy 1999, 11-12

Whereas the last six factors focus on fixed variables and are therefore easier to determine, the first factor is process orientated and gives the perception of a social engineering approach. Hence, it does not take the local water user community into consideration, but assumes that influences that are only dependent on the 'capacity' of the implementing agency can be achieved. It seems that the local community is only considered in terms of the strength of opposition from the elites (factor 5). Hence their approach assumes that, if elites benefit from the changes, the non-elites will comply and adapt to the changes as

well. Furthermore, it is implied that the elites are homogeneous and have the same interest. However, elites can base their status on cultural, religious, economic, educational, or political criteria (Wegerich 2002a). Hence, elites are heterogeneous and therefore may not follow the same interest. The anticipated changes resulting from IMT can be interpreted differently by the various elite groups and therefore could cause opposition as well as support at the same time (see also Meinzen-Dick et al. 2002).

Vermillion and Sargadoy (1999:11) mention an additional factor. They argue that IMT is not possible in areas of "severe poverty and social conflict". In this case, it is questionable whether IMT is often possible because irrigation systems are not necessarily built with merely an economic perspective in mind, but also have a welfare function. This becomes more obvious when one distinguishes between protective and productive irrigation systems (e.g. Mollinga 2003). Repetto (1986:23) explains that "in some semi-arid areas public irrigation systems provide minimal service in part because they were intended to protect against drought". In addition, Meinzen-Dick et al. (2002) argue that it is not only the infrastructure that is a welfare measure, but also the low service fees charged. The term 'social conflict' can imply a variety of factors, such as cultural, religious, and economic heterogeneity.

Huppert et al. (2001:44), focusing on governing issues for irrigation maintenance provision, use the term 'external institutional environment', and refer to all "the legal, policy, organisational, socio-economic and cultural factors which affect but are not part of the direct service relationship itself" (see Figure 2-2, Relationship 1 and 2).

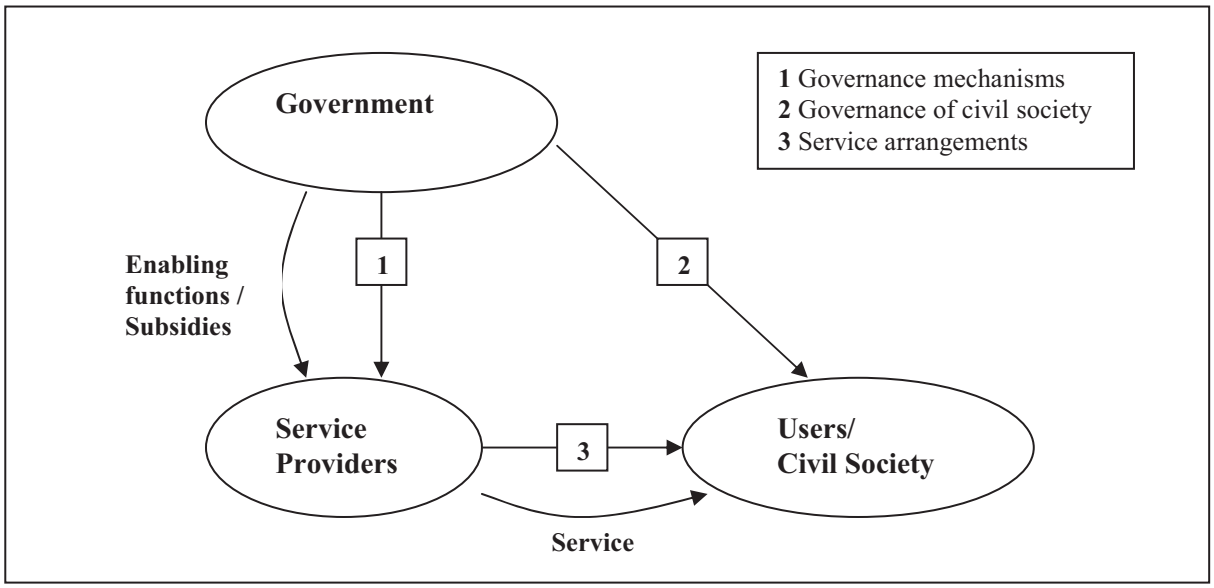



**Figure 2-2: Institutional arrangement for service provision**

*Source*: Huppert et al. 2001:44

They treat the relationship of the service provider with the user (civil society) as a separate issue; hence, it is not clustered in the category 'external institutional environment'. It appears that they view the relationship between service provider and user as internal, because, as they reason, "both parties must address the basic question of how to ensure that services and returns agreed upon are actually provided without one party taking undue advantage of the other" (Huppert et al. 2001:46). Huppert et al. describe the scenario between user and commercial provider, in which the user is arranger, payer, and user, and the commercial firm is the service provider (Box 2-2).

**Box 2-2: Conditions for strong service arrangements**

| **Service arrangements normally will be strong if there is:** |
|---|
| Agreement among the involved parties upon clear objectives of the service provision |
| Agreement upon well specified terms of the service delivery |
| Agreement upon procedures and performance standards (transparent, measurable, and monitorable) |
| A well established set of coordination mechanisms that govern relationships between the different actors |
| A possibility for the client side to influence the provision, if so agreed |
| An accepted level of payments or returns and a transparent payment plan |
| Ability and willingness of the client to pay |
| A closed 'feed-back loop' between service provision and payment for that service |
| The possibility of independent technical/financial audits |
| Arrangements for transparent accounting procedures |
| A mutually respected conflict resolution framework |
| A high degree of client satisfaction with service delivery |

*Source*: Huppert et al. 2001: 49-50

However, in the case of a government organization providing the service, the farmer is only a partial payer and full user, and does not have the function of arranger (Moore 1989). Since the farmer has no influence in the latter scenario, it is questionable whether the service provider should be classified as internal. One could reason for a dynamic perspective; if farmers are payers and arrangers, the agency could be classified as internal, otherwise as external. However, if one considers the welfare function of irrigation, it is questionable whether the emphasis should be on full payment or on arranger as a factor for classification. Huppert et al. (2001:165) address this issue using an example from Southern

France. They argue that the subsidy should go directly to the WUA and not to the service provider. If the subsidy goes to the users, then they "retain their customer sovereignty in relation with the service providers". A prerequisite for customer sovereignty is that customers should be able to choose between different service providers. Even though Huppert et al. (2001) make their case only for maintenance provision, in an earlier paper Huppert (1997:19) argues similarly on the aspect of service provision for water delivery. He describes the ideal case in which farmers "are able to choose between several O&M [operation and maintenance] services offered for their irrigation system on a commercial basis".

It is evident from Huppert et al.'s (2001) list of external factors that they are very general and address issues of legitimacy, accountability, and transparency of the state, capacity of the bureaucracy on all levels, as well as a functioning and empowered local community, through fair legal procedures as well as participation in local decision making (Box 2-3). Huppert et al. (2001) do not argue for a reduction in subsidies, and therefore the question of the economic viability of the system is not an issue. In addition, because Huppert (1997) argues for a commercial system with different choices for service provision, the questions of water scarcity and the technology of the irrigation system do not arise. However, it is somehow taken for granted that farmers would join a water user association that has the advantage of lobbying for farmers' interests in terms of service provision. Hence, issues relating to collective action, such as social heterogeneity, existence of other organizations, leadership, availability of different water sources, or a difference in the technology utilized, all of which could be important for forming a WUA, are not addressed.

As stated above, one of the objectives of IMT is the reduction of operation and maintenance costs. Huppert et al.'s (2001:167) approach does not question the necessity of the subsidy, but argues for a direct subsidy to the users, and not to the agency. They distinguish between two types of subsidies. "The first is a block grant to each newly formed WUA for emergency repairs and maintenance, to be used as the WUA sees fit. The second grant is made subsequently in a fixed amount per acre of registered irrigated land within the WUA area". Arguably, if the WUA is responsible for spending the grant and has the possibility of choosing the service provider for maintenance and rehabilitation, the costs of the subsidy could be less than if one service provider receives the subsidy and is responsible for the maintenance and rehabilitation work. However, one could still argue that, because the farmers are not responsible for raising the funds, there might be a tendency towards over-spending and misallocation.

**Box 2-3: Supportive external institutional environment**

In general,

A government with high legitimacy

Accountability of political and official elements of government (media freedom, transparent decision making, accountability mechanisms)

Respect for the rule of law

A satisfactory public perception of the accountability of civil servants

A high degree of independence of the judiciary

A satisfactory degree of administrative capacity in the bureaucracy

And with respect to the relationship 'government – service providers', we consider that there is a supportive institutional environment if there is:

A government which is competent to formulate policies and define its own role and core competencies with respect to service delivery

A well established framework for economic activity (laws on property rights, laws on companies (bankruptcy laws), banking, competition, foreign investment, establishment of regulatory bodies, etc.)

Existence of formal mechanisms and informal channels to facilitate communication between the public and private sectors

Sufficient strength in the public procurement system (transparency of procedures, adoption of bidding documentation, competitive bidding, staff training, etc.)

With respect to the relationship 'government – users (civil society)', we consider that there is a supportive institutional environment where the following conditions exist:

Respect for human rights

Political decision making based on strong participation of relevant groups of civil society

Micro level accountability through beneficiary participation in local decision making

Easy access of users to fair legal procedures and other conflict resolution processes

A clear and transparent distribution of property rights that is consistent with the intended service delivery system

A secure right of water user associations to organize

*Source*: Huppert et al. 2001:45-46

An alternative to Huppert et al. (2001) is Meinzen-Dick et al.'s (1994) framework (Box 2-4) that focuses not only on the external and internal institutions but on broader conditions for functioning WUAs. The study draws on insights from game and collective action theory to identify factors that enhance the cooperation to create WUAs. Meinzen-Dick et al. (1994) cluster external enabling factors under three main headings: 1) physical and technical, 2) social and economic, and 3) policy and governance. Each of the identified factors has its own sub-categories. Meinzen-Dick et al. (1994) point out that some of the factors do not have clear-cut enabling functions, but can be enabling as well as hindering factors for the creation of WUAs. Instead of explaining all the different factors, the focus here is on those factors that can have contradictory influences, that are interrelated, and that differ from the factors mentioned by Vermillion and Sargadoy (1999) and Huppert et al. (2001).

**Box 2-4: External factors after Meinzen-Dick et al. 1994**

**Physical and technical**

Water scarcity

Technology and infrastructure

**Social and economic**

Local social organization

Market penetration

Farmer incentives

Financial viability

**Policy and governance**

Policy environment

Legal framework

Agency structure and incentives

*Source*: Meinzen-Dick et al. 1994

Meinzen-Dick et al. (1994) focus not only on the level of absolute water scarcity, but also on relative water scarcity caused by mismanagement or lack of control of water on the part of the water agency. Hence, even though they cluster different external factors, they show the relatedness between the different clusters. The authors argue that, if one did not consider the financial burden of the state, then one could argue that, because government agencies and farmer involvement are substitutes in many operation and management activities, the

greater the competence of the agencies, the less apparent is the need for WUA development efforts. Meinzen-Dick et al. (1994:54) point out that "a non-performing agency has contradictory effects on WUA development. While on the local level it can stimulate WUAs taking on a greater role, at critical higher levels of the system it reduces the benefits of WUA activity at lower levels".

Whereas Vermillion and Sargadoy (1999) argue that the irrigation infrastructure should be suitable for management, Meinzen-Dick et al. (1994:38) argue that "advanced technology is not necessarily a barrier to WUA management of systems. It does, however, have implications for the organisations, creating the need for specialised training and adequate support services". On the basis of technological difference, they distinguish between the Asian model, which typically relies on direct participation by all members, and the American model, which is a more specialized organization with role differentiation. Whereas Huppert et al. (2001) put forward the argument for WUAs hiring external service providers for rehabilitation or maintenance, Meinzen-Dick et al. (1994) reason that WUAs are more efficient and sustainable when they are not dependent on outside input or technical support for operation and maintenance. This difference in reasoning can be explained by the difference in approach in relation to financial viability and the continuation of subsidies.

Meinzen-Dick et al. (1994) focus on economic conditions and are therefore closer to the approach of Vermillion and Sargadoy (1999) than to that of Huppert et al. (2001). However, in contrast to Vermillion and Sargadoy (1999), Meinzen-Dick et al. (1994) point out that not only should 'severe poverty' be considered, but also whether farmers have the capability to take over the system financially. This point is particularly crucial given the rent-seeking behavior of the water agencies involved in large-scale systems (Repetto 1986; Gyawali 1999), the quest of the hydraulic mission to conquer nature (Allan 2003), the difference between productive and protective irrigation systems (Mollinga 2003), and the political constructions to expand and to conquer the agrarian frontier (Mollinga 2003). However, Meinzen-Dick et al. (1994:40) argue that "overall commercialisation of the agrarian economy has contradictory effects on WUA development". On the one hand, market penetration furthers an individualistic approach and therefore weakens traditional ties; on the other hand, it increases the economic returns and thereby the incentives to participate. It seems that this reasoning could lead to different WUA organizational models; however, Meinzen-Dick et al. (1994) do not go into this kind of reasoning. One could argue that high commercialization could lead to an American model and lower commercialization to an Asian model of WUA organizational structure.

Based on the study of Meinzen-Dick et al. (1994), Jordans (2001) summarizes the external factors influencing successful WUA establishment (Box 2-5) and visualizes it (Figure 2-3). Even though the flowchart could imply hindering and

enabling factors, it does not show the dynamics between the different external and internal factors.

**Box 2-5: External Factors after Jordans**

Clear irrigation management transfer policies, specifying roles and responsibilities of farmers, WUAs, and the irrigation agency are crucial to the sustainability of WUAs. Policies supportive of decentralization and participation, as well as agricultural and price policies that stimulate irrigated agriculture, generally provide a stimulating framework for WUA development. Constructive cooperation between the irrigation agency and WUAs is further a condition for success. This cooperation is enhanced by a number of incentives to irrigation agency staff, and the employment of community or institutional organizers.

A clear facilitating and flexible legal framework is critical to WUAs' establishment, effectiveness, and sustainability. Legal issues encompass an enabling law, a formal legal status, rules regarding the ownership of irrigation facilities; water rights; right to mobilize resources; and right to open bank accounts.

Irrigation systems where WUAs can do all O&M without dependency on outside input or technical support seem the most efficient and sustainable.

The most successful WUAs are often found in cases where the irrigators have a homogeneous background and the WUA is consistent with existing social organization, including gender differences. However, measures are needed to avoid WUAs reinforcing existing power inequalities and further concentrating decision-making authority and power in the hands of the already powerful, who are most often men.

The benefits that members derive from WUAs must be greater than the additional costs they assume by actively participating in water management; in other words, farmers' incentives are crucial for WUAs' success and sustainability.

Further issues that affect effectiveness and sustainability are the fact that the WUAs need to be financially viable, and that mainly members with secure land tenure arrangements will invest time and money in WUA development.

*Source*: Jordans 2001: 14-15

The summary of external factors by Jordans (2001) is similar to factors identified by Vermillion and Sargadoy (1999) but calls for more accommodating conditions. While Vermillion and Sargadoy (1999) mention the 'absence of strong opposition' (Box 2-1), Jordans (2001) calls for 'constructive cooperation' and 'incentives for irrigation staff'. Instead of a 'supporting legislation', what is called for is a 'clear facilitating and flexible legal framework'. Instead of 'irrigated agriculture as is current, with modest costs and high profitability', Jordans calls for 'agricultural and price policies that stimulate irrigated agriculture'; hence active intervention at national levels. Jordan's (2001)

approach is different from that of Vermillion and Sargadoy (1999); the former states that the benefits that members derive from WUAs must be greater than the additional costs. However, it is questionable whether this call is consistent with the statement 'measures are needed to avoid WUAs reinforcing existing power inequalities and further concentrating decision-making authority and power in the hands of the already powerful, who are most often men' because then the issue is not simply the taking over of the irrigation system, but also the re-engineering of the social structures of the local community.

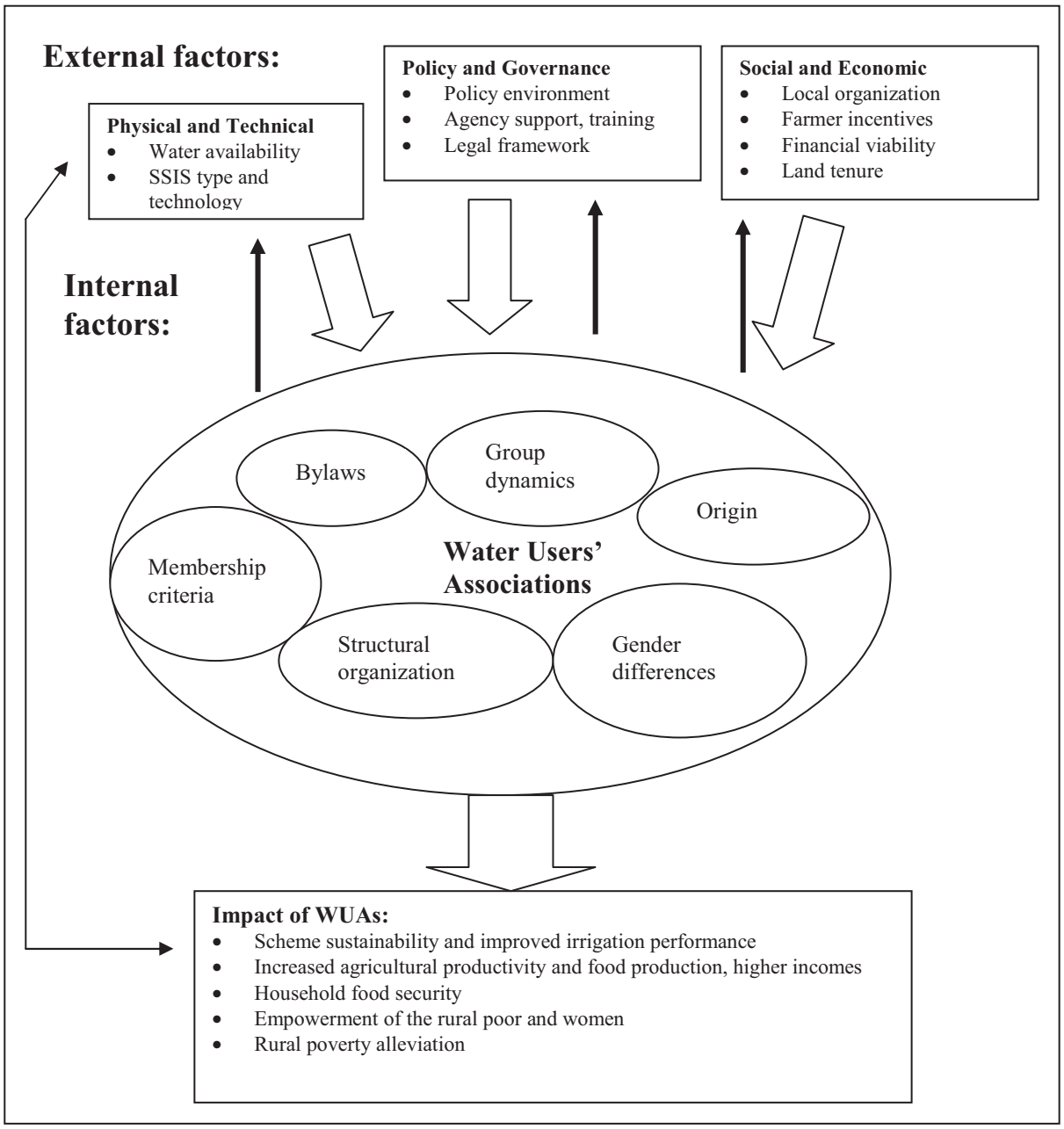



**Figure 2-3: Factors that affect the performance and sustainability of WUAs and their impact**

*Source*: Jordans 2001:16

It is evident from Figure 2-3 that WUAs should address empowerment, poverty alleviation, and food security. Arguably, the rural poor are not necessarily the landholders but the landless. Hence, it is questionable whether the WUAs could live up to the expected impacts of poverty alleviation or even empowerment of the rural poor. However, if one distinguishes between small and large farmers as members of the WUA, one could argue that a good governance performance of the WUA could lead to empowerment of small farmers. As Jordans herself points out, the most successful WUAs are often found in cases where the irrigators have a homogeneous background (Box 2-5); hence, it is less likely for empowerment to take place where heterogeneity is high. This is confirmed by recent studies on the impact of WUAs on small farmers. Van Koppen et al.'s (2002:22) research in India shows that "in all WUAs small farmers participate considerably less in meetings than large farmers, while they rarely become committee members". The decision-making power therefore lies with the more powerful stakeholders. Hence, "what is called a 'WUA' in reality is first and foremost a handful of local elite" (Van Koppen et al. 2002:21). This would imply that the process of IMT mainly reinforces the existing social and economic setting, and does not benefit the poor in particular. Hussain and Hanjra (2003) go even further, arguing that the implementation of IMT could actually lead to adverse impacts on the poor if land distribution is highly inequitable and the governance performance of the WUA is poor.

In a later publication by Meinzen-Dick et al. (2002), the focus is only on two external factors, the physical and socio-economic environment. It is difficult to understand the exclusion of the policy and governance factors identified in the earlier study. One could argue that, because the paper is based on a case study in one country and compares different WUAs in different Indian states, policy and governance is relevant. The exclusion of the sub-category, technology, is also difficult to understand, because the compared irrigation systems in Rajasthan and Karnataka are different: old established tank and large-scale irrigation systems. As Box 2-6 shows, nearly all the sub-categories are different from the categories identified in the earlier study (Box 2-4). Because there is no explanation as to why these new categories have been chosen instead of the old categories, it appears that these new categories have been selected as a result of rethinking the approach and coming to the conclusion that these categories are more important.

Within their model, Meinzen-Dick et al. (2002) show that the factor of water scarcity (as indicated by head/middle/tail of the system) is less important than the factors of physical size and location, and social capital and leadership, in influencing where organizations are likely to become established. In addition, they find that the number of village temples has a positive influence on the likelihood of organization for irrigation. Temples are a better indicator than the presence of other types of cooperatives.

**Box 2-6: External factors after Meinzen-Dick et al. 2002**

| |
|---|
| **Physical environment** |
| Water scarcity |
| Size |
| **Socio-economic environment** |
| Heterogeneity |
| Markets |
| Other organizations |
| Leadership |

*Source*: Meinzen-Dick et al. 2002

Even though Meinzen-Dick et al. (2002) show surprise at this finding, the article by Mosse (1997) already indicated the linkage between the tank irrigation system and village temples. However, Mosse points out that the management of village temples is based on strict authority lines originating in the caste system. Hence, even though it could be argued that there is collective action, it seems that this is based on the dominance of powerful stakeholders, rather than on an equitable village community. Mosse even reasons that modern forms of WUAs, implying equitable membership, will only occur when the traditional system of formal hierarchy has deteriorated and is contested by, e.g., marginal groups. It seems that the sub-categories of leadership and heterogeneity are contradictory. In addition, one could argue that the focus on temples and leadership contradicts earlier warnings by Jordans (Box 2-5) on reinforcing power structures at the local level.

Saleth and Dinar (2005:5) distinguish between endogenous and exogenous factors. They argue: "broadly, these factors can be grouped into (a) endogenous factors that are internal to the water sector (e.g. water scarcity, water conflicts, financial and physical crisis) and the water institutions (i.e. institutional linkages) and (b) exogenous factors that are outside the strict confines of both the water sector and its institutions (e.g. economic development, demographic growth, technical progress, economic and political reforms, international commitments and natural disasters)" (Figure 2-4). From their reasoning it is evident that they are looking at the water sector as a whole and not specifically at the local organization. This would imply that, for the local organization, the endogenous factors identified could also be classified as exogenous factors.

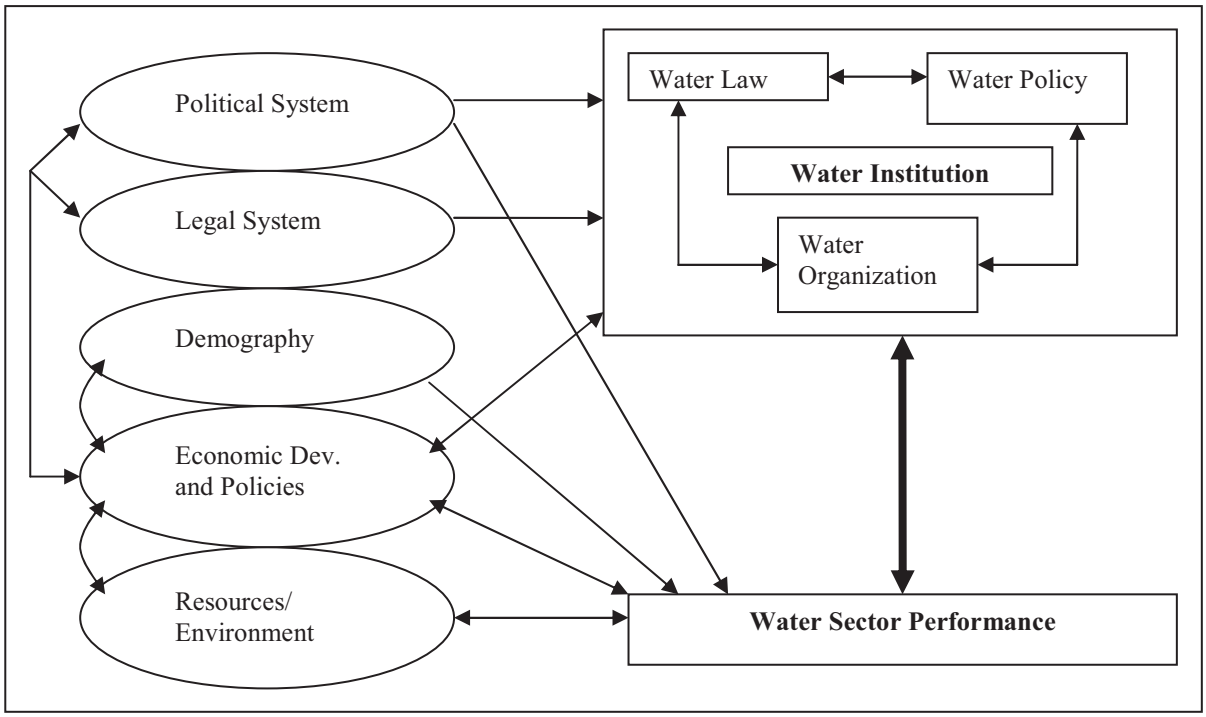



**Figure 2-4: Water institutional environment: a partial representation**

*Source*: Saleth and Dinar 2005: 3

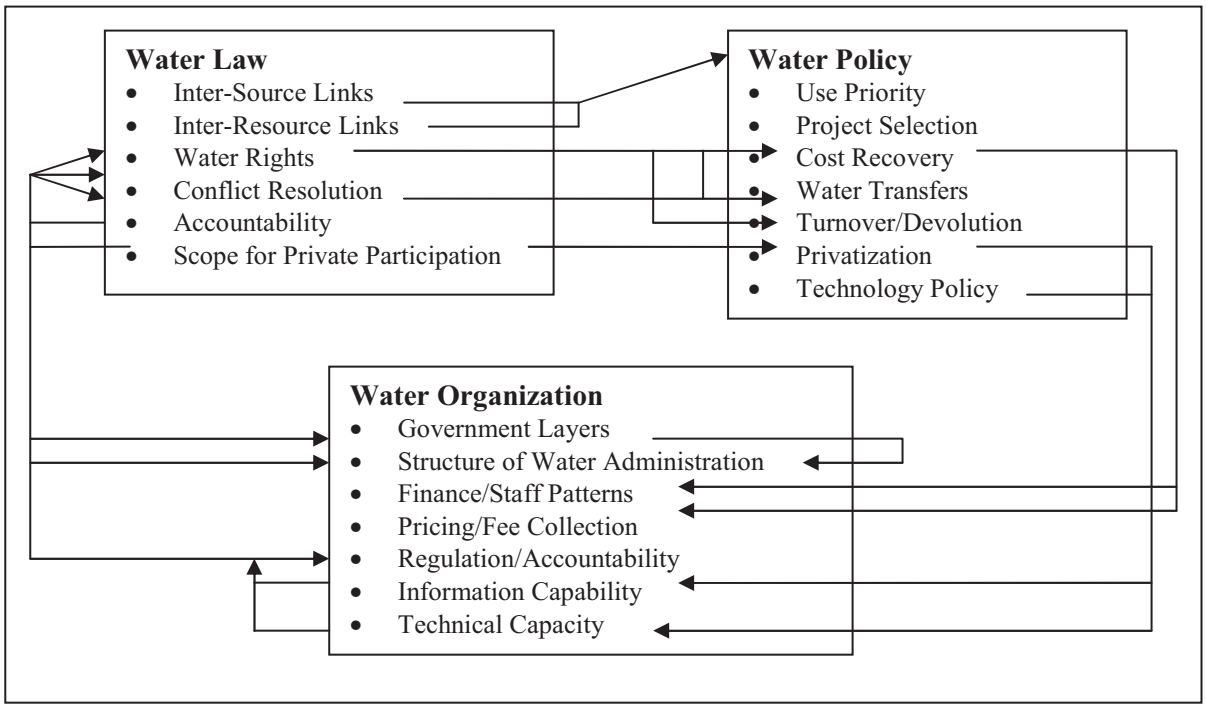



**Figure 2-5: Water institutional structure: a simplified representation**

*Source*: Saleth and Dinar 2005: 3

It is noteworthy that Saleth and Dinar (2005:3) have a very dynamic approach, because they argue that "the overall performance of water institutions depends not only on the capabilities of their individual aspects, but also on the strength of structural and functional linkages between them" (Figure 2-5). However, instead of arguing about the different influences, Saleth and Dinar (2005) just determine that there are influences, but do not classify how these influences might affect the viability of the IMT strategy or how it affects the sustainability of the local community.

Saleth and Dinar's (2005) paper is aimed at policy makers to avoid high political transaction costs. It has to be explored whether their described strategies of sequencing and packaging can be utilized for the creation of WUAs. A danger could be that these changes are implemented on paper by elites who receive rents from upper levels, instead of by the local community. Their reasoning and strategizing suggests that implementation is not necessarily for the good of the farmers, but mainly to relieve governments and irrigation bureaucracies of the financial burden.

## 2.5 From identification to implementation

The approaches of Meinzen-Dick et al. (1994) and Meinzen-Dick et al. (2002) seem to be appropriate for the evaluation of the situation at the local level. Meinzen-Dick et al. (2002) even argue that the model seems to predict 92 percent of cases of local water management organizations correctly. However, it is doubtful whether their approach could be utilized for policy making. The focus on the local level would imply that each irrigation system and local community would have to be evaluated separately in order to come to a conclusion as to whether it is appropriate to establish a WUA. The approach would endanger governments' objective and donors' pressure to hand over the whole irrigation system within a country. In addition, because the factors can have contradictory influences, it seems that it is only possible to establish the success of WUAs in an ex-post evaluation. Furthermore, because of the possibility of having different irrigation technologies within one country, different levels of relative water scarcity, and different levels of commercialization, it is questionable whether the current donor approach of one blueprint for the organizational structure of WUAs is appropriate. Finally, if WUAs not only have the function of taking over water management, but should also facilitate a social re-engineering of the local community (Jordans 2001), it is questionable whether IMT policies can be implemented either in a set time framework or even at all.

Huppert et al. (2001:54-55) argue that in the worst case scenario when "neither the arrangements between the provider and the users, nor the relationships with the government or other essential supportive actors, are founded on a sufficiently solid institutional base", it is an illusion to establish a well functioning and sustainable service delivery system. Hence, the IMT policy

should be abandoned, because "just the development of manuals and organising training for IMT would be a waste of resources". They argue that in this case a sector approach for institution building would be necessary (Figure 2-6).

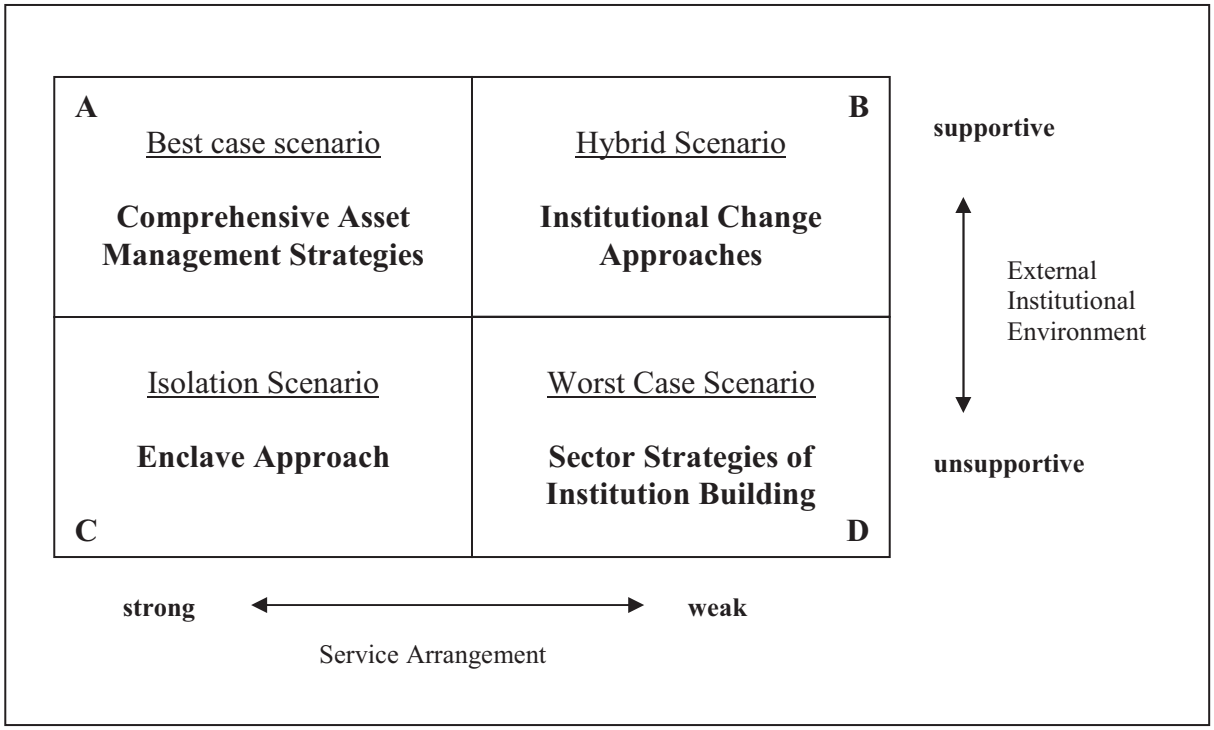



**Figure 2-6: Situation specific maintenance strategies in different institutional environments**

*Source*: Huppert et al. 2001:56

In general, the problem with the identification and listing of different factors is that it is not evident whether all of these factors have an impact and how large the impact is (compare Meinzen-Dick et al. 1994 and 2002). In addition, the different factors might not be independent from each other, and influencing one might trigger changes in the other. Similarly, Saleth and Dinar (2005:5) argue that "the exogenous and endogenous factors are interrelated and their relative impacts differ by context, it is difficult either to isolate their individual roles or to generalize the direction of their effects" (Figure 2-7), while Zwarteveen (1999:24) argues that "though 'conditions for success' can be identified, the literature remains suspiciously silent on if and how such conditions can be created, and even on how ex-ante assessment of these conditions can be done". On the other hand, Saleth and Dinar (2005:5) argue that "these effects can be tracked by conceptualising them as part of either the transaction costs or the opportunity costs of institutional change". However, it is questionable whether it is possible to determine the effects when it is not possible to isolate their individual roles. In addition, it is uncertain whether it would be possible to determine the transaction and opportunity costs of a policy. Referring to Reisner

(1987), Turton (1999) argues that the political costs of introducing demand management in the American West were so high that it led to the demise of Jimmy Carter as president.[4] If the costs are political, how can they be expressed in monetary terms? If one takes the economic rationale of the transaction and the opportunity costs of a policy as given, arguably the externality costs of a policy should be considered as well. Overall, it seems that to separate factors is a simplification and even to argue that it would be possible to determine the costs of implementing a policy, prior of implementation, seems to be a hypothetical game. The true costs seem to be only possible to determine in an ex-post calculation and not only in monetary terms.

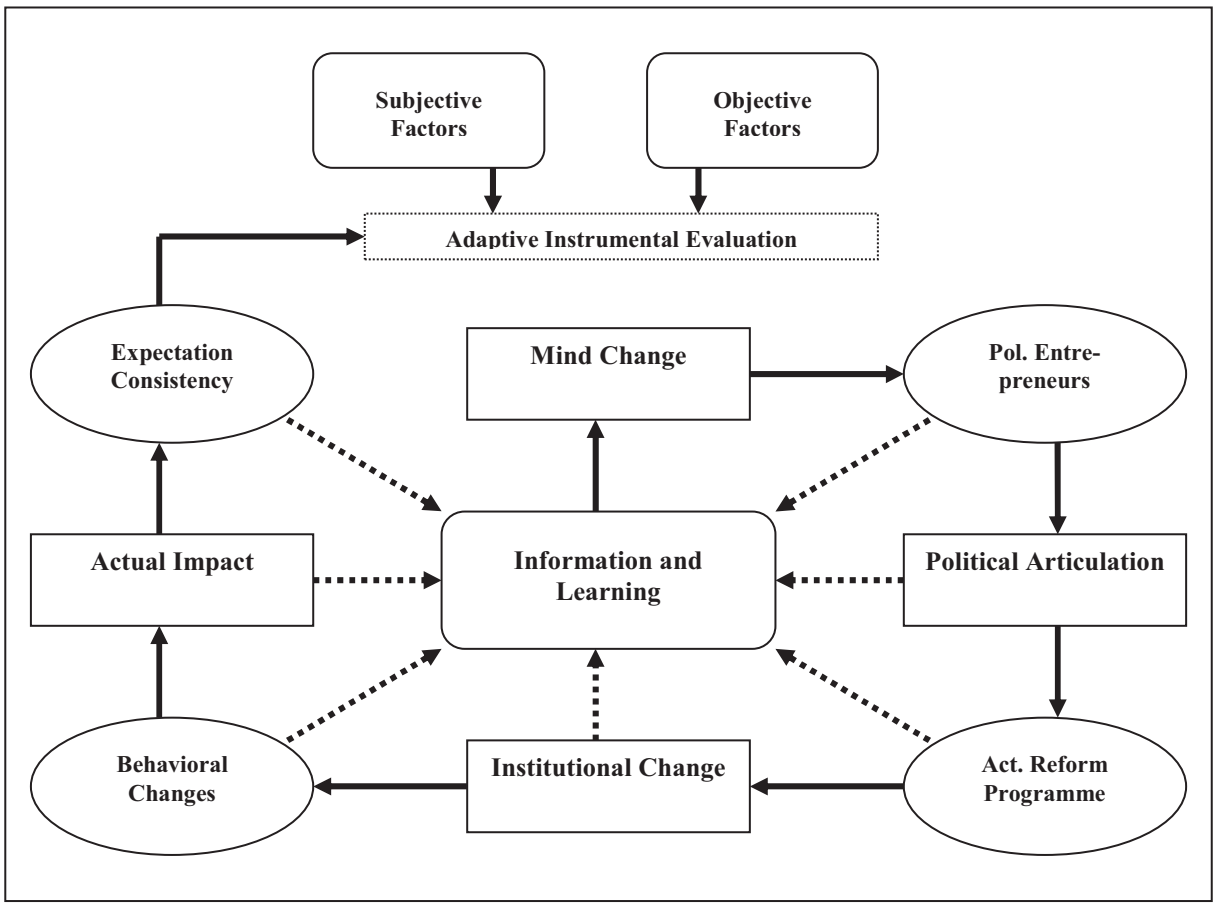



**Figure 2-7: A stage-based conception of the change process**

*Source*: Saleth and Dinar 2005:6

[4] "Jimmy Carter decided to counter this [construction of large dams] tendency and he started off his term of office with a 'hit list' of water-related projects that he considered were either unsustainable or uneconomic. He lost the momentum of his presidency, and a chance at a second term in office, through a hopeless effort to bring the Bureau for Reclamation and the Corps of Engineers under control. Eisenhower, Johnson and Nixon had all tried to dump or delay a number of water projects, and failed in almost every case" (Turton 1999:16).

Vermillion and Sargadoy's (1999) suggestion for pilot projects or Huppert et al.'s (2001) call for an enclave approach seem to be questionable. With the number of different external factors influencing WUA creation, it is doubtful that the experience of one or a few successful cases can be transferred to other localities. Zwarteveen (1999:8) argues that "an important lesson from early experiments with farmer participation was that, though results were often positive, they seldom spread beyond intensive pilot experiments, where abnormal and non-generalisable pressures were placed on agencies to operate in this way". In addition, although pilot projects benefit from a high level of external facilitation, with expansion of the project the amount of facilitation decreases. Korten (1980) distinguishes between three stages: learning to be effective, learning to be efficient, and learning to expand. On the basis of the experience of the Philippines, he argues that, with each new stage, the levels of the other reached stages decrease again.

## 2.6 Critique on IMT

There are three basic criticisms or three blind spots in relation to the creation of WUAs and a more fundamental criticism of the focus on local water organizations in general. The three blind spots are the technology in use, the definition of rights, and the political implication. Mollinga et al. (2003:13) point out that "most PIM/IMT programmes usually boil down to bringing a system back to its original design state". However, "many systems were designed decades ago for very different farming systems, agrarian economies and social political conditions" (Mollinga et al. 2003:13). Hence, the old infrastructure of the irrigation system may not fit the changed demands of the farmers, and therefore may lead to the deterioration or even manipulation of the infrastructure. It is debatable whether IMT policy incorporates only the current farmers and therefore reinforces their right but weakens the position of other water users such as tenants, the landless, women, domestic, or industrial users. In addition, is it only a right to water or to the infrastructure and decision making? Is there a transparent and adequate compensation mechanism between agency and WUA and between WUA and farmer when the right is not met? Irrigation reform is a political process, but the politics of vested interests are seldom addressed.

More fundamental is the criticism of Goldersohn (1994:11&13), who questions the focus on water organizations rather than on farmer organizations. "Farmers want water. But they want water as a means to an end, not as an end in itself". Hence, "organisations must provide farmers with what they want, not simply serve the need of government to develop the responsibility for paying for O&M".

## 2.7 Conclusion

In the literature there are three different influences identified as triggering the overall discussion of IMT; these are studies on small-scale irrigation systems, financial constraints of the state, and the poor performance of the large-scale irrigation systems. The review and discussion showed initially four different objectives: efficiency of water management, equity among users, empowerment of users, and decreasing the state's expenditure. In addition, broader objectives have been mentioned, such as increased production, higher incomes, food security, poverty alleviation, but also more specific objectives, such as empowerment of the non-powerful groups (rural poor and women). Although different authors highlight different aspects, a common theme in all the approaches is greater user participation and a decrease in the state's financial responsibility. Hence there seems to be only one direct link between influences and objectives, namely the identified financial constraints and the reduction of costs. The involvement of users in irrigation management does not necessarily translate into efficiency, equity, and empowerment of the whole community.

The analysis of the different external factors has shown that there is little agreement on what can be classified as an external factor, and, if agreement exists, how grey the shade of the external factor should be. In addition, how the factors influence WUAs is not clear cut. For example, the commercialization of local agriculture can have positive as well as negative effects. Furthermore, it seems that some factors are stronger than others (physical size and location, and social capital and leadership over water scarcity); hence, it cannot be determined ex-ante which factor is more influential for the success of a transfer policy. Another shortcoming is that some external factors are related and cannot be treated as independent. Water scarcity, for example, may be absolute or relative, and therefore linked to international and national water agreements and the management capacity of the international and national water agency, as well as the water management agency at the lower administrative levels. The more interlinked and complex the approach, the less likely it is to account ex-ante for the impact of the transfer. Furthermore, process-orientated factors have been incorporated (capacity to create or alter) and therefore it is more difficult to determine the current level, or to change the current level. Questions could arise such as what capacity is necessary, how much of it, and whether it would be the same for every local situation. Overall, it seems to be questionable whether the determining of the different external factors is possible for each individual local community and, if it is possible, whether that would enable the outcome of an IMT policy to be predicted.

The aspect of empowerment, such as user rights, recurs in the factors influencing IMT. Whereas some authors focus on the general legal relationship between citizen and government, others take a good relationship for granted and only focus on the legal framework for WUAs and water rights. One could

question a government's intention to encourage a strong, local, democratic organization, especially if the state is not based on public participation but on coercion. Hence, does the projected image of an empowered local community fit into the general form of governance prevalent in the country?

The question of WUA empowerment seems to be connected to the question of leadership within the WUA and what influence the leaders have on higher administrative levels. One could question whether the empowerment of one WUA implies the disempowerment of tail-end WUAs within the larger hydrological system. Connected to this is the question of whether empowerment is formal or informal; informal empowerment could mean the utilization of informal networks. The term 'leadership' leaves this open. Therefore, formal or informal empowerment could be a zero-sum game among different WUAs.

In addition, whereas some people view the water delivery agency as external, others have more a dynamic approach; if there is an enforceable contract relationship between farmers and the agency, the agency is viewed as being internal, otherwise external. Some treat the relationship between government and the water agency as external; hence, they point to the linkages between these two. This might be even more important if it were connected with leadership within a WUA and the political influence of members of the WUA with governmental layers at higher administrative levels.

Even though the question of the ability of the local community to take over the financial cost of IMT is a recurrent theme, the difference is in the detail of how this should be addressed. Some authors do not argue for taking over the costs of the rehabilitation, operation, and maintenance of irrigation systems, and therefore economic viability is not an issue. Whereas some state that severe poverty is a hindering factor and IMT should not be implemented in such a case, others focus on the economic situation of the farming community in particular, and again others just mention economic development, but then do not argue how this could affect IMT implementation. In contrast to these different views, however, poverty alleviation is seen as one of the broader objectives for establishing a WUA; hence in this case the economic situation should not matter. As cutting government expenditures is one of the basic objectives, the economic condition of the agricultural sector seems to be especially important in the case of countries of transition, in which farmers have only recently become independent, and governmental control is still dominant – and not only in the agricultural sector - and only slowly decreasing.

Finally, there seems to be a contradiction between the triggering factor of the financial pressure within states and the pressure from international lending organizations on states to implement IMT, and the complexity of the external factor models that call for a slow and local-specific approach for the establishment of WUAs. It appears that neither the strategy of expanding pilot projects nor a nationwide rapid IMT strategy promises to be successful, especially if WUAs are supposed not only to be responsible for water

distribution, but also to empower the less powerful in the local community. Hence, a new strategy has to be found that will be more costly in terms of time and finance, but that will increase the possibility of creating sustainable local organizations.

**Acknowledgements**

I would like to thank Kevin Coutinho for editorial help.

# The physical and basin environment

# 3 Open and hidden problems of current and future water distribution in the Amu Darya river basin[5]

## 3.1 Introduction

Since the late 1990s, a new water management paradigm has been on the agenda of many international organizations; the new paradigm is called integrated water resource management (IWRM). This chapter analyzes how two aspects of the new paradigm, namely water resource management according to hydrological boundaries and equitable utilization, are implemented in the Central Asian context. The basin management framework for the Amu Darya river was already established during the Soviet Union in the late 1980s. At that time, water allocations for the riparian states were determined. The Amu Darya case could represent a good example for water resource management according to hydrological boundaries because of its long historic experience.

During the time of the Soviet Union, the administrative boundaries between the Soviet Republics were less significant than after independence in 1991, because the water sharing agreement and the economic benefits of water resources contributed to the larger economy of the Soviet Union rather than to the individual states. Because they belonged to one economy and received compensation from Moscow, equitable utilization of water resources between the riparian states was not necessary. After independence, the existing water distribution agreements were officially confirmed. However, current and future trends in water utilization by the riparian states that receive less water under the existing agreements, as well as the recognition of the environment (i.e. the Aral Sea) as having a claim on water, have necessitated the renegotiation of the water agreements. The chapter analyzes the implementation of the water sharing agreements since independence, identifies current and future trends in water utilization, and pinpoints weaknesses of the organization managing the water resources.

The chapter is structured as follows. A brief introduction to the IWRM approach is followed by a background section on the Amu Darya river basin and

[5] Published in German: Wegerich, K. (2005). Wasserverteilung im Flusseinzugsgebiet des Amudarja. Offene und verdeckte Probleme – heute und in der Zukunft, in S. Neubert, W. Scheumann, A. van Edig, and W. Huppert (eds) *Integriertes Wasserressourcen-Management (IWRM): Ein Konzept in die Praxis überführen*, pp. 201-215. Baden-Baden: Nomos-Verlag.

on the early approaches to basin management during the Soviet Union. The third section addresses the question of equitable utilization and current and future demands of the riparian states. This is followed by an analysis of the implementation of the water sharing agreements after independence. In this part, published and unpublished datasets are analyzed and compared. The fifth section looks at current and potential disputes and organizational and institutional dispute resolution mechanisms. The last section concludes, firstly, that in the Amu Darya basin water management according to hydrological boundaries is not implemented. Secondly, the inequitable water resource distribution established during the Soviet Union continued after independence. Thirdly, different datasets about water utilization by the different users suggests that the Amu Darya River Basin Organization (Basseynoe Vodnoe Ob'edinenie: BVO) is biased towards Uzbekistan. Fourthly, even though officially water has been allocated and officially has reached the Aral Sea, a different dataset suggests that this might not be the case. Finally, the water sharing agreements between the riparian states seem not to be sufficient to deal with drought situations or with potential disputes between the riparian states.

## 3.2 Need for IWRM

The realization that new approaches to water, and a more integrated framework to water management, are needed comes from different academic directions. Firstly, there are environmental concerns. Jewitt (2002:891) states "not all 'blue' water should be considered to be available for direct use by society; and a protection must always be reserved for ecosystem functions". Secondly, the continuously rising demand for water will rapidly outstrip current supply (Bouwer 2000; Alaerts 2003). This idea is connected with the recognition that the traditional solution of finding new water sources and building more infrastructure is reaching its limits (Radif 1999; Turton 1999). Thirdly, the old practices of centralized management of water resources led to unsustainable uses of water and water wastage at the meso and local level. These realizations are not new. They have already given rise to different approaches to water, including water as an environmental good, an economic good, or a basic human right in the multiple North. The initial paradigm reflecting the first of these concerns was the environmental paradigm, which gained influence during the mid-1970s. During the 1990s, a second paradigm gained currency. This paradigm reflected economic solutions to water management. Both paradigms were rejected in the multiple South (compare Allan 2003).

During the late 1990s, the IWRM paradigm emerged. The IWRM approach requires a holistic framework, incorporating the ideas of the earlier paradigms. The Global Water Partnership has defined IWRM as a "process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"

(quoted in Tapela 2002:993). The IWRM framework breaks with the old practices of centralized management of water resources. Central to the IWRM approach are the principles of water management based on hydrological boundaries and of equitable utilization (Matondo 2002; Bruin et al. 2005).

The concept of hydrological boundaries as an appropriate unit for water management is not as broadly accepted as it might seem. There are at least two main problems. Allan suggests that the focus on the basin is limiting. He reasons that "economies, whether they fit hydrological boundaries or not, cope with water resource deficits and challenges with remedies deriving from beyond immediate watershed(s)" (Allan 2003:3). Bouwer (2000:217) accepts Allan's virtual water paradigm and explains that "water short countries can save water by importing most of their food and electric power from other countries with more water". In addition, the focus on water management according to hydrological boundaries creates conflicts between "boundaries of river basins and those of political units" (Bandaragoda 2000:17). In most cases, the interests of the administrative unit dominate the interests of the hydrological units. Bandaragoda (2000:17) argues that "when the difference in the boundaries creates a conflict in decision making, invariably the greater emphasis is on the administrative or political boundary". In spite of the first criticism, coupled with the problem of the discrepancy of boundaries, and the resulting potential for management conflicts, international demand for basin management is on the increase.

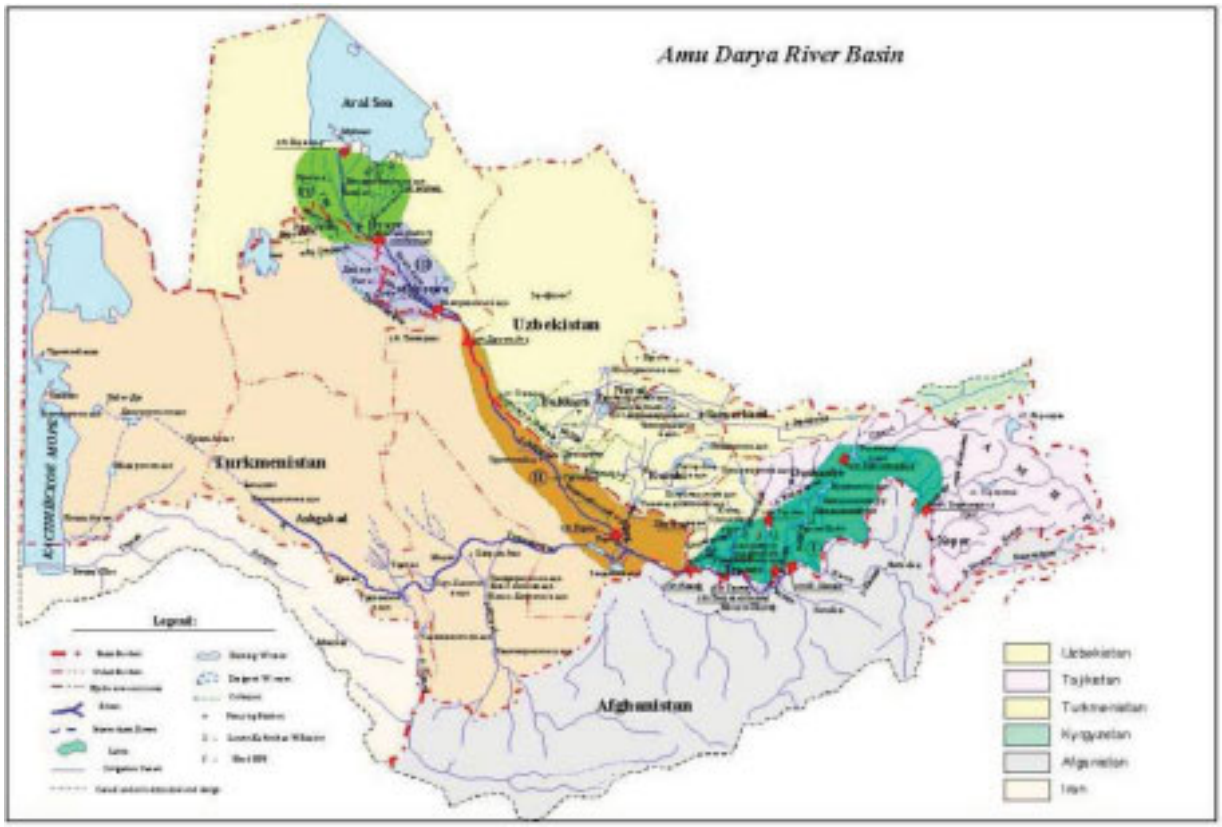
The principles of water management according to hydrological boundaries and of equitable utilization are discussed in the context of this case study on the Amu Darya river basin.

## 3.3 Background to the Amu Darya basin and the water sharing agreements

The Aral Sea basin covers about 1.8 million km$^2$ within six states[6]: Afghanistan and the five Central Asia Republics, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, and Turkmenistan. With the exception of Kazakhstan, the Central Asia Republics lie almost entirely within the Aral Sea basin. The basin can be described as a large drainage system that terminates in the Aral Sea. The western and central parts are covered by plains (the Kara-Kum and Kyz-Kum deserts); the eastern part is occupied by large mountain ranges. The mountain ranges form the flow generation zone for Central Asia's main rivers, the Amu Darya and the Syr Darya, which cross the deserts and flow into the Aral Sea. On their way to the Aral Sea, the rivers not only cross international boundaries but are

[6] Arguably Iran is also within the Aral Sea basin, but Iran's contribution to the flows in the basin is entirely in streams that end in the Kara-Kum desert and cannot actually reach the Aral Sea.

also used as boundaries between states. The focus of this chapter will be on the Amu Darya only (Map 3-1).




**Map 3-1: The Amu Darya river basin**

*Source:* PA Consortium Group and PA Consulting (2002:54)

Although the Syr Darya is longer, the Amu Darya is the biggest river in Central Asia. Its length is 2,540 km and its catchment area is 309 thousand km$^2$ (Sokolov, unpublished). The Amu Darya originates in Afghanistan on the glacier in the Vakjdjir Pass, close to the border with Pakistan's Northern Territories. Up to the confluence with the Vakhsh (from Tajikistan), the Amu Darya is called the Pyandj. After the confluence of the Vakhsh and Pyandj, the Amu Darya is joined by four further tributaries, the Kunduz (from Afghanistan), the Kafirnigan (from Tajikistan), the Sherabad, and the Surkhandarya (from Uzbekistan) (Sokolov, unpublished). On the other hand, Zonn (2002) suggests that nine rivers from Afghanistan contribute to the flow of the Amu Darya. These rivers are: Panj, Kowkchen, Kunduz, Khulm, Balkh, Sare Pol, Kaisar, Morghab, and Harirud. However, according to the BVO data only the Kunduz reaches the Amu Darya. There are no other tributaries reaching the Amu Darya further downstream.

Figure 3-1 shows the control structures and tributaries in the Amu Darya Basin.

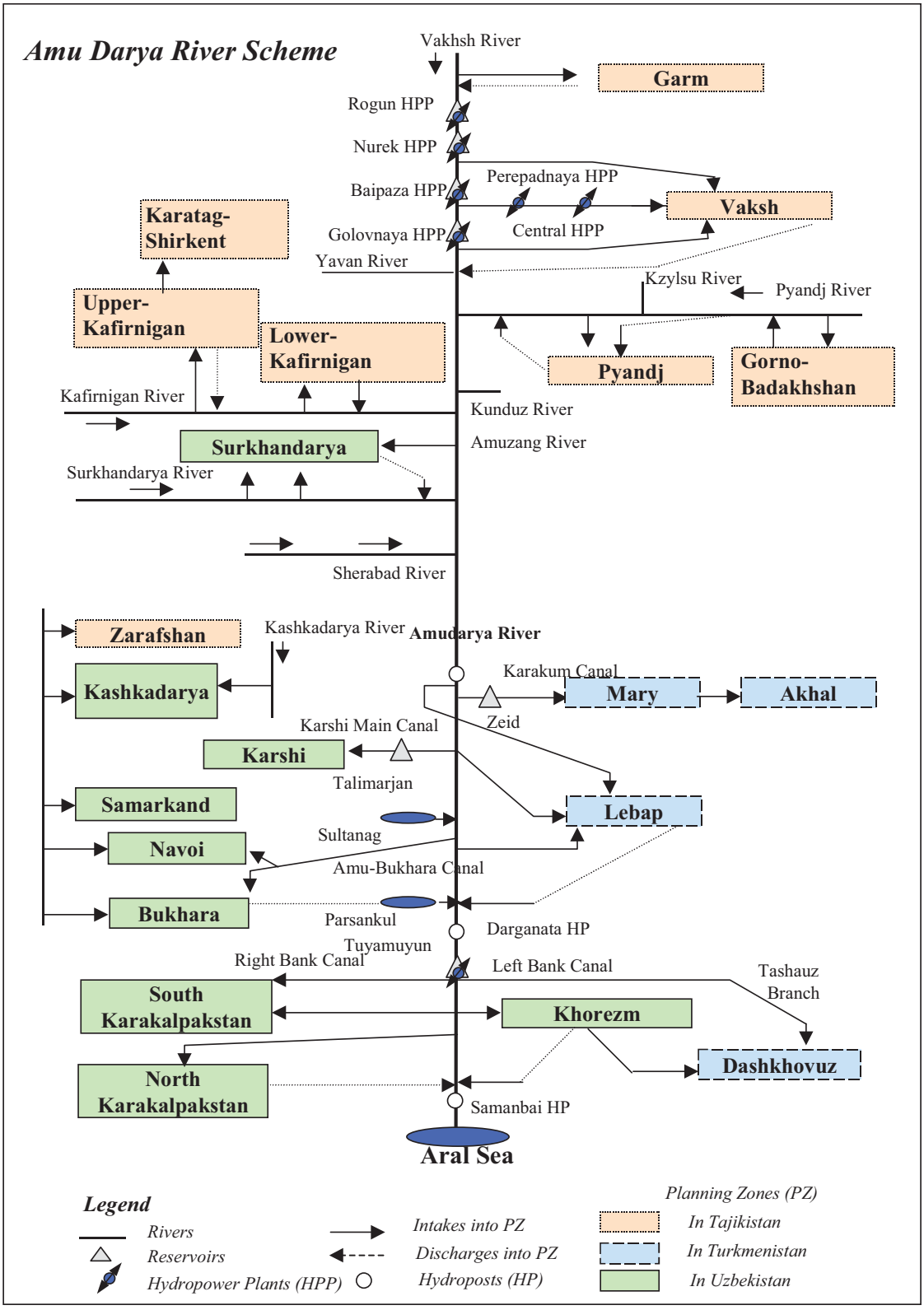



**Figure 3-1: Control structures and tributaries in the Amu Darya Basin**

*Source:* PA Consortium Group and PA Consulting 2002

During the Soviet Union, BVOs were created for the Syr Darya and the Amu Darya. Berkhoff states that "the BVOs were introduced because of the growing mistrust over water allocation and management between the Central Asian states" (personal communication D.J.W. Berkhoff 27.06.2003). As the catchment of the Syr Darya was within Soviet Union territory, it was possible to manage the river according to hydrological boundaries. "The Protocol No. 413 of the Meeting of Scientific-Technical Council of Ministry of Land Reclamation and Water Management of USSR held on February 7, 1984 in Moscow provides water distribution limits for the Syr Darya" (PA Consortium Group and PA Consulting 2002:8). A few years later, on March 12, 1987, the limits were set for the Amu Darya and "four Aral Sea Basin States formally endorsed these limits in Moscow on September 10, 1987, as Protocol 566" (PA Consortium Group and PA Consulting 2002:8) (Table 3-1). These states were Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Representatives of Afghanistan did not participate in the meeting. The same report states, "it appears that the available annual flow of 61.5 $km^3$ assumed diversion by Afghanistan at that time of 2.1 $km^3$" (PA Consortium Group and PA Consulting 2002:8). It is not evident that the amount allocated to Afghanistan is based on international agreements between the Soviet Union and Afghanistan; even though agreements were signed between the two states on the uses and quality of 'frontier' waters in 1946 and 1958 (compare PA Consortium Group and PA Consulting 2002). The BVO Amu Darya did not and still does not manage the water according to hydrological boundaries. Even today there is no agreement on the amount Afghanistan contributes to the flow of the Amu Darya. Current estimates on Afghanistan's contribution to the annual flow vary from 10 to 20 $km^3$ (PA Consortium Group and PA Consulting 2002; UNECE 2001).

**Table 3-1: Water distribution limits in the Amu Darya basin following Protocol 566 of March 12, 1987**

| | Limit ($km^3$/year) | Share % |
|---|---|---|
| Uzbekistan | 29.6 | 48.2 |
| Tajikistan | 9.5 | 15.4 |
| Kyrgyz Republic | 0.4 | 0.6 |
| Turkmenistan | 22.0 | 35.8 |
| Total for Basin: | 61.5 | 100 |
| Allocations downstream of the Kerki gauging site | | |
| Uzbekistan | 22.0 | 50 |
| Turkmenistan | 22.0 | 50 |

*Source*: PA Consortium Group and PA Consulting 2002:8

## 3.4 Equitable sharing of water resources

The limits for the different states do not reflect equitable water resource utilization, but rather the subordination of all the republican institutions and republican interests in water resource utilization to the former Central Authority in Moscow and to the greater interest of the former Soviet Union. The greater interest of the Soviet Union was irrigated agriculture in the downstream Central Asian Republics. It was in this area that irrigated land expanded during the Soviet Virgin Land Policy (initiated by Khrushchev in 1953), and later accelerated during the 'hydraulic mission'. During the Soviet Union era, the basin framework for water management was supported through an issue-linkage approach combining water, energy, and food, even from outside the basin (Wegerich 2004). After independence, the issue-linkage approach broke down and was only partly re-established in the Syr Darya basin. The new agreement included only energy and water. In the Amu Darya basin the riparian states did not come to a comparable water and energy sharing agreement.

Even though Uzbekistan is supposed to receive the largest amount of water from the Amu Darya basin, a BVO staff member argued that there is a disproportional distribution of the flow to Tajikistan and Turkmenistan – disproportional considering the irrigated area and population of the two countries (informal interview, Urganch, 16.01.2004). The irrigated area in the Amu Darya river basin is in Kyrgyzstan 22,000 ha, in Tajikistan 469,000 ha, in Uzbekistan 2,321,000 ha, and in Turkmenistan 1,735,000 ha (Sokolov unpublished:2). Zonn provides data for Afghanistan. He states that in 1965 in the territory of Afghanistan within the Amu Darya basin 460,000 ha were irrigated (Zonn 2002:4). Whereas the population of Afghanistan is 25.8 million, that of Uzbekistan is 24.1 million, of Turkmenistan 4.4 million, and of Tajikistan 6.1 million (ICG 2000:3). However, the numbers given for the population is for the whole country and not only for those provinces located in the Amu Darya basin. In view of the statement of the BVO employee, it seems that the main disproportionate distribution is towards Afghanistan.

Irrigated agriculture uses almost 92 percent of total water demand. Dukhovny and Sokolov argue that in future the water demand for agriculture will decrease to 87 percent, and the water demand of other sectors will increase. They state that the Kyrgyz Republic and Turkmenistan plan to lower demand for irrigated agriculture by 6.3 percent and 19.5 percent, respectively (Dukhovny and Sokolov n.d.:10). Nevertheless, since independence, Turkmenistan has increased its agricultural area (O'Hara and Hannan 1999); this suggests that there has already been a rise in Turkmenistan's water demand. They further mention that Tajikistan plans increases in agricultural water demand and that Uzbekistan's water demand will stabilize at the recent level (Dukhovny and Sokolov n.d.:10). Nonetheless, Sokolov argues that there is further potential to expand the irrigated area in Uzbekistan. He states: "Approximately 634,400 additional

hectares are suitable for new irrigation developments, and water conservation would allow a limited expansion of irrigated area, total irrigation potential can be estimated as 4.9 million hectares" (Sokolov 1999:109). In contradiction of their own statement, Dukhovny and Sokolov argue that "the view of the Kyrgyz Republic and Tajikistan is that they have been constrained during the Soviet times in their development of irrigation capacity, and that, therefore, they need to reassess what they consider their fair water share" (Dukhovny and Sokolov n.d.:16). According to FAO data, the Kyrgyz Republic and Tajikistan have already increased their agricultural area for wheat and rice production and decreased livestock production. Hence, they have already increased their agricultural water demand. In the case of Afghanistan, Zonn argues that in the Amu Darya basin Afghanistan has a total area of 1,580,000 ha suitable for irrigation (Zonn 2002:4). He states that the estimated "water intake for agricultural needs would then be 15 $km^3$ a year, with additional 1.5 $km^3$ for industrial and urban development" (Zonn 2002:9). Hence, it appears that all upstream states will raise their demand for water in future.

## 3.5 Implementation of the 1987 protocol

Has the water agreement been implemented after independence? Published data from BVO Amu Darya provide evidence about its implementation.

The data in Table 3-2 show that the water allocated to the upstream states as well as to Uzbekistan has decreased compared with their allocation in the protocol of 1987. The only country that still utilizes a similar amount as in the original protocol is Turkmenistan. The amount allocated to Kyrgyzstan decreased by 50 percent (0.25 $km^3$), to Tajikistan by 23 percent (2.2 $km^3$), and to Uzbekistan by 27 percent (8 $km^3$). According to Table 3-2, the remaining flow of the Amu Darya has been allocated to the Aral Sea. In the original protocol the Aral Sea was not considered as a user.

In an informal interview with a BVO staff member located in Urganch, Uzbekistan, it was stated that the Aral Sea is recognized as an independent user and that 3.5 $km^3$ is allocated annually to the lake (informal interview, Urganch 16.01.2004). As Table 3-2 shows, the allocated amount varies from year to year. However, the average flow to the Aral Sea was 6.1 $km^3$ during the period from 1993 to 1999. Hence, according to the published data the flow to the lake even exceeded the amount anticipated by the BVO. A comparison between the original agreement (Table 3-1) and the average allocation to the different states (Table 3-2) suggests that the original difference in water allocation between Uzbekistan and Turkmenistan has decreased and that the allocated amount is today nearly equal.

The data presented in Table 3-2, and especially the amount allocated to the Aral Sea, are very questionable. During the drought in 2000 and 2001, the Aral Sea as well as the downstream regions of Khorezm (Uzbekistan), Dashovuz (Turkmenistan), and Karakalpakstan (Uzbekistan) (from upstream to

downstream) received (actual) only a very small amount of the five-year average (Wegerich 2002b; Dukhovny 2002).

**Table 3-2: Actual water resource allocation in the Amu Darya river basin (1993-1999)**

| State - Water User | 1993-1994 | | 1994-1995 | | 1995-1996 | | 1996-1997 | | 1997-1998 | | 1998-1999 | | Average | | Limit % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Actual Data | | | | | | | | | | | | | | |
| | km$^3$ | % | km$^3$ | % | km$^3$ | % | km$^3$ | % | km$^3$ | % | km$^3$ | % | km$^3$ | % | |
| **Kyrgyz Republic** | 0.2 | 0.3 | 0.1 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.1 | 0.3 | 0.1 | 0.3 | 0.2 | 0.3 | 0.3 |
| **Tajikistan** | 7.3 | 14.2 | 7.0 | 14.2 | 7.4 | 14.3 | 7.5 | 15.0 | 7.2 | 14.7 | 7.5 | 14.4 | 7.3 | 14.5 | 15.2 |
| **Turkmenistan** | 22.8 | 44.2 | 21.2 | 42.9 | 21.5 | 41.5 | 21.0 | 42.0 | 20.9 | 42.4 | 21.8 | 42.2 | 21.5 | 42.5 | 42.3 |
| **Uzbekistan** | 21.3 | 41.4 | 21.0 | 42.6 | 22.7 | 43.9 | 21.4 | 42.7 | 21.0 | 42.6 | 22.2 | 43.0 | 21.6 | 42.7 | 42.3 |
| SUB-TOTAL | 51.6 | 100 | 49.3 | 100 | 51.8 | 100 | 50.1 | 100 | 49.3 | 100 | 51.6 | 100 | 50.6 | 100 | 100 |
| **Aral** | 11.2 | | 8.9 | | 3.1 | | 4.9 | | 0.5 | | 8.1 | | 6.1 | | |
| TOTAL | 62.8 | | 58.2 | | 54.9 | | 55.0 | | 49.8 | | 59.8 | | 56.7 | | |

*Source*: Table provided by BVO Amu Darya in 2002

A more interesting point is that, according to Table 3-3, the five-year average for the Kyzldjar metering station, which is still 102 km from the Aral Sea, is only 3.00 km$^3$.

**Table 3-3: Water availability downstream during droughts 2000 and 2001**

| | | Average Water Discharge | | | | | |
|---|---|---|---|---|---|---|---|
| Metering Station | Distance from Sea (km) | 2000 | | | 2001 | | |
| | | Actual (km$^3$) | 5-year average (km$^3$) | % 5-year average | Actual (km$^3$) | 5-year average (km$^3$) | % 5-year average |
| Tuyumayun | 450 | 4.41 | 11.84 | 37.27 | 3.62 | 11.84 | 30.58 |
| Kipchak | 287 | 2.73 | 7.69 | 35.47 | 1.51 | 7.69 | 19.67 |
| Samanbai | 215 | 0.51 | 3.19 | 16.18 | 0.034 | 3.19 | 1.08 |
| Kyzldjar | 102 | 0.32 | 3.00 | 10.68 | 0.032 | 3.00 | 1.06 |

*Source*: Data available from metering stations

Hence, it is lower than the amount officially allocated to the Aral Sea (Table 3-2), and lower than the average amount that officially reached the lake in the period 1993 to 1999. It goes without saying that after the Kyzldjar metering station the irrigated area continues. A comparison of the published data (Table

3-2) and the data from the metering stations (Table 3-3) reveals that, although water is allocated to and reaches the Aral Sea, this may not be the case or at least not to the extent claimed.

Do the states still obey the agreement of 1987, and what are the shortcomings of that agreement in terms of water allocation? A different dataset provided unofficially by BVO Amu Darya shows the annual amount of water abstracted from the intakes in Tajikistan, Turkmenistan, and Uzbekistan.[7] Table 3-4 utilizes these data and shows for each country the annual abstracted water in the time period from 1991 to 2001. Table 3-5 expresses the annual abstracted water for each country as a percentage of the total flow. Table 3-6 uses the same data to compile an index of the abstracted water using the flow of 1991 as the baseline. The data in Table 3-6 indicate the variation of abstracted water according to the variation of the river flow.

**Table 3-4: Water distribution in the Amu Darya basin (1991 – 2001) ($km^3$)**

| Country | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Uzbekistan | 45.0 | 61.6 | 50.8 | 52.9 | 37.4 | 42.0 | 33.4 | 58.5 | 42.9 | 26.9 | 19.1 |
| Turkmenistan | 21.9 | 22.5 | 22.4 | 22.9 | 20.9 | 20.8 | 21.2 | 22.5 | 22.0 | 16.4 | 13.4 |
| Tajikistan | 7.3 | 6.6 | 7.6 | 7.2 | 7.2 | 4.7 | 7.6 | 6.8 | 7.4 | 7.6 | 7.3 |
| All | 74.3 | 90.6 | 80.8 | 82.9 | 65.6 | 67.6 | 62.2 | 87.8 | 72.3 | 51.0 | 39.8 |

**Table 3-5: Water distribution in the Amu Darya basin (1991 – 2001) (%)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Uzbekistan | 60.6 | 67.9 | 62.9 | 63.8 | 57.1 | 62.2 | 53.7 | 66.6 | 59.4 | 52.8 | 48.0 |
| Turkmenistan | 29.5 | 24.8 | 27.7 | 27.6 | 31.9 | 30.8 | 34.1 | 25.6 | 30.4 | 32.2 | 33.7 |
| Tajikistan | 9.9 | 7.3 | 9.4 | 8.6 | 11.0 | 7.0 | 12.2 | 7.7 | 10.2 | 15.0 | 18.3 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

**Table 3-6: Index of water distribution in the Amu Darya basin (1991 – 2001) (base year 1991)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Uzbekistan | 100.0 | 136.7 | 112.8 | 117.4 | 83.1 | 93.3 | 74.2 | 129.9 | 95.3 | 59.8 | 42.4 |
| Turkmenistan | 100.0 | 102.5 | 102.2 | 104.5 | 95.6 | 95.0 | 96.9 | 102.8 | 100.3 | 74.9 | 61.3 |
| Tajikistan | 100.0 | 89.9 | 103.9 | 97.4 | 98.3 | 64.3 | 103.0 | 92.5 | 100.6 | 104.1 | 99.2 |
| All | 100.0 | 122.0 | 108.8 | 111.6 | 88.3 | 90.9 | 83.7 | 118.2 | 97.3 | 68.6 | 53.6 |

The data in Table 3-4 and Table 3-2 differ substantially. Not only is the calculated total annual flow of the Amu Darya different, but also the average utilization of the water resources by each country. The data in Table 3-4

[7] The original dataset stated for each intake the average flow (in $m^3$/sec) per month.

illustrate that during the time period of 1991 to 2001 Tajikistan stayed below the limit of the 1987 protocol and that Turkmenistan did not utilize any additional water either. That Turkmenistan did not increase its water use contradicts recent claims from Uzbekistan. The data for Tajikistan and Turkmenistan are similar in Table 3-2 and Table 3-4. However, the data in Table 3-4 indicate that Uzbekistan utilized more water than authorized in the 1987 protocol and utilized substantially more water than stated in Table 3-2. Hence, Uzbekistan is breaching the official protocol of 1987 and the subsequent agreements that were signed after independence between the states and that confirmed the annual allocation of 1987.

The data in Table 3-6 indicate some of the problems of the 1987 protocol. The agreements allocate to each country a water distribution limit. Nonetheless, it seems that the protocol does not take into consideration the variation of the river flow. During the ten-year time period, Tajikistan utilized a more or less constant amount of water. Even during the drought years of 2000 and 2001, Tajikistan utilized 7.6 and 7.3 $km^3$, respectively. The water amount utilized in the drought year of 2000 is even higher than the amount used in 1991. A comparison of the data in Table 3-6 shows that there is a higher level of variation in Uzbekistan's water exploitation compared to that of Turkmenistan. Any variation in the annual river flow affects Uzbekistan more strongly than any upstream riparian. It is likely that the variation in the flow affects also the amount of water allocated to the Aral Sea; this is also confirmed by the data in Table 3-2.

## 3.6 Dispute potentials and dispute resolution mechanisms

Even though Uzbekistan seems to utilize more water than permitted according to the 1987 protocol, Uzbekistan's use did not reduce the allocation to Tajikistan and Turkmenistan. It seems that the users that suffered from the over-exploitation were the Aral Sea, which was not considered in the 1987 Protocol, and Afghanistan, which has not developed its agricultural potential. Glantz (2002:28) raises the question of whether Afghanistan could "'sell' its legitimate share of the Amu Darya water to downstream users, because it is not in a position to use that water at present". Other upstream states in the Aral Sea basin have already proposed to charge downstream riparian states. According to Djalalov, Kyrgyztan proposed to charge downstream riparian states US$ 0.04 per cubic meter (Djalalov n.d.b:20). The proposal has been vetoed by the downstream riparian states. It is questionable what the 'legitimate' share of Afghanistan is and whether Tajikistan could claim a higher share of the river flow as well. Uzbekistan's current increased water usage could be interpreted as an attempt to raise its water share and therefore to have stronger bargaining power in any future renegotiations of the water allocations in the Amu Darya basin. However, this would imply that Uzbekistan has knowledge about the current level of water exploitation. It is questionable whether Uzbekistan or any of the other riparian states are aware of their own level of water abstraction or of

that of any other riparian state, because the data presented in Table 3-2 are published, whereas the data in Table 3-4 are not.

There is potential for disputes and renegotiations, and it seems that the organizations and institutions are ill prepared to facilitate cooperation. Even though the BVOs continued with their work after independence, the power of the BVOs is limited. The national water ministries are very reluctant to hand over diversion schemes to the BVOs, and to intervene in water distribution and in the operation of water schemes. The BVOs do not have full authority over the construction of water regulating structures and water reservoirs. O'Hara argues that the BVOs "are not recognised by national legislatures and therefore lack legitimacy and authority" (quoted in Horsman 2001:73). One reason for the lack of political will to cooperate could be the location of the BVOs. The Amu Darya and Syr Darya BVOs are both located in Uzbekistan. Hodgson (informal interview Bishkek 17.08.2001) argued that the Syr Darya BVO is not recognized in Kyrgyzstan. According to him, it is widely believed in the 'water community' in Kyrgyzstan that the Syr Darya BVO in Tashkent is supporting Uzbek interests, and is therefore trying to get more control over the Kyrgyzs' water resources. That there are already two different sets of data on the river flow within the BVO Amu Darya, and that only the data in Table 3-2 are published, confirms that the prejudice is maybe justified.

Whereas Weinthal (2001:59) argues that the interstate water agreements "excluded mechanisms for dealing with disputes across sectors", Vinogradov and Langford (2001) have a more fundamental criticism. They argue that the 1992 agreement refers water disputes to the ministries of the five republics, but does not provide for situations in which the ministers are unable to resolve the dispute. One 1997 draft interstate agreement "makes no reference to dispute resolutions" (Vinogradov and Langford 2001:353). Another 1997 draft interstate agreement has an arbitration clause, but lacks reference to applicable law or procedure and is weakened "by a subsection which provides that the party in fault is exempt from 'indemnities and penalties if its action were not prejudiced, not systematic or caused by emergency situations'" (Vinogradov and Langford 2001:353). The case of Uzbekistan's water extraction could fall under that subsection.

## 3.7 Conclusion

Even though a management framework for the Amu Darya was established in 1987, the framework was based on the administrative boundaries of the Soviet Union and not on hydrological boundaries. Afghanistan was excluded from the meeting that originally determined water resource utilization by the riparian states, and even today Afghanistan is not integrated in the basin management framework.

Equitable utilization of water resources by all the riparian states and by the environment was not considered during the Soviet Union. After independence,

the agreements between the states were confirmed by the former Soviet Republics. Hence, inequitable distribution between the riparians and the exclusion of Afghanistan continued. Even though after independence the Aral Sea was considered as a water user, and a share of the Amu Darya water resources was allocated to the lake, the different available datasets create doubt about whether the Aral Sea received its allocated water.

Even though the published data show that the riparian states continued to utilize their agreed water share, another BVO dataset demonstrates that Uzbekistan utilizes a significantly higher proportion of the Amu Darya than agreed. The discrepancy between the BVO datasets suggests that BVO Amu Darya is biased towards Uzbekistan. Such a prejudice would confirm the mistrust of upstream riparian states and would make it questionable whether the BVO can in future function as an international basin organization. The different datasets show that there is a need for transparency, in terms of how the data are collected and managed. In this case, transparency could facilitate confidence and trust building, and would contribute to cooperation between the riparian states.

The unpublished data suggest that the allocation to the riparian states is based on a first-come-first-served basis within the set limits. While during the drought of 2000 and 2001 upstream Tajikistan was able to utilize the amount agreed in 1987, downstream states had to cut their share. The presented data show that, when the annual flow is reduced, or during a drought situation, the downstream users are not protected and will suffer additionally, because the upstream users claim their official share. Hence, the weakest riparian user is the Aral Sea.

The current changes in agricultural production in Tajikistan and the anticipated rehabilitation of the irrigation systems in Afghanistan are feared by the downstream riparian states, who would have to reduce their current share. This may be one of the reasons why in recent years discussions about the diversion of the Siberian river have started anew. Kyrgyzstan's proposal to charge downstream users, a proposal that has already been reiterated on the international level, and that might be a future demand of the upstream riparians in the Amu Darya basin, causes further concerns for the downstream riparians. Under such conditions, Uzbekistan will suffer with its expensive irrigated agriculture in Kashkadarya Province and Bukhara Province. In these two provinces, water from the Amu Darya has to be pumped up to a height of 130m and 60m, respectively. Even without any upstream charges for water, irrigated agriculture in Kashkadarya is not economically feasible.

In their present form, the institutional arrangements to facilitate conflict resolution between the riparians seem not to be sufficient to deal with the current and potential demands of the upstream riparian states and of the Aral Sea. Institutional mechanisms facilitating dispute resolution should be established.

# 4 Politics of water in Central Asia[8]

## 4.1 Introduction

During the period of Soviet rule, the Syr Darya basin and parts of the Amu Darya basin, both of which were located in territories of the USSR, were managed according to hydrological boundaries, irrespective of the administrative boundaries of the constituent union republics (SSRs). The disintegration of the USSR in 1991 transformed these boundaries into national boundaries and resulted in national water-management approaches becoming transnational in status. In the Amu Darya and Syr Darya basins, the collapse of the Soviet system, with integrated water, energy, and food sectors, created new and very serious risks and security challenges for the independent states.

River basins can be classified as common pool resources (CPRs). These are resources that are utilized by two or more users. Ostrom et al. (1994) distinguish between two types of CPR problems: appropriation and provision. The appropriation problem of a CPR relates to the subtractability of the benefits consumed by one member from those available to others. Provision problems relate to the operation and maintenance (O&M) of the resource delivery system. In post-Soviet Central Asia, the new challenges involve both the allocation of water resources and the structures that provide the resources.

Since independence, much has been written on the potential for water wars in Central Asia. Indeed, Smith (1995:351) states that "Nowhere in the world is the potential for conflict over the use of natural resources as strong as in Central Asia". Whereas in the period that immediately followed independence attention was focused on the potential disputes over water allocation amongst the riparian states, subsequent analysis of the Syr Darya basin has focused on the conflicting upstream and downstream uses of water and the interdependence between energy and water. In the Syr Darya basin, the economically and politically weak, but water-rich Kyrgyzstan, as an upstream state, has the main influence in terms of water management, and the willingness of the state to cooperate with the downstream riparian states is crucial. Conversely, in the Amu Darya basin, the main emphasis was on the allocation of resources. During the Soviet period, the allocation of resources advantaged the economically and politically strong, but water-poor, downstream riparian states of Uzbekistan and Turkmenistan, at the expense of the upstream states of Tajikistan and Afghanistan. In terms of allocation, the two downstream states' willingness to co-operate is crucial.

[8] Wegerich, K. (2006), in I. Gladman (ed.) *Eastern Europe, Russia and Central Asia 2007*, 7th edition, pp. 26-31. London: Routledge.

However, various possibilities for funding the development of the pump stations in the basin drew attention to the problem of provision, which could potentially lead to tension between the downstream riparian states. In addition, Tajikistan plans to build a new dam (Rogun dam) on the Vakhs river to increase its hydropower production (Spoor and Krutov 2003; Karaev 2005). The dam would allow Tajikistan to have more control over the main tributary of the Amu Darya and therefore Tajikistan would have as powerful a position as Kyrgyzstan has at the moment. In both basins, the questions of allocation and provision remain problematic and need to be addressed. To understand the situation fully, one has to consider the historical background to water management in the region.

## 4.2 The Soviet legacy

The Aral Sea basin covers about 1.8 million $km^2$ and is located within six states: Afghanistan, and the five Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). With the exception of Kazakhstan, the Central Asian Republics lie almost entirely within the Aral Sea basin. The basin can be described as a large drainage system that terminates in the Aral Sea. The western and central parts are covered by plains (the Kara-Kum and Kyz-Kum deserts); the eastern part is occupied by large mountain ranges. The mountain ranges form the flow generation zone for Central Asia's main rivers, the Amu Darya and the Syr Darya, which cross the deserts and flow into the Aral Sea. Although the Amu Darya is the bigger river of the two, the Syr Darya is the longer. Measured from the Naryn headwater in Kyrgyzstan to the sea, its length is 3,019 km, with a catchment area of 219,000 $km^2$. The Amu Darya is the largest river in Central Asia. Its length is 2,540 km and it has a catchment area is 309,000 $km^2$ (Dukhovny and Sokolov n.d.:3). The Amu Darya originates in Afghanistan on the glacier in the Vakjdjir Pass, close to the border with Pakistan's Northern Areas. On their way to the Aral Sea the rivers not only cross international boundaries but are also used as boundaries between the states.

Even during the Russian empire, the Aral Sea basin was identified for its comparative advantage for growing cotton. Following the assumption of Russian control over the territories in the region in the mid-19th century, agricultural policies that encouraged the production of cotton were implemented. The establishment of Soviet power after 1917 did not bring a change in the economic specialization of the region. Under the 'virgin land' policy and the beginning of the 'hydraulic mission', the area under irrigation expanded further. In 1953, Soviet leader Nikita Khrushchev initiated the virgin land policy, which was intended to increase agricultural productivity. By 1956, an additional 88.6 million ha of agricultural land was under cultivation in the Soviet Union, mainly in Kazakhstan and Western Siberia (Russia). As part of the virgin land project, Khrushchev promoted the idea of expanding the irrigated areas in Central Asia (Rumer 1989). The Kara-Kum canal in Turkmenistan (length: 1,400km, intake: 10-12 $km^3$) and the pumping stations bringing water to the *viloyats* (provinces)

of Bukhara (discharge: 270 $m^3$/second, elevation: 57m) and Kashkadarya (discharge: 350 $m^3$/second, elevation: 170m) in Uzbekistan give an indication of the dimension of the water management constructions (Orlovsky and Orlovsky 2002; O'Hara 1997; Bucknall et al. 2001). The total irrigated area in Central Asia grew from 4.5 million ha in 1965 to 7 million ha in 1991. After independence, the hydraulic mission continued and the irrigated area increased even further to 8.1 million ha (Spoor and Krutov 2003).

During the Soviet era, the Ministry of Land Reclamation and Water Resources of the USSR controlled the Central Asian Water Authority. The Central Asian republican institutions and interests in resource utilization were subordinated to the central authority in Moscow, the Russian and Soviet capital, and to the greater interest of the USSR. Renger (1998:5) states: "The ministries of the Central Asian republics were extensions of the ministry in Moscow. They were responsible for fulfilling the centralized plans and norms. Their role in decision-making was limited to providing data to the centre." The subordination of the republics was two-fold: sectoral (with regard to irrigated agriculture) and national. Consequently, the utilization of the rivers did not correspond to the administrative boundaries and the interests of the administrative zones. Because of the Soviet policy to enhance irrigation productivity of the region, equal water distribution between the riparian administrative units was not considered (Table 4-1).

**Table 4-1: Sources of river flows in the Aral Sea basin (annual averages in $km^3$)**

| Country | River Basin | |
|---|---|---|
| | Syr Darya | Amu Darya |
| Kazakhstan | 2.4 | - |
| Kyrgyz Republic | 27.6 | 1.6 |
| Tajikistan | 1.0 | 49.6 |
| Turkmenistan | - | 1.5 |
| Uzbekistan | 6.2 | 5.1 |
| Afghanistan and Iran | - | 21.6[a] |
| Total for Aral Sea basin | 37.2 | 79.3 |

[a] Figures for Afghanistan are contested. In the mid-2000s estimates on the country's contribution to the annual flow varied from 10–20 $km^3$. Arguably Iran is also within the Aral Sea basin, but Iran's contribution to the flows in the basin is entirely in streams that end in the Kara-Kum desert and cannot actually reach the Aral Sea.

*Source*: PA Consortium Group and PA Consulting 2002; UNECE 2001

Lange (2001:1) explains the sectoral subordination, stating that "the water management infrastructure was designed for a unified purpose and placed where it made sense geologically". Within the basin framework, dams and reservoirs were built upstream in the mountains of Kyrgyzstan and Tajikistan, whereas the irrigation areas were downstream in the valleys and on the steppes. The water management constructions were built to enhance irrigation in the downstream regions. In order to use the dams for agricultural purposes, water had to be released in the vegetation season for irrigation demands. The basin management framework approach for the Syr Darya had the benefit of permitting total control over water and efficient water management for irrigation. The basin management framework for the Amu Darya led to the construction of pumping stations in Turkmenistan that provided water for Bukhara and Kashkadarya Provinces in Uzbekistan.

The Soviet authorities created river basin organizations (Basseynoe Vodnoe Ob'edinenie: BVOs) for the Syr Darya and the Amu Darya. Berkhoff states that "the BVOs were introduced because of the growing mistrust over water allocation and management between the Central Asian states" (personal communication, D.J.W. Berkhoff, 27.06.2003). The entire catchment area of the Syr Darya was within the USSR, and it therefore proved possible to manage the river according to hydrological boundaries. In February 1984, the Scientific-Technical Council of the Soviet Ministry of Land Reclamation and Water Management decided on annual water distribution limits for the union republics of the Syr Darya basin, and limits were established for those of the Amu Darya Basin in September 1987 (Table 4-2).

**Table 4-2: Agreed annual water use limits in Amu Darya and Syr Darya basins ($km^3$)**

| | Amu Darya basin[a] | Syr Darya basin[b] |
|---|---|---|
| Kazakhstan | - | 12.3 |
| Kyrgyzstan | 0.4 | 4.0 |
| Tajikistan | 9.5 | 2.5 |
| Turkmenistan | 22.0 | - |
| Uzbekistan | 29.6 | 19.7 |

[a] Figures agreed by Protocol 566 of the Scientific-Technical Council of the Soviet Ministry of Land Reclamation and Water Management of the USSR on September 10, 1987.

[b] Figures agreed by Protocol 413 of the Scientific-Technical Council of the Soviet Ministry of Land Reclamation and Water Management of the USSR on February 7, 1984.

*Source*: PA Consortium Group and PA Consulting 2002:8

It should be noted that Afghanistan did not participate in the 1987 meeting that determined allocations to the four Soviet republics in the Amu Darya basin. The agreements between Afghanistan and the Soviet Union of 1921, 1946, and 1958 focused on boundary issues, navigation, and water quality. However, in 1977 Afghanistan sent a delegation to Tashkent to prepare a water sharing agreement. The delegation wanted to claim an equal share of the river flow, but no agreement on water allocation was reached (Qaseem Naimi 2005). Hence, the limits set in 1987 ignored the claims of Afghanistan and simply assumed a utilization of 2.1 $km^3$, which was lower than what was already being used in 1965, namely 3.85 $km^3$ (Qaseem Naimi 2005).

In the Soviet system, there were no significant disputes between upstream and downstream interests within the Central Asian republics. Upstream and downstream riparian units benefited through the regional approach, using water, energy, and food as common pool resources. Because of the obligatory focus on irrigation, the upstream water management constructions, such as dams and reservoirs, did not produce hydroelectric power when it was most needed in the upstream regions, that is, during the winter season. The dams released water during the summer when the downstream riparian administrative units needed water for agriculture. Because all the republics were unified in one country, energy was provided during the winter from Russia and the downstream regions, which are rich in oil and gas.

### 4.3 Post-independence problems

With independence and the shift from a single administrative unit to independent states, the regional approach to water management that had hitherto existed was at risk. Nevertheless, soon after independence in 1991, the governments of the newly independent Central Asian states (again excluding Afghanistan) agreed to continue with the principles of water allocation that had prevailed in the USSR. The Almaty Agreement, signed in February 1992 by representatives of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, acknowledged joint management of water resources. “Under the agreement the states retained their Soviet-period water allocations, refrained from project infringements on other states and promised an open exchange of information” (O’Hara quoted in Horsman, 2001:73).

Even though agreement was reached in 1992, the international community saw the potential for water conflicts. What aspects of potential conflicts were identified? Smith’s (1995) statement, cited in the introduction to this chapter, was influenced primarily by concerns about the question of the allocation of water resources, specifically with regard to the differences in allocation between upstream and downstream states. The focus on conflict based on water allocation between the riparian states was dominant until the early 2000s (UNESCO 2000; Horsman 2001). By the mid-2000s, attention had shifted in the Syr Darya basin to the conflicting uses of water upstream and downstream and

the interdependence between energy and water (Weinthal 2001; Chait n.d.). Up to the present day, in neither basin are the allocation or the provision problems solved. The current national policies of all six Central Asian states focus on independence instead of interdependence, and therefore further the CPR problems.

## 4.4 Amu Darya basin

In the Amu Darya basin, the question of water allocation is based on two main concerns: the allocation of resources between the riparian states, and the quantity of water that should be allocated to the environment (i.e. the Aral Sea). Is the water distribution in the basin equitable? Although the population figures in Table 4-3 are for the whole of each country rather than just the provinces located in the Amu Darya basin, they do raise doubts as to whether the current allocation of water is equitable, or adequate with regard to the possible future water demands of the riparian states.

**Table 4-3: Population and irrigated areas of Amu Darya basin riparian states**

| | Population (million, UN estimates 2002) | Irrigated Area ('000 ha, 1998) |
|---|---|---|
| Afghanistan | 22.9 | 460[a] |
| Kyrgyzstan | 5.1 | 22 |
| Tajikistan | 6.2 | 469 |
| Turkmenistan | 4.8 | 1,735 |
| Uzbekistan | 25.7 | 2,321 |

[a] Figure for 1965

*Sources*: Dukhovny and Sokolov n.d.; Zonn 2002

Have the riparian states changed their water demand or do they anticipate changing it? Dukhovny and Sokolov (n.d.) state that the Government of Turkmenistan planned to reduce the country's water demand for irrigated agriculture by 19.5 percent. Nevertheless, in the decade following independence, Turkmenistan increased its agricultural area and plans to increase the irrigated area further by 450,000 ha (O'Hara and Hannan 1999; ICG 2002). This suggests that Turkmenistan's demand for water has already increased and will continue to increase in the future. The situation in Tajikistan is similar to that in Turkmenistan. Tajikistan has already increased its irrigated area by 200,000 ha since independence and intends to increase the irrigated area even further by 500,000 ha (ICG 2002; Spoor and Krutov 2003). In addition, Tajikistan

increased its water demand by decreasing livestock production and by increasing the land allocated to wheat and rice production (FAO 2004). Even though Uzbekistan has the potential to expand its irrigated area, it is anticipated that its water demand will stabilize at the level recorded in the late 1990s (Dukhovny and Sokolov n.d.). Sokolov (1999:109) argues that "approximately 634,400 additional ha are suitable for new irrigation developments, and water conservation would allow a limited expansion of irrigated area, total irrigation potential can be estimated as 4.9 m. ha". The national food self-sufficiency strategies in Uzbekistan, which reallocated some irrigated areas from cotton to wheat production, could have led to water savings. However, the potential savings were annulled by an increased water demand because of leaching and the deterioration of the irrigations systems (Spoor and Krutov 2003). The reduction in funding for the operation and maintenance of the irrigation infrastructure in all Central Asian states has led to a deterioration of the infrastructure and to a decrease in management control (SIC ICWC 1999). This would suggest that, overall, more water is being used in agriculture. In northern Afghanistan, there are currently only 385,000 ha under irrigation (Qaseem Naimi 2005). There are different estimates on the potential total area suitable for irrigation in northern Afghanistan, varying between 1,160,000 and 1,580,000 ha (Qaseem Naimi 2005; Zonn 2002). The estimated annual water intake for agricultural needs could be as high as 15 $km^3$. Overall, it appears that all of the states in the region have either already increased or are planning to increase their water demands. Nevertheless, according to official data, Tajikistan and Uzbekistan have decreased their water demand.

**Table 4-4: Water use in the Amu Darya basin in $km^3$**

| | Official data (1993-1999) | Unofficial data (1991-2001)[a] |
|---|---|---|
| Kyrgyzstan | 0.2 | n.a. |
| Tajikistan | 7.3 | 7.0 |
| Turkmenistan | 21.5 | 20.6 |
| Uzbekistan | 21.6 | 42.8 |
| Aral Sea | 6.1 | n.a. |
| Total | 56.7 | 70.4 |

[a] Data on water extracted at intakes utilizing pumps

Chapter Three argues that there appear to be substantial differences between the limits set in 1987 (Table 4-2) and the published and unpublished data provided by the Amu Darya BVO on water utilization in Uzbekistan (Table 4-4). According to the unpublished data, Uzbekistan utilized substantially more water

than had been officially stated, and even went above the limits set by Protocol 566 of 1987 and the subsequent water sharing agreements. Neither the official nor the unofficial data show that Tajikistan and Turkmenistan increased their water utilization. In the case of Tajikistan, one could reason that at least the unofficial data only refer to water intakes utilizing pumps. However, there seems to be no obvious explanation as to why the official data do not show an increase for Turkmenistan and Tajikistan. In addition, it is questionable whether water is still reaching the Aral Sea. Although official figures state that on average 6.1 $km^3$ reached the Aral Sea annually between 1993 and 1999, unofficial data suggest that, in fact, no water reached the lake (Chapter Three). The unofficial data seem to confirm the statement of Spoor and Krutov (2003) who argue that the scenario of the desiccation of the Aral Sea predicted by Micklin (1992) for 2010 has already become a reality.

A workshop organized by the UN University of Peace in Almaty in spring 2005 showed that there were so far no renegotiations of the limits for Afghanistan. In the event of renegotiations taking place, and Afghanistan being able to increase its allocated share, then the question should be raised as to whether Afghanistan could "'sell' its legitimate share of the Amu Darya water to downstream users, because it is not in a position to use that water at present" (Glantz 2002:28).

In the current circumstances, the water provision problem in the Amu Darya basin mainly concerns questions about access to and responsibility for the pump stations in Turkmenistan that provide water to Uzbekistan. Since independence, Uzbekistan has had to pay rent to Turkmenistan for the utilization of the land on which the pump stations are located and is also responsible for the operation and maintenance of the infrastructure. In the early 2000s, the World Bank declined to provide funding for a project to finance the rehabilitation of the pump station providing water for Kashkadarya Province in Uzbekistan, simply because of the extra-territorial location of the pumping station, and because Uzbekistan and Turkmenistan could not agree as to which of the two countries should benefit from the funds (informal interview with leading UZGIP expert 2004). A similar problem could also potentially arise with the anticipated rehabilitation project for the Bukhara pump station, which is also located in Turkmenistan.

A provision problem could also arise with the dams in Tajikistan, which provide water for the irrigated areas in Uzbekistan and Turkmenistan during the irrigation periods in the summer. At present, Tajikistan does not have full control over the water flow of the Vakhs river, a tributary of the Amu Darya, and is therefore not in such a strong position as Kyrgyzstan in the Syr Darya basin, which started to demand cost sharing for the water provision infrastructure. The situation may change if the planned construction of the Rogun dam materializes. However, Spoor and Krutov (2003:22) argue that "taking into consideration the power relations, the latter [Uzbekistan] will never allow this to happen".

## 4.5 Syr Darya Basin

Even though the post-Soviet Central Asian states agreed to share their water resources according to Soviet era agreements, other regional institutions and practices, such as the exchange of food and energy, have disappeared. Each of the newly independent republics initiated its own national strategies for energy and food security. Whereas downstream countries could divert water away from cash-crop production to food-crop production (as has been the policy of Uzbekistan since the early 1990s), the small amount of water allocated to upstream Kyrgyzstan does not allow much flexibility. Any increase in demand for water for agricultural purposes in the upstream countries has the effect of reducing the availability of water for downstream users. Since independence, in Kyrgyzstan the agricultural sector has become more important; the agricultural sector has dominated the Kyrgyz economy and accounted for 38.7 percent of GDP in 2003, according to preliminary official figures.

The upstream riparian state of Kyrgyzstan privatized its state and collective farms; this privatization resulted in an increase in the number of agricultural water users. While in 1990 some 450 state and collective farms existed, by 1996 the number of farms had increased to 40,000, most of which were small in size. The on-farm irrigation structures became inter-farm structures; however, these structures were not equipped to control the water use of small-scale farms. In addition to the problems of water distribution at the local level, small-scale subsistence farming changed the focus of agricultural production from livestock to crop production (Baumann 1999). Data compiled by the FAO for Kyrgyzstan show that the allocated area and the production of cotton, wheat, rice, and vegetables increased between 1992 and 2000, whereas livestock production decreased in the same period (FAO 2004). The shift from livestock to food and cash crops led to a greater demand for water in Kyrgyzstan. Ul Hassan et. al. (2004:18) state that based on evidence from sample areas, water limits "no longer appear to be imposed as an operational parameter." They conclude: "this situation can be viewed as an indicator that Kyrgyzstan no longer perceives the institution of limits as binding". However, so far disputes based on the water allocation limits have not occurred.

The tension between upstream and downstream riparian states was not based on an increase in water demand upstream, but rather on a shift from operating the dams in summer for downstream irrigation to winter releases to increase the availability of energy upstream. The prior arrangements for water allocation ceased to function when Kazakhstan and Uzbekistan started to charge market prices for petroleum and gas supplies to Kyrgyzstan. Kyrgyzstan began to release water during the winter, to produce energy for its population. Disputes in which water played a significant role were not based on allocation issues, but on different uses of water in now competing sectors, such as water releases from the Toktogul reservoir for hydropower in winter (Weinthal 2001; Chait n.d.).

Even though the use of water for energy production did not change the regional allocation of water, it changed the availability of water at certain periods.

Pressure from the US Agency for International Development, USAID, resulted in the establishment of a barter agreement, thereby reinforcing the Soviet arrangements on energy (Lange 2001; Weinthal 2001). On 17 March 1998, the governments of Kazakhstan, Kyrgyzstan, and Uzbekistan adopted an Interstate Agreement on use of water and energy resources in the Syr Darya river basin (Kasymova 1999) According to this agreement, the downstream riparian states would purchase Kyrgyz electricity during the summer and sell natural gas, coal, and petroleum to Kyrgyzstan in the winter. However, the agreement had limited success, partially because it "did not provide a means of enforcement" (Chait n.d.:3), and partially because the new agreement was less beneficial for Kyrgyzstan: firstly, the price of hydroelectric power was less than that of coal and gas; secondly, the provisions of the agreement that Uzbekistan and Kazakhstan would receive water at the time when it is needed for agriculture resulted in these countries obtaining additional income.

In addition, Article VII of the March 1998 Interstate Agreement stipulates that the operation, maintenance, and reconstruction of water and energy facilities should be covered in accordance with the ownership of the property. Hence, it does not provide for the recovery of operation and maintenance costs of upstream facilities from other republics to which water services are provided. Based on the agreement, Kyrgyzstan is responsible for the operation and maintenance costs of the dams, reservoirs, and transboundary canals in Kyrgyzstan. Owing to the high costs of operation and maintenance and Kyrgyzstan's poor economic situation, the water facilities are deteriorating. Kyrgyzstan started to demand fees from the downstream riparian states "for the use of water from its reservoirs" (Jumagulov 2001:2). In the late 1990s, debate started in Uzbekistan as to whether water prices that reflect operation and maintenance costs should be introduced in the agricultural sector. The assumption was that any such charges would contribute to the operation and maintenance costs of the infrastructure upstream (informal interview with leading UZGIP expert 2004). It was anticipated that water charges for agricultural users would be introduced in two steps in the whole of Uzbekistan starting from 2002, and by 2005 all agricultural users would have to pay for water (Spoor and Krutov 2003). By summer 2005, there had been no real charges for agricultural users in Uzbekistan. It is questionable overall whether Uzbekistan could charge its farmers even for the operation and maintenance costs of the water delivery system without endangering whole provinces. Bucknall et al. (2001) calculated the viability of charging farmers the energy costs of the pump irrigation system and concluded that 64 percent of Kashkadarya Province and 11 percent of Jizzak Province would have negative gross margins, and would therefore be unprofitable. It could be assumed that, if the calculation included upstream provision costs, more irrigated land could be

unprofitable. Therefore it is doubtful whether Uzbekistan could use water pricing mechanisms to pay for the service provision of the upstream water management infrastructure.

## 4.6 Conclusion

The studies of the Amu Darya and Syr Darya basins show that neither the pre-existing problems of allocation that were not resolved during the Soviet period (namely the environment of the Aral Sea and the allocation of water to Afghanistan), nor the problems of provision that only came into existence because of the disintegration of the Soviet Union, have been solved. In addition, the disintegration has caused new allocation problems. The riparian states are no longer integrated in the issue-linkage approach that had incorporated food, energy, and water. The policy of food self-sufficiency, developed since independence by all the individual riparian states, has led to increases in water demand upstream and therefore put pressure on the downstream riparian states as well as on the Aral Sea.

Although all of the riparian states in the Syr Darya basin participated in the negotiations on water allocation in the past and have agreed to the limits set in 1984, the evidence suggests that the limits would have to be renegotiated to reflect the current situation. In the case of the Amu Darya basin, not even all of the riparian states were present when the utilization limits were set in 1987. In addition, before agreements can be reached on allocation, there must be agreement about the amount of water that Afghanistan contributes to the annual flow of the Amu Darya. Any future increase in water allocation to Afghanistan would decrease the water availability for the existing main stakeholders, Uzbekistan and Turkmenistan. Such an allocation increase to Afghanistan would put the downstream countries under pressure to change their current method of irrigation, and maybe to move even further to less water demanding crops; this would have the effect of decreasing the income of these states. Uzbekistan and Turkmenistan did not fully privatize the agricultural sector and retained significant state control over the cotton sector. Such a shift in agricultural policy could have serious implications for the political control of the downstream states. Furthermore, a shift from high-value cash crops (cotton) to low-value food crops (wheat) in the downstream riparian states will intensify existing difficulties in financing the water provision infrastructure.

The disintegration of the USSR and the upgrading of administrative boundaries to national boundaries had very negative effects for the Central Asian republics and their water sharing agreements. Even though pledges have been made in the past for closer cooperation, and even the UN has been asked to establish a commission with the goal of giving UN status to the organizations involved in the Aral Sea basin, the overall tensions and mistrust between the riparian states remain.

The data presented on developments at the national level in the riparian states put into question whether any international agreement on water allocation will be effective. In the current situation, none of the national water management organizations has the means to monitor and to enforce agreed limits on the lower administrative levels. A statement by the Afghan delegation at the UN University of Peace pinpointed the problem of enforcement: “The politicians may decide on water allocation, but currently the farmers just take the water, when they have access to it” (Qaseem Naimi, Almaty, 23.04.2005). Hence, it depends on the political will of the national governments not only to agree on limits, but also to take responsibility and to fund the day-to-day functioning of the water sector.

# The organizational environment

# 5 Organizational problems of water distribution in Khorezm, Uzbekistan[9]

## 5.1 Introduction

This chapter identifies organizational problems of common pool resource management at the district as well as at the provincial level in Khorezm, Uzbekistan[10]. The identification of the problems is important for the current and future management of water resources in Khorezm and in the whole region. The importance is increased by three factors. First, Khorezm is downstream and will suffer from any changes in water use upstream. The appearance of upstream Afghanistan as an equal player in the Amu Darya basin and a major contributor to the basin's water resources makes it likely that water availability downstream will decrease when Afghanistan begins to use water for consumptive purposes. Secondly, due to climate change the available water resources in the Amu Darya basin will decrease. Thirdly, there is pressure currently from international organizations to establish water user associations in Uzbekistan. However, it is uncertain whether the higher level system of water allocation and distribution is viable for the creation of water user associations.

The analysis is based on field research undertaken in Khorezm between October and November 2002. The data are based on semi-structured interviews with employees of district and provincial water distribution departments. Interviews were conducted in all of the 11 districts in Khorezm. In ten districts, the heads of the water distribution offices were interviewed. In one district (Shavat), two employees directly subordinated to the head of water distribution were interviewed. In ten districts, the interviewees were interviewed twice, in one district (Khonka) the interviewee was interviewed only once. To crosscheck the overall findings, similar questions were asked in water distribution departments in other provinces (Karakalpakstan, Kashkadarya).

The chapter is structured as follows. The first section provides an introduction to common pool resources theory and to the behavior of institutions in stressful situations. The behavior of institutions in emergency situations makes it possible

[9] Wegerich, K. (2004). *Water International*, 29(2):130-137.

[10] In 1997, the Ministry of Water and the Ministry of Agriculture were merged. Here the focus is only on the water departments at district and provincial level and their logistical capacity to control water. In Chapter Six the merger between Water and Agriculture and the implications for management are evaluated.

to see the 'skeleton' of the institutions as well as the processes within the institutions. The second section offers a brief background to water allocation and distribution in Uzbekistan and the geographic and water resources situation in Khorezm. The third and main section is structured into two parts: (a) the problem of the lack of control of the District Departments for Water Resources, and (b) the results of water over-extraction and the lack of control at the district and the provincial level. The fourth section concludes that the current organizations managing the water resources at the district level do not have the capacity to control water exploitation. Over-exploitation and lack of control causes conflict at the district, provincial, and international levels. The current management of water resources according to administrative boundaries exacerbates inequitable distribution and generates conflict between upstream and downstream users. The analysis concludes that current systems of water distribution make the creation of water user associations unviable.

## 5.2 Problems of common pool resources and the institutional skeleton

According to Bromley (1992:11), "irrigation systems represent the essence of common property regimes" because "there is a well defined group whose membership is restricted; an asset to be managed; an annual stream of benefits; and a need for group management of both the capital stock and the annual flow". Bromley's reasoning can be expanded to the river basin and even different parts of the river basin. The Amu Darya water resources utilized in Khorezm Province have the characteristics of a common pool resource.

Common pool resources are defined by Ostrom et al. (1994:6) as resources that share two attributes: "(1) the difficulty of excluding individuals from benefiting from a good and (2) the subtractability of the benefits consumed by one individual from those available to others". However, common property represents private property for the group; hence the group will attempt to exclude non-members. Where there is not a system of exclusion we have a circumstance known as an open-access resource (Bromley 1992), which has the problem of unrestricted entry. These problems are different from those of a common property regime where tensions result from the structure of joint rights adopted, for example, by a particular village or group.

As in a river basin, in a catchment within the river basin, or an irrigation system, downstream users are in a weaker position than upstream users because they are directly affected by the water use of the upstream users. Downstream users are vulnerable to misuse and are dependent on institutions or organizations that represent their interests. Such institutions or organizations will ensure that equitable sharing takes place among all users of the common resource provided politics and its governance structures are robust enough to impose regulation. Instead of systems changing radically in emergencies, Torry (1986:126) argues that emergency "adjustments are not radical, abnormal breaks with customary behavior; rather they extend ordinary conventions". This reasoning was

advanced by Douglas (1986), who argues that an emergency system starts with a gradual tightening and narrowing of the normal distributive principles. As a consequence, those in command and those already advantaged are protected, and therefore the skeleton of the institutions becomes visible. In the case of water distribution in Khorezm, the drought of 2000 and 2001 was an emergency situation, and it will be shown that, in Khorezm, the skeleton of the water governance institutions or practices was revealed.

## 5.3 Background to water management in Uzbekistan

Water management in Uzbekistan is organized in a strict hierarchy. At the bottom of the hierarchy are the former state or collective farms, which receive water through the District Water Management Department (*rayvodkhoz*) (here referred to as District Departments for Water Resources), which is subordinated to the Province Water Management Department (*oblvodkhoz*) (here referred to as Province Department for Water Resources), which is subordinated to the Ministry of Agriculture and Water at the national level (see Renger 1998). The water management organizations within Uzbekistan are organized hierarchically based on the administrative structure of the state and not on the basis of hydrological boundaries (see Wolff 2002). The province and district departments for water resources implement the decisions of the ministry on the province and district levels and "are in charge of actually supplying water in given amounts" (TACIS 1995c:34).

Theoretically, water consumption is planned in a participatory manner. The rules have been developed in order to enable the demands for water to be planned from the bottom upwards. "According to the existing system, irrigation consumers themselves determine water consumption as requests are submitted by farm worker brigades" (World Bank 1996:69). Officially, water demand is calculated based on the following indicators:

- Structure and area of cropped land;
- Irrigation regime (method, norm, and period); and
- Efficiency of irrigation network and irrigation technique

(World Bank 1996; TACIS 1995b).

According to this system, all farmers sharing the same indicators as well as planting the same crop should receive an equal amount of water. Renger (1998) found that the farm administrations are consulted only in theory. The District Departments for Water Resources in practice determine the water requirements for each farm on the basis of irrigation and crop norms. Renger (1998) indicates that the water allocation rarely differs from one year to another when flows are normal (see also TACIS 1995b).

Even though real participation in the planning of water demand is questionable, reports still insist that water distribution is expected to be equitable. According to the World Bank (1996:69) report, equitable water distribution between the different provinces is expected. "The Ministry sets water intake limits for oblasts (province) according to the planned water demand submitted and intake limits from the transnational water resources. The limits allow for equal water supply with respect to planned demand". The World Bank report does not explicitly mention equitable water distribution at the district level; however, it seems that the same situation exists at the province level as at the lower levels. The World Bank (1996:69) states that "Limits for districts, water management systems and water consumers are set according to regional allocations". TACIS (1995b) even mentions specific water rights between the different administrative levels and units. The World Bank (1996:69) observes that, during the plan implementation stage, "water intake limits are adjusted and the general regional water management situation. When adjusting water intake limits, water management bodies proceed according to the principle of equitable water provision with regard for the specific characteristics of water consumption districts and consumer categories". This could imply that, during a situation of water scarcity, all the districts experience a similar proportional shortage. However, the report also states: "In the case of considerably reduced water availability in inter-district and inter-farm water sources, water management bodies may resort to water rotation according to priority rankings" (World Bank 1996:69). It is questionable what is implied. It could mean either that water will be allocated to districts or farms that specialize in certain types of crop production, or that certain districts or farms that are considered to be 'higher priority' by the district or province governor will receive more water.

The policy of equitable allocation of water to the farms is implemented by the District Departments for Water Resources. Renger (1998) provides a list of other functions of the district water department according to the water law in relation to water and water use of 1993:

- To ensure law and order concerning the utilization and protection of water resources;
- To determine main trends, estimates, and accountings;
- To act as special task force in case of calamities

It will become evident that the district departments do not have the capacity to fulfill any of those responsibilities.

## 5.4 Background to Khorezm Province

Uzbekistan receives its water from two main rivers: the Amu Darya and the Syr Darya. Here the focus is on the Amu Darya river, which originates in

Afghanistan and Tajikistan and ends in the territory of Uzbekistan in the Aral Sea. The three last provinces along the Amu Darya before it reaches the lake are Khorezm (Uzbekistan), Dashovuz (Turkmenistan), and Karakalpakstan (Uzbekistan). The three downstream provinces receive their allocated water resources through the Tuyamuyun reservoir, which is located before the flow enters Khorezm. From the reservoir, water is distributed to the three downstream provinces through a system of canals and the Amu Darya itself.

During 2000 and 2001, Central Asia experienced a drought. Measuring the drought by the available water in the upstream and downstream reservoirs indicates that upstream in the Nurek reservoir in Tajikistan the drought reduced the available water by 10 percent in 2000 and that there was an increase in available water in 2001 compared to the five-year average. However, the water scarcity experienced downstream at the level of Tuyamuyun was much higher. According to official data, the available water in Tuyamuyun was 50 percent in 2000 and 40 percent in 2001, when compared with the five-year average.

Hence, during 2000 and 2001 the downstream regions suffered from severe water scarcity, which cannot be explained only by drought (see Wegerich 2002b, 2004; Dukhovny 2002) As a consequence of the water scarcity experienced downstream, the planned allocation of water to the different provinces and their districts had to be readjusted downwards to 50 percent of the planned water allocation.

Khorezm Province has 11 districts (Map 5-1). The districts of Pitnyak, Khazarasp, Bogot, Khonka, Urganch, Yangibazar, and Gurlan are located along the Amu Darya. Pitnyak is the furthest upstream and Gurlan is the furthest downstream.


**Map 5-1: Khorezm Province**

*Source*: Ruzieva, ZEF GIS expert, German Uzbekistan project

The districts of Yangiarik, Khiva, Kushkupir, and Shavat do not have direct access to the Amu Darya, and they receive their allocated water through canals that pass through and are also shared by the first row of districts (Map 5-2). The canals are either inter-district or transboundary canals (two canals). The first transboundary canal flows through Shavat District, the second through Kushkupir District into Turkmenistan.


**Map 5-2: The irrigation system in Khorezm**
*Source:* Official water department map, Khorezm Province

As Map 5-2 indicates, the administrative boundaries of the farms and the districts do not coincide with the hydrological boundaries of the canal system. Table 5-1 gives an indication of the complexity of the canal system. Nearly all the canals are shared by more than one district, and are therefore managed by more than one district water management organization. The negative consequences of administrative rather than hydrological management became evident during the drought.

## Table 5-1: Irrigation system in Khorezm

| Irrigation System | Total ha | Irrigated Area | Bogot | Gurlan | Kushkupir | Urganch | Khazarasp | Khonka | Khiva | Shavat | Yangiarik | Yangibazar | Pitnyak (Drujba) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Khazarasp Unitor | 33,349 | 15,685 | 4,650 | | | | 11,035 | | | | | | |
| Atauz Unitor | 14,105 | 5,505 | 1,950 | | | | 3,555 | | | | | | |
| P-7a | 11,127 | 8,290 | 2,410 | | | | | 5,880 | | | | | |
| P-5 | 24,770 | 13,931 | 13,931 | | | | | | | | | | |
| Gurlan Branch | 23,110 | 16,658 | | 16,358 | | | | | | | | 300 | |
| Klichbay | 18,846 | 13,698 | | 12,248 | | | | | | | | 1,450 | |
| Daryalik-Arna | 38,535 | 25,785 | | 398 | | 4,960 | | 1,310 | | | | 19,117 | |
| Gazavat | 14,611 | 10,740 | | | 9,630 | 1,110 | | | | | | | |
| Kulovat | 21,231 | 12,940 | | | 4,400 | 8,540 | | | | | | | |
| Khanabad | 11,667 | 7,850 | | | 6,600 | | | | 1,250 | | | | |
| Zey-Yab | 17,995 | 7,964 | | | 7,684 | | | | 280 | | | | |
| Keneges | 4,105 | 2,610 | | | 2,150 | | | | 460 | | | | |
| Shavat | 52,216 | 32,810 | | | | 5,260 | | 3,710 | | 22,700 | | 1,140 | |
| Urganch-Arna | 21,694 | 13,253 | | | | 8,514 | | 3,420 | | | | 1,319 | |
| Tuyamuyn Unitor | 24,153 | 10,409 | | | | | 5,055 | | | | | | 5,354 |
| MC-1 | 124,759 | 4,255 | | | | | | | | | | | 4,255 |
| P-8 | 36,248 | 18,418 | | | | | | 1,588 | | | 16,830 | | |
| P-9 | 5,212 | 3,597 | | | | | | 3,597 | | | | | |
| Palvan | 39,817 | 15,130 | | | | | | | 15,130 | | | | |
| Palvan-Gazavat | 15,085 | 10,104 | | | | | | 7,433 | 1,866 | | 805 | | |
| Daudan | 9,534 | 5,647 | | | | | | | | 5,647 | | | |
| Outside the system | 43,017 | | | | | | | | | | | | |
| **Total** | **605,186** | **255,279** | **22,941** | **29,004** | **30,464** | **28,384** | **19,645** | **26,938** | **18,986** | **28,347** | **17,635** | **23,326** | **9,609** |

*Source*: Provided by Ruzieva, GIS expert German-Uzbekistan project.

## 5.5 Water management problems in Khorezm

The district administration unit is divided into smaller administrative units – the farms - that receive water either directly from the main canals (inter-district or transboundary) or from smaller canals that take from the main canal. Farms use pumps to extract water from either a canal or the Amu Darya.

As indicated above, the Province Department for Water Resources in Khorezm is responsible for equitable water distribution to the 11 districts. Within the districts, the District Departments for Water Resources are responsible for equitable distribution to the individual farms within the districts. Table 5-2 gives information about the number of farms within each district, the total number of pumps, the number of employees of the district water departments controlling the pumps, and the transport at the disposal of these employees to control the pumps. According to the head manager of the District Department for Water Resources in Urganch District, the distance between the pumps is approximately 1 km. The calculated average number of pumps controlled by one employee is nine pumps. This is less than the number stated in the Province Department for Water Resources. There it was stated that, on average, one person controls ten pumps. Calculating the average irrigated area controlled by one person shows that one person is responsible for 1,125 ha. However, controlling pumps is not these employees' only function. As was observed in Urganch District, there are 50 employees with responsibility for controlling pumps but, according to the District Department for Water Resources, on average one person controls ten pumps; this would imply that 230 pumps are controlled by on average 23 people. However, 50 people have controlling responsibility. Hence, the employees with controlling responsibilities do not control just pumps. Some of the people with water managing responsibilities are stationed at water gates or at pumping stations. According to the department of water resources in Urganch District, five employees are placed at each water gate. Therefore, the average area controlled by one person would be higher than stated above, and the possibility of control even lower. As shown in Table 5-2, the available transport for controlling the pumps is not sufficient. This was also confirmed at the Province Department for Water Resources where it was stated that adequate control of the pumps and of water exploitation was not possible in all 11 districts.

With these logistical problems (staff and transport), real control of the pumps and of water exploitation is not possible. This lack of control on the part of the district departments encourages water theft by upstream users and increases the conflict potential over scarce water resources on the local, district, and provincial levels. The duties of the District Departments for Water Resources, as stated by Renger (1998), cannot be fulfilled. Under the current system, equitable and timely water distribution from the district to the local level cannot be

guaranteed; the lack of control puts into question the current policies of creating water user associations at the local level.

**Table 5-2: Logistics of water users and control**

| | Irrigated agricultural area, ha | Farms | Pumps | Employees controlling | Transport for control |
|---|---|---|---|---|---|
| **Bogot** | 20,196 | 16 | 169 | 17 | none |
| **Gurlan** | 25,776 | 12 | 160 | 1 person controls 10 pumps | own cars, total petrol money: 5000 soum/month, enough for 30 km |
| **Kushkupir** | 26,504 | 19 | 230 | 42 | have cars, but no petrol |
| **Urganch** | 38,680 | 13 | 230 | 50, but 1 person controls 10 pumps | bicycles |
| **Khazarasp** | 18,117 | 10 | 187 | 23 | |
| **Khonka** | 24,976 | 18 | 161 | 20, 1 person for 8 pumps and 1,500 ha | have neither cars nor bicycles |
| **Khiva** | 17,566 | 10 | 128 | 8 | no cars available |
| **Shavat** | 25,807 | 15 | 220 | 25, but 1 person controls 10 pumps | bicycles |
| **Yangiarik** | 15,217 | 10 | 102 | 18 control | no transport, not even bicycles |
| **Yangibazar** | 21,471 | 10 | 156 | 10 to 15 | |
| **Pitnyak** | 5,910 | 3 | 30 | 8 control | 3 cars, 2 functioning, but no petrol |

## 5.6 Consequences of water over-exploitation and lack of control

During the period of water scarcity in 2000 and 2001, as already stated, the policy of equitable distribution of the available water resources implied that the official limits had to be adjusted downwards to 50 percent of the planned water allocation. Hence, officially each district was supposed to utilize only an adjusted amount of water from the Amu Darya, the transboundary, and inter-district canals.

### *5.6.1 The district level*

The adjusted limits for the province had implications for the water availability in the main and secondary canals, from which farms utilized water via pumps. As stated above, farms within the districts are located upstream and downstream of the river or the canals. Hence, the downstream farms are directly affected by the subtraction of water by upstream users. Even though the District Departments for Water Resources had no possibility of controlling the pumps, they were responsible for equitable distribution of the reduced water resources within their administrative territories. However, because of upstream over-exploitation and the lack of control of water utilization via pumps, proportionally equitable water distribution within the district was not possible. Out of 11 District Departments for Water Resources, nine admitted that they had problems between upstream and downstream water users within their territory, including conflicts between the upstream and downstream farms. With the exception of Pitnyak, the issue of conflict in the districts was the amount of supplied water; however, in Pitnyak, the amount was satisfactory, but the timing of the water delivery was the conflicting issue.

Table 5-3 shows the number of official requests from the farms to the district departments for additional water. Unofficial requests are not registered. The difference between unofficial and official requests is that official requests are in written form and have to be reported to the higher levels. Unofficial requests, usually via a telephone call, do not have to be reported. Official or unofficial requests occur when the official water limit of the user has been reached, but the amount of allocated water was not sufficient. The main difference is that unofficial requests are made when the canal is still carrying water, even though the water might be allocated to downstream users either in the same district, a different district, or even in Turkmenistan. Because most of the canals are inter-district canals, over-utilization in one district causes additional water scarcity in the downstream districts. Official requests occur in cases when the canals are already empty. In these cases, it is necessary to apply for water through the ministry to the basin organizations to open the Tuyamuyun reservoir for additional water. According to the District Departments for Water Resources, every official request for additional water was granted. In the case of both official and unofficial requests, the supplied water was above the allocated limit, and therefore reduced downstream users' fair share of this scarce resource.

**Table 5-3: Problems within the district**

| | Control over pumps | Problems within district | Official requests for additional water | Reaction of the water departments to the complains |
|---|---|---|---|---|
| **Bogot** | no control possible | yes | 20-30, unofficial very often in addition | tried to help |
| **Gurlan** | no control possible | | 30-40, every 5 days | |
| **Kushkupir** | no control | yes, conflicts (up- and downstream) | 20-30 | |
| **Urganch** | no control possible | yes, conflicts (up- and downstream) | 50 | |
| **Khazarasp** | control difficult, with own cars, own funds | yes, conflicts (up- and downstream) | 30-40 | tried to help |
| **Khonka** | no control | no, had equal distribution, but also political interference | none, but unofficial | tried to help |
| **Khiva** | no control, low salary | delivered water only to upstream not to downstream | 25-26 | |
| **Shavat** | real control not possible | conflicts (up- and downstream) | 20-30, but also possible 30-40 | tried to solve problem by allocation, but no real control |
| **Yangiarik** | no control | yes, some did not receive enough water | 18-20 | |
| **Yangibazar** | no control | there are conflicts, some take water above limit | 40-50, sometimes they call every day | tried to help |
| **Pitnyak** | not possible to control | yes, conflicts (up- and downstream) about timing of water delivery | 10 | tried to help |

### *5.6.2 The province level*

Over-extraction of water via pumps and the lack of control of the pumps on the farm and district levels have consequences for the provincial level. As noted above, because of the decreased availability of water at the metering point at Tuyamuyun, the reduced available water resources were supposed to be shared equitably among the different districts. Hence, each district should have received 50 percent less water than planned. The data in Table 5-4 show estimates of the District Departments for Water Resources for water delivery to their districts. The adjusted limit is 100 percent, and the estimates take this adjusted limit into consideration. The figures show how much the percentage received differed from the adjusted limit.

Table 5-4 indicates that the two most upstream districts, Pitnyak and Khazarasp, received 100 percent of the amount rescheduled. From upstream to downstream along the Amu Darya river, it is clear that the further upstream the district is, the more water was available. As shown in Table 5-4, the available water was reduced from Pitnyak and Khazarasp Districts to Bogot District and from Khonka to Urganch Districts and to Yangibazar District. However, the exception is Gurlan District, which, according to their estimate, received 61 percent of the adjusted limit, while Yangibazar district received 40 percent of that limit in the year 2000.

In eight of 11 districts, it was stated that there are problems within the province in terms of equitable water distribution amongst the districts. According to the District Department for Water Resources in Pitnyak, the adjusted limit was not 50 percent of the normal, but 80 percent. It was argued that the soil in Pitnyak District is special; therefore more water is needed for agriculture. Khonka District water department managers did not complain about other districts; however, other districts complained about them. It was not possible to receive a direct answer from Bogot District water department. However, it was pointed out that they are downstream to Pitnyak and Khazarasp districts. During the period of peak deficit, they were able to utilize alternative water resources. This implies that, if a District Department for Water Resources could not receive enough water through one canal, it could sometimes increase the amount of water pumped from the river or from a different canal. In Yangiarik District, it was observed that their district did not even have enough water for cotton, whereas upstream districts produced rice during the years of water scarcity. In two upstream districts it was confirmed that rice was produced. According to one of the two districts, rice was produced on 300 to 400 ha in the district. In the other upstream district, it was admitted that some farmers planned at the beginning of the year to grow cotton, but they also planted rice. Whereas in the first district it seemed to be official policy to grow rice, in the second district it was unofficial. The cultivation of rice during the drought in the districts adjacent to the river was confirmed through remotely

sensed and GIS data (informal interview in January 2003 with Rücker, GIS expert at the German Aerospace Centre).

**Table 5-4: Water problems within the province**

| | Water scarcity 2001 | Water scarcity 2000 | Problems within province | Reaction to the over-extraction of upstream districts |
|---|---|---|---|---|
| **Bogot** | 30-40 % of drought limit | 30-40 % of drought limit | | |
| **Gurlan** | 47 % of drought limit | 61 % of drought limit | other districts steal water | no complaints, used alternative sources |
| **Kushkupir** | 40 % of drought limit | 50 % of drought limit | yes | complaint, tried to help |
| **Urganch** | 50 % of adjusted limit | 50 % of adjusted limit | yes | did not complain, but the authorities know that they pump more |
| **Khazarasp** | 100 % of adjusted limit | 100 % of adjusted limit | | |
| **Khonka** | 67 % of adjusted limit | 59 % of adjusted limit | they are in the center, other districts complain | tried to solve problems |
| **Khiva** | 30 % of limit | 70 % of limit | upstream districts steal water | not able to complain, the authorities have no control either |
| **Shavat** | 55 % of limit | 73 % of limit | upstream take too much, but still better off | did not complain |
| **Yangiarik** | 40 % of limit, but received requested water | received all the water they requested | yes, 60-70 km from river | |
| **Yangibazar** | 40 % of adjusted limit | 40 % of adjusted limit | 35 % was stolen during drought | no complaints, used alternative sources |
| **Pitnyak** | 100 % of adjusted limit | 100 % of adjusted limit | | |

The head of the Province Department for Water Resources in Khorezm stated that the department had control over water distribution, and that this became even more obvious during the period of the water shortages. He claimed that during that period the District Departments for Water Resources followed the orders of the Province Department. However, when his statement is compared with the statements from the district level, it seems that the districts did not recognize the power of the Province Department. Only two districts suffering from reduced water availability complained about other districts to the Province Department. Five districts stated that even though they thought or knew that the upstream districts took more water, they did not complain. During the interviews it was mentioned that, if they complained, they would be told that the water scarcity was due to the drought and not to over-exploitation in upstream districts.

## 5.7 Conclusion

The analysis of water management during the period of 2000 and 2001 in Khorezm indicates that there is a common pool resource problem on the district level. This problem triggers common pool resource problems on the provincial level. The problem also occurred in Karakalpakstan and Dashovuz Provinces, even at the national and transboundary level. Even though the system of water management at the district level is organized to allocate and distribute water equitably among the users, because of over-utilization by upstream users and the lack of control at the district level, equitable distribution is not possible. The current focus of international assistance is on the supply of more pumps, and even mobile pumps for farms, but this assistance will only increase the problems caused by over-exploitation. The key issue is the lack of control by the managing departments.

In addition, the evidence indicates that, because of the difference between administrative and hydrological boundaries, there is a problem of resource management. The focus of the District Departments for Water Resources is on their district interests and on the users in their district only. However, because the district departments are supposed to manage a resource that has the problem of subtractability of benefits, the focus on administrative rather than hydrological boundaries increases the risk of inequitable distribution and increases the level of conflict between the different administrative units. Here, there is potential for conflict over water resources across district, province, and even transnational boundaries.

At the international level, the hydrological boundaries of the basin are taken into consideration. But it appears that, at the lower levels, these boundaries and the potential advantages of management according to these boundaries are ignored. The analysis of the problem suggests that it would be more beneficial for all users within one hydrological boundary if water management were operated by one organization. The boundary of the organizational authority

would then be defined by hydrological rather than administrative boundaries, as it is currently. This implies that administrative boundaries, such as districts, provinces, or states, would have to be transboundary. The current organizations would have to be transformed and detached from the interest of the current administrative units.

Currently in Uzbekistan, the focus is on the creation of water user associations at the farm level. The evidence presented in this study does not support the creation of water user associations. Under the current system, the fact that equitable and timely water distribution cannot be guaranteed increases the potential for the failure of proportionally equitable distribution at the local level. Upstream users would be encouraged to use the available water resources, because future delivery or timely delivery is not secure. This implies that the potential for water theft is very high. The wider institutional and organizational frameworks would have to be adjusted before water user associations could be effective in terms of providing equitable shares of water resources.

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# 6 What happens in a merger? Experiences of the State Departments for Water Resources in Khorezm, Uzbekistan[11]

## 6.1 Introduction

Since the Central Asian republics gained independence in 1991, international attention paid to the problems of water management in the basin and in Uzbekistan has increased. However, attention is mainly given to technical problems of irrigation (e.g. Hutchens et al. 2000), and reports or papers on the organizational and institutional problems are scarce. Where organizational and institutional dimensions are mentioned, the focus is on either the international or the national level (Müller 2002; McKee and Curtin 1996), or the local level (Berkoff 1994; Islamov 2002). However, neither the district and provincial levels nor the relations and interactions between the different levels are analyzed. In addition, the few reports that focus on the district and provincial level organizations give mainly a description of the duties of the organizations (World Bank 1996; TACIS 1995b; Renger 1998; SIC ICWC 1999). However, whether the organizations have the capability to fulfill their duties, how they fulfill them and the problems of achieving the organizational objectives are not mentioned. In addition, it appears that these organizations are mainly viewed as 'black boxes' or machines. The dynamics and power structures within the organizations and their influence on the fulfillment of organizational objectives are not analyzed.

In Uzbekistan, water management at the national level is carried out by the Ministry of Agriculture and Water Resources (MAWR). The Ministry was formed out of the Ministry of Melioration and Water Management (Minvodkhoz) and the Ministry of Agriculture in autumn 1997. The Department for Agriculture and the Department for Water Resources are supposed to be equal partners within the new ministry. The focus of the chapter is to analyze the consequences of the merger between the two ministries. It will be evaluated whether the Department for Water Resources lost its power position, and, if so, what the consequences are for water management. An organizational theory framework of power is utilized to evaluate the consequences of the merger. The research focuses on the provincial and district level in Khorezm Province.

The field research was conducted in October and November 2002 in Khorezm Province, Uzbekistan. All district managers of the 11 District Departments for

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[11] Wegerich, K. (2005). *Physics and Chemistry of the Earth*, 30: 455-462.

Water Resources were questioned in semi-structured interviews about their perception of the merger, and its consequences for water management.

The chapter starts off with a discussion on organizational theory frameworks to power within organizations. A distinction is made between three different approaches to power: resource, system, and process power. The chapter continues with a brief introduction to the geography of Khorezm and the different administrative settings and challenges of water management. This is followed by a short literature review on the water management organization in Uzbekistan, its structure, and its responsibilities. The remainder of the chapter focuses on the merger and its consequences. The analysis leads to two main conclusions. First, the water resource department became submerged in the whole organization and lost its old organizational objective of distributing water 'equitably' to agricultural water users. The dominant objective of the organization became the old objective of the agricultural department, namely fulfilling the state-order target for procurement of wheat and cotton. The decisions on water distribution were strongly influenced by the agricultural department and district governors. The merger reduced the process power of the water department. Second, the ability of the water resources department to manage and to control water resources was reduced during the merger. The merger also reduced the resource power of the water department.

## 6.2 Understanding organizations and their dynamics

Organizations usually bring to mind a state of orderly relations between clearly defined parts that have some determinate order. However, Morgan (1997:120) points out that "organisations are socially constructed realities". Organizations are concrete structures, rules, and relations but exist also in the mind of their members. Perceptions and concrete structures may differ. Hence, when analyzing organizations, one has to take into account socially constructed realities, such as organizational politics and power.

The concept of power has attracted considerable attention in the organizational theory literature. The more general attribute of power is given by Lasswell (1936), who in the title of his book states that power influences "who gets what, when, and how". Morgan interprets authority as the first and main basis of power. However, he suggests that "it is important to distinguish between the surface manifestations and the deep structure of power" (Morgan 1997:196). With this he gives space for other explanations of power bases.

Formal authority is only one form on which power can be based. Munduate and Gravenhorst (2003) discuss six different bases of power: reward, coercion, legitimacy, expertise, reference, and information. The definition given by Krackhardt (1990:344) is more pragmatic and output-orientated; he defines power as "the ability to get things done in spite of resistance and the ability to influence people through personal appeal and magnetism". Krackhardt's definition does not explicitly refer to changing formal or informal institutions,

whereas Holtgrewe (2000) incorporates in her definition of power the ability to influence institutions. She defines power not on its basis but on what someone with power has influence on, namely: rules, resources, signification, and legitimization. Therefore, it seems necessary to modify Morgan's definition of power, because it does not explicitly refer to institutions, which legitimize and give significance. It seems more appropriate to use as a definition: Power influences who gets what, when, how, and why.

Organizations are structured into different units and sub-units, with rules regulations and procedures. Even though these formal structures can be viewed as rational instruments intended to aid task performance, Morgan (1997:175) argues for a political perspective, and for these units to be understood "as products and reflections of a struggle for political control". There are different approaches, incorporating the aspect of power that could be used to analyze organizational structures and their linkages; a distinction can be made between resource, system, and process power.

All organizations and the different units within organizations are dependent on resources; hence, controlling the resource flows can provide an important source of power. Different forms of resources lead to a high level of dependence and interdependence of units and sub-units. According to Morgan (1997:182), "the quest for autonomy is a powerful feature of organisational life". In this line of thought, autonomy is based on resource power. Astley and Zajac (1991:405) state that "in the resource dependence perspective, one of the keys to maximising power is to maintain autonomy and avoid resource dependence". On the other hand, in a systemic approach, units or individuals within the organization gain power by performing tasks that are essential to the organization's collective functioning. Power in a system is based on functional importance (compare Dubin 1957). In contrast to the resource power approach, connectedness and centrality to the activities of others increases an individual's or a unit's power in a systems approach. Hence, exchange dependencies generate power relationships. A different approach to power within organizations is the concept of process power. This concept draws attention to the political aspects of the decision-making process that give intra-organizational power a dynamic character (Astley and Zajac 1991). Here, Morgan (1997:178) points out that "it is useful to distinguish between three interrelated elements of power, decision premises, decision processes and decision issues and objectives". Of all three approaches, process power seems to be the only approach that incorporates the definition of power: who gets what, when, how, and why.

If one can interpret the structure and the rules governing the organization in terms of politics, then any organizational changes could be interpreted as being political as well. Morgan (1997:176) argues that, even though structural changes can be justified in technical terms; they are also "motivated by political considerations relating to issues of control". Hence, structural changes are part

of power plays, increasing or decreasing the role or influence of individuals or units.

## 6.3 Background to geography and the water management organization

The tributaries of the Amu Darya originate in Tajikistan and Afghanistan. While upstream, the Amu Darya forms the border between Tajikistan and Afghanistan, midstream it crosses the territories of Uzbekistan and Turkmenistan. The downstream regions consist of Khorezm (Uzbekistan), Dashovuz (Turkmenistan), and the autonomous republic of Karakalpakstan (Uzbekistan). The three downstream provinces receive their allocated water resources through the Tuyamuyun reservoir, which is located just outside the border of Khorezm Province. During the drought years 2000 and 2001, the downstream provinces suffered from resource over-exploitation by the midstream water users (compare Wegerich 2002b; Dukhovny 2002).


**Map 6-1: Khorezm province**

*Source*: Ruzieva, ZEF GIS expert, German Uzbekistan project

Khorezm Province has 11 districts (Map 6-1). The water of the Amu Darya is distributed through a complex system of canals starting in the upstream Pitnyak District. Even the districts adjacent to the Amu Darya receive water through these canals rather than pumping it directly from the Amu Darya themselves. Hence, the main canal and its branches are either inter-district or transboundary canals that bring water to Dashaguz Province in Turkmenistan. Within

Khorezm, the administrative boundaries of the districts do not coincide with the hydrological boundaries of the river and canals.

On the district level, the agricultural area was divided into the administrative units of former state and collective farms. The administrative boundaries of the farms did not coincide with the hydrological boundaries. In total there were 136 former state and collective farms in Khorezm. The average farm had an area of 1,837.7 ha and used 12 pumps (0.5 $m^3$/sec) for water exploitation from the irrigation canals. The District Departments for Water Management were responsible for distributing water to the different farms and had to ensure that all the farms receive an equitable amount of water. Officially, the "water demand is calculated on the basis of the following indicators: Structure and area of cropped land; Irrigation regime (method, norm, and period); and Efficiency of irrigation network and irrigation technique" (World Bank 1996:69; TACIS 1995b:13). According to this system, all farms sharing the same indicators as well as planting the same crop should have received an equitable amount of water. During the plan implementation stage, water intake limits were adjusted depending upon water availability (World Bank 1996). This would imply that, during a situation of water scarcity, all the districts experience a similar proportional shortage.

Water management in Uzbekistan was organized in a strict administrative hierarchy that did not coincide with the hydrological boundaries (compare Wolff 2002). On the local level were the former state or collective farms, which received water through the District Department for Water Resources (*rayvodkhoz*). The allocation to the districts was officially decided by the Province Department for Water Resources (*oblvodkhoz*), and the Ministry for Water Resources presided at the national level (compare Renger 1998).

There are no reports on the processes within the water organization; the available reports state only the responsibilities of the organization, but do not question whether the organization has the means to fulfill its official responsibilities. The district water departments were responsible for the determination of the water requirements for each farm on the basis of irrigation and crop norms. Furthermore, they were responsible for water allocation to the district farms and the operation and maintenance of the inter-farm irrigation and collector-drainage system. According to the Law on Water and Water Use (1993), the district water departments had the obligation to: ensure law and order concerning the utilization and protection of water resources; determine main trends, estimates, and accountings; and act as special task force in case of calamities (Renger 1998).

Prior to independence, the Ministry for Water Resources was the most powerful ministry, with the highest allocation of funds. Since independence, the power of the department has decreased. According to Bucknall et. al. (2001), it was estimated that the budget of the ministry was only sufficient to cover 50 percent of the operation and maintenance costs of the running system. The

merger further reduced the power of the organization. SIC ICWC (1999: 20) states that the "level and means of [the] water related organisation decreased sharply, they lost their independence within a rising subordinated state". However, the report does not state what exactly changed and what implication this had for water management, and therefore for the processes within the organization. The report only states that "their influence on the organisation of works at district level and even at provincial level is reducing. This is particularly evident in provincial infrastructure and often revealed in administrative territorial organisations" (SIC ICWC 1999:20). However, here influence is only measured in terms of infrastructure, not in terms of influence on decision-making processes within the organization. Furthermore, it does not become evident whether the Department of Water Resources became submerged as a dependent sub-unit of the larger organization (compare Renger 1998), or whether the organization was able to sustain its functions and to deliver water to the farm level on an equitable basis.

## 6.4 Merger: increasing efficiency or decreasing bargaining power

As already stated, structural changes can be justified in technical terms but can also be motivated by political considerations relating to issues of control (Morgan 1997). The official objective of the merger between the Ministry of Agriculture and the Ministry of Water Resources was to increase the efficiency of agricultural production. During interviews it was stated that it was common for the two ministries to blame each other in cases of harvest failure. Merging the ministries was supposed to achieve better coordination and therefore higher production. For this reason, the merger was decided by presidential decree in 1996, and took place in 1997.

According to the statements of the first deputies of the district agricultural and water resource departments, before the merger there was little communication between the two departments. In Pitnyak District they exchanged data, but otherwise ignored the other department, and in Khiva District the two departments did not even acknowledge each other. The merger forced the departments together. After the merger, in some districts the departments of agriculture and water resources were based in one building rather than two and therefore increased the potential for unofficial meetings. The merger increased the number of official meetings as well. In Khonka and Kushkupir Districts before the merger, there were no meetings between the two departments. After the merger, but especially during the drought, the number of meetings increased. The number of meetings varied in the different districts; whereas Kushkupir and Pitnyak held meetings every 2-3 days, in Khonka and Urganch meetings were held only once a week. Just in terms of meetings it seems that there was an increase in coordination. In Kushkupir and Yangibazar the water department advises the agricultural department on water distribution. Clearly, merging the two departments increased coordination and therefore would increase the

systems power of the water departments. Nevertheless, the simple statement of the number of meetings does not give any indication of the power structure during the meetings.

The increased coordination was not always perceived as positive. In Kushkupir it was pointed out that the agricultural department gave orders to the water resource department. In Shavat and Yangiarik Districts, it was stated that the lack of knowledge on the part of the agricultural department in terms of water resources and irrigation led to water wastage. Hence, there was the implication that the interference of the agricultural department in water resource management was negative. This would imply that the systems approach does not give a real indication about the power balance. The increase in meetings reduced the process power of the water departments.

In addition to the interference from within, there seemed to be interference from outside the organization as well. According to different statements in the Province Department for Water Resources in Khorezm, the district governors were influencing water distribution. In a crosscheck interview with the department in the Republic of Karakalpakstan, a similar answer was given. It was explained that the governors were interested in fulfilling the state-order target, hence cotton and wheat received more water. For example, in Khiva District in 2001, the year of the drought, only farms producing state-order crops were supposed to receive water. In Kushkupir, the governor forced the water department to allocate water mainly to state-order crops. However, it was pointed out that the governor would not interfere in a 'good' year with sufficient water supply. In Khonka, the political interference started with the merger. It was mentioned that the local government was influencing water allocation and distribution, independent of whether there was sufficient water or water scarcity. According to the interviewee in Khonka, before the merger, water distribution was more equitable. The comments of the District Departments for Water Resources indicate that the influence of the district government was very strong.

It appears that after the merger the sub-unit goals were subordinated to those of the whole organization. Whereas before the merger the objective of the water resource department was to distribute water equitably, within the new structure the departmental objective was sacrificed to the objective of the agricultural department, which was to fulfill the state-order target. In view of the above statements, mentioning the interference of the agricultural department and of the governors, it seems that the water department's autonomy in decision making, and therefore its process power, was minimized.

In an interview with the Province Department of Agriculture and for Water Resources in Khorezm it was stated that both ministries merged as equal partners, that the positions as head of the province and district departments were allocated on the basis of ability, and that there was not a preference between the departments. It was also argued that the water department still had the same power and authority as before.

If both departments had been equal and the head had been chosen on the basis of ability, then this should have been reflected in the organizations at the district level. Interviews in the District Departments for Water Resources showed that in nine out of 11 districts the new head came from the agricultural side after the merger. It was only in Bogot and Gurlan that the head came from the water department. Before the merger, the agricultural departments were much smaller in terms of funds and staff than the water resource departments; this is a further indication that the decision was not based only on ability. In a crosscheck interview with the Province Department of Agriculture and Water Resources in Karakalpakstan it was stated that the positions were directly decided by the governor and that the decisions were not based on the ability of the person, but on personal reasons.

The new head of the combined departments decided on the allocation of funds for the whole organization. The heads of the new organization predominantly came from the agricultural department; therefore, the agricultural department controls the fund allocation to the different sub-units. Currently there is only one signature needed for fund allocation: the signature of the new managers of the whole organization (the former heads of the agricultural department). Again, had the two departments been merged on an equal footing, one could have assumed that they would have had equal rights within the decision-making process, and in legitimizing decisions.

After the merger, the water department and its resource power was downsized. In terms of funds, seven districts argued that their funding decreased after the merger. In terms of jobs, eight districts pointed out that staff reductions took place, and six districts mentioned that either their equipment was reduced or old equipment was not replaced (Table 6-1). A crosscheck with the Province Department of Agriculture and Water Resources of Karakalpakstan confirmed that, after the merger, funding and equipment were reduced. This was also confirmed in a crosscheck interview in the province department of Kashkadarya. Here, the interviewee mentioned that staff reduction took place in both departments; however, the main cuts (80 percent) took place in the water department. In addition it was stated that the reduction in funding led to a decrease in salary. In the Khonka District department it was mentioned that funding had already been reduced before the merger; however, at the province department in Khorezm it was stated that the period of transition in Uzbekistan was not the reason for the reduction in funding, rather, that the main reason for the cut of funds was the merger.

It appears that for the staff of the water resource department the merger was negative in terms of salary, job security, and job satisfaction. In two districts it was explicitly mentioned that ‘the specialists’ or ‘the good people’ left; this was also stated in the crosscheck interview in Karakalpakstan. There, it was pointed out that the people replacing the outgoing staff came from other professions and had no experience in water management. In two different districts in Khorezm it

**Table 6-1: Reduction of funds, jobs, and equipment**

| | Loss of funds | Job losses/insecurity | Lack of equipment |
|---|---|---|---|
| **Bogot** | - | Staff reduced, more work | - |
| **Gurlan** | 10-15 % reduction | Limited staff reduction | - |
| **Kushkupir** | Funds allocated to other uses, no reduction of funds, but inflation reduces the funds | Reduction of staff, departments decreased from 3 to 1, from 69 to 58 | Lack of equipment, no money for transport or petrol |
| **Urganch** | Reduction of funds, does not know how much, but perceptible | Decrease in each department from 3 to 1, at water gates from 7 to 5, salaries are low, good people left | - |
| **Khazarasp** | No influence | No influence | - |
| **Khonka** | The funds were already reduced before the merger | The staff was already reduced before the merger | Before, they had cars and bicycles. Now neither |
| **Khiva** | More allocation of funds to agriculture, and before merger sometimes additional salary, stopped after merger | Staff reduction, mainly in water management, from 48 to 36 | Before, they had 2-3 cars, now they have no cars, all the heads of departments had cars, now no cars |
| **Shavat** | - | There were no staff reductions | Very limited equipment, but not clear whether this resulted from the merger |
| **Yangiarik** | Reduction of funds | Reduction of staff; not enough people to control the water pumps and gates, people are not specialists; departments decreased from 3 to 1 | - |
| **Yangibazar** | Funds mainly allocated to agriculture | Staff reduction from 3 to 1 in the departments, there are not enough specialists, the good people leave | Since merger, no repair of telephone system, which is old and broken down |
| **Pitnyak** | Funds were reduced, funds are allocated to different sectors away from agriculture | Maybe now more staff | Were supposed to receive computers, did not happen after merger |

was stated that staff turnover was very high. Again, this could imply that the overall level of trained people working for the water resource department was reduced, and therefore the resource power (skills and expertise) of the department declined. In a systems approach, this would also imply that it is not possible to make use of high dependency positions because resource power has declined due to the loss of experienced staff. In interviews with water department insiders and outsiders it was mentioned that the payment of bribes was common in the water departments. There could be a link between the dissatisfaction of the employees and the occurrence of bribery.

What is the logistical capability of the water department? Can the water department still fulfill its duties and control water management? A respondent in the province water department stated that on average one person was controlling ten pumps. According to the district departments, a person controlled on average nine pumps. Calculating the average irrigated area controlled by one person shows that one person was responsible for 1,125 ha. The distance between the pumps was on average one kilometer. One employee had to control on average nine kilometers along the canals. According to the statements of the district departments, the departments had either cars (only two out of 11), but no or only limited funds for petrol, or no cars, in which case the employees had to utilize their own cars with their own funds for petrol. Given that the person controlling had no sufficient form of transport, real control seemed to be difficult. This was confirmed in all the district departments where there was no control over pumps and water withdrawals. In terms of resource power, the data suggest that the department had not the logistical means to effectively manage the water resources. Therefore, even though water could be a powerful tool to gain power within the organization, the lack of capability to manage the resource decreased the possibility for the water department to base its power on efficient water management.

However, the water department had the possibility to supply water as such; this became especially important during the time of water scarcity. During the drought period, the water departments in the districts adjacent to the Amu Darya river, and even Shavat District, which utilized water from a transboundary canal to Turkmenistan, tried to supply additional water, if farms demanded it through either official or unofficial requests. By supplying additional water, the district departments exceeded the water limit allocated to their districts. The reaction of the district departments caused additional water scarcity for downstream districts and increased the conflicts between the districts over scarce water resources (see Chapter 5).

As stated above, one of the goals of the merger was to increase the efficiency of agricultural production It is questionable whether this goal was achieved: there are many factors influencing agricultural production. However, what influence had the merger on water use efficiency?

Even though the reasons given varied, the common thread was that the merger created problems for water management and led to water wastage (Table 6-2). However, the most obvious reason for water management problems caused by the merger, such as 'less control' due to staff reduction or old/lack of equipment, was as often mentioned as the 'lack of knowledge of the agricultural department' as a reason for water wastage. The agricultural department determined when and how much to irrigate, and this caused over-irrigation. In addition, it was mentioned twice that the agricultural department interfered and that water distribution became more inequitable as a consequence. This seems to indicate that the water resource department was subordinated, and that the subordination and therefore the loss of power and authority were perceived as causing water problems. Hence, in the perception of the respondents, the new organizational structure caused even more problems for water management than the reduced funds, staff, or equipment.

**Table 6-2: Perceived water problems resulting from the merger**

| | Water problems because of merger |
|---|---|
| **Bogot** | Less control, because of staff reduction |
| **Gurlan** | None |
| **Kushkupir** | Agriculture tells them what to do |
| **Urganch** | Before they had control, now they do not have control |
| **Khazarasp** | None |
| **Khonka** | Hakim interfered in equal water distribution, for water to cotton and some farms with influence |
| **Khiva** | Because of the merger water is wasted, lack of transport leads to lack of control, no control over pumps, agriculture does not understand problems |
| **Shavat** | Water losses, due to lack of knowledge, more unequal |
| **Yangiarik** | Water losses, due to lack of knowledge, do not understand water problems |
| **Yangibazar** | - |
| **Pitnyak** | - |

## 6.5 Conclusion

The above analysis of the Province and District Departments for Agriculture and Water Resources in Khorezm shed light on the organizational 'black box'. The evidence suggests that the water resource department became submerged in the whole organization and lost its old organizational objective of distributing water equitably to agricultural water users. The dominant objective of the organization became the old objective of the agricultural department, namely fulfilling the state-order target for wheat and cotton production. The analysis also indicated that with the merger the interference from outside the organization increased. The governors of the administrative levels intervened in water allocation during the drought period 2000 and 2001.

Even though the merger and the new structure of the organization can be rationalized based on functionalism, it can also be rationalized in terms of power and control over outcome. The analyses show that the ability of the water resource department to manage and to control water resources was reduced during the merger. The merger reduced not only the resource power of the water department, but also its process power. The decisions on water distribution were strongly influenced by the agricultural department and the governors. Therefore, it would be possible to argue that there are surface-level reasons for the merger, but that there are also deeper-level reasons.

The focus on the internal structure and dynamics of the District Departments for Agriculture and Water Resources has shown that the internal power structure and dynamics influence, if not determine, equitable and efficient water management. This implies that it is important to look not only at the surface structure and the surface rules and duties but also at the deeper levels, such as resources in terms of knowledge and experience, logistical capabilities, and the way decisions are made about the allocation of funds, and the wider objectives of the organization as a whole. The power of the water department should have increased as consequence of the merger; however, our additional examination of the resource and process aspects to power indicates clearly that the department has lost influence. Therefore, it is necessary to adopt a holistic approach that incorporates the different aspects.

Ongoing and future changes of the State Departments for Water Resources in Uzbekistan have to be analyzed holistically; surface changes may not result in the desired effect. The latest proposal to de-merge the departments again, and to organize the departments according to hydrological rather than administrative boundaries, could have the effect of decreasing the influence of the agricultural department. However, it is questionable whether it can decrease outside interference from the district governors, especially if state-order targeting continues. Hence, the enabling factors of the outside environment as well the internal factors of resource power will be crucial.

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# 7 Informal network utilization and water distribution in two districts in Khorezm Province, Uzbekistan[12]

## 7.1 Introduction

"I have very little power; *shirkat* managers [managers of former state and collective farms] can go directly to the hakim [district governor] and apply for water. They do not have to deal with me. For example, this is the case for one shirkat manager, who is in his position for 15 years" (informal interview with the head of the District Department for Water Resources, Pitnyak District, October 2002).

During research conducted in Khorezm in the period of October to November 2002 it became evident that the Province and District Departments for Agriculture and Water Resources were not strong players during the drought period when it came to water distribution to the former state and collective farms. Statements similar to the one above, and statements about the interference of the hakim during the drought period, led to the suspicion that there are special linkages between the hakim and the shirkat managers. These linkages are mentioned in different contexts in different reports and articles (compare Spoor 1995; Lerman et al. 1996; Eckert and Elwert 2000).

The purpose of this chapter is to examine how and when the informal network is most utilized. The chapter applies an organizational network theory approach to map the behavior of the shirkat managers of two districts in Khorezm, Uzbekistan, in relation to applications for water during a water sufficient year and a drought year. One of the districts is downstream, the other upstream. The data are compared with the informal linkages between the shirkat managers and the hakims of the two districts and of the province.[13] In addition, the content and the nature of the network linkages of the managers to the hakims are analyzed. The chapter concludes that during water scarcity an informal network was utilized to receive water.

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[12] Wegerich, K. (2004). *Local Environment*, 9(4):337-352.

[13] During the fieldwork it was already anticipated that the province and district water departments would be abandoned, and that a new system of management would be introduced. Because of this, the network links between shirkat managers and district water departments, and between hakims and district water departments, were not analyzed. On 21 July, 2003, the Cabinet of Ministers of the Republic of Uzbekistan passed resolution N320 introducing a new water management framework. Consequent to the change in the water management system, all the province and district water departments in Uzbekistan were closed and new departments were opened.

The field research was conducted in Khorezm Province between March and May 2003. The method utilized for gathering the information was structured and semi-structured interviews. The field research was divided into four different time stages, in which four different groups of participants were interviewed. The different stages were chosen to clarify and deepen understanding of the formal and informal network structures and their dynamics. The questions addressed highly political issues. The topics were sensitive and the participants were suspicious, and therefore may not have answered the questions thoroughly and honestly in fear of their livelihood.

## 7.2 An organizational approach to network theory

Why use organizational theory in this case study? What are organizations? Batteau argues that "organisations create structures of meaning" (Batteau 2001:726). He understands organizations as "a social form defined by goal-oriented instrumental rationality" (Batteau 2001:727).[14] Using this definition of organizations it is possible to analyze the relationships between the Hakimyat (governorship), the Department for Agriculture and Water Resources, and the farms as if it is one organization with different units and different sub-unit goals.

Morgan points out that when one talks about organizations one usually has in mind a state of orderly relations between clearly defined parts that have some determinate order (Morgan 1997). He argues that to understand organizations and organizational dynamics one has to interpret organizations as "socially constructed realities" (Morgan 1997:120). One of these realities governing organizations is the informal network. The importance of informal networks within organizations was pointed out by Blau and Scott, who argue that "it is impossible to understand the nature of formal organisation without investigating the networks of informal relations" (Blau and Scott 1962:6). Krackhardt and Stern (1988:123) emphasize the positive influence of informal networks by stating that "although the formal organisation describes authority lines, much of the influence and the actual work is accomplished through the informal structure of friends, contacts, and accidental communications". Whether social networks have a positive or negative influence on organizations and organizational adaptability to changes is contested. Nevertheless, the importance of network analysis for a better understanding of organizational dynamics has been confirmed from different authors throughout the organizational theory literature. Hence, network analysis represents one framework for investigating and conceptualizing organizations and organizational dynamics.

What are these networks based on, and how can one identify different networks? A detailed framework for analysis is offered by Tichy et al. (1979). They determine three sets of properties of networks: a) transactional content, b)

[14] It is questionable whether organizations have a unifying goal that incorporates all the sub-goals of the organizational units, or even whether organizations have one or more goals.

nature of the links, and c) structural characteristics. Whereas the first two properties focus on the linkages between pairs, the third property focuses on the network as a whole. According to the authors, there are four categories of 'transaction content' distinguishable: "a) exchange of affect (liking, friendship), b) exchange of influence and power, c) exchange of information, and d) exchange of goods and services" (Tichy et al. 1979:509). Even though they state that these content type networks can overlap, they do not rank the different network types into a hierarchy. On the other hand, it is questionable whether it is possible to rank these networks into a general hierarchy, or whether any ranking would be dependent on an individual, in a specific situation, and at a specific moment in time. They distinguish between four different characteristics of the 'nature of the links': "a) intensity, b) reciprocity, c) clarity of expectations, and d) multiplexity" (Tichy et al. 1979:509).

A positional analysis of formal structures is not informative "because it fails to tap the actual ongoing processes of the organisation" (Tichy et al. 1979:511). A positional analysis gives only an indication of the prescribed network, but not the actual dynamics within the organization. Nevertheless, when it comes to uncertainty they argue "that mechanistic structures are most appropriate under conditions of high task uncertainty" (Tichy et al. 1979:513). Their argument would shift attention again to formal structures during uncertainty. Torry (1986) and Douglas (1986) argue along similar lines. Torry reasons that instead of changing radically in emergencies, institutional "adjustments are not radical, abnormal breaks with customary behaviour; rather they extend ordinary conventions" (Torry 1986:126). Douglas reasons that an emergency system starts with a gradual tightening and narrowing of structures (Douglas 1986). According to this reasoning, formal structures would dominate during uncertainty. On the other hand, Conway (2001) demonstrates with a case study of one organization that during uncertainty an informal structure occurred. The informal network undermined the formal network of the organization. Krackhardt and Stern (1988) also show that during a crisis informal networks dominate the response of the organization to the crisis. The present case study of the shirkat managers' behavior in the upstream and downstream districts tries to validate whether formal or informal institutions dominate during crisis and uncertainty.

## 7.3 Brief geographical background to Khorezm Province and experiences of the drought in an upstream and downstream district

The province of Khorezm is located in the northwest of Uzbekistan and is downstream in the Amu Darya basin. Khorezm Province has 11 districts. These districts are either adjacent to the Amu Darya and therefore more water rich, or closer to the desert and therefore more prone to water scarcity (Map 7-1).


**Map 7-1: Khorezm province**

*Source*: Provided by Ruzieva, ZEF GIS expert German-Uzbekistan project

The two districts where the research is focused are upstream and downstream in Khorezm Province. The first district is adjacent to the Amu Darya, and different inter-district canals originate in the district. Because of its geographical location, the district can be defined as upstream. The downstream district borders the desert and receives the majority of its water from one inter-district canal that originates in the upstream district and terminates within the downstream district.

The two districts can be divided into smaller administrative units, the shirkat farms. The upstream district has 11 shirkat farms. The downstream district has nine.[15] Each of the shirkats can be classified as either upstream or downstream within the water management system.

A comparison of average available water in the upstream and downstream districts reveals that the upstream district had on average more water in water rich and water scarce years. In addition, comparing the percentages shows that the fluctuation of supplied water is much higher in the downstream district than in the upstream district. This would imply that the water situation in the downstream district is more unstable than the situation in the upstream district. The data show that, during the water scarce years 2000 and 2001, the water supplied to the upstream district was higher. In Table 7-1 the 1999 water data have been taken as a reference point for the other years; the figures shown represent percentages of the 1999 baseline.

[15] In the following study all the shirkats in each of the upstream and downstream districts are represented with Arabic numbers from 1 to 11 and 1 to 9, respectively.

**Table 7-1: Index of water supply in the two districts (to base year 1999)**

| | Upstream district | | Downstream district | |
|---|---|---|---|---|
| | Water supply | | Water supply | |
| | 1000m³ | 1000m³/ha | 1000m³ | 1000m³/ha |
| 1997 | 85.73 | 85.58 | 64.81 | 63.73 |
| 1998 | 92.05 | 100.6 | 80.45 | 85.11 |
| 1999 | 100.00 | 100.00 | 100.00 | 100.00 |
| 2000 | 62.64 | 57.77 | 56.06 | 51.59 |
| 2001 | 44.79 | 40.76 | 33.41 | 30.06 |

*Source*: Province Department for Agriculture and Water Resources[16]

**Table 7-2: Rice and cotton yields in the two districts**

| Yields | District | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| Cotton [ton/ha] | Upstream | 2.53 | 3.21 | 2.84 | 2.62 |
| | Downstream | 2.37 | 2.96 | 2.03 | 1.61 |
| Rice [ton/ha] | Upstream | 4.23 | 3.79 | 1.53 | 1.62 |
| | Downstream | 3.84 | 3.71 | 1.01 | 0.47 |

| Yields | District | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| Cotton [c/ha] | Upstream | 78.82 | 100.00 | 88.47 | 81.62 |
| | Downstream | 80.07 | 100.00 | 68.58 | 54.39 |
| Rice [c/ha] | Upstream | 111.61 | 100.00 | 40.37 | 42.74 |
| | Downstream | 103.50 | 100.00 | 27.22 | 12.67 |

[16] The data provided by the Province Department for Agriculture and Water Resources was not confirmed in interviews with district departments in the two districts. According to the district department in the downstream district, the available water was much lower than stated in the above table. The water scarcity and the stress factor for the agricultural sector were higher.

In terms of agricultural productivity, the data in Table 7-2 illustrate that the two districts both had large cuts in rice production during the two drought years. The decreases in rice production did not differ significantly in either of the two districts. As the data for cotton indicate, the production in the downstream district decreased significantly more during 2000 than that in the upstream district. The data on water supply and agricultural production indicate that the crisis or the level of uncertainty was much higher in the downstream district than in the upstream district. Nonetheless, whether the water scarcity was perceived differently in the two districts is not evident from Table 7-1 and Table 7-2. It may become evident from the analysis of the reactions of the shirkat managers. In addition, the evaluation will show whether the level of uncertainty influenced the mobilization of informal networks.

## 7.4 Change of the network structure during the period of water scarcity (2000 and 2001)

To learn about the network structure for water distribution a) in a year with enough water and b) in a drought year, the current shirkat managers of the different shirkats in the two districts were asked about 1) whom, 2) how, and 3) how often they contacted an organization or a person to receive the water they needed for their shirkats. If the manager was not in the management position during the drought period, he was asked whom he would contact in a drought situation.[17]

As the network maps in Figure 7-1 and Figure 7-1 visualize, only one shirkat manager stated that he would contact the water department during a water sufficient year and, if he needed additional water, then he would contact the hakim directly to receive the requested water. In addition, the figures show some differences in regard to water availability within the district and the need to contact the water department. In the upstream district, three shirkats (3, 5, and 10) stated that during a water sufficient year it was not even necessary to contact the water department. Two of the three shirkats in the upstream districts are located upstream within the district. The third shirkat is within the district downstream, but it is located next to an inter-district canal that provides water to two downstream districts. In the downstream district, two shirkats (5 and 9) made similar statements and they were also upstream.

[17] In the upstream district three managers started after the drought years, two during the drought (2000 and 2001), and five before the drought. In the downstream district, five shirkat managers started after the drought years, three during the drought period, and one was in his position before the drought.

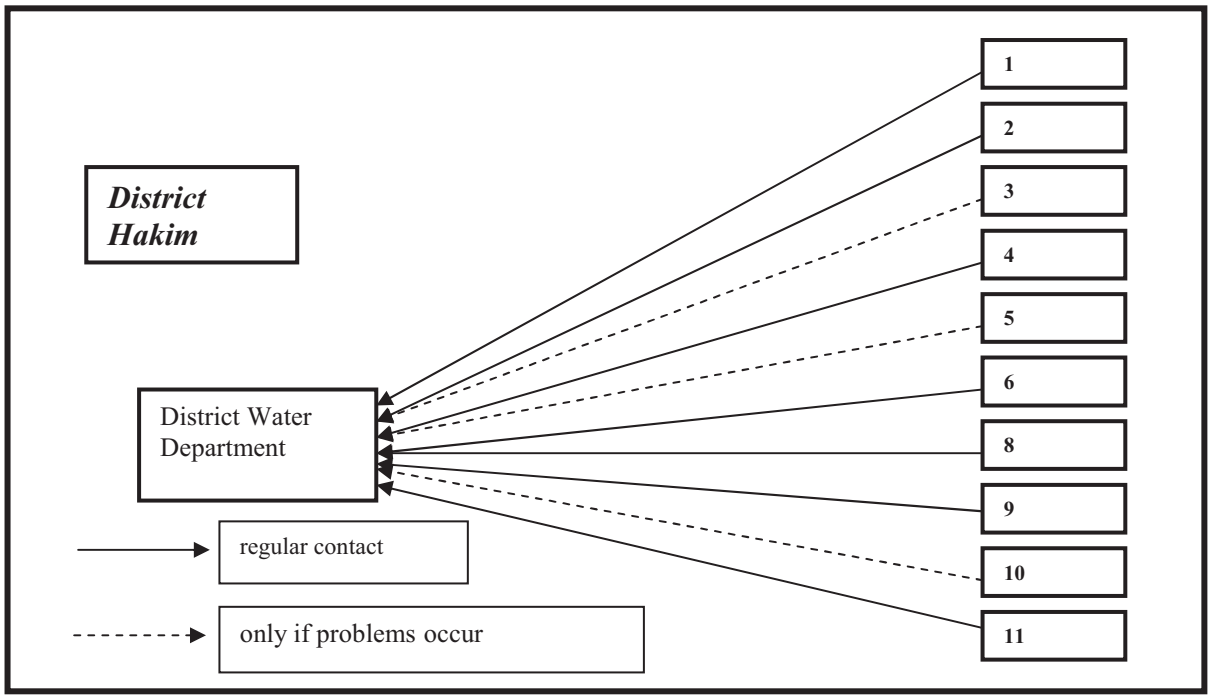


**Figure 7-1: Network structure of shirkat farms' contacts for water during a water sufficient year in the upstream district**

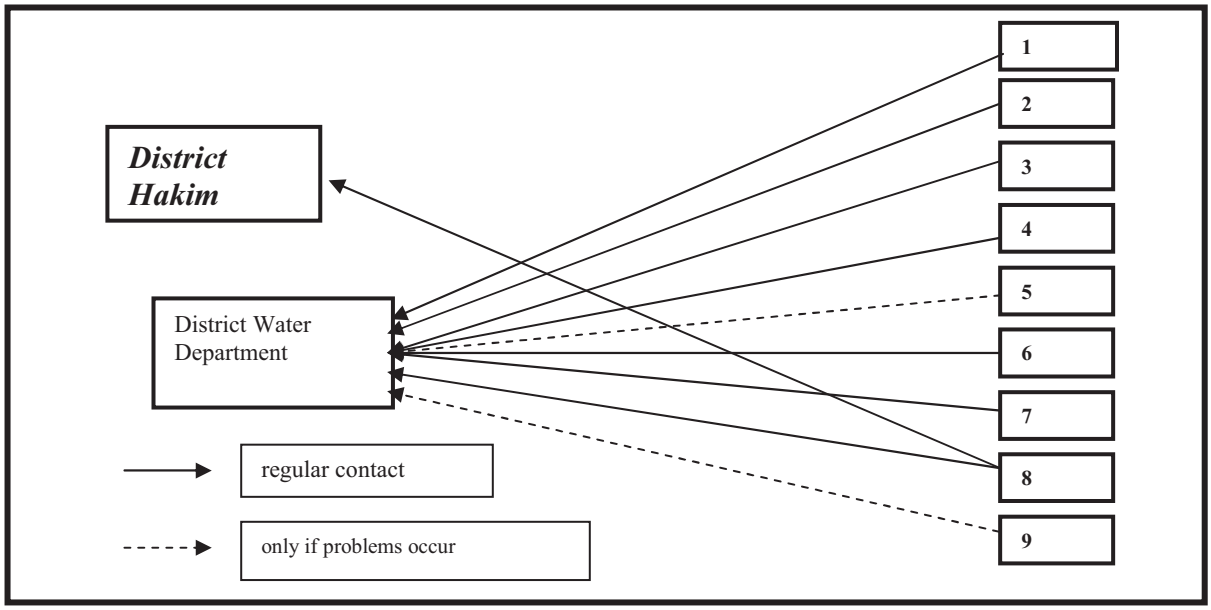


**Figure 7-2: Network structure of shirkat farms' contacts for water during a water sufficient year in the downstream district**

In comparison to the responses about contacts in a water sufficient year, the answers in the two districts varied tremendously from each other for a water scarce year. This becomes more evident in Figure 7-3 and Figure 7-4. In the upstream district, only four shirkat managers (4, 6, 9, and 11) contacted the hakim, whereas in the downstream district eight of the nine shirkats contacted the hakim to get help with their water supply. A comparison of the answers with the geographical position in the district shows that shirkats 6 and 11 are

downstream, 4 is midstream, and 9 is upstream. Similar to the behavior of shirkat 8 in the downstream district in a good water year, the behavior of shirkat 9 in the upstream district cannot be explained simply by the geographical position.

For the downstream district, the communication map (Figure 7-4) illustrates that only shirkat 3 did not contact the hakim during the drought period to help with water supply. Shirkat 3 is upstream in the district and was identified by the District Department for Water Resources as a shirkat that takes more water than is allocated to it. However, three other upstream shirkats, which were identified for the same offence, also contacted the hakim for additional water. Therefore, it seems that in both districts there is not a relation between geographical position and contact with the hakim during the drought year. Comparing the two districts, the network map shows that in the downstream district the hakim was contacted more to help with water supply than the hakim in the upstream district.

More interesting is the behavior of shirkat 6 in the upstream district. The shirkat manager stated that he contacted first the hakim and then the water resource department. Shirkats 4 and 11 contacted first the District Department for Water Resources for help with water supply. Only when the department could not help did the two contact the hakim. The manager of shirkat 9 mentioned that he received help from the hakim, but he did not mention that he contacted the District Department for Water Resources. This could imply that he did not contact the department before contacting the hakim. Contrary to the situation in the downstream district, all the shirkats who contacted the hakim had first contacted the water resource department, and only when the department was unable to provide help was the hakim contacted directly. But in the case of shirkat 4, contacting the hakim did not bring the expected help.

The analysis of the network maps confirms the statement in the introduction made by the head of the Pitnyak District Department for Water Resources that shirkat managers went, or would go, to the hakim for water supply. The contact maps during a water sufficient and a drought year indicate that an informal network is utilized in a crisis situation. The contact maps seem to validate the reasoning of Conway (2001) and Krackhardt and Stern (1988). Their theoretical reasoning is more confirmed for the downstream district than for the upstream district. On the assumption that the drought was perceived in both districts equally, then the difference could imply that in the upstream district the informal network structure between shirkat manager and hakim is not as strong as the informal network structure in the downstream district.

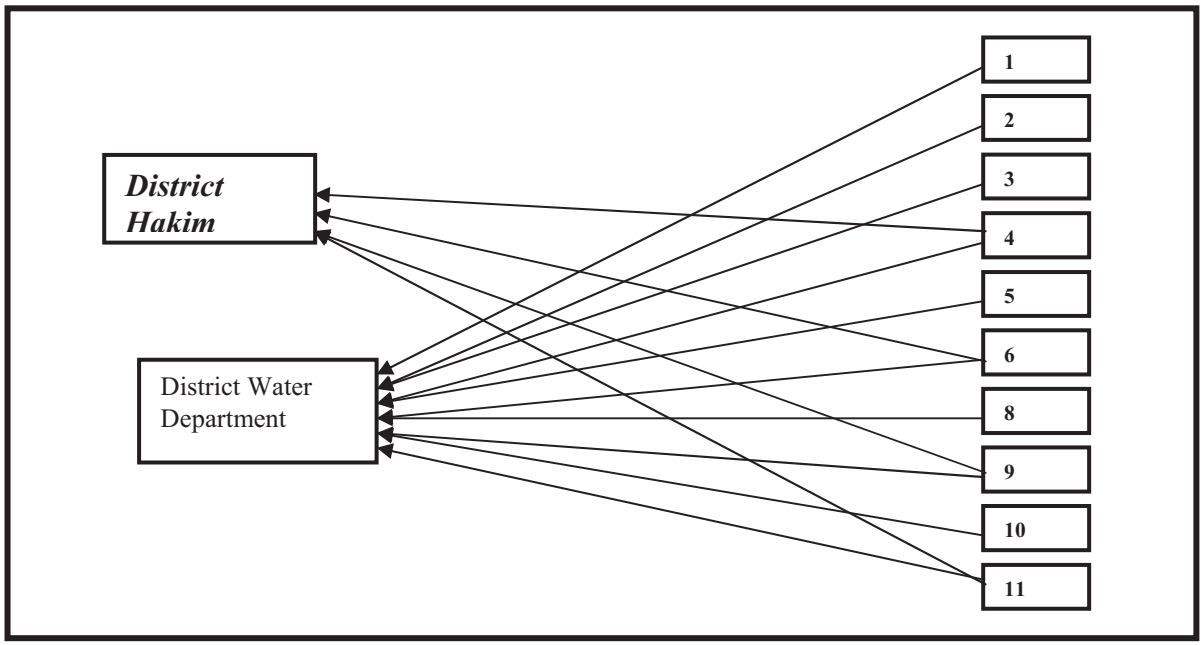


**Figure 7-3: Network structure of shirkat farms' contacts for water during water scarcity in the upstream district**

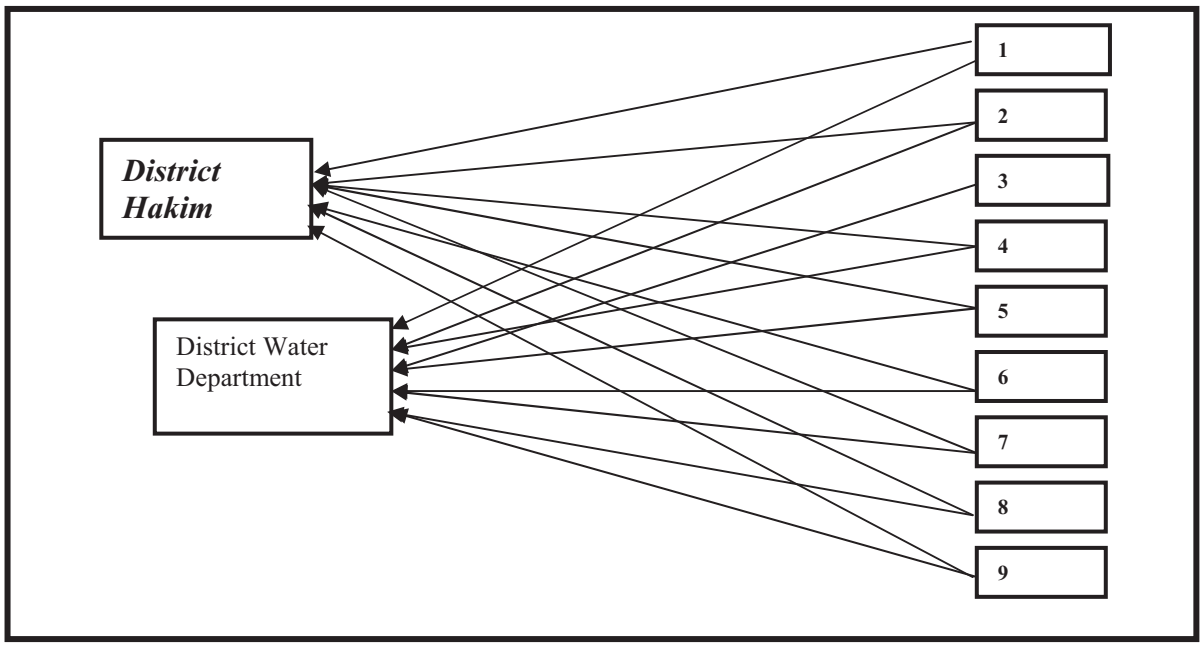


**Figure 7-4: Network structure of shirkat farms' contacts for water during water scarcity in the downstream district**

## 7.5 Analyses of linkages between managers and hakims

The communication structure in a water sufficient and in a drought year illustrates that downstream as well as upstream farms asked the hakim for help to receive water. Therefore, application for help is not necessarily based on a

weak geographical position, but could be based on some more hidden structures, such as informal networks.

During the Soviet Union, the party had influence on the collective and state farm managers' positions. Managers kept their positions for more than 20 years (data from case study area). Since independence in 1991, this time span has changed drastically. The current collective and state farm managers change frequently. In the two districts analyzed in Khorezm Province, about 75 percent of all the shirkat managers lose their position within three years. According to official Uzbek government statements, attaining the position of shirkat manager is based on bribes and nepotism (Assembly of State Commission, 29.11.2003).

The theoretical framework of the chapter distinguishes between different categories of 'transaction content' of linkages. The distinction of categories is important because it explains on what the linkage between the manager and the hakim is based. To learn about the foundation of the linkages, former shirkat managers were asked about determinants for the position of manager.

Even though, according to the law, it is the employees of the shirkat who decide on who will get the position of manager, all former shirkat managers answered that it is the hakim who makes the decision on the position. Of the 22 former shirkat managers asked in the whole of Khorezm Province, 20 stated that money is involved in the decision about who becomes a shirkat manager. Eighteen stated that networks are important to get the position. According to these 18 interviewees, networks are based on family and friendship relationships. It was argued by the eighteen interviewees who mentioned networks that the price of becoming a shirkat manager varied, according to the relationship. Family and friends pay less. Skills were mentioned only nine times; six times it was pointed out that they are important together with networks and money; three times it was stated that skills do not count to get the position.[18]

If we return to the theoretical approach, it seems that in Khorezm Province the transactional content of the network is based on exchange of goods and services more than on exchange of affect. Hence, money transactions seem to dominate the decision-making process more than family and friendship ties. However, family and friendship ties influence the amount of goods and services that have to be paid for the position. This shows that a general ranking is possible between the different transactional contents. Furthermore, the network ties presented in Table 7-3 and Table 7-4 indicate a more differentiated approach to the determining factor, exchange of affect.

[18] Nevertheless, in the two districts, the farm managers were engineers (seven), accountants (five), hydrologists (one), or agronomists (six). Hence, all of them were skilled, but not necessarily in an agriculture-related field. One should ask what qualifications should a manager have: formal education in an agriculture-related field or management skills?

## Table 7-3: Network ties of shirkat managers in the upstream district [19]

| Khorezm Province | Upstream district | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **X1**: 96-99 | **Y1**: 97-2002 *studied & worked together with **X1*** | **AA**: 98-2002 *close friend to **X1** studied & worked together* | **AB**: 97-2000 *engineer with **X2*** | **AC**: 97-now *friend of a friend of **X2**, worked together in cotton plant* | **AD**: to 2000 | **AE**: 96-99 *placed by **X1*** | **AF**: 93-now *placed by 1st province hakim, is relative of city hakim of Urganch* | **AG**: 97-now *friend of **X1**, relative of **Y1** through marriage* | **AH**: 98-2001 *relative of **X2** through marriage* | **AI**: 98-99 *friend of **X2**,* | **AJ**: 93-now *no relative ties* | **AK**: 97-now *relative of **X2** through marriage* |
| **X2**: 99-now | **Y2**: (**AB**) 2002-now *friend & (brother-in-law?) & classmate of **X2*** | **AL**: 2002-now *uncle of* **X2** | **AM**: 2001-now *relative of **X2*** | | **AN**: 2000-now *relative of **Y1*** | **AO**: 99-01 *neighbor & relative of **X2*** | | | **AP**: 2001 – now *friend of **Y1**, worked together in province level water department* | **AQ**: 99-2002 *friend of **X2**, worked together in cotton plant* | | |
| | | | | | | **AR**: 2001-now *relative of **Y1*** | | | | **AS**: 2002-now | | |

[19] Shirkat managers are represented by letters from AA to AS, province hakims by X1 and X2, district hakims by Y1 and Y2.

## Table 7-4: Network ties of shirkat managers in the downstream district [20]

| Khorezm Province | Downstream district | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| **X1**: 96-99 *was head of construction in Tuyamuyun* | **Z1**: (**BS**) 98-2000, *friend of **X1*** | **BA**: 92-2000 *worked together with 1st hakim of district* | **BB**: 98-2000 *maybe because of influence of his father 1st shirkat manager in shirkat 2* | **BC**: 99-2001 *brother of former shirkat manager in shirkat 3* | **BD**: 98- 2001 *was deputy in shirkat, placed by **Z1*** | **BE**: 97-2001 *main agronom in shirkat, placed by **Z1*** | **BF**: 98- 2002 *engineer in chief of shirkat, related to city hakim of Urganch* | **BG**: for 2 years till 99 *neighbor and maybe relative of 1st hakim of district* | **BH**: 98-2002 Nov *deputy of 1st hakim of district* | **BI**: 96-now *bookkeeper in shirkat, related to former manager of shirkat 11* |
| **X2**: 99-now *worked together with **Z2**'s dad* | **Z2**: (**BB**) 2.8.2000-now | **BJ**: 2000-2002 *head of Agroprom for 1 year, reduction of staff in the 1990s downgraded* | **BK**: 2000-2003 *deputy in shirkat of **Z2*** | **BL**: 2001-now *worked in Hakimyat, just friends with **Z2*** | **BM**: 2001-now *placed by **Z2**, good friend of **Z2*** | **BN**: 2001-now *son of 1st manager in shirkat 5, placed by **Z2*** | **BO**: 2002-now *worked in shirkat 5 in upstream district in 85, connection with **X2*** | **BP**: 99- 2002 Aug *friend of **Z2**, studied together with **Z1*** | **BJ**: 2002 – now *placed by **Z2**, studied together with the brother of **X2*** | |
| | | **BQ**: 2002-now *was an agronom in shirkat 1, placed by **Z2*** | **BR**: Feb. 2003 *deputy of **BK**, worked for a long period with **Z2**'s dad* | | | | | **BS**: 2002-now *friend of **X1*** | | |

[20] Shirkat managers are represented by letters from BA to BS, province hakims by X1 and X2, district hakims by Z1 and Z2.

Money, which all the former shirkat managers mentioned, does not appear in the two network tables. The tables illustrate family and friendship ties of the current shirkat managers and the managers during the drought period.

Tables 7-3 and 7-4 show that nearly all of the shirkat managers were linked with the hakim with a similar transaction content. Nonetheless, comparing the communication map (Figures 7-1 to 7-4) with the network tables demonstrates that although most of them had these ties based on affect, not all of them utilized them, or could utilize them. Even managers who did not have the affect link could utilize the informal network to the hakim to receive more water. The comparison between the communication maps and informal network tables indicates that the informal networks are open and dynamic.

Even though shirkat 8 in the downstream district did not have an affect link with the current hakim, the shirkat manager was able to apply for help with water supply during a good year. As stated above, during the drought in the downstream district, shirkat 3 did not apply for water and shirkat 4 applied for help, but did not get any. According to the information gathered about the two managers of shirkat 3 and 4, both of them were friends of the current district hakim. However, neither utilized, or could not utilize, their network ties with the hakim. In the upstream district, shirkats 4, 6, 9, and 11 would contact or contacted the hakim for help with water supply. All the shirkat managers in the upstream district (except the managers in 6 and 9) have network ties, either directly to the district hakim (during drought) or to the province hakim.

The evaluation of the answers of the former shirkat managers regarding the basis of the linkage, together with the detailed network maps of the two districts, indicate that the transaction content is not necessarily based on one issue alone, but that it could be a link based on more than one issue, such as exchange of goods and services as well as exchange of affect (liking or friendship). It is questionable whether the network link is static or dynamic: whether the transaction content shifts from one aspect (such as affect), which is dominant at one point of time, to a different aspect (goods and services), which is at that time less dominant.

The nature of the links was identified as another characteristic of networks and it was differentiated into four categories: a) clarity of expectations, b) intensity, c) reciprocity, and d) multiplexity. The current shirkat managers were asked about general contact with the hakim. Common answers were: “The hakim is very important for the shirkat.” “All problems of the shirkat are solved through the hakim.” “In difficult times I can contact the hakim for help.” “If necessary I go to the Hakimyat, even three or four times a day.” “I call the Hakimyat only if it is necessary, sometimes two or three times in a day”.

The answers of the current managers show that they see the hakim as a trouble shooter for a variety of problems. Hence, there is a certain expectation towards the hakim. It is expected that the hakim will help during difficult periods. The drought period in 2000 and 2001 was clearly a period of stress for

the shirkat managers. That they contacted the hakim during this period for water, after the water department failed to help them, seems more understandable if one considers the expectation of the shirkat managers that they could receive help from the hakim if any kind of problem occurred.

The case study shows that the aspect of the intensity of the link should not be considered as a static characteristic, but that the intensity can be dynamic. The answers of the managers show that the fluctuation in intensity of contact is correlated with expectations and the environment. Here, high uncertainty shifted the intensity of the contact from a lower level to a high level. Some shirkat managers stated that they contact the hakim on different issues, such as fuel, pesticides, fertilizers, and spare parts for technical equipment. The multiplexity of the linkages is of a high level, and again correlated with intensity, expectations, and a changing environment. The correlation between intensity, expectations, and multiplexity makes it questionable whether it is useful to treat them as separate characteristics to analyze networks. In addition, the change from a certain to an uncertain situation influenced the network. The case study shows that environmental changes influence the intensity of the links; therefore it might be possible to understand the relationships based on changes in the intensity of expectations and multiplexity.

## 7.6 Perception of crisis and network structure

How has the water crisis or environmental uncertainty changed the network structure? Did the informal structure take over, as argued by Conway (2001) and Krackhardt and Stern (1988), or did the formal network become tighter?

To address the issues raised, one has to consider what is formal and informal, and whether it is possible to distinguish between the two in this case. Did the managers contact the hakim as a relative or friend in need, or did they contact him as the hakim of the district, who is responsible for the running of the district and problem solving? Krackhardt and Stern (1988:123) state “formal organisation describes authority lines”, and Morgan (1997:13) describes organizations as “a set of mechanical relations”, indicating machine-like bureaucratic structures.

In the case of the two districts, authority lines have not been maintained. Instead, the authority of the district water departments was undermined during the drought. Shirkat managers first approached the district water departments but could not receive help, and then approached the higher authority level for help. In the case of shirkat 6 in the upstream district during the drought, the opposite was the case. The first contact was with the hakim rather than the water department; but, as Table 7-3 indicates, neither friendship nor family ties exist between the current hakim and that shirkat manager. The data support the reasoning of Conway (2001) and Krackhardt and Stern (1988) that during uncertainty and crisis informal networks take over. During the drought, the line of authority and the structure of the organization were broken, and water

distribution was arranged through an informal network. The case study also confirms the reasoning of Torry (1986) and Douglas (1986) that the formal organizational structure is thinned during uncertainty. Less powerful units or less well functioning units of the organizations were abandoned during the crisis. The evidence from the two districts contradicts Tichy et al. (1979), who argue that mechanistic structures are more appropriate during uncertainty. Here, the mechanistic or formal structures did not function, and therefore informal structures aided the organization to adjust to the crisis situation of a drought.

As mentioned in the background section, it is questionable whether the drought was perceived as crisis in the two districts equally. If the shift from formal to informal structure is based on crisis or uncertainty – resorting to the informal in time of crisis - then the contact maps (Figures 7-1 to 7-4) confirm the different perception of the crisis in the two districts.

## 7.7 Conclusion

The research conducted in Khorezm confirms that hakims and shirkat managers are linked within an informal network. The utilization of Tichy et al.'s (1979) network analysis approach helped to determine the content and nature of these network ties. The case study data show that the formal organizational structures between hakim and shirkat managers coexist with an informal network. These informal networks were more utilized during a drought year than in a water sufficient year. These informal networks undermined the authority of the district water departments, and undermined equitable use of the water resources. Hence, the case study confirms that considering the formal hierarchy as a basis for analysis of organizations does not fully explain the dynamics within organizations. Here, network theory supports a deeper understanding of organizations and their dynamics.

The case of the two districts demonstrates that an informal network is in place. The mapping of communication in a water sufficient and in a drought year illustrates that the informal network is activated in situations of crisis and uncertainty. As the answers of the current shirkat managers indicated, the hakim is the troubleshooter; in any form of crisis he would be the person to contact for support. Hence, informal networks seem to be utilized more frequently when the formal network fails or is not functional. However, informal networks are already present and do not have to be formed at the time of the crisis. The case study therefore confirms the importance of the informal network during crisis.

In the chapter, different methods of analyzing networks have been utilized. Tichy et al.'s (1979) framework of different properties of networks helped to get a detailed understanding of the networks in place. Determining the full details of the transaction content of the networks proved difficult, and it is very questionable whether the full scale of the transaction content can be determined. Utilization of the dynamic approach of communication mapping in addition to the static framework of determining the properties of the network showed that

the informal networks are dynamic and not static. It also showed that, against the general assumption of the strength of affect ties, not all shirkat managers having these ties to the hakims did or could utilize them during the crisis situation. This contradiction was only possible to determine with communication maps. Even though it was not possible to determine the transaction content by utilizing the communication maps, the maps delivered a complementary perspective on the existing networks. The case study shows that communication maps are particularly helpful in identifying dynamics within the network, and reactions of the network to external changes.

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# The social and political environment

# 8 Against the conventional wisdom: Why do sector reallocation of water and multi-stakeholder platforms not take place in Uzbekistan?[21]

## 8.1 Introduction

Currently, integrated approaches to water management, reallocation of water resources between sectors, and multi-stakeholder platforms (MSP) are common frameworks in the hegemonic discourse of the international community working on water management. The chapter argues that none of these paradigms have manifested themselves in Uzbekistan. On the contrary, reallocation of water from the agricultural to the urban sector to meet rising demands does not take place, and water scheduling in the tertiary cities in Uzbekistan is common practice.

Whereas the literature focuses on strategies about how to make multi-stakeholder platforms more efficient and how to increase stakeholder participation, this chapter focuses on the political aspects in Uzbekistan that do not support the creation of multi-stakeholder participation in water management.

The remainder of the chapter is structured into six sections. It continues with a short theoretical section on the political aspects of water management, followed by a description of the water situation in Uzbekistan. Here, the focus is on water availability and the water utilization of the urban sector. The third section focuses on the organizational structure of the different water departments on the national level and the power structure between the departments since independence. The section is followed by a small case study on the water management organization, and the problems of water supply in two tertiary cities in Khorezm Province in Uzbekistan. The fifth section focuses on the relationships between the state and civil society and the strong influence of the state on the creation of civil society organizations. The last section concludes that, first, the institutional development of the Uzbekistan Communal Services Agency shows that since independence its influence on decision making in relation to water allocation has been undermined. Second, multi-stakeholder platforms are not wanted. Third, the current hegemonic water management frameworks are not yet on the agenda in Uzbekistan.

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[21] Wegerich, K. (2007), in J. Warner (ed.) *Multi-Stakeholder Platforms for Integrated Water Management*, pp. 235-244. Aldershot and Burlington: Ashgate.

## 8.2 Multi-stakeholder platforms

Ohlsson and Turton (1999) distinguish between three historical stages of water management: supply management with the objective of 'getting more water'; demand management, which increases end-use efficiency, with its objective of achieving 'more use per drop'; and a second step in demand management called 'allocative efficiency' with the objective of getting 'more value per crop'. Allocative efficiency would imply the reallocation of water from the agricultural to the urban and industrial sectors. Perry et al. (1997:12) state what is believed to be the conventional wisdom: "For the most part, in the real world, water is allocated first to municipal and commercial use, and third to agriculture."

On the other hand, conflicts over scarce water resources do occur between the agricultural sector and the urban and industrial sectors. The conflicts arise because "thirsty cities, drought and crisis suggest that these transfers do not catch up with growth in demand" (Molle, e-mail discussion 16.09.2004). Perry's statement 'foregrounds' the political argument that the non-agricultural sector has more influence and power compared to the agricultural sector; therefore their interests prevail. Water allocation between the sectors is based on political decisions. Allan (1999:75) argues that "there is far too much political stress associated with water re-allocation; too many political prices to pay". Water allocation to the sectors could be renegotiated between the sectors. Mosse (1997:499) emphasizes that "existing systems of water use are supported by structures of authority". Multi-stakeholder platforms could question this authority and change the structure of the system from a hierarchical structure to a horizontal structure. Currie-Alder (2007:253) argues that with multi-stakeholder platforms the "top-down approaches operating with hierarchical structures must shift to a more horizontal network structure where responsibilities and roles are more freely shared with others". This would directly question the state and the form of governance of the state.

The data presented on Uzbekistan suggest that the current water demand of the urban and industrial sectors outstrips water supply. Hence, water allocation to the sectors should be renegotiated. Multi-stakeholder platforms could be arenas for negotiating water allocation. However, even though it is recognized that the current supply to the urban sectors is insufficient, renegotiations between the sectors do not occur. Instead of fixing the problem through reallocations between the sectors, the international agencies (World Bank and Asian Development Bank: ADB) focus only on productive efficiencies to increase the efficiency of the supply side and to decrease the demand of users in the urban sector. Hence, the political renegotiation of water allocation between the sectors and a change in the structure of authority is avoided. The case study on Uzbekistan will show that the current system is manifesting and expanding the hierarchical authority line for water management; the reproduction of the existing authority line, and therefore its manifestation in forms of agricultural

production, allows no space for horizontal platforms and stakeholder participation.

## 8.3 Water situation in Uzbekistan

Even though Uzbekistan has only a few rivers originating within its own territory, the country utilizes the transboundary Syr Darya and Amu Darya rivers for its agricultural, industrial, and urban sectors. The water allocation limits for the Amu Darya riparian states were set in 1987 during the time of the Soviet Union and were reaffirmed after independence in 1991.

In Uzbekistan, agriculture is mainly based on irrigation. In 1989, 4.3 million hectares were irrigated, that is about 82 percent of cultivated land. The irrigated land produces more than 90 percent of crop production. Of the total irrigated area, 56 percent is situated in the Amu Darya river basin (compare SIC ICWC 1999). The data in Table 8-1 show that Uzbekistan is still in the stage of supply management of water. The country tries to utilize water beyond its official water distribution limits (cf. Chapter 3).

**Table 8-1: Amu Darya distribution limits and actual utilization**

| | Water distribution limits 1987 | | Average official BVO[a] data 1993-99 | | Average unofficial BVO data 1991-01 | |
|---|---|---|---|---|---|---|
| | $km^3$ | % | $km^3$ | % | $km^3$ | % |
| Kyrgyzstan | 0.4 | 0.6 | 0.15 | 0.29 | - | - |
| Tajikistan | 9.5 | 15.4 | 7.32 | 14.47 | 7.00 | 10.6 |
| Turkmenistan | 22.0 | 35.8 | 21.52 | 42.53 | 20.6 | 29.8 |
| Uzbekistan | 29.6 | 48.2 | 21.61 | 42.71 | 42.8 | 59.6 |

[a] Basseynoe Vodnoe Ob'edinenie – River Basin Organization

According to a DFID (2001) study, in Uzbekistan the agricultural sector uses 94 percent of total utilized water. Only four percent of water is used in the industrial sector and two percent in the urban sector (DFID 2001:17). A recent ADB (2001:5) report states that "the distribution system tends to be old, in varying stages of disrepair, and prone to high levels of leakage. […] The ageing assets have resulted in poor delivery of services. Water rationing is common in all cities". The report states that utilization in the urban sector ranges between "250 liters per capita per day (lcd) to nearly 1000 lcd. […] The use is in addition to the supply of between 200 to 400 lcd of hot water"(ADB 2001:6). A DAI report argues that the official figures do not distinguish between industrial and urban supply. According to the report, 25 percent of the supplied amount is utilized by industries. In addition, the leakage losses are estimated to be between 11 and 30 percent, or even higher (McKee and Curtin 1996:43). The ADB

figures include industries, losses, and wastages. Even though the ADB is making a general statement about water utilization in urban areas in Uzbekistan, their project is only based on two provincial capitals and one district capital; hence it is questionable whether the data merely reflect the situation in the three cities (Djizzak, Gulistan, and Karshi) or also that in other cities. In addition, as the ADB points out, only 1.8 percent of domestic consumption is metered, hence it is questionable whether the above data reflect actual household consumption.

Research conducted in Khorezm Province in 2004 suggests that public water supply in tertiary cities (district capitals) is very unreliable and that households rely heavily on groundwater to compensate for the public water supply shortages (see Chapter 6). The findings also show that potable water and not privately pumped groundwater is used for watering gardens, and this use therefore contributes to the shortages of supply. The ADB (2001:5) report points to the "poor condition of irrigation systems leading to the alternative use of potable water for garden and land watering". The data collected for Khonka and Khiva suggest that water shortages occur mainly during the spring and summer period, whereas during the autumn and winter period water supply is sufficient. This would imply that the shortages are not based on leakages, but that either the agricultural and the urban sector are in competition over the water resources, or that the fixed supply limits for the urban sector are insufficient to meet demand during the summer period. However, the latter would also suggest competition between the agricultural and the urban sector. Given that Uzbekistan is in a transitional period, facing financial constraints, it seems likely that the investments in operation and maintenance of the infrastructure for potable water and irrigation of urban gardens have decreased. The next section will show that this decrease is not only based on financial constraints, but that it is government policy to strengthen the agricultural sector and to weaken the urban sector and their water supply organizations.

## 8.4 The changing organizational setting of the water sector stakeholders

After independence, the Ministry for Water Resources was responsible, amongst other things, for water policy and strategy development and implementation, water resource planning, and the formulation of water legislation. In addition, it was charged with the provision of water resources to the various sectors of the economy (TACIS 1995c). The Ministry of Communal Economy was dealing with municipal water supply and sewage. Hence, at the time of independence the Ministry for Water Resources provided water resources to the Ministry of Communal Economy. Both ministries were structured hierarchically with their branches at provincial and district level. The Ministry for Water Resources distributed the surface water resources through its provincial and district departments to the collective farms, and the Ministry for Communal Management distributed the potable water resources at provincial and district level through two organizations to the urban areas, industries, and to the

households in the rural areas (TACIS 1995b). These organizations were Vodokanal, which was responsible for water distribution to the urban areas and industries, and Agrovodokanal, which delivered water to the rural households.

In 1997 the Ministry for Agriculture and the Ministry for Water Resources were merged and the ministry had "no autonomous body for water management in form of a department or association" (SIC ICWC 1999:18). The new Ministry for Agriculture and Water Resources was responsible (among other things) for:

> "Intensification of economic reforms in the water sector, extending the economic independence of water enterprises, combining their interests with agricultural enterprises for rational organization of agricultural production;
> Accounting and supervision of effective water use in all water consumption sectors;
> Water planning and allocation among all economic sectors and provinces, setting up the limits of water diversion and consumption in all water consumption sectors and control of observation" (SIC ICWC 1999:18).

The list of responsibilities shows that the Ministry for Agriculture and Water Resources remained in charge of water provision to all sectors. However, the main emphasis of the ministry became water provision for the agricultural sector. Even though there were two ministries that had to compete for water resources, and although the Ministry for Communal Management provided services to the high-value users, the Ministry for Agriculture and Water Resources was responsible for water planning and allocation. This emphasizes the focus on agricultural production rather than on water delivery to the urban areas and industries. There are two possible explanations; first, agriculture continues to be the main user and, secondly, the agricultural sector is very important and together with gold exports is the main earner of hard currencies. O'Hara states that Uzbekistan's GDP declined between 1989 and 1998 by 20 percent. She argues that the "economic crisis […] placed even greater importance on agriculture, which has been and continues to be the mainstay of the economy" (O'Hara 2000:366).

Since independence, the budget of the Ministry for Agriculture and Water Resources had declined. It was estimated that the budget of the ministry was only sufficient to cover 50 percent of the operation and maintenance costs of running the system (Bucknall et al. 2001). The merger further decreased the financial power of the water department within the ministry as well as its ability to make decisions about water allocation and distribution (see Chapter 6). Hence, the agricultural department within the ministry grew stronger and had direct influence in terms of water allocation.

Under Presidential Decree No 2791 (19.12.2000), the Ministry of Communal Services was transformed into the Uzbekistan Communal Services Agency (UCSA). "UCSA reports to the Cabinet of Ministers, but is now a self-financing institution funded by income from the enterprises and organizations that make

up UCSA. […] The department responsible for water in the ministry was reorganized into a general directorate responsible for operation and development of interregional trunk water mains only. All other responsibilities for the delivery of drinking water were devolved to the oblast (province) and city levels" (ADB 2001:39). An ADB staff member working in Uzbekistan stated that the transformation was a 'downgrading'. "The agency was reorganized (downgraded) from a ministry in the recent past" (Mamatkulov, ADB, e-mail correspondence).

On 21 July 2003, the Cabinet of Ministers of the Republic of Uzbekistan passed Resolution N320 that introduced a new water management framework. According to this resolution, the Ministry for Agriculture and Water Resources is supposed to introduce a "rational management of the superficial water resources on the territory of the republic by the basin principle, the application of the market principles and mechanisms of water use" (Resolution N320, Attachment N5, II3). The resolution could be interpreted as water reallocation to high-value users. However, as the name of the ministry suggests, its main focus is still agriculture. In addition, Resolution N320 states that the head of the Communal Services Agency is nominated by decree of the Minister of Agriculture and Water Resources (Resolution N320, Attachment N5, III7). Hence, the Ministry of Agriculture and Water Resources not only allocates water to the urban and industrial sectors, but also appoints the head of the Communal Services Agency.

To sum up, there seems to be a government policy of decreasing the funding and the decision-making power of the Communal Services Agency. Contrary to this, the ADB (2001:5) report states that "as water is a basic need, the Government is giving improvement to the water supply a high priority in its program".

## 8.5 Vodokanal and the Vodokanal branch of Khorezm

The city Vodokanals receive their water through the provincial departments. The Territorial Communal Exploitation Agency (TCEA) in each province "is responsible for large capital development and infrastructure programs in the oblast and is in charge of the province Vodokanals, which manage the city Vodokanals". The TCEA reports to the province government, "but maintains a working relationship with UCSA in reforming the communal services system" (ADB 2001:39).

The TCEA in Khorezm is responsible for the public water supply to the urban centers in Khorezm Province. According to the corporate development plan (CDP) of the Khorezm TCEA, the total water supply coverage of the urban areas was 96 percent in 2003, and it was anticipated that the coverage would increase to 98 percent in 2004. The CDP states that there were only five water supply failures in 2003, and it was anticipated that the number of interruptions would be reduced to three by 2004. In addition, the plan states that in 2003 the reaction

time following a pipe burst was shorter than four hours, and that it was anticipated that this would decrease further to under two hours in 2004. The CDP was developed in cooperation with a World Bank project; after the termination of the project, the CDP has been continuously updated.

The data in Khorezm TCEA's CDP suggest that the organization can provide sufficient water supply to the cities in Khorezm Province, and that interruptions to the public water supply are negligible because of their small number. Also the reported short response time to interruptions implies that there are no shortages of public water supply.

However, research conducted in two tertiary cities in Khorezm (Khonka and Khiva) indicates that water supply is not sufficient. Both cities receive water from the same source, the Tuyamuyun reservoir. Khonka is geographically closer to the reservoir than Khiva. Whereas in Khonka the majority of interviewees stated that they had on average more than six hours of water supply per day, in Khiva the majority of the interviewees stated that they had on average less than six hours of public water supply per day. These differences cannot be explained by seasonal variation, but would have to be explained by management shortcomings in sustaining the infrastructure and in responding to infrastructure breakdowns. There could also be a second explanation: water is distributed according to the first-come-first-served principle. Hence, over-utilization upstream leads to water shortages downstream in the public water supply system. This would indicate that the public water supply faces the problem of a common pool resource and is in need of stronger regulations and enforcement mechanisms in terms of sharing allocation and sharing utilization. Above all, it demonstrates that the cities are in competition with each other over water resources. The organizational map indicates that there is a hierarchical structure that ends at the city level. Even though there are indications about the interactions above city level, it does not seem that there are formalized network interactions that could be utilized in terms of information exchange and coordinated bargaining for water resources.

## 8.6 The state and its influence on civil society

According to Jones Luong (2000:1), "Soviet policies and institutions in Central Asia created, transformed and institutionalised regional political identities". Hence, Soviet rule created the potential for a national identity. Jones Luong argues that, after independence, the regional political identities persisted; this independence "ensured that the very same actors, interests and the basis for evaluating power asymmetries would continue to dominate decision-making in the post Soviet period" (Jones Luong 2000:1). She reasons that the "common past continued to influence their subsequent development, and hence, the mechanism for institutional continuity" (Jones Luong 2000:2). Jones Luong's argument is confirmed by Spoor who argues that the vested interests of the political economy of the cotton sector have affected decision making after

independence (cf. Spoor 1998). Weinthal (2001:26) argues similarly, "Uzbekistan sought to keep the general population on the farms and engaged in cotton production to ensure their hold on social control and stability. [...] Uzbekistan could not jeopardise the foreign revenue earned by cotton sales abroad". According to her, the state had to continue with full control over cotton production and sales because it allowed the elite to reinforce regionally based patronage networks (cf. Weinthal 2001).

In Uzbekistan, two forms of civil society organizations can be identified: local NGOs and community-based organizations (*mahallas*). Even though these different organizations are described by international donors (World Bank, Asian Development Bank) as representing civil society, it is questionable whether they in fact represent the interests of civil society or whether they are used by the government to promote a 'foregrounded' or even its own agenda.

Weinthal draws attention to the state-sponsored nature of the International Ecology and Health Foundation (ECOSAN), established in 1992 and claiming to have five million members. She states: "while I was in Nukus, Karakalpakstan, in August 1994, some members of the Union for the Defence of the Aral Sea and Amu Darya suggested that the creation of this official NGO was to counter the rise of indigenous social movements and for the government to have its own showpiece NGO to present to foreign delegations" (Weinthal 2002:165). Describing the rise of NGOs in the environmental disaster zone near the Aral Sea, she argues that "indeed the rise of NGOs provides a good measure for the development of local civil society. The Central Asian leaders also recognize this, and as a result, have sought to co-opt local NGO activities and only allow them to have an environmental and educational component, rather than a political one." She concludes that "these NGOs do not act as a form of opposition to government policies" (Weinthal 2002:170). Even though during the Soviet Union the state order on cotton production (i.e. the farmer has no option but to plant cotton on his plot) was identified as 'colonization' by Moscow, after independence the state order on cotton production continued. However, the local environmental organizations do not question irrigation agriculture and state order on cotton production. Their focus is not on the causes of the environmental problems, but on their consequences.

Massicard and Trevisani (2003) write on the role of the mahallas. The law of 2 September 1993 defined the status of the mahalla in the framework of a reorganization of the state. Massicard and Trevisani point out that the role is integrated in the vertical hierarchy of state authority. The head of the mahalla is strongly recommended by the governors of the administrative unit, and can be dismissed by the governors as well. Hence, the election of the mahalla is not a bottom-up process. They argue that "through the mahalla offices, a two dimensional broadening of the state has taken place, one which can be interpreted as a symptom of the latter's propensity to monopolize the norms and rules of every area of social life. This evolution is important as it demonstrates –

more than the Mahalla itself – how the state attempts to create, in the form of the Mahalla offices, new fields of control through which it can intervene" (Massicard and Trevisani 2003:208).

Given the reasoning of Weinthal on NGOs and the co-option of NGOs by the government, as well as the environmental organization mobilized by the government for its own purposes, and Massicard and Trevisani's reasoning on the mahallas, it seems that these organizations are strongly integrated into the hierarchical structure of the state and could not be considered as platforms for local voices that challenge the policies of the government.

In the cities of Khiva and Khonka, the water shortages did not lead to a unification and mobilization of customers. Instead, households found strategies to cope with the water shortages at the individual level. Households use hand pumps for groundwater extraction. Although urban households blame the allocation of water resources to agriculture for the shortages, they focus on individual strategies rather than on collective action. Hence, it seems that the urban households are aware that the mahallas would not or could not represent their interests against the established power structure. In addition, as Weinthal reasons, NGOs do not challenge the political establishment; therefore it seems likely that they would not challenge the hegemony of the agricultural sector and its thirst for water.

## 8.7 Conclusion: why reallocation and multi-stakeholder platforms do not take place

Despite integrated approaches to water management, reallocation of water resources between the sectors, and multi-stakeholder platforms being common frameworks in the hegemonic discourse of the international community working on water management, the Uzbek data emphasize that these approaches are not yet on the agenda. The evidence suggests that, on the one hand, the current authoritative structure does not allow horizontal platforms that could challenge the current political agenda, and the manifestation of the political structure as represented in the form of agriculture. On the other hand, the historical data on the institutional development of the Uzbekistan Communal Services Agency show that since independence its influence on decision making in relation to water allocation has been undermined, its role has decreased from ministry to association, its financial support has changed from government funding to consumer fees funding, and even the head of the association is appointed by the Ministry for Agriculture and Water Resources. Hence, the influence of the department has been continuously decreased. This was more than just a single event; it was a long political process in which the power of the agricultural sector grew. The rising importance of the agricultural sector after independence is reproduced in the downgrading of the former Ministry of Communal Services.

The current top-down influence of the authorities on NGOs and mahallas indicates that the rise of civil society influence is seen as a threat to the system.

Multi-stakeholder platforms, which would be symbolic of a change from authoritarian, vertical management to participation and democratic, hence horizontal, management, are not wanted, because they would also challenge the current vertical structure of political decision making and the manifestations of the structure, such as agricultural production and cotton monoculture. Because the top-down influence is manifested at all levels, the members of one level are forced into competition with each other, rather than being allowed to unite and to manage the water resources as a common pool resource. The fact that the different cities in Khorezm are competing for water resources and utilize the resources in a seemingly un-institutionalized manner only underlines how unwanted horizontal co-operation is.

Instead of relying on the public water supply, urban users found alternatives to compensate for its shortcomings. It can be assumed that having these alternatives prevented them from questioning and challenging the current system of water distribution and management However, it is questionable whether the focus on technical efficiency and an increase in water tariffs will solve the water problem in the urban areas. First of all, the costs of implementing these changes are high, and water consumers will not be able to finance them. The ADB report on the three cities states that 45 percent of the total population is poor. The household gardens, which have to be irrigated, are an important aspect of the livelihood strategies of the urban population. Increasing the price of potable water, without maintaining the irrigation channels in the cities, may increase the vulnerability of the poor. The long process of increasing productive efficiency is in sharp contrast to the urgent needs of the urban population. Therefore, this strategy may have the opposite effect: instead of creating stability, it may well create political instability.

# 9 A little help from my friend? Analysis of network links on the meso level in Uzbekistan[22]

## 9.1 Introduction

Recent work on Uzbekistan has emphasized the importance of formal and informal networks during the period of transition. Whereas earlier studies on land privatization just mention the importance of these networks for accessing land (Ilkhamov 1998; Eckert and Elwert 2000), anthropological studies have analyzed in much detail the network interactions of rural households within the rural community (Kandiyoti 1999; Rasanayagam 2002). These studies have deepened understanding of the organization and functioning of social networks in Uzbekistan and have emphasized the importance of these networks and their utilization as coping strategies for households, especially during the period of transition. A recent study highlighted the importance for private farmers and *shirkat* managers (managers of former state and collective farms) of networks to higher administrative levels to guarantee the functioning of these farms and to turn them into 'bright spots' (Noble et al. 2005). Whereas the anthropological studies highlight the importance of these networks on the local level as survival strategies, on higher administrative levels these networks and their utilization are of great concern. On 26 November 2004, the Uzbek President Islom Karimov dismissed the hakim (governor) of Sirdaryo province because he gathered "around him his friends and people close to him who used to work with him before" (Uzbek Television first channel, Tashkent, in Uzbek 16:20 gmt, 27.11.2004). Prior to this event, the president had acknowledged the problem of informal networks in governing positions and started to appoint hakims to provinces other than their own. However, the dismissed governor had brought his network from Tashkent to Sirdarya Province.

As in Sirdarya Province, in Khorezm Province the utilization of networks is important for securing higher level positions. As far back as 1996, the former province hakim, Mr. Yusupov, was dismissed, the official reason being that he placed his network too openly in the positions of district hakims and shirkat managers. One interviewee stated that Mr. Yusupov sacked 55 shirkat managers during his reign. In Khorezm Province, all three province hakims originated in the province, and therefore had an extensive network from within the province.

Although during the Soviet Union the collective and state farm managers in Uzbekistan kept their positions for more than 20 years (data from case study area), since independence in 1991 this time span has changed drastically. The

[22] Wegerich, K. (2006). *Central Asian Survey*, 25(1&2):115-128.

current shirkat managers change frequently. In the two districts analyzed in Khorezm Province, about 75 percent of all the shirkat managers lose their position within three years. According to official Uzbek government statements, attaining the position of shirkat manager is based on bribes and nepotism. But how can the frequent change be explained?

The chapter analyzes the network structure of two districts in Khorezm Province. It focuses on the reasons for getting a position as shirkat manager and the reasons for losing it again. It analyzes what guarantees a longer stay in the shirkat manager position. Two common assumptions are examined: 1) it is only network ties between shirkat manager and district hakim that play a significant role in becoming a shirkat manager, and 2) a new district hakim replaces his predecessor's shirkat managers. The chapter exposes a detailed structure of ties, covering networks between shirkat managers, district hakims, and even province hakims in two districts in Khorezm Province. These different links show that there is a power game between the different administrative levels.

## 9.2 Methodology

The field research was conducted in Khorezm Province between 10 March and 10 May 2003. The method utilized for gathering the information was semi-structured interviews. The field research was divided into three different time stages in which three different groups of participants were interviewed. The different stages were chosen to clarify and deepen understanding of the formal and informal network structures and their dynamics. The three different groups are: (1) 19 current shirkat managers in the upstream district (ten) (one manager refused to be interviewed) and the downstream district (nine); (2) 22 former shirkat managers in nine districts in Khorezm Province (not including the two districts focused upon); (3) ten former shirkat managers from the two districts.

The first group, the current shirkat managers, was asked about the process undergone in obtaining their position. The second group, the former shirkat managers, was interviewed mainly on two issues: (1) the criteria for becoming a shirkat manager, and (2) the reasons for a change of managers. The third group, the former shirkat managers in the two districts, was asked to map out the networks of the former and current shirkat managers with the district and province hakims.

The questions addressed highly political issues. It was not possible to ask former shirkat managers about the basis of the network structure as long as they were still 'within' the system. Only former managers who had left the system were relatively open to speak about the system and how it functions. Because of the sensitive topics, the participants were suspicious, and may not have answered the questions thoroughly and honestly in fear of their livelihood.

## 9.3 Background to case study

As a consequence of the break-up of the Soviet Union, Uzbekistan, a semi-arid country in Central Asia, gained independence in 1991. During the Soviet period, Uzbekistan's main income was based on agriculture. Uzbekistan was the largest cotton producer of the Soviet Union. After independence, the GDP of the former Soviet Republic was relatively stable compared to the other Central Asian states. Nevertheless, in 1998 the GDP was 80 percent of the 1989 level. "The economic crisis in the region has placed even greater importance on agriculture, which has been and continues to be the mainstay of the economy" (O'Hara 2000:367).

Because Uzbekistan is a semi-arid country, having access to water resources plays an important role in the political power and influence of different administrative units, such as in the two districts. The two districts chosen for the case study differ in terms of their access to water. The first district is adjacent to the Amu Darya river, whereas the second district is adjacent to the desert and receives its water resources through inter-district canals. Whereas the first district is considered to be politically powerful[23], the second district does not stand out politically in Khorezm Province.

Rasanayagam (2002:63) shows for his case study in a village in Ferghana Valley in Uzbekistan that local networks (in the case of a *gap*[24]) can consist of different participants, such as "work colleagues, relatives, classmates from university or school". These networks can be classified as strong network ties. According to Krackhardt (1992), the strength of a network tie is based on interaction, affection, and time. Rasanayagam emphasizes that the social unit of the mobilized network is contextually determined by shared interest. This would imply that the utilization of social networks is dynamic and purpose bound. It seems that, according to Rasanayagam's reasoning, the network is based on a stable group of participants, which become active in the network for a particular project.

Kuehnast and Dudwick (2004:4) emphasize the importance of money for network dynamics. They argue for Kyrgyzstan that "money has become a key means of establishing and mobilising networks". They argue that, even among kin, transactions of the non-poor increasingly involve money. Tichy et al. (1979) distinguish between four categories of 'transaction content': exchange of affect (liking, friendship), exchange of influence and power, exchange of information, and exchange of goods and services. One could argue that a network would be stronger if it were based on more than one transactional content. This could imply that networks that are based on belongingness to the social unit alone are not as often mobilized and maybe not as stable as networks that are based on

[23] In interviews, access to water was confirmed as being important. Access to water gives the opportunity to grow higher value crops, such as rice, which can be sold at the local bazaar.

[24] *Gap* is an Uzbek word meaning a situation where people come together and pool money for example.

belongingness plus additional money transactions. Kuehnast and Dudwick (2004:4) argue that money has aided the non-poor, "who can more easily deploy financial resources to bypass traditional or well-established networks". This would become especially important in a dynamic environment with frequent changes at the top level of the provincial hierarchy.

A different dimension is added by Simmel (1950), who argues that triads (having two network links) are stronger than dyads (having one network link). He argues that conflicts between network participants are more easily managed and resolved in a triad. If triads are stronger than dyads, would that also imply that an individual with a triad network connection has a stronger position than a person with a dyad network position?

The different approaches to the strength of networks are applied to explain networks and network dynamics of former state or collective farm managers in two districts in Khorezm Province. The distinction between different transaction contents is important because it explains the basis of the link between the managers and the hakims.[25] The first district has 11 shirkat farms; the second district has nine. To learn about the foundation of the linkages, former shirkat managers were asked about determinants for the position of manager.

## 9.4 How to become a shirkat manager?

According to the law, it is the shirkat employees who decide who will get the position of manager. However, "we can see some weaknesses in the transformation process of shirkat units into farmer units. In certain regions election for heads of farmer units is not carried out honestly. Getting one's position by using relations and bribery are common and instead of experienced local people, inexperienced outsiders are allocated the land" (Assembly of State Commission 2003). All former shirkat managers (22 in all) replied that it is the hakim who makes the decision on the position. This was confirmed by the current shirkat managers in the two districts. They stated that the hakim had had to recommend them; otherwise they would not have been able to occupy the position of shirkat manager. Of the 22 former shirkat managers in the whole of Khorezm Province, all stated that money is involved in the decision-making process as to who becomes a shirkat manager. Eighteen stated that networks are important to get the position. According to these interviewees, networks are based on family and friendship relationships, and the price to become a shirkat manager varies according to the relationship with the hakim. Family and friends pay less. Skills were only mentioned nine times, of which six times it was pointed out that they are important together with networks and money. Three

[25] The data for the two districts show that the linkages between the province and district hakims are friendship ties based on common work experiences.

interviewees stated that skills do not count to obtain the position.[26] The answers of the former shirkat managers show that strong ties (family and friends) are necessary to get the position. Overall, it was not possible to get one general answer to the question of whether family or friendship networks are stronger, or on what friendship ties are based. The most convincing answer was that "it depends on the character of the Hakim, which network he utilizes, either family, friends or colleagues". However, family ties are more obvious and easy to trace. Therefore it could be the strategy of the hakims to place friends rather than relatives. In addition, appointing friends or former colleagues has the advantage that the hakim can estimate the expected work performance.

It seems that in Khorezm Province the transactional content of the network is based on exchange of goods and services more than on exchange of affect. Hence, money transactions seem to dominate the decision-making process more than family and friendship ties. However, the case study data clearly indicate that family and friendship ties are important. It was possible to trace 75 network links of 55 (total 69) shirkat managers. Network links could not be determined for mainly the managers who had secured their position before or immediately after independence. At least in the case study area, the data suggest that network links are more important than money. On the other hand, respondents also stated that family and friendship ties influence the amount of goods and services that are required for the position.

The network flowcharts presented in Figure 9-1 and Figure 9-2 give an indication of the network structures in the two districts. Each arrow represents an identified strong tie between either province or district hakim and shirkat manager.[27] Strong ties between shirkat managers, and between shirkat managers and hakims in other districts or other power stakeholders, are not included in the flowchart. However, they are included in the tables analyzing the networks. A comparison of the two flowcharts reveals that in the first district there are more links between the province hakims and the shirkat managers, whereas in the second district there are more links between the district hakims and the shirkat managers. The greater influence of the province hakim on the placement of the shirkat managers in the first district may have at least two explanations. Firstly, as stated before, the first district is close to the Amu Darya and therefore economically (more irrigated agriculture, and therefore higher production of

[26] However, in the two districts the current shirkat farm managers were either engineers (seven), accountants (five), hydrologists (one) or agronomists (six). Hence, all of them were skilled, but not necessarily in an agriculture-related field. One should ask what qualifications should a manager have: formal education in an agriculture-related field or management skills?

[27] In the flow charts, the shirkats in each of the upstream and downstream districts are represented by Roman numbers from I to XI and I to IX, respectively. In the first district, shirkat managers are represented by letters from A01 to A30, province hakims by X1 to X3, district hakims by Z1 and Z4. In the second district, shirkat managers are represented by letters from B01 to B36, province hakims by X1 to X3, district hakims by Y1 and Y3.

cotton and rice) and politically more powerful. The second and probably the more important reason is that the third province hakim was born in one of the shirkats of the first district. He had previously been hakim in this district in 1996-97. Hence his personal network in the district is extensive.

Table 9-1 structures the flowcharts according to the shirkat manager's time in office and number of network links. The structure distinguishes between relative or friend on the province, district, or shirkat level and the general category, 'outside support', which refers to either relatives or friends of hakims in different districts. The table indicates that the category 'friend to the district hakim' has the most counts, followed by the category 'friend to the province hakim'. Only a total of 13 family ties (17.3 percent) between shirkat manager and district or province hakim in the two districts could be identified. As the data suggest, a shirkat manager's family tie to either province or district hakims seems to offer less stability in terms of retaining the position than a friendship tie. A family tie to the province level was only able to help a shirkat manager remain in that position for up to three years, whereas a family tie to a district hakim provided staying power for up to six years. However, while the province level family tie came mainly as a single link, three out of the eight district level family ties had a second strong network tie (twice friend to the province level, and once outside support). In addition, it seems that the network link to outsiders offered the most stability when it could be utilized not as single but as a second network tie. Given that the province and district hakims changed in the period from 1991 to 2003 three and four times, respectively, the shirkat managers who held their positions for the longest time utilized two network links: firstly, a friendship tie to the province level and, secondly, a network link to outsiders. It seems evident that one network link to the province or district level cannot offer long-term stability. This is especially the case in an environment such as Uzbekistan in which the positions of the province and district hakims are insecure, and the province hakims are continually changed, replaced, and rotated in order to break down the influence of networks.

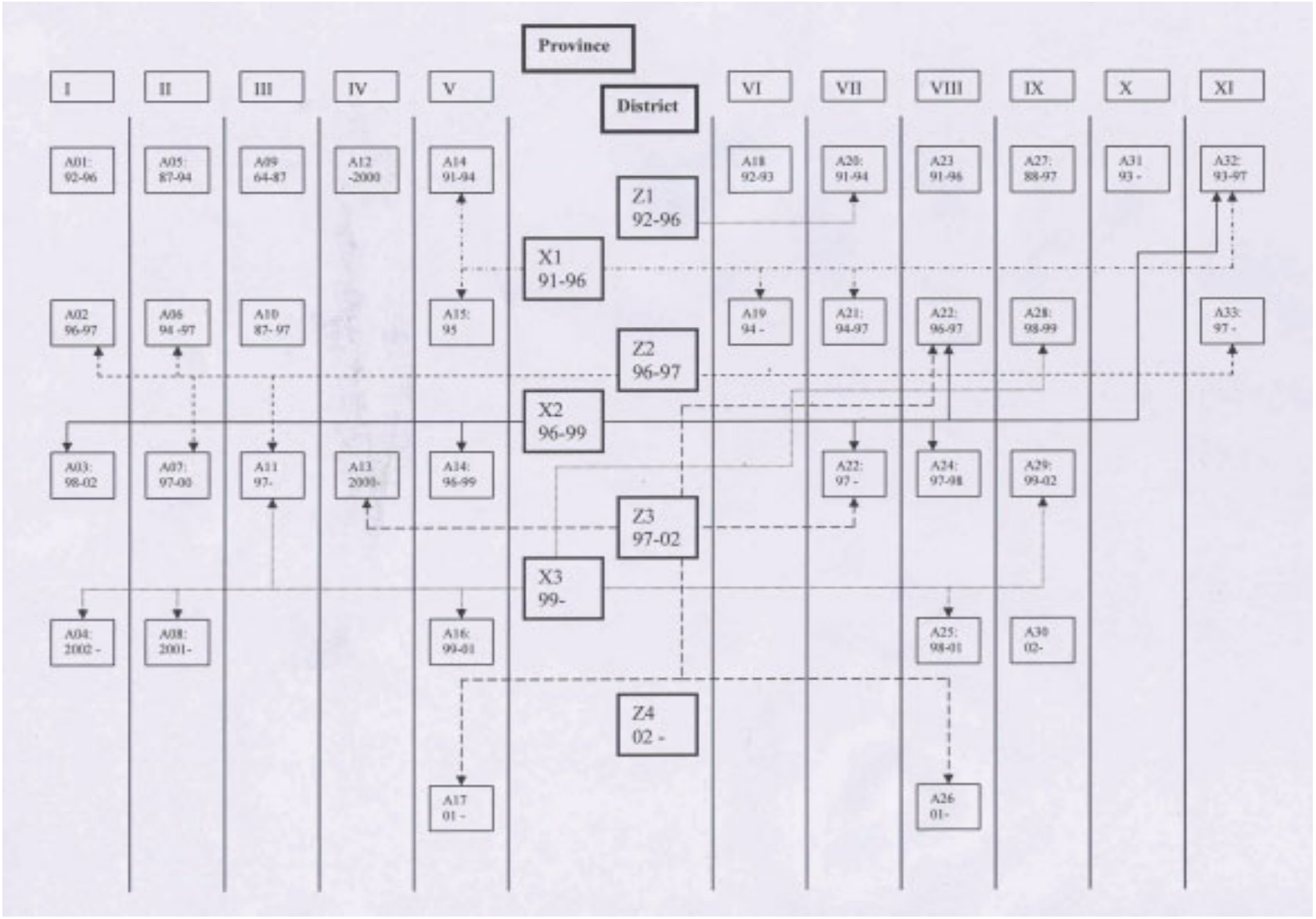



**Figure 9-1: Network links in the first district**

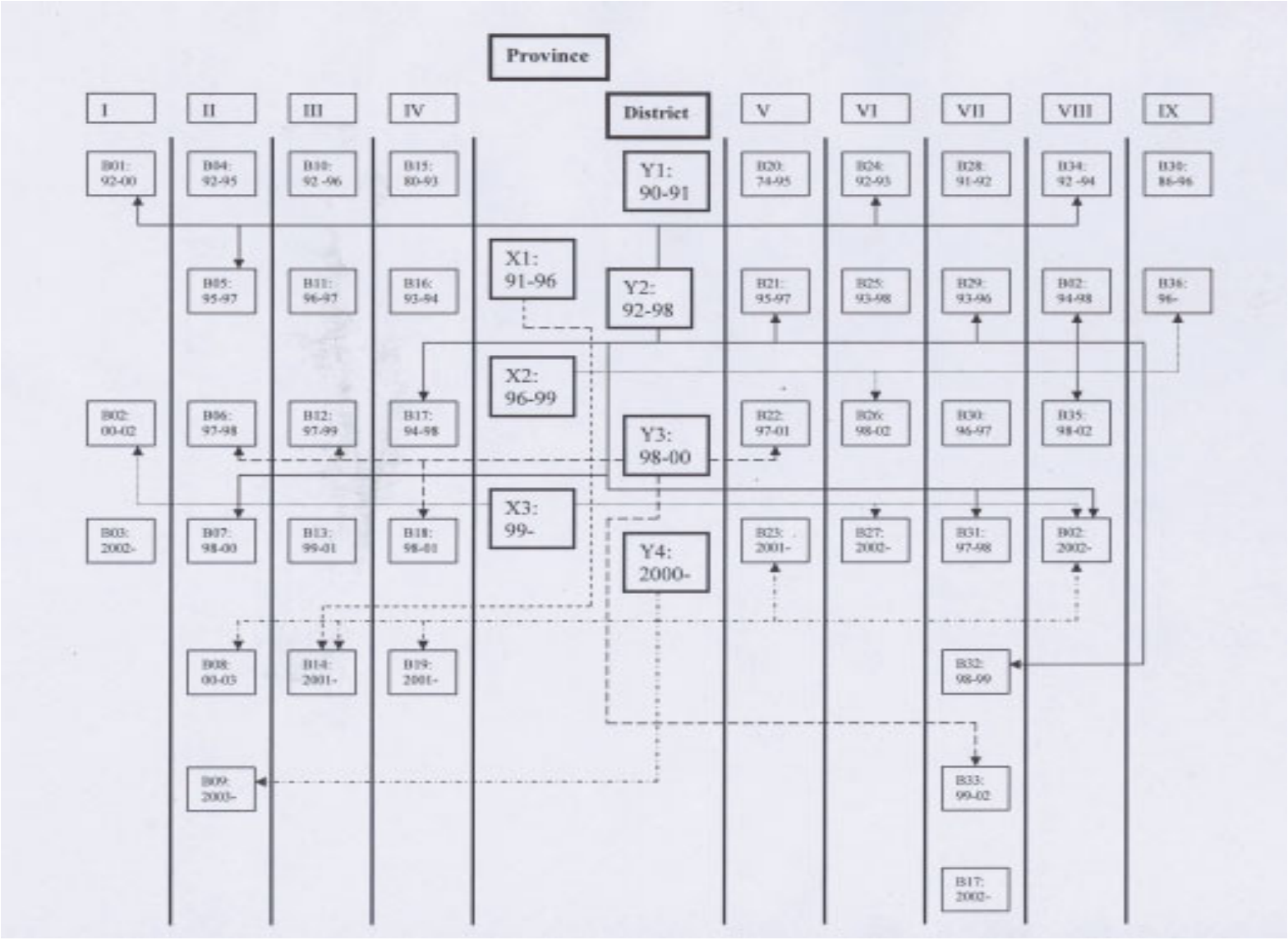



**Figure 9-2: Network links in the second district**

**Table 9-1: Analysis of the network links**

| Number of years in nosition | Number of network links | Shirkat manager | Relative province | Friend province | Relative district | Friend district | Relative shirkat | Friend shirkat | Outside support | Total identified links | Percent of network according to number of linkages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | **1** | 10 | 2 | 4 | 0 | 2 | 1 | 1 | 0 | 10 | 26.3 |
| **1** | **2** | 2 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 4 | 14.3 |
| **1** | **3** | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 33.3 |
| **2** | **1** | 10 | 1 | 1 | 2 | 4 | 1 | 1 | 0 | 10 | 26.3 |
| **2** | **2** | 4 | 0 | 0 | 0 | 4 | 1 | 3 | 0 | 8 | 28.6 |
| **2** | **3** | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | 33.3 |
| **3** | **1** | 11 | 2 | 3 | 2 | 4 | 0 | 0 | 0 | 11 | 29.0 |
| **3** | **2** | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 4 | 14.3 |
| **3** | **3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **4** | **1** | 5 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 5 | 13.2 |
| **4** | **2** | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 4 | 14.3 |
| **4** | **3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **6** | **1** | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.6 |
| **6** | **2** | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 7.1 |
| **6** | **3** | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 33.3 |
| **7** | **1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **7** | **2** | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 7.1 |
| **7** | **3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **8** | **1** | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2.6 |
| **8** | **2** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **8** | **3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **10** | **1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| **10** | **2** | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 14.3 |
| **10** | **3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Total | | 55 | 5 | 20 | 8 | 25 | 4 | 8 | 5 | 75 | |
| % | | | 6.7 | 26.7 | 10.7 | 33.3 | 5.3 | 10.7 | 6.7 | 100 | |

The data in Table 9-1 show that the number of individuals who were identified as having only one network link is considerably higher than the number of individuals with either two or more network links. The table shows also that the two individuals who held their position for the longest period (ten years) had two network links. This could be an indication that individuals with two network links are more stable in their position than individuals with only one network link. The data also seem to confirm that the difference between two

or three network links does not increase the stability of the individual's position. However, the data in the last column of Table 9-1 seem to suggest that there is no obvious link between number of network links and the time a shirkat manager holds his/her position. The bulk of shirkat managers (87.2 percent) left their position after four years.

While 94.8 percent of shirkat managers who had only one network link left their position after four years, only 71.4 percent of shirkat managers with two network links and only 66.7 percent of shirkat managers with three network links had to leave their position after the same amount of time. Hence, it seems that the likelihood of staying in the position increases with the number of networks. The result would confirm that two network links are stronger than one network link, but also, depending on the number of years considered that having three network links is even stronger than having two network links.

A shortcoming of the collected data is that they do not incorporate any information about what happened to the shirkat manager on leaving the position; for example, was the shirkat manager promoted or demoted? Three examples are presented here to underline the dynamics of holding the position: 1) B17 in the second district was shirkat manager for four years, after which time he was promoted to work in the Hakimyat, and even became hakim (Y3) for two years, before he was demoted again to become shirkat manager in a different shirkat. 2) After working for four years (94-98) in shirkat VIII in the second district, B02 was promoted and worked for two years in the Khorezm Province agro-technical department. In 2000 he was demoted to become manager in shirkat I, and in 2002 transferred back to shirkat VIII, the same shirkat in which he started. 3) A6, who has two family network ties to Z2 and to a powerful outsider, was replaced after three years by a person who had only a friendship network tie with Z2. A6 lost his position but was promoted and became hakim in a different district. Furthermore, the tables do not indicate the closeness of the tie, such as family. An example in the first district shows that there can be great variations hidden under this classification. A14, who is a relative of X1, was replaced by a closer relative (the daughter of X1 married the brother of A15). As soon as X1 lost his position to X2, X2 replaced A15 and chose A14 for the position again. These details emphasize that the tables reflect only a selected reality.

## 9.5 Losing the position

Of the 22 former shirkat managers of Khorezm Province, 14 were asked about the reasons for losing the shirkat manager position. Eleven of the former shirkat managers stated that a new hakim changes the managers of the shirkats. The answers of the three former managers who did not say that a change of hakims triggers a change of managers were: "Managers change even more frequently than hakims. The changes are not necessarily related"; "Managers stay in their position if they are good"; "The new hakim is happy with the shirkat managers,

as long as they pay and obey." When the question was asked as to how the reasons for the change could be explained, the answers differed: "The hakim is interested in his own security. A new and loyal management team offers security"; "The new hakim needs money".

Table 9-2 utilizes the data from the two districts to clarify whether the prejudice of 'new hakim, new manager' is justified. It displays the data for 49 shirkat managers of the two districts. According to the data, 22 (nearly 45 percent) shirkat managers lost their position within the same period as the district hakim under whom they became shirkat manager, and 21 (nearly 43 percent) shirkat managers lost their position in the same period as the province hakim under whom they became shirkat manager. As demonstrated in Table 9-2, there is a significant difference between the managers in the first and second group. The data presented also suggest that changes of shirkat managers are more frequent than changes of hakims, either on the district or province level. Hence, the prejudice of the 'new hakim, new manager' policy cannot be verified. However, 19 (about 39 percent) and 24 (about 49 percent) shirkat managers lost their position after a hakim change on the district or provincial level, respectively. Consequently, this result would support the common prejudice. However, the former shirkat managers referred explicitly to the district hakims when they uttered their prejudice. The data show that this prejudice holds more true for the province hakim than for the district hakim. What could be the reasons for the changes?

The statement about the new hakim's interest in his security implies that relatives and friends of one hakim (either province or district) may lose their position if the hakim loses his/her position and a new hakim takes power. As the data in Table 9-2 demonstrate, none of the relatives of a province hakim kept their positions in the period of the following hakim. As one could expect, all of the relatives of province hakims kept their position during the period of the reign of the province hakim to whom they were related. On the other hand, the network of friends was not particularly stable either. Six (out of 11) shirkat managers who were identified as having a friendship tie to the province hakim lost their positions during the time their friend (the province hakim) was in power, and four (out of 11) lost their positions within the period of the reign of the next province hakim. The example of the relatives and friends of one province hakim losing their position during the reign of the following province hakim confirms that the new province hakim is interested in his security, and he therefore changes the shirkat managers who belong to the network of the former province hakim. The results do not differ significantly in terms of security for the district level. Family members of one district hakim lose their position during the reign of the following district hakim. The analysis of the family network on the district level confirms that the new hakim is interested in his security and perceives a threat from the family network of the former district hakim. However, a minority of friends of the district hakims do not lose their

position during the reign of the next hakim. This could imply that the friends of the former hakim are not always considered as threats, and are able to stay on in their positions even though they belong to the network of the predecessor. This result would allow an interpretation such as stated above: "Managers stay in their position if they are good" or "The new hakim is happy with the shirkat managers, as long as they pay and obey." Unfortunately, the collected data give no information about the bribes given.

**Table 9-2: Losing the position structured according to network connection**

| Number of network links | Left position within same period as district hakim | Left position within period of 1 different district hakim | Left position within period of 2 different district hakims | Left position within period of 3 different district hakims | **total** | Left position within same period as province hakim | Left position within period of 1 different province hakim | Left position within period of 2 different province hakims | **total** |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 3 | 3 | 2 | 1 | **9** | 3 | 4 | 2 | **9** |
| 1 | 13 | 13 | 3 | 0 | **29** | 14 | 14 | 1 | **29** |
| 2 | 5 | 3 | 2 | 0 | **10** | 4 | 5 | 1 | **10** |
| 3 | 1 | 0 | 0 | 0 | **1** | 0 | 1 | 0 | **1** |
| **Total** | **22** | **19** | **7** | **1** | **49** | **21** | **24** | **4** | **49** |
| Network link | | | | | | | | | |
| Relative province | 2 | 2 | 0 | 0 | **4** | 0 | 4 | 0 | **4** |
| Friend province | 3 | 5 | 3 | 0 | **11** | 6 | 4 | 1 | **11** |
| Relative district | 2 | 3 | 0 | 0 | **5** | 4 | 1 | 0 | **5** |
| Friend district | 10 | 4 | 2 | 0 | **16** | 5 | 10 | 1 | **16** |
| Relative shirkat | 0 | 1 | 0 | 0 | **1** | 1 | 0 | 0 | **1** |
| Friend shirkat | 1 | 0 | 0 | 0 | **1** | 1 | 0 | 0 | **1** |
| Outside support | 1 | 1 | 0 | 0 | **2** | 1 | 1 | 0 | **2** |
| No network identified | 3 | 3 | 2 | 1 | **9** | 3 | 4 | 2 | **9** |
| **Total** | **22** | **19** | **7** | **1** | **49** | **21** | **24** | **4** | **49** |
| % | 44.9 | 38.8 | 14.3 | 2.0 | **100** | 42.9 | 49.0 | 8.2 | **100** |

There is one significant difference between the networks on the district level and the networks on the province level. On the district level, family members of the hakim sometimes lose their position during the reign of their own relative. (However, the data in the tables do not distinguish between whether the shirkat managers who lost their positions were demoted or promoted.) By referring back to the original notes collected from the shirkat managers in the two districts, it is possible to clarify why two relatives of one district hakim lost their positions

during the reign of their own relative. The first shirkat manager was promoted and became hakim in a different district. The other shirkat manager just seems to have been replaced by a friend of the province hakim. This replacement suggests that there is a power play between the networks of the district hakim and those of the province hakim. The fact that none of the relatives of the province hakims lost their positions during the reign of their relative seems to suggest that the network tie 'relative to the province hakim' offers more security than the network tie 'relative to the district hakim'.

The situation with the friendship network tie to the district hakims is similar to the friendship network tie to the province hakim. In the former situation, the majority of friends (10 out of 16) lost their positions during the reign of their own friend. However, only four of these shirkat managers lost their position during the reign of the same district and province hakim. The reasons why they lost their position are: poor performance, illness, or promotion. The situation is similar for the two shirkat managers who had friendship network ties to the province level and who were let go during the reign of the same district and province hakim. The reasons why they lost their positions are: poor performance and displacement. This evidence shows that a friendship tie to a hakim does not necessarily protect a shirkat manager who cannot perform. However, the tables do not give any information about shirkat managers who could not perform in their position, but kept their position because of friendship networks. That these cases existed was stated by the former shirkat managers of the second district. Hence, the term friendship tie seems to need a further differentiation in order to be able to distinguish between weak and strong friendship ties.

Evidence from the case study indicates that there is a power struggle between the networks of the province hakims and the networks of the district hakims. The data suggest that the district and the province levels are more or less equal in terms of utilizing their influence to place their networks and to remove the networks of the other level. In addition, an interesting result is presented in Table 9-2. It appears that having no network (or rather no identified network) seems to give more stability to the shirkat manager than belonging to a network at all. There could be two reasons for these cases: first, the appointment was solely based on money and therefore stable; secondly, the person is a technocrat and, because of good performance, able to stay in the position. In both cases these shirkat managers are not a threat to the new hakim. With reference to the statements of the former shirkat managers in the whole of Khorezm, it seems to be unlikely that a pure technocrat would stay in his position for a long period. Hence, it is more likely that the link has not been determined or that the appointment was based on money. However, the data also show that shirkat managers with no identified network are in the minority. Hence, obtaining the position of shirkat manager is easier when one has a network. However, having a network reduces the time spent in office.

## 9.6 Conclusion

The first part of the case study confirms the theory on network ties and the strength of triads compared to single network links (dyads). However, in general, it is not a second network tie but a network tie to a strong stakeholder that seems to be the key to explaining the staying in power of shirkat managers. Hence, for this case study, the theory on the strength of triads has to be combined with a concept of the power of the stakeholders who belong to the network. As the data in Table 9-1 show dyads to one strong stakeholder (district or province hakim) and one weak stakeholder (other shirkat manager) do not guarantee the stability of the position. However, two network links to two strong stakeholders (district or province hakim and strong outside support) seem to guarantee a longer tenure. Combining this result with the argument on security in the second part of the case study, it seems that leaving a shirkat manager with a network tie to a strong stakeholder in his position offers more security for the new hakim than removing the shirkat manager.

Using a network approach to analyze the frequent changes of the shirkat managers facilitated a better understanding of the dynamics in the transitional economy of Uzbekistan. It demonstrated the importance of family and friendship networks during the current time of transformation from Soviet Republic to independent state. However, having no network link ties or network ties to outsiders seems to provide more security of tenure. Given the statements of the former shirkat managers about the influence of financial transactions, the data seem to confirm the importance of money for securing a position. This confirms the conclusions of Kuehnast and Dudwick, (2004) that money as transactional content is more important than family and friendship ties.

The evidence of the case study demonstrates the utilization of networks for the positioning of relatives and friends in public offices. Hence, it seems to underline the necessity of the president's policy of rotating and continually changing hakims and placing hakims in provinces that are alien to their origin. However, if one looks at the official salary for a hakim or for any other public position (teacher, nurse, doctor, or lecturer), it seems obvious that people in public positions could not survive on the official salary, and therefore are dependent on additional incomes. In addition, rotating the hakims as frequently as under the current policy begs the question as to whether the rotation will not destabilize Uzbekistan more than the utilization of networks. Furthermore, one has to question the reason for the rotation of hakims. Is it because they utilize networks, or is it because they build up a power base and therefore become in the long-run too powerful, and could become a threat to the president himself?

# 10 Furthering inequality through land reforms in Yangibazar District, Uzbekistan [28]

## 10.1 Introduction

Uzbekistan gained independence from the Soviet Union in 1991 along with the other Central Asian states. Whereas Kyrgyzstan and Kazakhstan opted for privatizations through a system of shares for former state and collective farm employees, Uzbekistan opted for land privatization that privileged the former elite in the collective farms over those who were farm employees, and therefore increased inequality in the rural sector.

This chapter focuses on recent land reforms in Yangibazar District, Khorezm Province, Uzbekistan (Map 10-1). Whereas previous land reforms mainly privatized the fringes of the former state and collective farms (*shirkats*), in Yangibazar all shirkats were privatized and land distribution took place. In previous land reforms it was often claimed that former main stakeholders from higher levels received land; this was mainly backed up with anecdotal evidence. However, it is unclear whether during the recent land reforms this was also the case, and, furthermore, it is just questionable, if all collective farms were privatized, whether there would be so much influence from inside and outside power stakeholders.

The field work for this research was conducted in the period from October 2003 to May 2004. Although the data collection took only one month at the end of the period, the process of trust building within the Farmer and Dekhan Association (FDA) in Khorezm took seven months. Without this long period of working with the staff of the FDA, insights would not have been gained and data gathering would not have been possible. In addition to the information collected through the FDA, a survey was conducted in two former collective farms in Yangibazar District. In total, 100 people were interviewed, of which 42 were *dekhans* (households with small plots), 11 *pudrats* (contract workers), 24 garden owners, and 23 farmers. In the survey, questions were asked about the information received about the land reforms, the process of receiving land, and general questions about perceptions of the privatization process.

The chapter continues with a brief outline of the livelihood approach with its six capitals, which is utilized to analyze the process and the outcome of the privatization. It continues with a brief background on the agricultural sector in Uzbekistan and previous reforms. This is followed by a section on the privatization process and a section on perceptions of the process and on the

[28] *Journal of Central Asian Studies* (accepted).

outcomes of the reforms. The chapter concludes, first, that the privatization process alienated the rural poor from the start and, secondly, that the privatization manifested or even increased the existing rural power relationships, thereby polarizing and perhaps further destabilizing the rural sector.

## 10.2 Livelihood approach and six capitals

The livelihood approach originally considered five assets of the household: financial, human, natural, physical, and social capital. Later, a sixth capital was added, political capital (Baumann and Sinha 2001). Utilizing the livelihood approach has the advantage that it is possible to identify different assets of stakeholders. In the case of the privatization process, the livelihood approach is particularly useful, because the land reforms officially targeted individuals with high human capital, in the form of education, specialization, and duration of service at the shirkat. However, unofficially, financial and physical capital were the primary reasons for receiving land. In addition, social and political capital were also utilized to receive land.

The different capitals cannot stand by themselves, and each capital has to be interpreted in the context of the other capitals. This would also imply that a development policy has to be evaluated in terms of its overall impact on all the capitals. Ratna Reddy et al. (2004) distinguish between a strong and a weak sustainable rural livelihood (SRL). “Improvement in all the capitals, and less dependence on vulnerable activities or strategies, could be termed ‘strong SRL’, while improvement in some of the capitals should at least compensate for any decline in other capitals and high dependency on vulnerable strategies, which could be termed ‘weak SRL’” (Ratna Reddy et al. 2004:300).

## 10.3 Background to land reforms and agricultural producers in Uzbekistan

In 1991, two different types of farm existed in Uzbekistan: 971 collective farms and 1,137 state farms. Together they covered 4.2 million hectares of irrigated area. In 1992 and 1993 land privatization in Uzbekistan started. However, the evaluation of available data indicates that the main emphasis of the government was the transformation of the state farms into different economic institutions. In 1993 nearly all of the state farms (95 percent) were transformed into joint stock companies, co-operatives, or collectives. These different economic units continued to function like the former collective farms. The government continued to control them through a command administrative system. By 1996, the number of collective farms had increased from 971 to 1,374. During the reform, only a few farmers became independent. Opinion of these reforms differs substantially, and some argue that land privatization was utilized to reinforce the position of the powerful. For example, Spoor (1995:53) reasons that “with the system of allotting land through the powerful [collective farm managers and governors], vested private interests in the public sector promote

land to the benefit of the nomenklatura". On the other hand, many independent farmers complained about their allocated plots. Eckert and Elwert (2000:18) emphasize that farmers were receiving land of bad quality. Farmers had not only to farm the most unproductive land, "they also had to travel up to fifteen kilometers to reach their plots". Their statement is confirmed by Egamberdi et al. (n.d.:241), who argue that collective farms managers "have also used their clout to push most private farmers onto less desirable, unirrigated lands".

One of the lessons learned from the first reform is that newly independent farmers expressed "a lack of experience in management, accounting, generally in small scale agriculture and specific agricultural questions which formerly were delegated to specialists employed" by the collective farms (Eckert and Elwert 2000:16). In some districts in Khorezm, the FDA opened accounting centers for facilitation of newly independent farmers and even offered legal advice to farmers. The inexperience of the newly independent farmers with management issues could be one of the reasons why in the recent reform more emphasis was placed on education and specialization as a basis for receiving land.

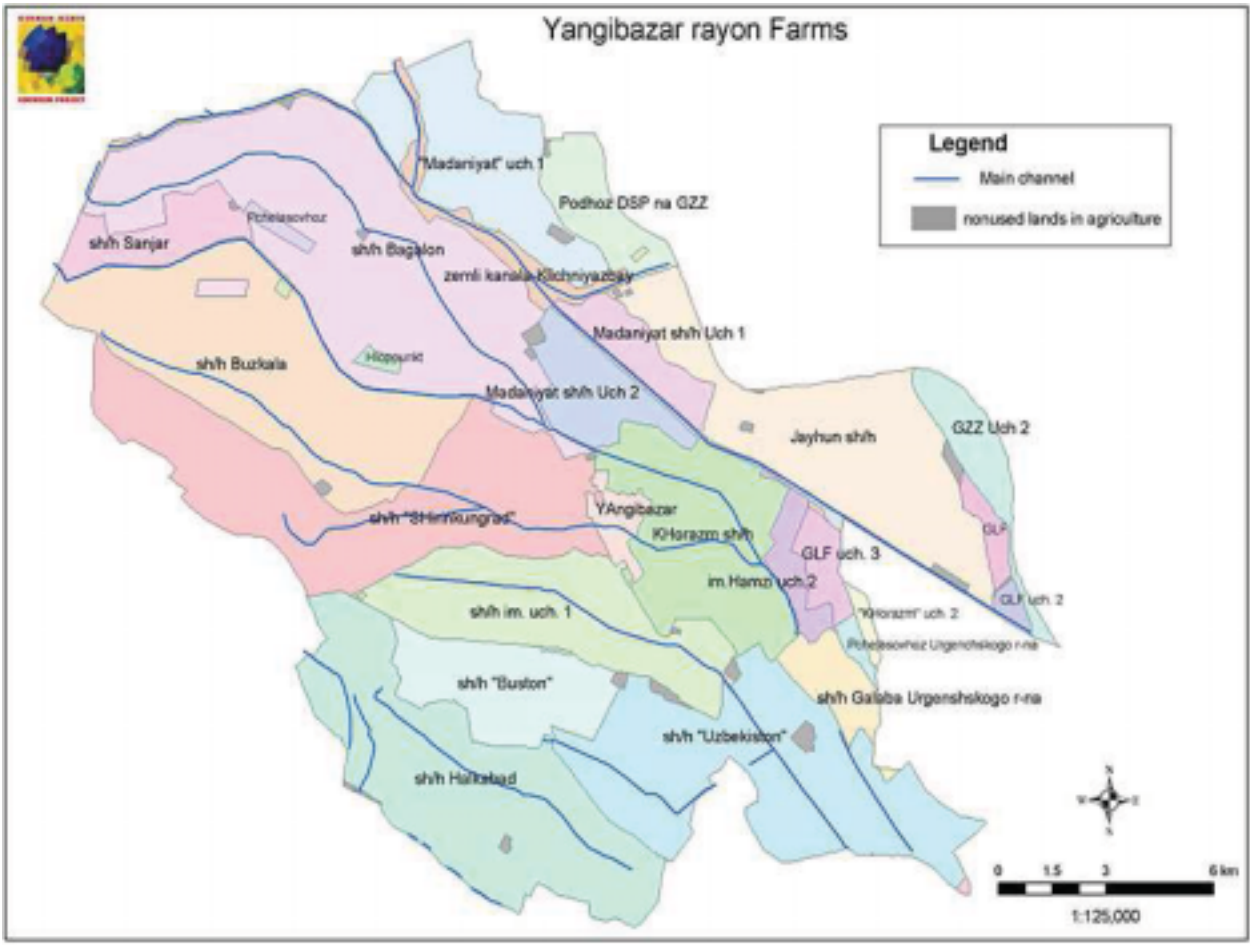
Djanibekov (2005) distinguishes between four different agricultural producers in rural Khorezm: shirkats, private farms, pudrats and dekhans. At the beginning of 2003, Khorezm Province had 116 shirkats with an average size of 1,445 hectares of arable land. The established private farms are still subject to the state-order system for production of cotton and wheat. According to Spoor (2005), the system of pudrats (family contraction on shirkat farms) was already introduced in the late 1980s and replaced the brigades on the shirkats. Pudrats can be classified neither as tenants nor as share-croppers, but are contractual workers responsible for agricultural production on designated plots. Unlike tenants and share-croppers, the shirkat, or today the private farmer, provides all the inputs, and the pudrat delivers the harvest. Although the income of the pudrat should be in cash, in reality it is in kind, with the additional possibility for the pudrat to grow any second crop in the period when the land is not being used (Djanibekov e-mail discussion 21.08.2005). Djanibekov (2005:3) estimates that in Khorezm "shirkats employed 12 percent of the rural households through pudrat contracts". The introduction of the pudrat system did not change the hierarchical structure within the shirkat. Djanibekov states that key personnel are still responsible for the monitoring of pudrat groups. These are referred to either as *bosh pudratchi* (main pudrat worker; chief pudrat worker), or as *brigadani boshligi* (head of brigade)." (Djanibekov e-mail discussion 24.08.2005) Dekhans are rural households with small agricultural plots. In Khorezm Province, two thirds of the rural households have plots with an average size of 0.19 ha. (Djanibekov 2005:4).

If Djanibekov's calculation is correct and only approximately 12 percent of rural households work in Khorezm as pudrats, it is very questionable whether and how the majority of the rural population is employed. According to FDA

statements, rural unemployment is very high, and illegal work migration to Kazakhstan and Russia is soaring (informal interview with FDA discussion group). In this sense, equitable land distribution through the privatization of shirkats to all shirkat inhabitants could increase the livelihood of the rural poor and therefore could lead to more stability in the rural areas.


**Map 10-1: Khorezm Province**

*Source*: Ruzieva, ZEF GIS expert, German Uzbekistan project




**Map 10-2: Shirkats in Yangibazar District**

*Source*: Map provided by GIS centre, ZEF Khorezm

## 10.4 Shirkat privatization in Yangibazar District/Khorezm Province

While until 2002 in each district only a few shirkat farms had been privatized, by the beginning of 2003 in Yangibazar District in Khorezm all shirkats (Map 10-2) were abolished. Former farm employees from the shirkats, who wanted to be independent farmers, had to apply formally for agricultural land on their farm. According to the regulations, the agricultural land was supposed to be given first only to inhabitants of the shirkat, and secondly only to applicants with promising characteristics, these included a certain age, the available work force of the household, level of education, kind of specialization, financial capital, and physical capital (see Appendix). A scale for each of these characteristics was established, the higher the scoring on these scales, the higher the chances of the applicant receiving the land in the competition. In addition, the application had to include a business plan. The business plan was not a detailed plan, but more a promise of the future independent farmer to be profitable. Finally, applicants were supposed to have their knowledge tested. According to the FDA, the test was only on agriculture. Information about the

structure of the test, and how many points were given for different levels, as well as a standard business plan, were supposed to be made public prior to the privatization.

The results of the survey showed that, even though all of the interviewees knew about the land reform, more than half of the dekhans, pudrats, and new gardeners stated that they did not have information on the criteria for the application process. Of the 42 dekhans questioned, only 16 stated that they received information about the necessary criteria. According to these 16, the former shirkat manager provided information on the criteria at a public meeting. In addition, information was also publicized on posters in the shirkat building. Some other dekhans were aware of the criteria through communication with their neighbors, but they did not know the details. This lack of knowledge could have two implications. First, even though information on the privatization of the shirkat was widely publicized in the shirkat, the information on the application process was not publicized that widely, or was even restricted to a certain circle. At least this suspicion was mentioned; one dekhan stated that "only the former farmers were informed about the criteria" (No. 95). Secondly, but somehow hard to believe, maybe the dekhans and pudrats thought that this information was not relevant for them and therefore did not pay attention. Again one dekhan mentioned this case: "I did not hear about the criteria because I was not interested" (No. 80). Dekhans who knew about the criteria had different perceptions about the time the information was publicized. This was the case for two dekhans from the same village. One dekhan stated: "The criteria were presented on posters and ten days in advance application forms were introduced" (No.72); however, another dekhan stated: "The criteria were announced two months after the farms were organized" (No.70). What appears strange is that, even though the privatization was about to change the rural setting and directly affect the local community, information on the privatization process was scarce.

According to the official criteria and the marking scheme, there was emphasis on specialization, service in the shirkat, and education; the possession of technical equipment did not merit high scores, with the exception of double or triple counting. However, 14 out of 16 dekhans who claimed to have been informed about the criteria stated as main criterion 'the possession of agricultural machinery', the second criterion, which was mentioned five times, was 'having a settlement account'. One could argue that these are items that dekhans do not have, and maybe therefore they emphasized these criteria more than 'education' and 'specialization'. On the other hand, dekhans might not have scored high on 'education' and 'specialization' either. The perception that 'the possession of agricultural machinery' counted more than 'education' and 'specialization' was also shared by the new independent farmers. Eleven out of 22 mentioned first the possession of machinery, and education together with available work force (each five) was only in second position. However, having

an available work force at household level seems to be a criterion that dekhans as well as farmers could fulfill equally. In total, the farmers mentioned having machinery 21 times and having financial assets 14 times. Farmers distinguished between education and specialization, as they were also distinguished in the official announcement; these were mentioned in total only ten and 12 times, respectively. The emphasis on 'agricultural machinery' and 'financial assets' suggests that there is a difference between the publicized and actual importance of criteria. However, it seems that both groups (dekhans and farmers) had the same perception of which criteria mattered in applying for land: physical and financial capital, rather than human capital. It is interesting that the criterion 'record of service' was not mentioned at all. This is especially noteworthy, because shirkat managers and their key staff change frequently (see Chapter 9). Administrative staff could score high in terms of specialization, but would score lower in terms of record of service. On the other hand, ordinary farm workers could have scored high.

That the ownership of machinery mattered might be understandable; however, this raises the question of how former administrative workers in shirkats were able to obtain agricultural machinery. Djanibekov gives three possible explanations for how agricultural machinery could have been obtained. First, the worsening situation of agricultural conditions in Karakalpakstan (a neighboring province of Khorezm) and in Turkmenistan led to the sale of light and medium plowing and transport tractors[29]. Secondly, in shirkats in Khorezm, some of the agricultural machinery was written off the official books and then sold[30], and thirdly, shirkats had to sell some of the old tractors in local auctions to decrease their debts (Djanibekov e-mail discussion 24.08.2005). However, that machinery was available on the formal or informal market does not explain why administrative employees of the shirkats would purchase agricultural machinery. One possible explanation could be that higher administrative officials in shirkats had informally private agricultural land, and therefore needed agricultural machinery.[31]

It is not evident that receiving gardens and vineyards was connected to the official application in terms of the criteria, business plan, and knowledge testing. Out of the 24 interviewed new gardeners, only nine were working as gardeners in the shirkats before. Thirteen had professions unrelated to gardening, such as teachers, warehouse head, craftsman, vet, accountant, hydraulic engineer, and mechanics. Even a student became garden owner. In terms of knowledge testing,

[29] In the case of Turkmenistan, the sale would have been illegal.

[30] In contradiction of this, however, in the Khorezm FDA accounting system the depreciation of assets was not accounted for, and old and dysfunctional assets were valued as new. It was the practice of FDA district branches to sell assets off, but to keep them officially on the account books.

[31] Previous research in Khorezm on network structures between governors and shirkat managers showed anecdotal evidence of this (see Chapter 9).

the majority of the new gardeners stated that knowledge was supposed to be tested, but that they did not participate in the test. Only two out of the 24 new garden owners stated that they were tested. In this case it appears strange, because the two tested new owners were previous shirkat gardeners. Hence, the testing seems to have been arbitrary. Instead of knowledge and experience of gardening (human capital), only financial capital mattered. All of the new garden and vineyard owners stated that they bought the land at auction. According to FDA staff, the gardens were sold because the trees were regarded as assets. However, officially the price of the gardens was fixed and determined by the level of debts of the shirkat (informal interview, FDA office, Yangibazar District). One gardener stated: "The auction was held twice, because some people refused to pay six million soum [approximately six thousand US dollars] instead of the two million soum [approximately two thousand US dollars] per hectare previously announced" (No.11). Hence the auction appears to have accentuated the importance of having financial resources, and sidelined the importance of the former gardeners' experience. A new farmer commented that everybody could get gardens: "If they had the opportunity; one or two former gardeners were not able to buy gardens" (No.75). The special position of the former high level administrative employees, in terms of having 'capitals', becomes evident with the ownership of gardens also. According to the interviewed gardeners, the owner of the largest garden was an accountant of the former shirkat. He bought 18.3 hectares of gardens at auction. Including the landholding of the accountant, the average landholding of the interviewed gardeners was 2.29 ha; excluding the accountant, it would have been 1.59 ha. That high administrative staff had the financial resources to buy gardens was also confirmed in the Yangibazar District FDA. In an interview with a key informant of FDA Yangibazar, it was stated that the largest gardens belonged today to the former managers of the shirkats (informal interview with FDA staff).

The competition for gardens was decided through auction. For the remaining agricultural land, which is still under state order, competition was also important. One farmer stated that "for every plot there were three competitors" (No. 3); another stated "there was very tough competition, there were 30 applicants for each land plot" (No. 47). Twenty-one out of the 23 new farmers stated that there was competition for land with high fertility and for land close to the irrigation systems. However, again there seems to be a difference of opinion, because two new farmers stated that there was no competition at all. Another difference is that the group of 21 stated that the commission made the final decision, whereas the remaining two stated that the land surveyor made the decision on land allocation. Of the group of 21, 17 claimed that the test decided the competition, whilst four emphasized the possession of machinery as the prime reason for land allocation.

Assuming that the test demonstrated fairness in the competition, one could presume that there was a standard test, which would have given equal opportunity to all of the applicants. However, the farmers' answers given during the survey showed that there was no standard test. Nearly all of the farmers gave different answers to the question "which questions were asked in the test". Hence, the questions asked in the test seemed to be arbitrary. The data suggest that certain general questions were asked when it was obvious that the applicant was not familiar with agriculture. A former builder (today owner of 28.1 hectares of land) stated that he was asked about "the land reforms, national agricultural policy, and the five principles of Karimov" (No. 46); a mechanical engineer stated that he was asked "about the duties of the farmer and how a farm should be organized" (No. 60). On the other hand, most of the new farmers had previously worked at higher administrative levels on the shirkats (either as accountants, economists, agronomists, mechanical, technical, or hydraulic engineers) and only a few had jobs that did not involve some training; arguably, the administrative staff do not necessarily understand agriculture. It appears even more strange that the two who had no job specialization before were the ones who stated that there was no competition. That there might have been some unofficial reasons for receiving land is suggested by a new farmer, who stated: "Everybody received land. Some people received land accidentally; 25 to 30 percent of them are quitting farming" (No. 14).

Even though one farmer stated that "those who received high scores on the test" received land, he also admitted that "the best land was sold" (No. 68). Another farmer stated: "those having money could receive as much of the land as they wanted" (No. 77). A third farmer did not state it directly, but when asked whether poor people could receive land, he argued: "the poor had no money to buy land" (No. 92). On the other hand, a farmer who did not state that the land was sold said that "during the land distribution bribes were taken" (No. 82). Hence, financial capital more than human capital seemed to be the reason for receiving land. Social capital was also utilized, but not always successfully. A farmer stated: "friendship links are always used" (No. 68), and another argued that the people with "knowledge of the land and friendship links received land" (No. 77). On the other hand, one farmer argued, when asked whether friendship and family ties mattered, that "even the chairman's brothers did not receive land" (No. 82), and another, who denied the importance of ties, explained that the "members of the commission on land distribution were from other districts" (No.53), therefore they would have been impartial. However, even the FDA in Yangibazar admitted that during the privatization process family and friendship ties were utilized. A key FDA informant, who was shown a table of all the new farmers of Buzkala and Bogolon shirkat, pointed to individual farmers and explained their family and friendship relations with power stakeholders. For example, in the Buzkala shirkat an ordinary worker who became owner of 53.6 ha was a close friend of the former shirkat manager. The former shirkat manager

himself got additional land (88 hectares) by allocating land to a farmer who is now only the owner on paper. Similarly in Bogolon shirkat, a close friend of the former manager, who had no experience in agriculture, received 26.8 ha, and a relative of the manager who was an ordinary worker received 28.9 ha. Lower administrative levels also had influence on land distribution. For example, two new farmers with 43.9 and 31.6 ha, respectively, who were ordinary workers before, received land on the basis that their fathers were heads of brigades on the shirkat. But even outsiders had influence; a new farmer, who lived in another shirkat and works in Yangibazar city received 26.2 ha, on the basis that he was a relative of the district governor (informal interview with key informant FDA Yangibazar). Hence, it appears that not only the amount of machinery and financial resources of applicants mattered but also their position in a network and political influence. It is questionable why there was competition for agricultural land and why farmers utilized their different 'capitals' to receive land. Because farmers are still obliged to grow cotton and wheat under state order and for state prices, farming is not really profitable. In addition, land rights are still not secure, and farmers can lose their land if they do not fulfill the state order in three consecutive years. Even though it appears to the outsider to be an uncertain investment, it seems that in an unstable environment, such as the wider transformation process, land is considered to be a more stable and secure asset.

## 10.5 Perception of the privatization and the new farmers

Of the 100 participants in the survey, 84 thought that the privatization process was fair, six thought it was unfair, and ten did not comment. However, the various groups gave different reasons as to why the privatization process was fair. Out of 59 interviewees who gave a reason why they thought the privatization process was fair, 28 stated that the test made it fair, 15 of whom were farmers. All gardeners stated that the auction made the privatization process fair.

To verify the question of fairness, the survey participants were also asked to rate the following statements in terms of 'yes', 'no', 'don't know': a) "Poor people had a good chance of receiving land", b) "The land distribution made the rich richer and the poor poorer". The results presented in Table 10-1 show that, even though a high number of interviewees perceived the land reform as fair, the majority of the interviewees thought that it increased the inequality of the rural inhabitants.

**Table 10-1: Perceptions on land reform**

| | "Poor people had a good chance of receiving land." | | | "The land distribution made the rich richer and the poor poorer." | | |
|---|---|---|---|---|---|---|
| | no | yes | don't know | no | yes | don't know |
| Dekhan | 34 | 7 | 1 | 13 | 27 | 2 |
| Gardener | 18 | 6 | 0 | 12 | 11 | 1 |
| Pudrat 0.5-10 | 8 | 3 | 0 | 3 | 7 | 1 |
| Farmer 10-20 | 2 | 3 | 0 | 2 | 3 | 0 |
| Farmer 20-40 | 7 | 6 | 0 | 8 | 4 | 1 |
| Farmer 40+ | 2 | 2 | 1 | 3 | 1 | 1 |
| Total | 71 | 27 | 2 | 41 | 53 | 6 |

The interviewees were also asked to give reasons for their answers. In relation to the first statement, most of the interviewees who answered 'no' explained that the poor had neither machinery nor 'opportunities' to receive land. With the second statement the interviewees were more hesitant, because the privatization process had happened only two years previously and because of other factors influencing farmers' profits. Hence, more answers were similar to the statement "this will be evident in some years" (No. 25). The reasons given were also linked to the perception of the new landowners. One interviewee stated: "This depends on personal abilities. Some people came from the cities, received land, but were not able to work on it; they became poor" (No. 45). Others stated: "The rich became poorer, due to the poor harvest in the previous year" (No. 23), and "Those who received the land started to go bankrupt" (No. 26). Other interviewees, who took into consideration that cotton is still under state order, consequently argued that "The profits are low" (No. 57) and "Cotton is unprofitable and it is not permitted to plant rice due to the water shortage" (No. 60).

All participants were asked, "If you had to group the new landowners into different categories, which one would you choose?" Out of 21 farmers who answered, 12 replied the ones who have machinery, and eight said the ones who understand the land. From the dekhan group, 28 replied the ones who have machinery, and 11 replied the ones who understand the land. The pudrat group differed in their perception from the other groups. Out of eight pudrats, seven said the ones who understand the land.

Although dekhans and pudrats were not asked about the working relationship with the new private farms, some wanted to comment on this topic. The following statements were given by interviewees from these two groups: "Even having such a chance [as applying for land] the poor can't work on the land; this is why we work for the farmer as slaves" (No. 62). "The poor work for the

farmers day and night, but don't get paid even a hundred thousand soum [approximately US$ 100] per year. The poor get fifty kilogram. This is enough to feed the family for two weeks only" (No. 100). "Of course, the poor work for the rich as slaves" (No. 88). "The poor work for the rich as slaves, the farmers pay the workers occasionally" (No. 85). "We are forced to work for the rich, we work day and night, but their payments are not enough for living" (No. 70). Even though the work on the shirkat offered only low and often late-paid wages, it offered formal and informal advantages to the dekhans and pudrats, and hence an economic and social security net (Ilkhamov 1998). It seems that this security net has disappeared with privatization, and the poor are today more economically vulnerable.

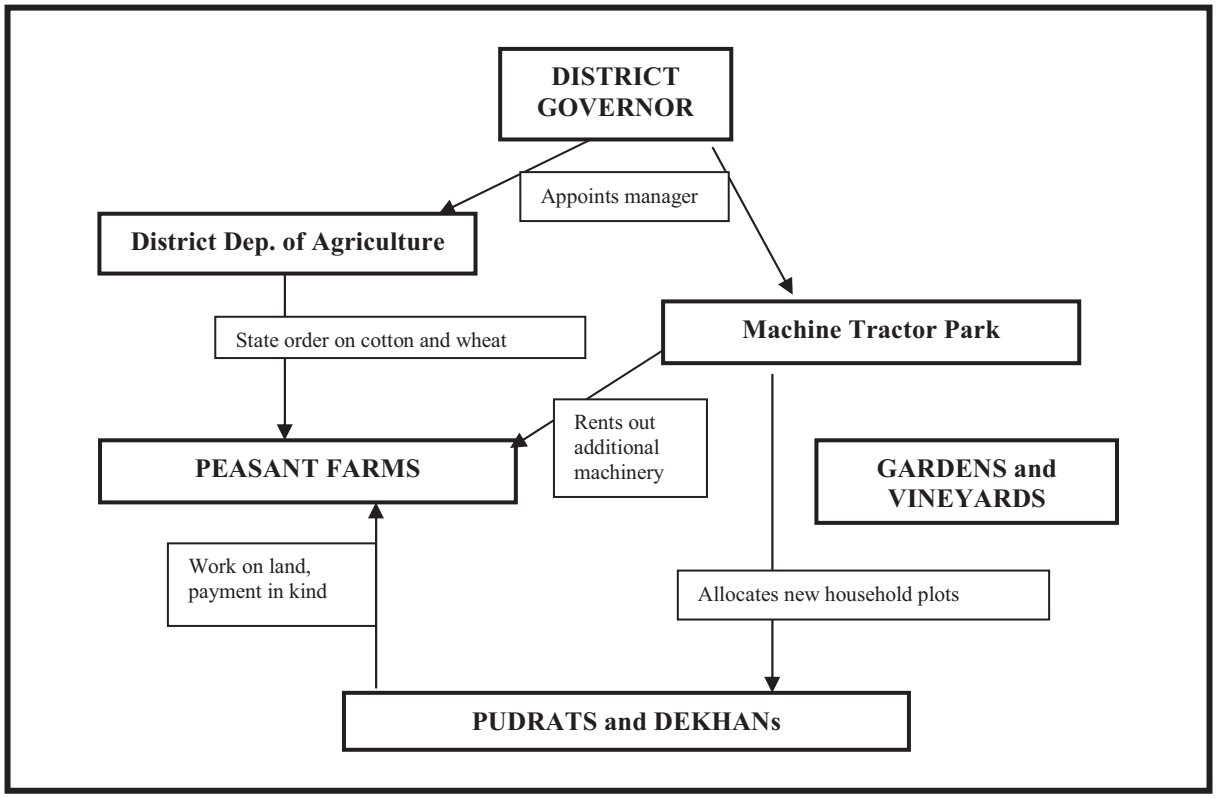



**Figure 10-1: Relationships of dependency after privatization**

Figure 10-1 shows the new power relationships and dependencies in the rural sector. Prior to privatization, the shirkat manager was the key power player on the shirkat, and the higher administrative staff were dependent on the decisions and duration of the reign of the shirkat manager. The privatization process seems to have metamorphosed the position of the former administrative staff and seems to have decreased their dependence on the former shirkat head. On the other hand, in the two shirkats the former managers became the heads of machine tractor parks (MTPs). Therefore, they still have some influence on the private farmers, because the latter are dependent on the MTPs for larger

agricultural machinery. In the current situation, the MTPs are also responsible for the distribution of household plots to the dekhans; this means that dekhans are kept at a high level of dependency to the former power structures.

## 10.6 Conclusion

It appears that the process of privatization alienated the poor from the start. The alienation began with the choice of criteria for receiving land, the failure to distribute information on the privatization, and the criteria for obtaining land. The formal criteria for receiving land, with the official emphasis on 'formal' human capital (education and specialization), advantaged the former administrative employees and disadvantaged the pudrats and dekhans who were and are working on the land. A common perception of the dekhans and pudrats is that the people of the rural areas know the land and can work the land. One could argue that they were specialized employees of the former collective farms, and therefore one could assume that they would have more knowledge of the land than an accountant, a technical, or a hydrological engineer, but the de-emphasizing of record of service disadvantaged farm workers who had spent their lives working the land of the shirkat. In addition, the perceived emphasis on physical and financial capital excluded the rural poor further, and prevented them from applying.

Djanibekov's suggestions about how the former administrative staff could have purchased agricultural machinery prior to the privatization process leads to suspicions about the reasons why administrative workers would purchase machinery without having private land. It seems that, prior to the formal privatization, land was already informally utilized privately. Hence, the formal privatization may have formalized the informal arrangements.

The utilization of the six capitals to analyze the privatization process of the two shirkats in Yangibazar District showed that human capital (education, specialization, and record of service) was not the main reason for receiving land, but that land allocation was due to physical (agricultural machinery), financial (being able to buy gardens, maybe farm land and to bribe), social (family and friendship networks), and political (having high positions within the shirkat or district administration) capital. The data suggest that the land privatization manifested, if not furthered, the current power positions and power relationships in the rural setting and left the powerless more vulnerable. Even though the power structure appears to have stabilized, it seems that overall social stability has weakened. The privatization process could have been undertaken as in other Central Asian countries (such as Kazakhstan and Kyrgyzstan) to redistribute land more equitably and therefore give more stability to the livelihood situations of the rural poor. Instead, the privatization process has weakened the livelihood situation of the majority of the rural inhabitants in the long term.

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# 11 Final conclusion

As already discussed in the framework chapter, it appears that the division into physical and basin, organizational, and socio-economic and political external factors is arbitrary and that these identified external factors are linked. Although the models presented in Chapter Two focused on the national level, the special situation in Central Asia, with a shift from intra-state boundaries to inter-state boundaries and therefore the disintegration of an issue-linkage approach and its implication for the basin management framework in the Syr Darya basin and partly in the Amu Darya basin, highlights the importance of considering the allocation and provision questions within the basin. In this case, the discussion in Chapters Three and Four on Afghanistan's strategies and in Chapter Four on the desire of Kyrgyzstan to charge downstream riparian states for the operation and maintenance of the large reservoirs as well as the increase of water use upstream, has shown that the basin scale and the changes within the basin are key to understanding the current and future water management strategies for the downstream riparian states in terms of both relative water scarcity and water costs. Upstream planned strategies and unpredicted developments will have major implications for any irrigation management transfer (IMT) policy in Uzbekistan.

The data show that the quantity of water resources in Uzbekistan is currently undetermined, as also the amount of water other stakeholders should receive (Afghanistan, the Aral Sea, Kyrgyzstan, and Tajikistan). If one considers the inverted U-curve of water scarcity and its relationship, one could argue that at the current level there is enough water. Hence, there is no need for local cooperation, and, with the other users increasing their use, there is too little water for cooperation. However, the data have shown that there is not equitable utilization of water resources within Uzbekistan. Hence, upstream in Uzbekistan there is enough water and downstream too little water, and therefore again at the head and at the tail cooperation would either not be necessary or not be possible. Consequently, the policy of strengthening the national water agency to ensure equitable distribution of water should be a priority before an IMT policy could be implemented.

As the collected data suggest, at present not all irrigated areas (such as Kashkadarya and maybe even in Bukhara Province in the Amu Darya basin and in Jizzak Province in the Syr Darya basin) would be suitable for an IMT policy, which transfers the financial burden of the operation and maintenance of the irrigation system to the users. In addition, with the current state order for cotton production, the state's monopoly on cotton ginning, and the rising input and stagnating output prices, it is doubtful whether farmers could bear the additional

costs of the irrigation system. Furthermore, the current policy of food self-sufficiency, and therefore state order for wheat production with low product prices, seems to be an additional hindrance to water user associations (WUAs), particularly if farmers would have to pay the full costs of operation and maintenance. If on the basin scale, in the Amu Darya and Syr Darya basins, upstream riparian states claim compensation, then the cost of irrigation could increase, possibly rendering irrigated agriculture too costly in other provinces as well. Hence, it seems questionable whether a strategy of full cost recovery could be implemented. Huppert et al.'s (2001) model for keeping the subsidies but allocating them directly to the users instead of to the water delivering agency could be applicable, if the main objective of the Uzbek state were to empower the local community through the creation of WUAs.

This raises the question of the motivation of the Uzbek state in pursuing an IMT strategy. Is the motivation to increase efficiency, to create equity on the local level, to lower the financial constraints of the state budget, or to empower the local community? The chapters on the organizational constraints of the water delivering agency have shown that the efficiency of the agency is low; hence it is doubtful that the creation of WUAs could increase overall efficiency, because they are dependent on the higher water management levels. Also, the chapter on the merger has shown that the aim of equitable distribution at higher levels has been eroded; hence, it is questionable whether lower level equitable distribution could be the motivating objective. The chapter on multi-stakeholder platforms (MSPs) has argued that citizens' empowerment and influence on decision making is currently not an objective of the state, because it could trigger larger issues on empowerment that in turn could question the current hierarchical and non-democratic order of the state. Hence, it can be deduced from the data that the main objective is to decrease the burden on the state's budget. As argued before, this is not possible in all provinces; hence an IMT strategy could not be identical throughout Uzbekistan but would have to consider whether irrigation agriculture with the premise of paying operation and maintenance costs, plus the additional costs of basin allocation and provision, could be feasible. It also remains questionable whether the other external factors are conducive for an IMT policy and for the creation of WUAs.

At the current stage, it seems that the water agency has neither enough logistical capabilities nor organizational strength and might not even be a strong power holder. The question of organizational strength has been recently addressed through a de-merger of the agricultural and water resource departments on the lower administrative levels. However, there is so far no evidence that this de-merger has led to a strengthening of the water agency. In addition, logistical capabilities can be addressed through a higher level of investment in the water agency, combined with more training and more incentives within the agency, thereby allowing it to increase its capabilities. However, if the overall objective of Uzbekistan is to decrease the state's

financial burden, it is questionable whether the state would be willing to invest first in the water agency to strengthen its capabilities. Furthermore, it is doubtful whether these measures could lead to a strengthening of the water agency's position, given the influence on water delivery of the social networks between shirkat managers and district and province hakims (governors). One could argue that the policy of land privatization, and therefore the spread of influence away from one or two strong power holders on the local level to a larger group, might strengthen the water delivering agencies; however, in the current situation the farmers on the local level and the governors on the district and province level are still responsible for implementing the state order for cotton and wheat. Non-fulfillment of the plan could have the consequence for the farmers of losing their land, and for the district and province governors it could negatively influence the stability of their position. Therefore there is a strong incentive for lower level and higher forces to have an influence on the water delivering agency. Currently, the water agency's deficiencies on the local level might motivate the establishment of WUAs; however, the deficiencies on the district and province levels will be a hindering factor for their sustainability.

As was suggested in the framework chapter, leadership within the local community can be a contributory factor for the empowerment of the WUA. The evidence presented on network structure and its utilization suggests that a strong network structure is present. It seems that the factor of leadership could have positive as well as negative influences. While it could lead to the empowerment of one WUA, it could at the same time lead to the disempowerment of other WUAs at the tail-end within the larger hydrological system. Hence, leadership leading to empowerment could be a zero-sum game among different WUAs. The chapter on land reform has shown that the administrative boundaries of the former shirkats are weakening, and that therefore it could be possible to implement water management according to hydrological boundaries on the lower levels. However, because of the state-order system, which is implemented through the administrative boundaries of the districts, it is doubtful whether it would be possible to introduce a different boundary for water management. Even though in Yangibazar and in Khorezm the WUAs have been created according to hydrological boundaries, the administrative boundaries still predominate. Where in Yangibazar there were ten shirkats before, today there are only seven WUAs. Organizing farmers according to these hydrological boundaries and creating a feeling of trust and identity, of belonging to the new units puts their current identity into question. Furthermore, it is doubtful whether the leadership of the old administrative units would be willing to accept their loss of power in the new hydrological unit. Hence, the new WUAs could be just paper organizations without real substance.

Although the international and even some national pilot projects (WUAs in Yangibazar District) that focus on hydrological boundaries have been created, the new wave of privatization and the large-scale creation of WUAs sticks to the

administrative levels of the former shirkats. This puts into question whether lessons learned from the pilot projects could be transferred to the newly created WUAs. The fact that the new WUAs are in violation of the recent Decree (N УП-3226, 24.03.2003) mentioned in Chapter One demonstrates that the legal framework and the changing reality of the period of transition do not coincide. Although one could interpret the new focus on administrative boundaries as a sign of the vested interests of the administrative levels, one could also reason that, because of the tight timeframe of the government plan to privatize, a long procedure to establish WUAs is not considered to be a priority. This is especially so if the old hydro-technical units of the former state and collective farms could continue operating the irrigation system. In either case, the establishment of the WUAs is just the continuation of the old system under a new name. This would also put into question whether the changes on the higher level to hydrological boundaries is a real change or only a change on paper. That the lower level and the higher level of water management will have conflicting interests suggests that the power relationships between former shirkat and district levels will continue.

Even though the land reform established relatively large-scale farms, which could be economically viable and therefore conducive to farmers investing in the operation and maintenance of the irrigation system, the current insecurity of land tenure, the state-order system, and the inefficiencies of the water agency make it questionable whether the farmers would be willing to invest. Although the chapter on land reform has suggested that land ownership is viewed as an investment, the chapter also shows that the farmers are not necessarily connected to the land, do not have knowledge about working the land, and depend on pudrats for agricultural labor. Hence, the data suggest that the land reform created a large group of possibly absentee landowners, or at least diversified farmers, who see farming only as one livelihood strategy, but possibly not as their main strategy. This might influence their willingness to participate in a WUA and to invest in the irrigation system. One could alternatively address this question through the type of WUA model advocated. The American model of WUAs, with a high level of specialization (trained hydro-technician), already reflects the arrangements on the former shirkats. The hydro-technical units of the former shirkats used to function as a service provider, but only to the shirkats as a whole. As against this suggestion, because of the state-order system with fixed prices, the level of commercialization is still not very high. Furthermore, one would have to raise the question of how small landholders, such as small gardeners or dekhans, would be affected by the model chosen. It seems that with both the Asian and the American models it could be difficult to include them fully because of the power position of the new farmers. By not including them, the power position of the dekhans and small gardeners would be further weakened, and this could increase inequality in the rural areas and therefore the potential for social conflict.

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# Appendix

Criteria: rating marks for estimation of preliminary opportunities of applicants for farmer units

| | | |
|---|---|---|
| 1. Age | Up to 30 | 8 marks |
| | 31-40 | 10 marks |
| | 41-50 | 8 marks |
| | Over 51 | 6 marks |
| 2. Specialty | Agronomist | 10 marks |
| | Engineer | 9 marks |
| | Mechanic | 8 marks |
| | Accountant | 8 marks |
| | Specialist cattle | 7 marks |
| | Constructor | 7 marks |
| | Farm worker | 7 marks |
| 3. Record of service | Up to1-5 years | 6 marks |
| | Up to 6-8 years | 7 marks |
| | Up to 9-11 years | 8 marks |
| | Up to 12-15 years | 9 marks |
| | More than 15 years | 10 marks |
| 4. Education | High | 10 marks |
| | Higher | 8 marks |
| | Secondary | 7 marks |
| 5. Number of employees in family | Up to 5 people | 4 marks |
| | Up to 10 people | 6 marks |
| | More than 10 people | 8 marks |
| 6. Available funds | Up to 500 thousand soum | 3 marks |
| | Up to 500-800 thousand soum | 4 marks |
| | Up to 801-1000 thousand soum | 5 marks |
| | Up to 1001-1500 thousand soum | 6 marks |
| | Up to 1501-2000 thousand soum | 7 marks |
| 7. Own technical equipment ( for one of them) | Transport tractor | 4 marks |
| | Cultivator | 5 marks |
| | Lorry | 6 marks |
| | Plough | 4 marks |
| | Car | 3 marks |
| 8. Indication on fulfillment of production plan over next three years by family contractor | When fulfilled from 1 year to 3 years | 1 mark |
| | When fulfilled from 3 years to 2 years | 3 marks |
| | When fulfilled in the whole 3 years consecutively. | 7 marks |