

Afghanistan Research and Evaluation Unit
Case Study Series

A Historical Perspective on the *Mirab* System:

A Case Study of the Jangharoq Canal, Baghlan



AGA KHAN FOUNDATION

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Acronyms

ADB	Asian Development Bank
ISAF	International Security Assistance Force
GAA	German Agro Action
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
KRBP-TA	Kunduz River Basin Programme - Technical Assistance
MEW	Ministry of Energy and Water
NGO	nongovernmental organisation
NIA	National Irrigation Agency (Philippines)
NSP	National Solidarity Program
PMIS	Participatory Management of Irrigation System
RAMP	Rebuilding Agriculture Market Program
SMEC	Snowy Mountain Engineering Corporation
WMD	Water Management Department
WUA	Water User Association

Glossary

<i>abi</i>	irrigated land
<i>arbab</i>	a senior elder of a village community, representing the interests of his community to district and provincial government
<i>asyab</i>	flow used to supply a water mill structure. In Takhar, one asyab is equivalent to average 200-250 l/s (based on flow measurements done by the Participatory Management of Irrigation System project)
<i>chakbashi</i>	community-level water bailiff on tertiary canals (northern Afghanistan). In the case study of Jangharoq, the <i>chakbashis</i> were service providers chosen by the mirab to assist him in his various tasks without specific level or area of responsibility.
<i>jerib</i>	unit of land measurement (1 jerib = 0.2 hectares)
<i>lalmi</i>	rainfed land
<i>mirab</i>	water master

<i>paw</i>	unit of weight (400 g)
<i>ser</i>	7 kg of grain (in this case study)
<i>sherkat</i>	factory
<i>zabur</i>	drainage

Technical terms

command area	the area that can be irrigated from a specific canal
head-end	term head-end is used in canal irrigation to refer to the irrigated area located close to the top of the main canal. The concerned water users can be referred to as head-enders.
intake	in this case study, an intake is a hydraulic structure designed to acquire water from a river to a main canal. It usually consists of a weir across the river and a gated headwork at the head of a main canal.
offtake	an in-canal structure designed to acquire water from a first level canal to a secondary level canal (i.e. from a main canal to a sub-canal)
tail-end	used in canal irrigation to refer to the irrigated area located at the far end of the main canal. The concerned water users can be referred to as tail-enders.

1. Introduction

From 2002 onwards, consultants and various organisations have planned and carried out major institutional reforms in the water sector. The Ministry of Energy and Water (MEW) has been designated as the core institution to manage water resources. The concept of Integrated Water Resources Management (IWRM) has been promoted and a River Basin Management approach has been adopted, as underlined in Article 4 of the most recent Draft Water Law¹. An initial set-up was first proposed by the GTZ Water Sector Reform Project in July 2005 and has then been slightly modified by the MEW. Figure 1 describes the River Basin organizational set-up as adopted by the MEW in 2009.

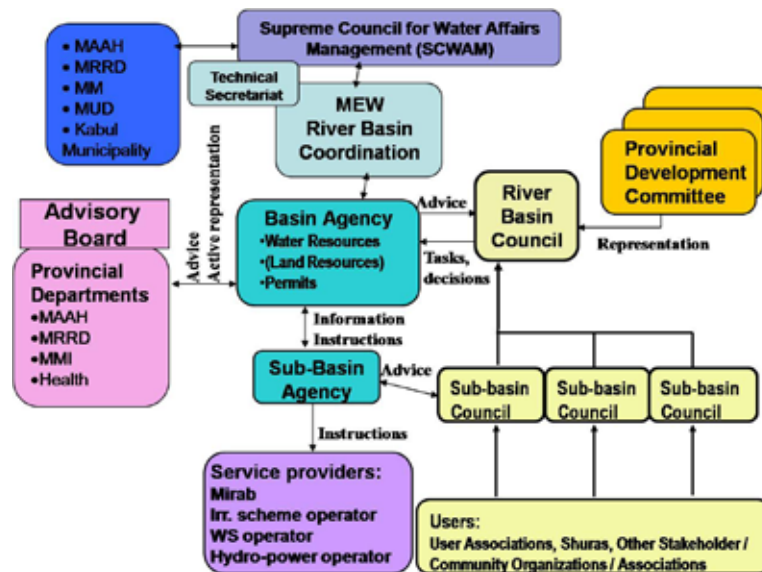


Figure 1: River basin organisational set-up (Source: KRBP, adapted from original version by GTZ Water Sector Reform Project, July 2005)

As part of this approach, the government is promoting the formation of Water User Associations (WUAs) at local level. In the first article of the Draft Water Law², the Afghan government calls for “fulfilling the rights of water users, based on praiseworthy customs and the traditions of the Afghan people”. Similarly, an earlier 2004 draft of the Irrigation Policy³ recognises the effectiveness of the *mirab* system. It states that one of the objectives of the irrigation sub-sector is to “develop legal and regulatory frameworks and introduce mechanisms to enforce laws and regulations, taking into consideration the importance of effective traditional rules and regulations common in Afghanistan.” In the paragraph dealing with WUAs, the Draft Irrigation Policy states, “procedural guidelines for the formation of WUAs and their need for and capacity for development, in both formal and traditional irrigation systems, will be developed and established at an appropriate time. The experience of the existing *mirab* system shall be the basis for such guidelines.”⁴ It adds that

the existing mirab institutions involved in the management of irrigation water resources shall be strengthened towards formal Water User Associations (WUA). The present mirab culture will be preserved, but would

1 At the time of writing, the Draft Water Law has been approved by the Afghan Parliament.
 2 Minister of Energy and Water (MEW), Draft Water Law (Kabul: Islamic Republic of Afghanistan, 2009), 1.
 3 MEW, Draft Irrigation Policy (Kabul: Islamic Republic of Afghanistan, 2004), 8.
 4 MEW, Draft Irrigation Policy, 14.

be structured so as to improve its management effectiveness and enhance its legitimacy and power. They would be converted into more management-oriented, accountable and transparent institutions, developed through democratic process, acceptable to local and regional values, norms and customs.

Therefore, it seems that Afghan government, together with its foreign advisors, has approached the issue of WUA formation in a way that builds on the foundations of the existing *mirab* culture.⁵ However, in all these policy documents it remains unclear what “traditional rules” are, what the “*mirab* system” is, and what the elements of “*mirab* culture” are.

In the research literature, the term “*mirab* system” is used extensively yet precise definitions are never given. Some studies (see those by Lee from 2003, 2006 and 2007) provide explanations about the traditional role of the *mirab* as a service provider and the arrangements for water allocation and maintenance work.

In one of his studies, Lee⁶ gives the impression that the organisational set-up for collective water management in Afghanistan is based on long-held, stable and well accepted traditions:

Communities continue to maintain their own water management systems, raise finances and organise labour according to traditional and long-accepted norms based on customary law. Enforcement is based on a symbiotic relationship between water-master and water users, with the real power lying with the ‘electoral college’ of water user stakeholders.⁷

Similarly, discussing the formation of WUAs as part of a government programme, Lee states that

historically it is the communities that have managed, maintained and organized the irrigation systems in Afghanistan, not the government. Until a better management system is proposed, there is no justification for abandoning a framework which has survived for generations, both in times of war and peace. Rather, the existing system should be affirmed and every effort should be made to build in additional capacity to the system.⁸

Not only does Lee contend that most canal systems in Afghanistan have been managed in the same way over a long period of time, he also argues that the government has never been (and should not be) an influential actor in the way canal systems are managed at a local level. Based on his study on Herat canals, Lee⁹ makes the general statement that

The desire by communities to resolve their own disputes is an age-old, country-wide phenomenon... Communities see themselves as fundamentally autonomous in matters of water management and resent outside interference from government official or imposed structure from outside by, for example, international organizations. In effect, the role of government

5 Yet it seems to imply that the traditional system and its “praiseworthy customs” lack legitimacy and power.

6 J.L. Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems” (Kabul: Afghanistan Research and Evaluation Unit: 2007), 5.

7 Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems,” 43.

8 Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems,” 44.

9 Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems,” 30.

in community water management is minimal. Nor is there any evidence to support a contention that a more proactive role by government in community water management will improve either the physical distribution of water or social cohesion. Indeed, the opposite appears to be the case.

However, policy documents such as the 1981 and 1991 Water Laws challenge perceptions about the pre-eminence solely of long traditions and customary practices when it discusses the role of the *mirab*. The 1981 Water Law highlights the role of the Ministry of Water and Electricity as well as Agriculture and Land Reform in defining water rights for agricultural use at local level (Article 17). Article 28 of the 1991 Water Law portrays a *mirab* working under the guidance of irrigation and agriculture departments regarding maintenance and water distribution. Article 31 even legitimates payment of bonus and rewards to *mirabs* for their effective work. In Article 33, the participation of the water management and agriculture departments in water users' general meetings is prescribed in order to participate in the evaluation and approval of the *mirab*, as well as other water management related decisions. Thus, it appears very clearly that the *mirab* had defined linkages with the government. The inescapable conclusion is that the *mirab* system seems to be far from being solely community based or divorced from events and forces swirling around it. However, policy documents do not always reflect reality on the ground.

Consequently, it is necessary to have a deeper understanding of what the “*mirab* system” entails from a field perspective. One way to achieve this is to conduct an in-depth case study that gives an historical perspective on how collective water management practices, and the environment in which they occur, have evolved over time. Such a study should address the challenges with which local water management institutions have had to cope, and how they have responded and evolved in the process. Indeed, it is only by getting an understanding of the process through which “praiseworthy traditions” have evolved that one can appreciate the relevance of changing the current framework (i.e. through the formation of WUAs) and, as importantly, how to facilitate this change.

In a first part, this report attempts to give a conceptual understanding of what the *mirab* system entails and how it could be studied systematically. In a second part, it exposes the dynamics of social water management practices over time through a case study of one canal in Baghlan province in the Kunduz River Basin: the Jangharoq canal. Last, the report concludes on the lessons learnt and provides some recommendations for improving local water management institutions, in a context where institutional reforms call for WUA formation.

2. Description of the Study Area

The study area is in the Kunduz River Basin in northern Afghanistan. The Kunduz River Basin consists of three sub-basins, namely the Taloqan, the Lower Kunduz (previously labelled as Baghlan) and the Upper Kunduz (previously labelled as Bamiyan-Doshi) sub-basins (Map 1).



Map 1: Boundaries of the Kunduz River Basin and its three sub-basins (Source: KRBP-TA)

This case study focuses on one canal in Baghlan province, in the midstream section of the Lower Kunduz sub-basin. The Jangharoq irrigation system (see Map 2) currently covers a command area of 3,684 ha within an estimated total of 113,370 ha for the Lower Kunduz sub-basin (though the entire command is not irrigated during the summer season). In informal discussions, local government officials and farmers described the canal as a traditional, farmer-managed system. Hence the canal is part of the 90 percent of irrigated land in Afghanistan that is classified as being in farmer-managed systems. Such systems are “developed, managed, owned and operated by the local communities in accordance with acceptable societal norms.”¹⁰ According to the definition proposed by Bob Rout:

informal systems are traditionally developed and managed by local communities, largely with local resources and knowledge. In most cases, these systems have existed for generations and have undergone many social and physical changes. They have expanded or, in some cases, contracted as a result of water availability or the challenges posed

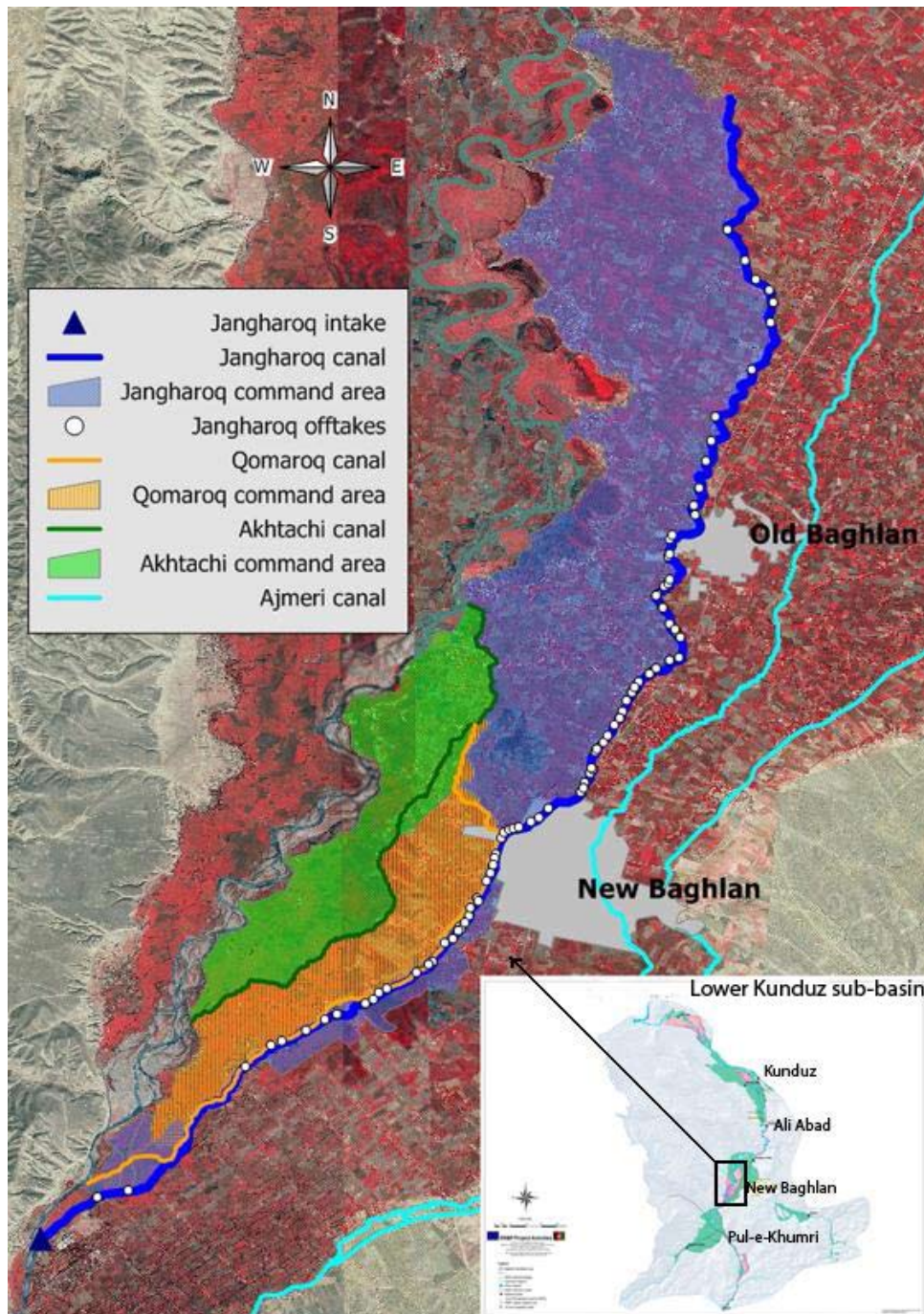
10 MEW, Draft Irrigation Policy, 7.

by the last 30 years of conflict. Informal systems irrigate 90 percent of the total irrigated area in Afghanistan and make up virtually all (99 percent) of the country's irrigation systems.¹¹ It is estimated that there are nearly 29,000 informal irrigation systems in Afghanistan. Contrary to their name, informal systems are generally well organised and have well-defined procedures for operation and maintenance.¹²

Map 2 (next page) shows the command area of the Jangharoq canal (in 2007), as well as the command area of its neighbouring canals.

11 All estimates of the number of irrigation systems in subsequent sections are based on information presented in R. Favre, R. and G.M. Kamal, "Watershed Atlas of Afghanistan" (Kabul: Ministry of Irrigation, Water Resources and Environment, 2004).

12 B. Rout, "Water Management, Livestock and the Opium Economy: How the Water Flows: A Typology of Irrigation Systems in Afghanistan" (Kabul: Afghanistan Research and Evaluation Unit, 2008).



Map 2: Jangharoq Canal command area (Source: PMIS project)

3. Conceptual Understanding and Methodology

3.1 A conceptual understanding of the *mirab* system

Figure 2 illustrates the different interlinked components (not necessarily exhaustively) of the *mirab* system as defined for the purpose of this study. A clear distinction is made between the *mirab*, considered as an agent (i.e. a service provider), and the other elements which form the system.

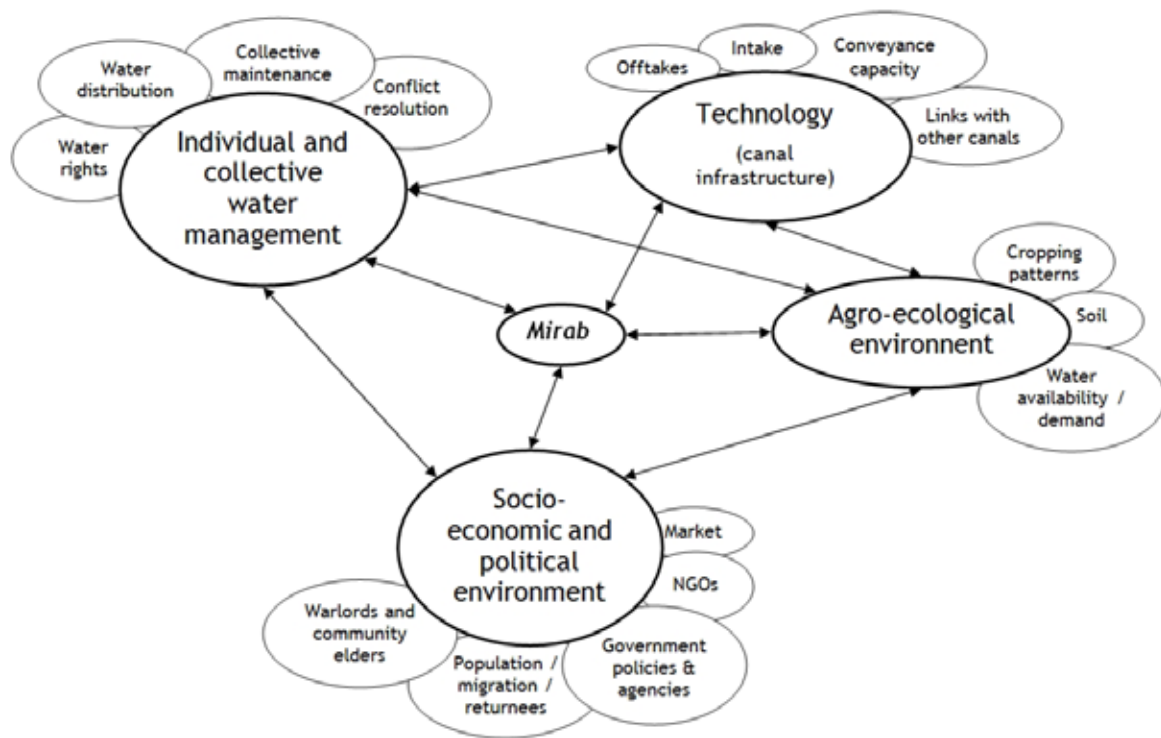


Figure 2: The elements of the *mirab* system of the Jangharoq Canal

For the purpose of this study, understanding the *mirab* system and its culture means understanding how key individual and collective water management practices have been managed at canal level since the origin of the canal (more than 100 years ago in this case). The emphasis is on the factors and actors that have influenced and shaped those practices and related collective action. In this study, individual and collective water management practices are mainly limited to water distribution (overlaid by the rights that relate to it), collective maintenance and conflict resolution.

An important concept in the study of social interactions and collective actions is the concept of “social capital.” According to the World Bank’s definition, social capital refers to “the institutions, relationships, and norms that shape the quality and quantity of a society’s social interactions.”¹³ On an operational level, the concept can be broken into five elements defined as follows:

- **Groups and networks:** collections of individuals that promote and protect personal relationships improving welfare;
- **Trust and solidarity:** elements of interpersonal behaviour that foster greater cohesion and more robust collective action;

13 The World Bank, “Social Capital,” <http://go.worldbank.org/COQTRW4QF0>, 2009.

- **Collective action and cooperation:** ability of people to work together toward resolving communal issues;
- **Social cohesion and inclusion:** mitigates the risk of conflict and promotes equitable access to benefits of development by enhancing participation of the marginalised; and
- **Information and communication:** breaks down negative social capital and also enables positive social capital by improving access to information. These dimensions capture both the structural and cognitive forms of social capital.

Throughout the description in the case study of the Jangharoq canal, it will be shown how the different elements of social capital have evolved and how they have impacted on individual and collective water management practices at canal level.

An important point in the study of the *mirab* system is to focus not only on local institutions but also on the influence of external factors such as the sociopolitical environment (including the state and the market) as well as technology or the agro-ecological environment. Regarding the **sociopolitical environment**, Afghanistan's political landscape at national and local level has changed greatly in the last 40 years. The researchers assumed that warlords would play a significant role in the overall system, particularly from the 1980s onward. It was thus considered important for this study to look for examples of their possible influence on *mirab* selection, the regulation of cropping patterns, conflict resolution and other collective water management rules. It was assumed that the Government's influence within the system could have been significant in the pre-Soviet invasion period. Conversely, it was assumed that the collapse or weakening of the Government from the 1980s onward might have triggered change in the way collective water management was done. In addition, the settling, outmigration and return of local populations were also expected to be factors that could both shape and be shaped by the overall system, including technology, maintenance, water rights and so forth.

Throughout the history of a canal system, **technology** often evolved (sometimes through government or NGO projects) and, in some cases, may have significantly influenced the water access potential for a canal (for example, in the case of a new intake). The researchers assumed that this could, to a certain extent, influence the way water is distributed or maintenance is organised. Conveyance capacity is a key factor in the relationship between water availability and demand. In the case of earthen canals (the large majority of canals in Afghanistan), the conveyance capacity is often threatened by siltation. It was assumed, therefore, that the water users' ability to maintain a system of collective maintenance practices would strongly condition whether water demand can be fulfilled. In the case of Jangharoq, early field visits showed that the canal was hydraulically interlinked with other neighbouring canals (for example, drainage water from higher canals supplies Jangharoq). Thus, it was assumed that because of this apparent mesh system, the management of Jangharoq canal had possibly been linked with the management of neighbouring canals over time.

Regarding the agro-ecological environment, the balance between **water availability and crop water demand** was considered an important factor to consider in the history of the canal. The researchers assumed that relative water scarcity (lower availability than the demand) would be a key factor in explaining certain management practices by the *mirab* and water users. This is particularly relevant in the Kunduz River Basin where the cultivation of a highly water-consumptive crop like rice has become a major concern today for downstream farmers (at both canal and sub-basin level). Markets and government policies were assumed to be potential factors that triggered changes in cropping patterns at canal level over time.

The other important point in the study of the *mirab system* is to analyse and explain its evolution. Commenting on the symbolism of common property resources in India, Mosse¹⁴ stresses the shortcomings of models that define and promote community management if these are based solely on their reputed long-term success. He argues that these models show limitations in accounting the evolution, rather than just the structure and operation, of farmer-managed irrigation systems. Mosse suggests that collective action theories produce an “ahistorical” and “apolitical” construction of “locality.” In the case of Afghanistan, Mosse’s perspective is particularly relevant considering the dramatic political changes that have occurred over the last 40 years. This case study shows how such changes have significantly affected water management practices over time at the local level.

3.2 Methodology

The data was collected throughout the course of the Participatory Management of Irrigation System¹⁵ (PMIS) project between August 2006 and August 2008. In the first months of the PMIS project, data collection was mostly informal and done during field work events (like canal mapping) to get a first impression of events and changes in collective water management and to identify key informants. Later on in the project, a collective diagnosis (including the different canal communities) of the collective water management issues, challenges and opportunities at canal level allowed the research team to refine the understanding of the *mirab* system. This diagnosis came about mainly through group discussions. It was later in the course of the project that formal interviews (semi-structured and open-ended) were conducted with key informants to probe further and confirm the previous set of findings. A list and description of key informants formally interviewed are provided in the Annex. In addition, a literature review on farming systems in Baghlan was conducted to cross-check farmers’ statements. The qualitative information collected covers the period from the origin of the Jangharoq Canal (around 1906) until 2007—before the Kunduz River Basin Programme began.

14 D. Mosse, “The Symbolic Making of a Common Property Resource: History, Ecology and Locality in a Tank-irrigated Landscape in South India,” *Development and Change*, 28, (1997): 467-504.

15 The PMIS project is one of two social water management projects that are part of the Kunduz River Basin Programme (KRBP).

4. The Early Years of Jangharoq Canal

4.1 Construction of Jangharoq Canal¹⁶: The reigns of Emir Habibullah Khan (1901-19) and King Amanullah Khan (1919-29)

The Jangharoq Canal was built so long ago that it is difficult to find anyone now who could have witnessed it. According to interviewees Gul Suliman and Ghulam Hazrat, digging on the Jangharoq Canal started during the reign of Emir Habibullah Khan. Another interviewee, Mudir Salem, said his father had always mentioned that the construction started in 1906 (year 1285 of the Afghan calendar). At that time, there were only a few Uzbek villages in the current area of Houtkhil (see Map 8 in the Annex) close to the intake. These villagers had already dug Qomarok¹⁷ Canal (see Map 8) and turned part of the current Qomarok command area into cultivable land. It was mainly because of the growing population that Jangharoq was created. Villagers took some years to dig the canal up to the current location of 12th Street in Fabrica (in Khujakhanbaba village; see Map 8 in Annex) and make new land cultivable. The land that was irrigated at this level was on the right bank of Jangharoq and used to be a larger area than the current right bank area of Jangharoq Canal. Today, this area is irrigated by a different canal—Ajmeri—which was dug later by the Government. At that time, other parts of the current Jangharoq command area were either water-logged in the upstream part of the canal (approximately between the intake and the current location of Old Baghlan) or bare land in the downstream part (below Old Baghlan). There were no settlements in the downstream areas at that time.

According to people who knew stories about the early years of Jangharoq, villagers themselves constructed and maintained the traditional intake and the main canal and were led by their villages' headmen. In this early period, there was no person formally or informally named *mirab*.

4.2 The arrival of new settlers and expansion of the Jangharoq Canal: The reign of King Nadir Shah (1919-33)

At the beginning of King Nadir Shah's reign, different waves of settlers came from southern Afghanistan under the initiative of the government that encouraged settlers to acquire uncultivated land and make it cultivable¹⁸. According to many of our informants, some of these settlers were sent out of southern Afghanistan because of their criminal records. The first settlers created the villages of Qazi, Tarakhil and Chalozai (see Map 9 in the Annex). They extended the Jangharoq Canal from Khujakhanbaba to their villages to bring water for drinking and domestic use, as well as for their livestock.¹⁹ Soon after extending the canal, villagers started clearing some land, turning it from a water-logged area to arable land. Still, during the reign of Nadir Shah, a second wave of Pashtun settlers arrived in the area. Daud Zaye and Daoulat Zaye created the villages that are still named after them. At that time, they again extended the Jangharoq Canal up to these

16 "Stone canal" in Uzbek language.

17 "Sand canal" in Uzbek language.

18 The Emir of Afghanistan, Abdur Rahman (Emir from 1880 to 1901), initiated this transmigration of Pashtuns from the South to the fertile, but uncultivated, plains of the North. See Favre, R. and G.M. Kamal, "Watershed atlas of Afghanistan" (first edition, working document for planners, Kabul: January 2004).

19 This explains why the current main canal passes through numerous settlements and towns with a small tertiary canal passing through the houses' compound walls.

new villages (see Map 9 in the Annex). According to Ghulam Hazrat, these settlers had a close relationship with King Nadir Shah, and this gave them access to government support in the form of tools and equipment to dig and excavate the canal. The Jangharoq was made slightly bigger to ensure water reached and irrigated land made cultivable around the villages. Agriculture was mainly subsistence oriented.

A few years later, at the end of Nadir Shah's reign and in the early years of Zahir Shah's reign (in the mid-1930s), Pashtuns from Kandahar settled in the village named after their area of origin (Kandahariha). The villages of Wardaka and Kuna Qala were also created then (see Map 9 in the Annex). Ghulam Hazrat (an elder from Kandahariha) explained:

We had a good relationship with the local government. My grandfather was working for the government in Kabul. Our grandfather and people from other settlements of Kandahariha and Kuhna Qala were relatively well off; they could hire labourers for digging and extending the canal. It took us some four to five years to extend the canal and to clear some land so that we could start cultivating. At that time, the government was just telling us to clear some land for ourselves and they would give us documents. But we did not take the documents in the beginning because we were afraid of possible taxes.

At that time, people from Daoulat and Daud Zaye also enlarged the canal as they continued clearing more land each year by year. It was also during that period that most of the Uzbek people who founded Jangharoq Canal started leaving the area. According to Hemat Ali (one of the few Uzbeks now living in downstream Jangharoq):

People left when they saw that the government favoured the Pashtuns coming as new settlers. They were not confident about the arrival of new settlers and feared discrimination, so they preferred to migrate to other areas like Takhar where they had relatives.

Just a few years later, Gadi people (Kuchis or nomadic) started migrating from southern Afghanistan and several waves arrived in a short period of time. These new settlers favoured keeping livestock over land cultivation and preferred the area of Jar-i-khushk (bare land which is close to the cliff and close to the river at the present tail-end of Jangharoq). When the first Kuchi arrived, the area downstream in Old Baghlan was pasture land. For a few years, people did not try to extend the Jangharoq Canal and did not want to cultivate land as their livelihoods were based on livestock. After some time, though, they wanted to extend the canal to their villages as well. Gul Suliman explained:

When we arrived from Paktia province to the downstream part of Jangharoq during Nadir Shah's reign, the canal ended only at the level between Kandahariha and Zeker Khel. At that time we were too busy with our livestock and we were not interested in having land and crops. But after one year we understood it would not be a bad idea to irrigate the grass for the livestock and grow some fodder crops for winter. Some local Uzbek people helped us with seeds. In the beginning of Zahir Shah's reign, we asked Kandahariha elders if we could extend the canal to supply water to the downstream area. At first they refused as they thought that the canal was not big enough to provide water for them and us.

A few years later, the Kuchi settlers asked the government to convince elders from Kandahariha to let them extend the canal and it was agreed that settlers from Hemat Khil, Utman Khel, Shah Bazih, Shefer Khil and others should do so. Haji Mohammad explained that Mohammad Ayoub Khan (from Safia village – see Map 9 in the Annex), a representa-

tive of some downstream villages, was selected by village leaders to supervise the excavation. He got a letter of support from the government. “We finished this excavation in few months because we did not make a big canal. This was enough for our fodder crop,” Haji Mohammad said. Since the downstream settlers were mainly interested in fodder crops, the canal did not have to be widened and people in the upstream area could continue to cultivate two crops per year.

During that period, the intake was still a diversion off the river made from local materials. Its location was not fixed but it was in an area some 100 metres upstream of the current location. In the mid-1930s, the number and size of villages involved in the collective maintenance of the Jangharoq intake was limited. According to different interviewees, the formation and maintenance of the intake was organised spontaneously by villagers with the guidance of the village leaders. Interviewees said that, at the time, the contact and communication between the headmen were good and that all villages often spontaneously joined in the intake construction effort. According to all the respondents who had heard about this period, there was no *mirab* or any specific person appointed then to supervise the maintenance work in Jangharoq. While intake maintenance happened when it was needed, it seems that no annual canal desilting took place, at least from the period of the Jangharoq extension towards the current downstream area (under the supervision of Mohammad Ayoub) until the beginning of the sugar factory period (see next section). In fact, as mentioned earlier, the canal was enlarged from time to time as new land was put under cultivation, rather than maintained through regular desilting.

With the beginning of the Jangharoq extension, farmers constructed their own offtakes. These were direct openings in the main canal that were reinforced with branches and other local materials. The farmers could decide for themselves on the size of the offtakes and the bottom level of the opening in the main canal.

Overall, water access and water management was not a significant issue at the time. While Kandahariha was reluctant at first to extend Jangharoq beyond Old Baghlan, it did not prove to be an issue during the remaining years of Nadir Shad’s reign and the first years of Zahir Shah’s government (at the end of the 1930s), when the canal was extended to its current position through the involvement of the government. The final extension to today’s downstream Jangharoq did not create problems. The additional demand for water was limited since downstream settlers were not interested in intensive agriculture but in additional fodder crops for their livestock. The fact that the offtake’s construction was neither regulated nor contested is also a sign that water access was not a significant problem in the downstream area.

4.3 Reflection on the *mirab* system in the period from the origin of the Jangharoq to the late 1930s

The period from the creation of the Jangharoq Canal up to the late 1930s can be characterised as a “supply-oriented” phase of development. The rising demand for water due to immigration and the expansion of the irrigated area was met by an increased supply of water. Since water was not scarce at plot level, it was not necessary to manage the resource or to define water rights. Nevertheless, as the case of the Kuchi settlers particularly shows, access to water was starting to be contested. The need for maintenance of the main canal was limited and maintenance was only needed at the intake. As described earlier, local leaders organised the whole canal community ad hoc because there was little need for anything else either in terms of water distribution or for maintenance. Hence, a fixed position for a service provider (*mirab*) was not necessary and informal organisation under the existing local leaders seemed to be sufficient. Overall, the first

40 years or so of Jangharoq were mostly a community-driven development phase with some support and intervention from government (for the Pashtun settlers).

5. Water Management During the Period Before the War

5.1 The creation and development of the sugar factory (1940-78) during the reign of King Zahir Shah (1933-73) and rule of President Daud Khan (1973-78): The first government-managed *mirab* system

In 1940, a sugar factory was constructed in Fabrica (upstream Jangharoq, close to the current intake location – see Map 10 in the Annex). Adamec²⁰ describes the importance of the sugar industry in Baghlan: “The most important industry in the town of Baghlan is sugar production. The industry was started in 1940 with the establishment of a sugar refinery by Skoda Czechoslovakia...The sugar industry is a private enterprise but the Afghan National Bank, Bank-i-Millie, owns about 85 percent of the stocks.”²¹ As will be shown, the construction of the factory was very influential on agricultural development and water management in the Jangharoq Canal area (and more generally in large parts of the Baghlan plain) up to the beginning of the war with the Soviet Union. This period corresponds with most of the period when Zahir Shah (1933-73) and Daud Khan (1973-78) ruled.

On the early years of this period, Gul Suliman says:

In the beginning we saw some people from the government surveying the area and the land but we did not know what it was all about. It is only a few years later (the end of the 1930s) that the government told the communities that they were constructing a sugar factory. They explained to us that there would be more than 2,000 jeribs (400 ha) belonging to the government and that the rest of the land would be given to people for agriculture. We were worried about getting land because we thought about taxes and we did not have oxen or even skills in agriculture. So we said to the government: ‘The land can belong to the government, we just need a place for our livestock.’ But they insisted that the land would be for irrigated agriculture and that 30 jeribs (6 ha) would be given to each family.

At that time, not all the land in Jangharoq (including the tail-end area) had been acquired by settlers and cultivated.

As part of its strategy to support the sugar factory production, the government pressured the farmers in the downstream area to make more land cultivable and to grow sugar beet. According to interviewees, including Mudir Salem, the Agriculture Department said that land titles would be given to those who turned bare land into cultivable areas.²² Initially, many farmers were hesitant as they wanted to continue with livestock production. Some elders did not like this attempt by the Government to introduce changes in farmers’ livelihoods. Gul Suliman remembered his father saying:

We escaped the government from South Afghanistan because we did not want to pay tax for our livestock and now this government here wants us

20 L.W. Adamec (ed.), “Badakhshan Province and Northeastern Afghanistan,” *Historical and Political Gazetteer of Afghanistan* 1 (1972).

21 Adamec (1972) as quoted in J. Pasquet, “Participatory Management of Irrigation Systems: Farming Systems Research - Final Report” (forthcoming), 42.

22 It is probable that land was sold very cheaply rather than given for free.

*to get land for agriculture. One day they will ask us to send our children to school and then they will send them to foreign countries and they will become kafir.*²³

Some people did acquire a large amount of land through the government initiative (for example, Ekramudin Zia who still owns more than 500 *jeribs* (100 ha) and is still considered to be an influential land owner in the downstream area with an offtake named after him). Remembering this period, Ghulam Hazrat from Kandahariha said: “We were very stupid at that time. While the downstream people did not make much effort in the beginning to get more land for themselves, we should have gone to the government and told them we were ready to get the land. We would be big land owners now.” At the time, the land his family cultivated was enough to fulfil their needs and his father did not feel the need to extend his land.

According to Haji Mohammad, at that time, the leader of Shah Baziha village, Shah Baz discussed the Jangharoq Canal with the Agricultural Department. He said the canal would not have enough capacity if there was to be more agricultural land in the downstream area. The Government explained their plan to help farmers to enlarge the whole of the main canal, from intake to the tail end. The Government would pay the villagers to enlarge and reshape the canal. Downstream farmers who were interested in cultivating industrial crops welcomed this. It took four years to reshape the main canal to the Government’s requirements. The canal enlargement benefited not only downstream farmers, but also directly benefited the Government, which had acquired 2500 *jeribs* (500 ha) of land from the Ministry of Mines in Sarak-i-Sherkat (downstream Jangharoq).

So, during the early 1940s, the Government led and supported some important improvements to the canal infrastructure. On the right bank of Jangharoq, a large drain was also dug to turn the water-logged area into a more suitable place for agriculture. Ghulam Hazrat and Haji Mohammad explained the situation with offtakes: “If somebody wanted to concrete their offtake they had to write a letter to the Agriculture Department. Then the Agriculture Department would provide them with some cement only. The construction was supposed to be done by the farmer himself.” Ghulam Hazrat (see photo in Annex), Cimet (see photo in Annex), Haji Ali Mohammad and Jerib Shah are examples of offtakes that were concreted during that period. According to Ghulam Hazrat and Said Ibrahim Tahir, there were no specific recommendations from the Agricultural Department on the size of the offtakes. There was never any refusal to upgrade an offtake through concreting. Usually the concrete offtake was the same size and height as the previous, traditional one. No gates were installed or even suggested.

For farmers, the main goal of upgrading was to reduce the maintenance of the offtakes and not necessarily to increase water capacity or to make it easier to control the water. During that period there was no demand for new offtakes but the same informants explained that new offtakes would not have been possible without the Agriculture Department’s and the provincial governor’s agreement. By the time the Ajmeri Canal was constructed (also during the sugar factory period), some pipes and aqueducts were introduced across Jangharoq Canal, especially in the Ekramudin Zia area (just downstream of Old Baghlan). At the time, the Agriculture Department supported these pipes and aqueducts as a way to increase the irrigated area. The introduced technology made irrigation possible in some areas in the upper part of Jangharoq where it was not possible to irrigate via the Jangharoq Canal. With irrigation, the Agriculture Department was able to sell this land to farmers and to promote the cultivation of crops used for industrial production (e.g. cotton for textile and sugar beet for sugar production). Because the

23 *Kafir* means “non-believer.”

Agriculture Department led the process to get from the Ajmeri side to the Jangharoq side, farmers were given rights to get water from Ajmeri drainage. All this was possible because Ajmeri was a government-managed canal. Moreover, the amount of water was not very significant as it concerned only few hundred *jeribs*. The water rights given to Jangharoq farmers were only informal agreements with the Agriculture Department. In terms of using the drainage water, no water sharing conflicts were recalled.

Government land (downstream of Jangharoq) was exclusively reserved for growing sugar beet. The Agriculture Department also closely followed its cultivation by those farmers who had land around the Government's plots. Haji Mohammad remembered:

In the beginning, we did not know how to grow sugar beet. We did not know about weeds; we thought it would be good to keep them for our livestock. But the Government punished us if we did not pay attention to our sugar beet. They would warn us two times and then they would sanction us, for example by asking us to pay one sheep.

At the same time, the Agriculture Department provided training, tools, technical advice and quality seeds. The Agriculture Department's initiatives varied with the fluctuating demand from the factory. Haji Mohammad explained: "After some time, farmers were interested in growing sugar beet since it became profitable for them." As part of its strategy to raise farmers' interest in sugar beet cultivation, the Government also offered jobs for the downstream farmers' families (mostly young people) at the sugar beet factory. This was another incentive for downstream farmers to take sugar beet cultivation seriously. In short, the Agriculture Department employed a "carrot-and-stick" strategy.

Haji Mohammad explained that ten years after the sugar beet factory was completed, the Government constructed a cotton factory in Old Baghlan, called the Spinzar factory. Cotton was cleaned and stored there before being sent to Kunduz for further processing. Again, the Government applied the same strategy to encourage, if not force, farmers to grow cotton. Haji Mohammad and Ghulam Hazrat explained that, initially, the Government asked farmers to plant at least 10 percent of their land with cotton. Though the land belonged to farmers, the two men explained that, at the time, the Government was powerful enough to make farmers understand that it was not in their interest to oppose the initiative. Though the respondents did not remember any case of a farmer refusing to grow cotton, they did remember what happened to a farmer who did not irrigate his cotton on time (because of negligence rather than lack of water).

Box 1: Enforcement capacity of the local government during Daud Khan's rule

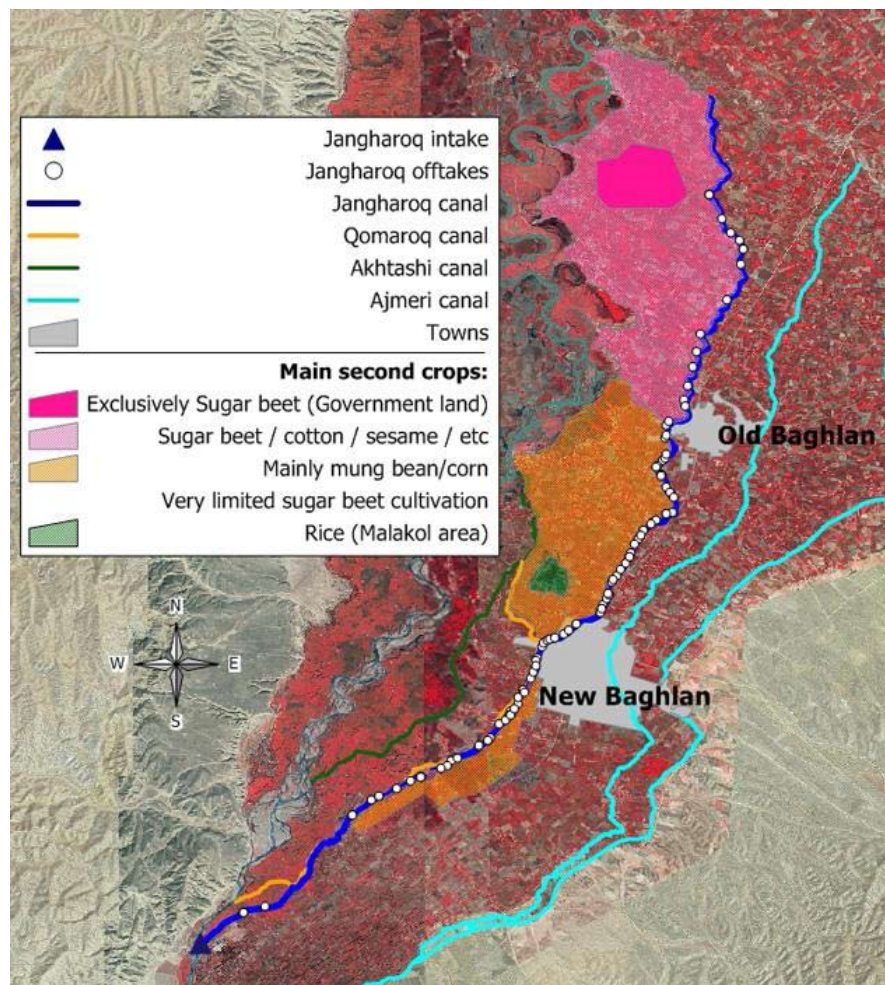
During an informal discussion, the *mirab* from AbQul Canal (located across the river and opposite to Jangharoq Canal) illustrated the government's ability to enforce their decision to forbid rice cultivation in upstream Jangharoq.

"At that time I was around 15 years old. I was visiting some relatives in Mullah Khel village. When I started walking back home, a person from the Agriculture Department accompanied by policemen grabbed my hand and told me to 'go and knock at each house of this village and bring the villagers to this place.' I was not from this village and I didn't know what he wanted, but he insisted so I informed all the different houses. When villagers gathered, he pointed at a field which had rice. He said, 'You have one hour to clear this field. If it is not done in one hour I will bring each and every one of you to the police station.' The farmers tried to discuss this, but they did not resist and they started clearing the plot. This was despite the fact that everything would be lost as it would be too late to grow a second crop."

In Kohna Qala, I remember a farmer who let his cotton become dry. When an extension officer from the Agriculture Department came to the area and saw the result of the farmer's negligence he wrote a letter to the governor, mentioning that this farmer was reluctant to support the Government's efforts.

As a result, the farmer spent some time in jail and got out only after paying a substantial amount of money. However, as the Government provided fertilisers, technical advice and other support, and guaranteed good prices, farmers found their interest in growing cotton. So the Government's coercive strategy was balanced by supportive measures. And, according to Haji Mohammad, most farmers planted more than 10 percent of their land with cotton.

Nevertheless, not all the downstream command area was under industrial crop cultivation. As sugar beet and cotton can only be cultivated as a single crop, some of the land would be under wheat (for subsistence) during the winter season, followed by another crop, such as mung bean (or sesame, millet, etc.), during the summer season. Thus, during the critical months of summer, some crops were low water-demanding crops (such as mung bean) instead of industrial crops only, which meant less demand for water and less pressure on the system. In the years after the sugar beet factory's construction, the Government also started building the Ajmeri Canal (see Map 3), which ran parallel to Jangharoq on higher land. This new canal was constructed to increase industrial crop production in the area.



Map 3: Water access for Jangharoq (sugar factory period)

In the upstream area (from intake until Old Baghlan area), the main second crops were mung bean, sesame or corn. Sugar beet and cotton were also grown but only in a few places that were not waterlogged or unsuitable for such crops. But, according to Mudir Salem, the Agriculture Department was less interested in sugar beet being grown in this area because it preferred to concentrate its efforts on the farmers' lands which were close to Sarak-i-Sherkat (where the Agriculture Department already had 450 ha of their own land under sugar beet). However, the crop over which the Agriculture Department exercised a strong control in the upstream area during the period of the sugar factory development (which lasted up to the beginning of the war with the Soviet Union) was rice. Despite the fact that the upstream land was suitable for rice cultivation and that farmers were interested in growing rice²⁴, the Government thought the increase in water consumption induced by rice would threaten the availability of water downstream and thus the production of the sugar factory, according to Mudir Salem. The Government's second argument against rice cultivation was that it would spread malaria²⁵ and the Government was particularly strict about rice not being grown close to houses. The Agriculture Department and local government's ability to enforce this restriction is illustrated in Box 1. The main place where rice cultivation was accepted in upstream Jangharoq was Malakol (a strongly water-logged area of approximately 40 ha, where the land is said by farmers to be "in the shape of a bowl" and naturally collects drainage). Because Malakol was not suitable for any crops other than rice and was relatively far from settlements, the Government accepted rice cultivation there. Rice cultivation was also accepted around two neighbouring canals in the canal command area (Qomarok and Akhtashi) as the land there was water-logged and it was hardly possible to grow any other crop.²⁶ In addition, the water-logged area below the cliffs at the level of Kuhna Qala (see Map 10), which is currently under rice cultivation, was not water-logged during the period when the sugar factory functioned. At that time, the bed of the river was different from the way it is today; then, it was further away from the land. Farmers also used to make gabions in case of flooding to further protect the land and so that farmers could grow other crops as in upstream areas.

So, when there was a high demand for water (from June to September), the sugar factory period first saw an increase in water demand from the tail-end area where there was an increase in industrial crops such as sugar beet and cotton. At the same time, in the head-end zone, the demand for water was kept constant by prohibiting rice cultivation, without which the demand for water from there would have increased tremendously.

As mentioned earlier, all informants said there were no *mirabs* in the very first years of the sugar factory. However, in these first years Shah Baz Khan, an *arbab*²⁷ from Shah Baziha, asked Jan Mohamad-i-Beruda, a retired person from Agriculture Department living in New Baghlan "to help downstream people in getting water." The demand came from a group of tail-end villages. Help was needed mainly to make the intake strong enough for water to reach downstream and to make sure that no technical problems occurred on the way (i.e. small breaches, damage to offtakes, etc.). The call for a person to help came during the time when the Government was reshaping the canal to improve

24 According to farmers interviewed, it was in the late 1940s that they learnt about rice cultivation from experiences in the Kunduz area.

25 Nowadays, malaria is an issue for upstream farmers (though apparently not serious enough to switch to another crop).

26 In fact there were few *jeribs* in the most upstream part of Qomarok which were high enough to be suitable for industrial crops. This land represented not more than five percent of Qomarok and was bought by the government to grow sugar beet and cotton.

27 Village or community leader.

its capacity to carry water (see earlier section). When the reshaping started from the tail-end, which took several years, there was a period during which the canal was not in the best condition to supply downstream farmers. Jan Mohamad-i-Beruda was chosen to help because of his potential influence on head-end farmers. Jan Mohamad-i-Beruda was from the head-end area himself and he had worked for the Agriculture Department. Gul Suliman remembered: “Jan Mohamad-i-Beruda even refused to be paid and helped because of his good friendship with Shah Baz. But at that time we did not call him a *mirab*.”

According to different informants, it was after the Government finished reshaping Jangharoq that the first *mirab* of Jangharoq was selected. On that point, Haji Ali Mohamad, Haji Mohammad and Gul Suliman clearly remembered it was the Government (via the Agriculture Department) who chose the first person who was officially called *mirab*. The Agriculture Department had noticed that the canal had not been well maintained in the past and was also aware that the tail-end villages had selected one person (Abdul Quduz) to help them with water management-related tasks. According to Haji Mohammad, the Agriculture Department said: “There should be one official person for the whole canal to ensure that there is a good intake and good maintenance, and to make sure there is enough water for everybody.” Thus, the Government presented Abdul Aziz Khan as the first *mirab* to the different *arbabs* in Jangharoq. While the first official *mirab* was initiated by the Government, in following years the Agriculture Department encouraged *arbabs* to select their *mirab* themselves. But the selected *mirab* had to be acknowledged by the Agriculture Department. Only then would he officially receive the title *mirab*.

According to Haji Ali Mohamad,²⁸ Abdul Aziz became *mirab* in 1945 for four years. In 1949 he was replaced by Mohammad Shafir, who then became ill after two years. Mohammad Shafir proposed Ghulam Qader as his replacement in 1951. Ghulam Qader (the grandfather of the current *mirab*, Abdul Rashid), was *mirab* for 19 years after which he was replaced by his son who had been his *chakbashi*²⁹ in his last years as *mirab*. Year after year, up to the beginning of the war with the Soviet Union in the early 80’s, the selection process appears to have been the same. It consisted of a ceremony, which was organised by the *Arbabs* in which farmers elected the *mirab* by public hand voting. Haji Ali Mohamad, who witnessed most of these elections (as he was also a land owner in Jangharoq as well as a being involved in Government), pointed out that beyond the appearance of being a democratic election process “...it was the *arbabs* who chose the *mirabs*. The hand vote was mostly a formality. People were just following their village *Arbab*’s choice.” He remembered when Mohammad Shafir was elected (the second *mirab*): “The *Arbabs* discussed with each other and selected a person who was influential and well known to the Government. This was so that if he had problems he could easily get support from the Government. At first, Mohammad Shafir wanted to show his power and used to patrol the canal with two policemen requested from the Government, even though it was not necessary.” At the time Mohammad Shafir also had two *chakbashis* to help him with the practical work. According to Haji Mohammad, when Ghulam Qader replaced Mohammad Shafir after two years,

...Ghulam Qader did not know about the work of a *mirab*. But he was strong, which was good for making the intake. And Jan Gul, Mohammad Shafir’s former *chakbashi*, could help him as he had experience. Also,

28 Haji Ali Mohamad arrived in Baghlan in 1949 to work as the head of administration for the Baghlan District Governor. He lived in Big Zad (within the Jangharoq command area).

29 Defined as “community-level water bailiff on tertiary canals (northern Afghanistan)” by Lee (2006). In the case study of Jangharoq, the *chakbâshis* were service providers chosen by the *mirab* to assist him in his various tasks without specific level or area of responsibility.

Ghulam Qader was from the head-end, but he had a wife from a tail-end village, therefore people thought that it would ensure a good relationship between head and tail.

While in the early years there was not much discussion about who should be the *mirab*, a few years after Ghulam Qader was elected there were some differences of opinion. Head-end farmers believed that more pressure and more demands were put on them to maintain the intake and canal (see discussion on maintenance in a later section). They wanted to discuss new candidates for the *mirab* selection. Tail-end villages did not want to consider candidates proposed by head-enders. “At that time, tail-end villages had more power and influence on the *mirab* selection because of the *Sherkat*,”³⁰ said Haji Ali Mohamad. Even though the Agriculture Department did not intervene directly in the choice of the *mirab*, it was implicit that their interest in the tail-end area (where the Agriculture Department had land for sugar beet cultivation) gave tail-end farmers stronger support compared with head-end villages. In addition, the *arbab*s (even in the head-end area) were not interested in challenging the local government as they were selected by this same government. It was also not certain that a new candidate would have won an election since, overall, Ghulam Qader was considered to be a very good *mirab* in the head-end and the tail-end areas.

Even though the Agriculture Department determined that the remuneration of the *mirab* was the duty of the community, it did not propose any specific amount. The issue was left up to the *mirab* and the farmers themselves. “For the first two *mirabs*, and for three years after Ghulam Qader started, there were no clear remuneration rules,” Haji Mohammad explained.

Even though the mirab took a share of the harvest (usually wheat), he did not always apply the same rule to everybody. So people started to complain and asked why these and those people paid less or more. But we did not complain too openly about the mirab as we were afraid he would create problems for us with the Government...At that time I used to pay around five paw³¹ per jerib but it was a lot [i.e. he realised this retrospectively]. Then one day the representative of Agriculture Department said, ‘I have good news. You should now pay for the mirab only 1.5 paw per jerib.’³² An old man from Kandahariha put his shovel in the ground and started dancing and made everybody laugh while singing ‘now Ghulam Qader can’t take our harvest anymore!’”

The Agriculture Department did not introduce the change in remuneration itself. The remuneration rules changed only when a new district head took office in Baghlan (three years after the selection of Ghulam Qader). According to Haji Ali Mohamad (who used to work for the District Governor), a national inspector, the *Khais-i-Tanzima*,³³ gave this instruction to the Agriculture Department. According to Haji Ali Mohamad, who witnessed the event,

...the Khais-i-Tanzima asked about the sugar beet production, the maintenance of the canal and the remuneration of the mirab. He was

30 *Sherkat* means factory, a reference to the Baghlan sugar factory.

31 1 *paw* = 400 grams.

32 600 grams of wheat per *jerib*.

33 Respondents defined this as “a person responsible for supervision and monitoring whether the Agriculture Department (among other departments) worked by Kabul Government rules.” In this case he reported to Kabul on all northern Afghanistan provinces).

checking whether it was enough for the mirab. But when he heard that the mirab could take as much as he wanted, he gave clear instructions to lower this remuneration and for it to be made the same for all farmers, proportional to their amount of land.

According to the inspector's calculations, the set amount was enough for the mirab, his two chakbashis and their families. According to Haji Ali Mohamad, the Khais-i-Tanzima asked for a lower remuneration because it was also a strategy to improve the image of the Government, which was pushing farmers to grow sugar beet. At that time, as some elders remember, the interference of the Government via the Khais-i-Tanzima was strong. The anecdote in Box 2 describes the context in which the Government intervened in farmers' affairs and agriculture development.

The Agriculture Department not only introduced the first *mirab*, but it also laid down some of the principles for collective maintenance of the canal, including annual canal desilting. According to Haji Mohammad, when the Agriculture Department informed communities about the first *mirab*, it also made clear that the reshaping of the canal by the Government (i.e. paying for labour) would not be repeated in future. It would be the responsibility of the community to follow the *mirab's* instructions. According to Haji Mohammad, the head-end villagers did not like having to help with the unpaid canal maintenance work, since they did not need a well-maintained canal. Moreover, as part of the Government recommendations, the head-end farmers had to provide the materials (branches and bushes) for the intake. This was recommended because it would have been too costly for tail-end farmers, located more than 20 kilometres from the intake, to transport materials. Also at that time, head-end farmers were worried that the Agriculture Department would control upstream offtakes. However, this concern was mainly over cases of drought at river level, when water distribution needed to be closely controlled.

In practice, the *mirab* was responsible for setting the most suitable date for main canal desilting. He would inform the Agriculture Department, which would then write a letter to the different *arbabs* of the area. The letter was considered to be in support of the *mirab* to help him gather the necessary labourers. Hence, the *mirab* would not have to go to each house himself to inform people, but it would be the task of the *arbabs*, under the instruction of the *mirab* and backed-up by the Agriculture Department. Each house had to have one person to help and this included houses without land owners or sharecroppers (i.e. people living off livestock).

Box 2: Example of the authority of the Khais-i-Tanzima

When Haji Mohammad was a young man he witnessed Shab Baz Khan (*arbab* from downstream) accompanying the Khais-i-Tanzima in the downstream area for a field visit to government land. The Khais-i-Tanzima saw a man with a very long turban (10m long). He took the turban and cut it into three pieces. He explained to the farmer that this length would be enough for a turban. He explained that a long turban would go to waste after one year while three shorter turbans could last three years. The farmer said: "It is part of our custom; where we come from." The Khais-i-Tanzima said: "Forget about your customs, I'm telling you how you can save money for your family."

Haji Mohammad concluded by saying: "At that moment, we thought that we didn't even have control over our own bodies anymore. Today, children are not even scared of ISAF [International Security Assistance Force], the police or any person in uniform. At that time, even our fathers were worried when they saw somebody in uniform (from local government)."

According to Haji Abdul Raziq and Haji Ali Mohammad, every village also had to send a representative who could tell the Agriculture Department who was not present. Those people not present would then be brought to the police station. Though there were some instances when this happened, usually the *mirab*, the *arbab* and the defaulter monitor would find an acceptable solution (for example, by providing more labour on another day) to avoid having to report to the Agriculture Department. At that time, the *mirab* did not have a list of households with the names of inhabitants or the names of those who did not participate in maintenance work. The *mirab* would simply record the number of people per village who attended. Each day, he would ask the village representative how many people had come from that village. If it was less than the previous day, he would ask why and which house had not provided labour. With experience, the *mirab* would know how many houses there were in each village, according to Haji Abdul Raziq. Specifically for main canal desilting, the area was divided into three zones, designated by the *mirab*, to make labour distribution easier:

- a tail-end zone from the last offtake until Mullah Abdul Ramin offtake (see offtake location on Map 3). In this zone, there were usually less desilting requirements due to a relatively steep slope that caused less deposition in the main canal.
- a central zone from Mullah Abdul Ramin offtake until Jerib Shah offtake (see offtake location on Map 3)
- a head-end zone from Jerib Shah offtake until the intake

All three groups would start work at the same time with villagers from the area. Usually when the first group (tail-end) finished desilting their zone, they would join the group working in the central zone where most desilting work was needed.

In the same way, when the second group (central zone) was finished, people joined the head-end group, which had the longest stretch of the main canal. Therefore, all three zones would contribute the same amount of labour days. According to Haji Ali Mohammad, it did not always work perfectly, but it was sufficient and there was effective enforcement to deal with the few cases of low attendance.

The general perception of all informants was that, during the period when the sugar factory was the most productive (the mid-1970s), there was usually enough water to reach the tail-end in time for everybody to grow sugar beet or cotton. Only on some occasions was there a need to organise water turns between different offtakes along the main canal. This was the *mirab's* responsibility. Water turns were only implemented in an emergency situation; for example, when the intake was damaged or washed away at the river level and the maintenance or the reconstruction was time consuming. Other times were when there was damage along the main canal (breaches due to erosion of banks, etc.). Because of the interlinkages between canals, shortages could also be created by problems in the Ajmeri Canal. In that case, less water would drain from Ajmeri and would limit the flow to tail-end areas. Overall, if a water shortage was experienced at plot level, it was not a problem of lack of water but a technological problem.

During that period, the Agriculture Department focused on water access for the tail-end area (between old Baghlan and Jar-i-Khushk). This was motivated by the vested interest of the Agriculture Department in sugar beet production as well as cotton. For example, Mudir Salem remembered that, when people had to take their turn for water, the priority and therefore the first turn was given to the tail-end. The *mirab* was responsible for making sure enough water reached the downstream area, with the Agriculture Department being the higher level authority. For example, Haji Mohammad, an elder from Sarak-i-Sherkat, said that if some farmers could not irrigate their crops on time because

of water shortages, they would go directly to the Agriculture Department. They would say: “Look at our crops. If we do not have water, please do not come to us later on to ask why we did not get a good yield!” The Agriculture Department would then put pressure on the *mirab* to do his job, ensuring crops in the tail-end area received water in time. Haji Ali Mohamad explained that in some cases, when the *mirab* could not solve the problem informally, he would go to the Agriculture Department. In such cases, the Agriculture Department usually asked the *arbab* to solve the problem. However, this issue of water not reaching the tail-end in time and in sufficient amounts was the exception, because the *mirabs* at that time (Ghulam Qader and then his son Hemat Ali) controlled the situation efficiently. Ghulam Hazrat and Mudir Salem remembered Ghulam Qader in his latter years as a *mirab* (at end of the 1960s): “He used to patrol the whole day along the canal with a pillow on his shoulder to rest his shovel.³⁴ He would just shout to villagers, ‘Bring me lunch.’ He would often sleep at night along the canal and in the morning, wherever he was, he would yell, ‘Where is my breakfast?’” According to Ghulam Hazrat and Haji Nazir: “Ghulam Qader was afraid that people would try to open their offtakes at night or that something would happen on the canal because he knew the Government would blame him. So he spent most of his time in the field.”³⁵

At that time, the Ajmeri Canal, which is on higher land than the Jangharoq and runs parallel to it, was already functioning. The canal drained into the Jangharoq main canal at different points, and mainly benefited areas after Old Baghlan at the tail-end. According to different informants, during the time of the sugar factory the Agriculture Department was never given a formal, written document on water rights within the Jangharoq canal area which indicated who had the right to how much water and when. However, water rights seem to have been given explicitly to the downstream area and prioritised the sugar beet growers’ demand for water. Probably the most tangible evidence of this was the tight control the Government exerted over rice cultivation in the head-end area, which ensured a sufficient water supply to growers of sugar beet and other crops. According to Said Ibrahim Tahir (a former teacher at the Baghlan Agriculture faculty), there were neither water measurements nor gauges. At the time, there were only traditional offtakes (some of them being concreted by farmers with the agreement of the Agriculture Department). Neither farmers nor the *mirab* nor the Agriculture Department talked in quantitative flow measurement terms such as cubic metre per second (m³/s) or even *asyabs*³⁶ regarding the different offtakes or given proportionally to the amount of land behind the offtakes. The *mirab* estimated, based on experience, what the flow should be so that farmers could irrigate without constraint and without too much wastage. Said Ibrahim Tahir remembered, however, how

from time to time the Provincial Governor [Ismael] [a few years before the end of Zahir Shah’s reign in 1973] used to come to put a stick in the canal and leave a mark for the mirab at the level of 12th Street. He would say ‘I will come next week, it should be at the same level.’

5.2 Reflections on water management in the period before the war

34 The shovel was used for small maintenance, to close some offtakes, to make sand bags if needed and so forth.

35 A very close friend of the *mirab* Hemat Ali and his family, Haji Abdul Raziq used to joke with Hemat Ali, telling him: “You are always along the canal and never in your house, please let me know if you need me to take care of your wife.” The *mirab* used to reply, “I’m strong and my wife is strong. If my children are not strong, I will know what she has been doing while I was along the canal.”

36 flow used to supply a water mill structure. In Takhar, one *asyab* is equivalent to an average of 200-250 L/s (based on flow measurements done by the Participatory Management of Irrigation System project).

With the building and development of the sugar factory and the cotton factory, there was a transition from a “supply-oriented” towards a “management oriented” phase of development. Initially, there was still a focus on improving supply (with the reshaping of the Jangharoq Canal under the local government initiative) and drainage. This increase in supply was driven by the Government. As it increased its stake in the irrigation system by buying land for cash crop production, the Government understandably took steps to protect its interests. Thus, a government-driven management system took shape to ensure that the overall increased water supply met the increased demand. At this point, the canal communities’ decision-making power over the resource eroded. The decisions became top-down and protected government interests. During this period, water rights were not explicitly defined. However, it was the farmers’ duty to grow a certain crop. The Government could control water demand by limiting rice cultivation and thus limiting water use upstream. One could say that water rights were implicit and they prioritised the demands of those growing industrial crops in the downstream part of Jangharoq. This, plus the fact that the *mirab* who also played a role in ensuring water distribution was himself influenced by the Agriculture Department, meant one could almost talk about a government-managed system. More accurately, one could argue this was a jointly-managed system since the water users selected the *mirab* (though under the supervision of the Agriculture Department).

The way labour was shared appears to have been fair in principle. It was the community that mobilised and controlled labour for canal maintenance (with the support of the *mirab* and the *arbab*), even though this was facilitated by a letter from the Agriculture Department. For that period, collective maintenance was shared equally, with each household contributing labour for the same number of days. Water use and maintenance requirements were not linked. For the intake, it appears that there was a distinction made between communities over their labour contribution since the head-end communities provided materials.

In summary, the period of change in the local water management institutions from the 1940s to the end of the 1970s, means it is difficult to talk about Jangharoq as a traditional farmer-managed system—a system where rules and regulations for collective maintenance are (re)defined, implemented and controlled by the water users themselves without (or with very low) external influence (for example, from government, markets, etc.). Referring back to the concept of social capital that was introduced earlier, one could say that the local government’s ability to promote and support collective action for water management was a key element in the rather positive performance of the Jangharoq irrigation system (in terms of water access and collective maintenance).

6. The War with the Soviet Union (1978-89): The Collapse of the First *Mirab* System

The war with the Soviet Union triggered key changes in the *mirab* system. The relatively rapid collapse of local government led directly to the de facto end of restrictions on the upstream cropping patterns. It also led, in combination with the collapse of the sugar factory, to the end of support and incentives for tail-end farmers to grow sugar beet.

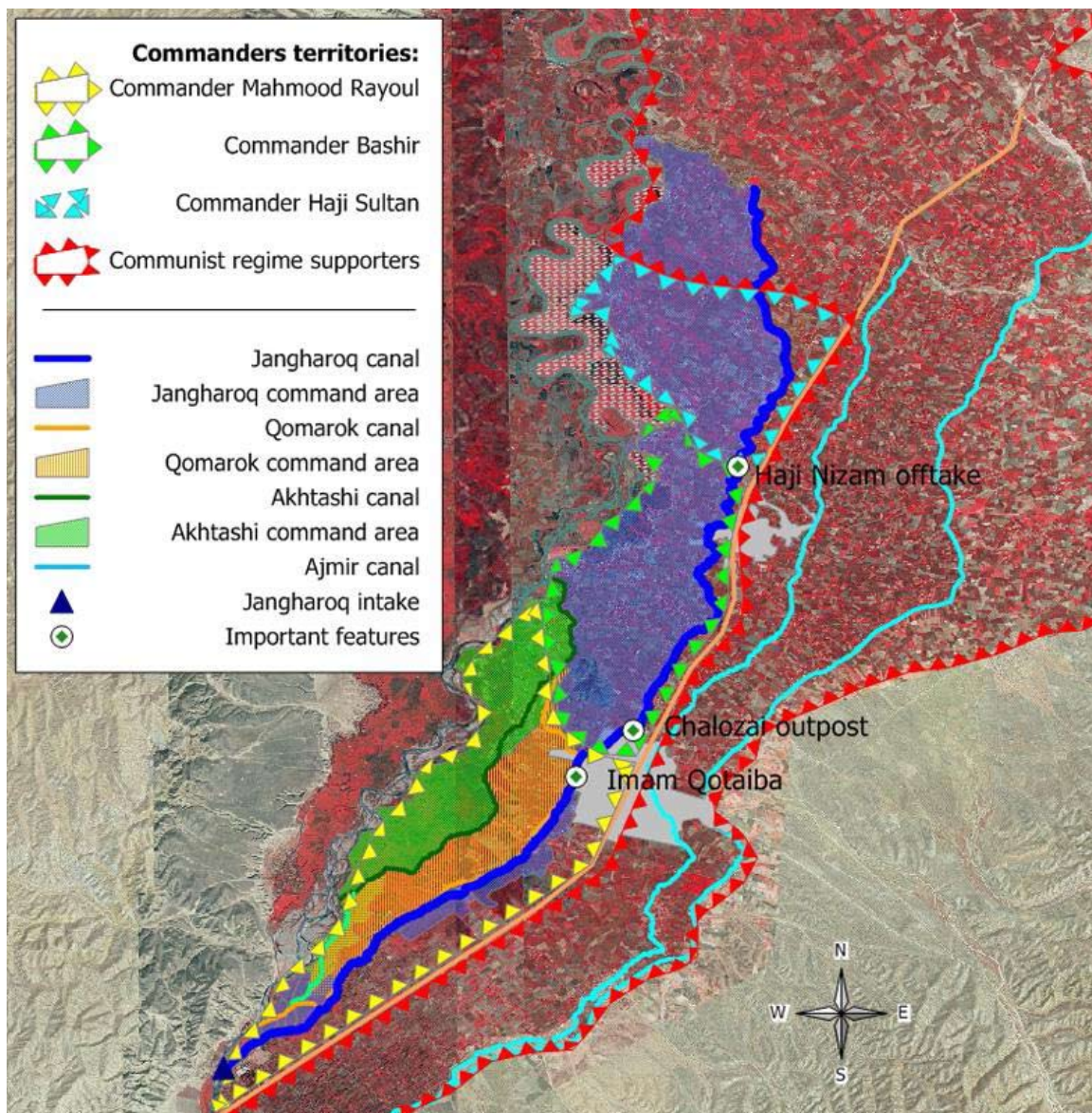
Overall, it was the fact that the Jangharoq area became an intense combat zone which had the most severe impact on the canal system and its management. At the beginning of the war with the Soviet Union, the area was divided between different, opposed groups in Baghlan. Generally, the pro-communist government mostly controlled the east side of the road, while the mujahiddin controlled the west side, including the Jangharoq command area. The pro-communist government also controlled the area north of Saraki-Sherkat up to Tcharshambe Tepa (about 12 km north of the end of Jangharoq Canal). In addition, the mujahiddin did not form a homogeneous group and there was strong rivalry among them. "They spent more time fighting each other than fighting the Russians," said Amanullah.³⁷ In the first two years of war, Commander Bashir Khan controlled the area between the intake (in Fabrica) and the Haji Nizam offtake. Commander Haji Sultan controlled the area further downstream. They were not serious rivals. Amanullah explained, "They had an agreement not to kill each others' men but nothing more." At that time a third commander, Mahmud Rayoul, controlled the area south of Fabrica, just upstream of the command area of both Jangharoq and Qomarok canals. At the very beginning of the conflict, Mahmud Rayoul and Bashir were close allies. Ghulam Hazrat remembered a meeting between the commanders where Mahmud Rayoul told Bashir: "You should be the one who takes decisions and makes plans while I will be responsible for the implementation part. By working together, we can capture all of Afghanistan!" At that time, there was also an agreement between the two mujahiddin commanders that loot from government trucks or convoys should be shared between them.

In these first two years of the war, a problem began with Qomarok Canal that would have negative consequences for Jangharoq, which would continue up to the present time. During the war, it was difficult for Qomarok farmers to properly maintain their intake as it was very exposed to enemy fire from the other side of the river (in Tap-i-Arab). The water access in Qomarok decreased substantially, to the extent that the tail-end part of Qomarok could not grow rice anymore and farmers had to change to mung bean or other crops. The Jangharoq intake, however, although close to the Qomarok intake, was not as badly exposed and could still be maintained. After the first two years of the war, the relationship between Bashir and Mahmud Rayoul started to deteriorate and Mahmud Rayoul planned an attack on New Baghlan. New Baghlan was divided between Bashir and pro-communist supporters on the east side. Mahmud Rayoul pretended that the city was falling into the pro-communist's hands. The attack was successful and Mahmud Rayoul also used the opportunity to take control of the whole area between the intake and Khujja Khan Baba, including the Qomarok command area (see Map 4) which used to belong to Bashir. This incident was the start of tensions between Bashir and Mahmud Rayoul. Mudir Salem, Ghulam Hazrat and Amanullah also remembered another incident between these two commanders soon after. One day, Bashir hijacked a government truck and looted the contents.³⁸ However, he kept the loot for himself, which was contrary to the

37 Amanullah was the *chakbashi* of Hemat Ali (son of Ghulam Qader and father of Abdul Rashid, the current *mirab*).

38 This was a common practice during this war period.

agreement with Mahmud Rayoul. Mahmud Rayoul took offence. In response, for one year Mahmud Rayoul stopped the entire flow of the Jangharoq Canal at the level of Himmam Kotaiba (see Map 4) and let it flow to the river through the Akhtashi Canal. He argued that it was now his water and that he did not have to share it. During this year the water did not even reach New Baghlan. The following year, a delegation of villagers from the area, which Bashir controlled, begged Mahmud Rayoul to let water flow to their area. They said that the rivalry between the commanders should not affect ordinary farmers. Mahmud Rayoul agreed, on condition that the farmers did not join Bashir's armed forces. Mahmud Rayoul let the water flow beyond his territory, but this did not last long. Bashir built an outpost in Chalozai (see Map 4), which Mahmud Rayoul considered to be a threat³⁹ and he decided to cut the flow of water again. According to Amanullah (and confirmed by Mudir Salem) until the end of the Najibullah government (in 1992), the water from the Jangharoq intake never went further downstream than Imam Kotaiba (see Map 4). Land in the upstream part of Jangharoq was abandoned and a large number of villagers left the area, migrating to other parts of the country or, in some cases, abroad.



Map 4: Commanders territories in the Jangharoq Canal area (right bank of the river), approximately two years after the beginning of the revolution.

³⁹ Some attacks from Chalozai on Mahmud Rayoul's area were recorded.

The tail-end did not receive any water from Jangharoq intake but, on some occasions, the drainage from Ajmeri was enough to provide a little water for those who stayed in the area.

From the moment Mahmud Rayoul controlled the Qomarok area up to New Baghlan, farmers started making breaches in the Jangharoq Canal banks in the Surong area. There, the Jangharoq Canal is at a higher level than the Qomarok Canal; the two canals run parallel and very close to each other (see Map 11 in the Annex). For the farmers of the Qomarok Canal, creating a breach between the two canals at this point made access to water much easier than getting it from the traditional intake, which was much more laborious and time consuming in addition to the issue of security as already mentioned. Because of this breach between the canals, the downstream area of Qomarok was able to grow rice again. Towards the end of the war, Qomarok farmers made a second breach at the level of 6th Street to increase the flow for Qomarok. As explained earlier, even though the intake of Qomarok still functioned, it had less maintenance because of the poor security.⁴⁰ This led to the intake deteriorating to the point that water coming through it was only used for the Tasharok Canal (see Map 11), a branch canal in the head-end area of Qomarok Canal. The Tasharok Canal could not get water through the Jangharoq Canal. The breach between the Qomarok and Jangharoq canals did not have any immediate effect on Jangharoq because the water had been cut at the level of Imam Qotaiba/New Baghlan anyway. However, this non-negotiated transfer of water from one canal to the other would become a problem later—from the mujahiddin period onwards.

Soon after the beginning of the war, the *mirab* Hemat Ali and his family migrated to Pakistan. His nephew Amanullah, who had assisted him as a *chakbashi*, did not have enough money to migrate and stayed during the entire war period. He said: “Since the day Allah Mohammad left, no one replaced him. There was no *mirab* in Jangharoq for the 10 years of the war, until the end of Najibullah’s time when Hemat Ali came back.” There was also no need for a *mirab*, as the command area of the Jangharoq Canal became almost entirely dry.

The intake and canal maintenance needs on Jangharoq were minimal because only a few hundred hectares on the right bank were irrigated. The maintenance was done ad hoc under Commander Mahmud Rayoul. Even when not working properly and not receiving water from its intake, the Jangharoq Canal became silted by the run-off from the spring floods (rain running off the hills to the canal) and from the small drainage which came from Ajmeri year after year. The degradation of the canal was accelerated because the canal was used as a trench for outposts to launch ambushes and to fire from. At the level of the Haji Karim offtake, where the Jangharoq passes very close to the road, the canal became completely blocked. A tank had been put in the canal and an outpost had been made around the tank from which to ambush convoys passing on the road.

During that period, the different drains which had been made during Zahir Shah’s time to decrease water-logged areas and to make the land suitable for industrial crops became filled too. Still today, despite attempts to renovate these drains, the area on the right bank of Jangharoq and the Malakol area are not suitable for any crops other than rice. Before the war, farmers whose land was below the cliffs (at the level of Kuna Qala) protected it from floods by regularly constructing gabions, but this practice did not last during the war. Farmers had either left the area or had other priorities. Also, the river bed changed over time and moved closer to that land and the area became progressively

⁴⁰ After Mahmud Rayoul took control of the intake area, he managed to have an agreement with the Tap-i-Arab people to let Qomarok farmers maintain the intake once a year. Still, it was not adequate since the necessary regular maintenance could not take place.

water-logged. Today, rice cultivation is the only option in this area of approximately 140 ha. Hence, the water demand in the upstream area increased.

Regarding the cropping patterns, most of the land of Jangharoq command area became either abandoned or rainfed (*lalmi*). In the years before the water was cut at the level of Imam Kotaiba, villagers started changing to rice because the government restrictions were, in practice, lifted. Very soon, however, the lack of water, combined with the war and the pressure which commanders exerted over the local population, pushed many people to abandon their land and houses. But beyond the critical issue of water not flowing beyond Imam Kotaiba, this period of the war was particularly violent in Baghlan. “At the time, it was easier to go from Kabul to other countries than to go from Fabrica to New Baghlan. Even a bird making a noise was shot at,” said Amanullah. Only a small area in Malakol could still be cultivated with rice as it received drainage from Qomarok.

6.1 Reflection on the *mirab* system during wartime

It is no surprise that, with the collapse of the state, the water management system at canal level collapsed as well since the state was the main enforcer and decision-maker on water distribution and crop production. It is also no surprise that the vacuum left by the collapse of the state was filled by new power-holders (the commanders) who used the irrigation canal and the water flow for income generation and to demonstrate their power and influence. The dramatic cutting off of Jangharoq Canal water by an upstream commander as an act of defiance against his rival became a key event signifying “the death of Jangharoq,” according to Haji Mohammad. He recalled the golden age of the sugar factory, “We used to have good economic benefits. When we had problems, we were the first to get attention. A lot of people in the area felt like the kings of Baghlan. But our kingdom died with Daud.” Referring to the concept of social capital, the Soviet invasion period drastically affected the elements of trust, cooperation and social cohesion among all actors within the Jangharoq canal system, leading to a complete collapse of collective actions and cooperation for water management.

7. The Mujahiddin Period (1992-98): The Start of the Second *Mirab* System

At the end of President Najibullah's government in 1998, Allah Mohammad, the previous *mirab*, returned from Pakistan where he had migrated to during the war. Many villagers returned to the area at that time. For about a year, the situation in Jangharoq was stable until an important event triggered change for the Jangharoq Canal. Soon after the mujahiddin took control of the country, Mahmud Rayoul was killed and Bashir took control of Rayoul's former territory, which included the upstream area of Jangharoq from the intake to New Baghlan. Bashir now controlled the area from the intake up to Old Baghlan. A few years later, Haji Sultan died and was replaced by Ekramudin Zia (his brother, currently a big land owner in Jangharoq) who had a good relationship with Bashir. Even though Ekramudin Zia was not directly under Bashir's authority, Bashir's influence and control was considered to be strong in the area from Fabrica to the end of Jangharoq (including the Jangharoq command area).

Mahmud Rayoul's blockage of the water flow could now be lifted. At the same time, Hemat Ali took the initiative to restore the canal. According to Amanullah⁴¹, "Hemat Ali went directly to Bashir and told him, 'I need help from you. This canal has not been maintained for 12 years, I need people to help me restore it.'" Even though Hemat Ali had never really been one of Bashir's men⁴² and left the area at the beginning of the war, he always had a good reputation in the Jangharoq area and beyond and was considered to be an influential person despite not having military power. Bashir agreed to support the *mirab*. He asked villagers to follow Hemat Ali's demand for collective labour. According to Amanullah, Bashir had said that "...for the small repairs you can directly ask the community. But for work demanding more labour, I will ask the police to use prisoners to do the work." With the support and under the authority of Bashir, Hemat Ali organised and supervised the rehabilitation of Jangharoq. For major rehabilitation work, prisoners closely controlled by Bashir's gunmen were brought to the site.

In this way, Hemat Ali became the de facto *mirab* of Jangharoq, although there was no election or selection. He took on the *mirab*'s responsibility with the approval and support of Bashir. For this entire period of organising and monitoring the canal restoration, Hemat Ali did not ask for any remuneration. Still, according to Amanullah (and confirmed by Arbab Rulam Sakhi), it was only one year after this that new candidates started proposing themselves as candidates for the *mirab* position. During the mujahiddin period local commanders (i.e. Bashir) controlled the election of the *mirab* despite the appearance of an open election process. Bashir would choose the location for the annual election which was done with an open hand vote by the people present. The majority chose the *mirab*. There were no criteria for who could vote. According to Amanullah, new candidates would provide trucks to gather people and promised them breakfast or lunch. "There were bribes by new candidates and sometimes people came to vote who did not have land in Jangharoq." This apparently only happened with new candidates. Amanullah explained that it was

all just a show. We knew that the person who would be the *mirab* would be decided by Bashir anyway. This is why we did not bother bringing truck loads of people. We had sup-

41 Amanullah is currently *chakbashi* under Abdul Rashid (son of Hemat Ali). He is the nephew of Hemat Ali and used to be his young *chakbashi* during the period the war with the Soviet Union as well during the mujahiddin and Taliban period until Hemat Ali's death).

42 Hemat Ali refused to be a commander under Bashir (unlike his brother who was considered to be one of Bashir's best commanders).

porters and we knew who Bashir would choose, because Hemat Ali developed a good relationship with Bashir.⁴³

However, Bashir's influence did not seem to be openly authoritative or straightforward. From Amanullah's explanations, decision-making seemed to be subtle. Evidently, if Bashir had been authoritarian, nobody would have chosen to be a candidate and wasted time bringing trucks of people or buying breakfast for farmers to "buy" votes. Even if Bashir did not personally support the candidate, he still signed their candidacy paper.⁴⁴ "Bashir would not discourage people because he did not want to have unsatisfied people from his area who could become enemies later," said Amanullah.

But during discussions between landowners at the voting event, (if needed) Bashir would give his opinion at a certain moment. He would say things like 'I think that Hemat Ali was a good mirab last year. He did this and that, what do you think?' Most people would not really like to go against Bashir's choice.

As Amanullah recounted, "People, coming on the trucks of the other candidates would openly approve of Bashir's opinion, despite having eaten breakfast from the other candidate's pocket."

During the year Mullah Abdul Ramin⁴⁵ replaced Hemat Ali (towards the end of the mujahiddins' regime) there was another example of the hidden negotiations that took place before the final selection. Mullah Abdul Ramin was a good commander of Bashir's and interested in being the *mirab* (some farmers would say later it was for the remuneration and the bribes this position could offer). It was a dilemma for Bashir. On one hand he was concerned that Mullah Abdul Ramin would be disappointed if he did not have Bashir's support. On the other, Bashir did not want to give negative signals about Hemat Ali, who was an experienced *mirab*, respected and probably the person most capable of managing conflicts in the area. According to Amanullah, Bashir discussed things directly (and secretly) with Hemat Ali and asked him to let Mullah Abdul Ramin be *mirab* for one year and "people will see that he cannot do the work. Then you will become *mirab* again next year." In that year, Hemat Ali did not present himself as a candidate and pretended he was tired and becoming old. *Mirab* Mullah Abdul Ramin selected his own *chakbashis* but there were some problems during the season and he did not convince water users that he should be *mirab* the following year. He did not have the same level of respect that Hemat Ali had earned through long years of service. Mullah Abdul Ramin also had less experience than Hemat Ali with anticipating farmers' water needs (based on crop water demand, time needed to convey water from one place to the other, negotiating skills, etc.). At the end of the season, people wanted Hemat Ali to come back and he became *mirab* again until the end of the Taliban regime. In his last few years as *mirab* he stopped doing physical work as he became too old. "He was just teaching us and directing us," said Amanullah.

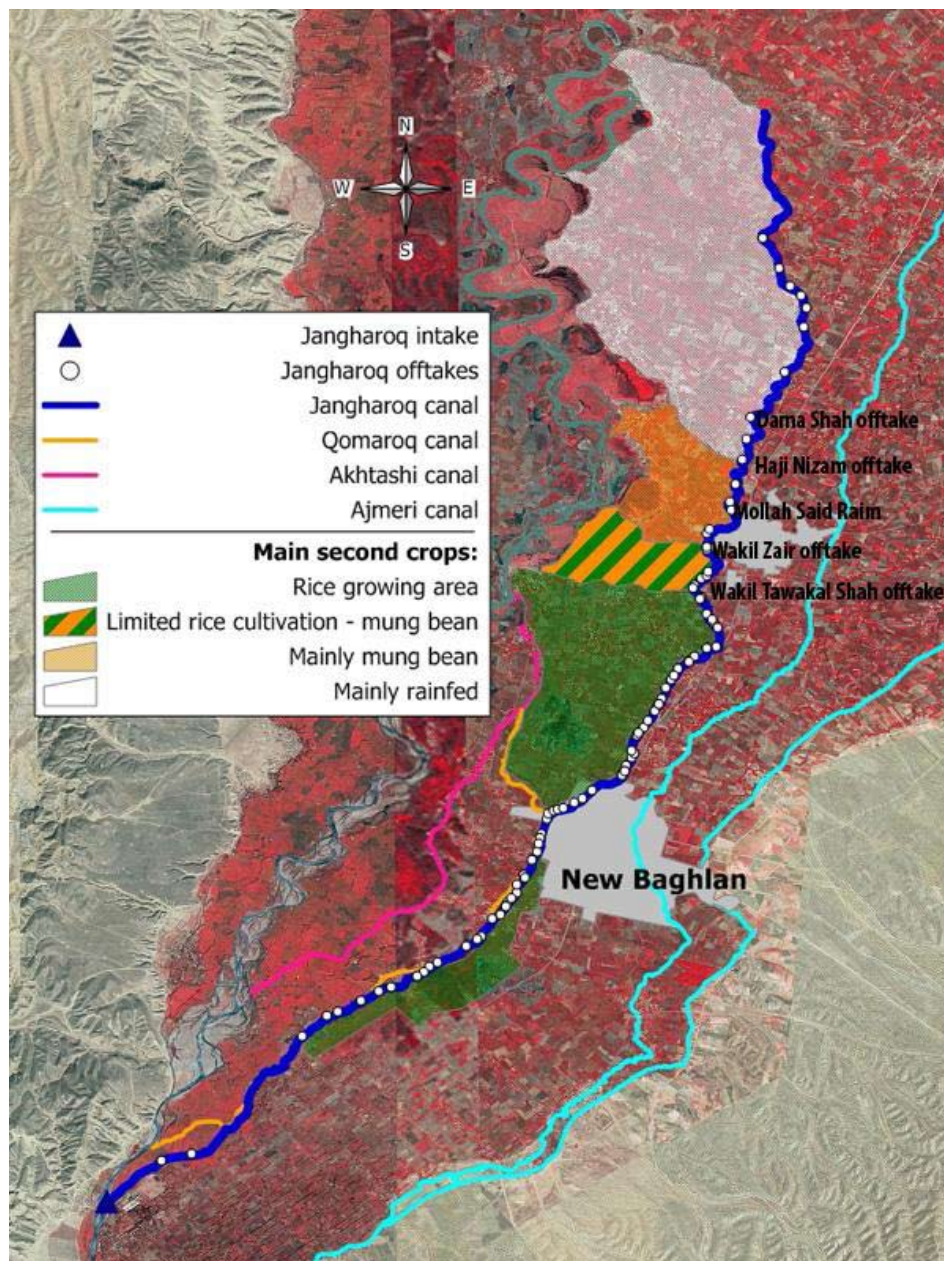
When the Jangharoq Canal was restored under the initiative of Hemat Ali, the rapid and unregulated spread of rice crops in the upstream area was the most critical issue. Rice

43 Amanullah also said that it was an important factor that Hemat Ali's brother was Bashir's best commander (beyond his respectable work as a *mirab*) in the good relationship the two men had.

44 The candidate was supposed to get a signed agreement from Bashir before getting 20 signatures from land owners for the right to be a candidate. Before the hand voting, the *mirabs* would introduce themselves and present their paper (which gave them some legitimacy as a candidate).

45 Mullah Abdul Ramin is currently an influential person in Jangharoq. He owns many businesses in the province and has relationships with MEW members in Kabul.

could be grown from the intake to the Wakil Zair offtake (see Map 5). However, by the last few offtakes upstream of Wakil Zair (included) water access was not good enough for rice, especially for the plots far from the offtake. This meant a significant increase in the demand for water for the 1087 ha in the upstream area, compared with demand in the pre-war period when the entire Jangharoq command area benefited equally from irrigation. Despite having obvious negative consequences for downstream farmers, neither the *mirab* nor the most influential person in the area, Commander Bashir, controlled this trend. There is no straightforward explanation for this, just that “after the war, people were different. They were doing whatever they wanted, just like today.”



Map 5: Water access for Jangharoq (mujahiddin period)

There is another possible interpretation of the situation though. Local commanders, including Bashir, had some interest in the spread of rice which was already a cash crop and farmers had to give 20 percent of their harvest to the commander. It was a win-win situation for head-end farmers and the commander. For tail-end farmers, the improvement in water access meant they could again irrigate a first crop (mostly wheat). However,

for them to grow a second irrigated crop was difficult (with some variations from year to year), even though some extra water from Ajmeri Canal improved the supply along Jangharoq's main canal. Some water still reached the area between Wakil Zair and Haji Nizam offtakes which was sufficient to grow at least a dry crop such as mung bean, the second main crop grown in this area. But, as Mudir Salem recalled, "no water was flowing after Haji Nizam offtake."

The unregulated construction of offtakes during the mujahiddin period hindered the increase of water access for the tail-end area. Even today these offtakes are referred to as "illegal offtakes." Almost all of the 35 "illegal offtakes" (out of the 119 recorded in 2007) were built during that period. All of them are located between the intake and Old Baghlan (i.e. rice growing head-end area). Ghulam Hazrat explained, "At that time, any land owner would make these offtakes on his own. Nobody regulated these structures, not even Bashir Khan." Mudir Salem added that *Mirab* Hemat Ali complained about these practices, but Bashir dismissed him. Bashir apparently said, "Do not worry, these offtakes will be closed in a few years." According to Ghulam Hazrat, some people, mainly less powerful land owners, gave some money to Hemat Ali to avoid him making complaints about them. But the most powerful did not care. No cases of any landowners or commanders refusing offtake construction were ever recorded during that period. The Haji Khalat Khan and Haji Abdul Rasoul offtakes were cited as examples during the discussion on "illegal offtakes" (see photos in Annex). Haji Mohammad reasoned that the creation of illegal offtakes was triggered by farmers wanting direct and independent access to the canal without sharing a flow with neighbours. Ghulam Hazrat described cases where land divisions within families led to separate offtakes being built. These illegal offtakes mainly supplied the plots of land close to the main canal. But the consequences were the same. In theory, the increasing number of offtakes should not have increased the amount of water withdrawn from the main canal, but in practice each new offtake used the same flow as the previous one. Farmers almost constantly left their offtakes open and diverted what they needed for irrigation from the tertiary channel to their plot. The rest of the flow was left to drain out the system through the mesh network of tertiary channels.⁴⁶

According to Ghulam Hazrat and Amanullah, tail-end farmers did not complain too much about their low or no water access. They knew that there was not much they could do. "At that time everybody had guns; people sat on their offtakes with their weapons," said Ghulam Hazrat. As rice cultivation became accepted in practice, head-end water users claimed water allocation based on crop water demand. It became their "water right." The only person who went to head-end areas to discuss with farmers was the *mirab*, according to Hemat Ali. He tried to take the initiative, which helped slightly in limiting water use upstream.

As Mudir Salem (from the head-end area) remembered, Hemat Ali wanted to organise turns within the area between the intake and the Haji Nizam offtake. He proposed that from 8 a.m. until 2 p.m. head-end farmers could use as much as they wanted, but after 2 p.m. the head-end farmers should slightly close their offtakes to allow fields in Old Baghlan and further at the tail-end to be irrigated. According to Mudir Salem, however, this was not implemented. Instead of turns, some head-end farmers stopped using water from time to time for a few hours but not on a regular basis and not often enough (maybe one or two days in every 15 days). So, in that period the *mirab* system did not ensure

46 Many of these tertiary channels flowed through the villages, passing through different houses' compounds. Leaving an offtake open made sense to farmers as it was useful to have water constantly flowing through the village for domestic use, ablutions, livestock, etc.

fairer distribution for tail-end farmers. Nevertheless, Hemat Ali's initiatives helped to some extent to limit the high water use upstream. "If Hemat Ali had not been there, the water would not have flown beyond Haji Karim offtake," said Mudir Salem. According to several respondents, it was not really as *mirab* that Hemat Ali played a (minimal) role to improve water distribution but because of his personality and his reputation as an honest man. Also, that Hemat Ali had taken the initiative to restore the canal without asking for remuneration earned the respect of water users. During the mujahiddin period, water turns started at offtake level but were mainly arranged for the most downstream offtakes where water availability in the main canal was becoming too low. The farmers themselves usually organised these turns. In practice it was done in an ad hoc way with changes made through negotiations (at best) or through conflicts. It was in cases of conflicts that the *mirab* was called on for first-level mediation.

Different respondents reasoned that Bashir did not seem to have too much interest in helping tail-end farmers against head-end farmers. During the mujahiddin period, there were some incidents between influential farmers and Bashir, which created animosity (without becoming open, armed conflict between zones of Jangharoq). Informants such as Mudir Salem described the *mirab*'s remuneration, which was similar to that of the commander who received 20 percent of the rice harvest. It was reasoned that the *mirab* had less interest in tail-end farmers since the overall remuneration⁴⁷ that he received from them was lower if less water was given to head-enders and more to tail-enders. At that time, the *mirab*'s remuneration was in kind—a share of the harvest. Head-end farmers had to give a share of their rice harvest. Because tail-end farmers could not grow rice but rather mung bean or other dry crops, it was better for the *mirab* to get higher rice yields from the head-end. However, it is not clear whether this was a key factor in the lack of pressure on head-enders to get more water to tail-enders.

At the same time, water supply at the head of Jangharoq (at the level of New Baghlan) was not good because of breaches between Jangharoq and Qomarok (see Section 7 on the war with the Soviet Union). Before it reached New Baghlan (Pul-i-Utkhil), water was diverted from Jangharoq Canal to Qomarok Canal. Consequently, Jangharoq was not at its maximum capacity. *Mirab* Hemat Ali did not have much direct authority over the Qomarok community and the only person who could have forced Qomarok farmers to stop making breaches in Jangharoq Canal was Bashir. He controlled the whole area covering both canals. Muder Salam, an influential farmer from New Baghlan who lived in the same village as some Qomarok farmers, explained,

Even if Bashir was from Jangharoq he was also collecting taxes, a share of the rice harvest, from Qomarok. He was not so interested in having Surong completely closed. In practice, during the day Bashir authorised Jangharoq farmers to close Surong with sand bags. But very soon after the Qomarok people would open it again and throw the sand bags away. In such cases Bashir did not really insist on punishing them. He would always say that nobody knew who exactly did it, therefore it was not clear who he should punish.

Daoulat Zaye added that the Qomarok farmers had been under Bashir's control for only a short period and that they used to be his enemy in the past. Daoulat Zaye's opinion

⁴⁷ During the mujahiddin period, the remuneration changed compared with that given during the sugar factory period. As a follow-up to a demand from the *mirab*, Hemat Ali, Commander Bashir agreed to raise the payment to one-quarter *ser* per *jerib* for all crops. For first crops, farmers paid in wheat while for second crops they paid in rice or mung bean (if they did not grow rice). A farmer growing other crops such as melons paid in mung bean. (1 *ser* = 7 kg)

was that Bashir did not want to appear too harsh to keep them under his control but gain their trust and avoid future problems. This opinion was shared by Mudir Salem and Zareef.

Initially, Bashir's prisoners were forced to maintain the canal but later the community did regular work. The *mirab*, Hemat Ali, tried to re-establish a system used previously (during the Zahir Shah and Daud period). According to Amanullah this did not work as it had in the past with government support. The rule of one person per house helping with maintenance work was opposed by farmers who did not have land and they stopped participating. This created conflicts. Hemat Ali proposed a by-law in which labour for maintenance was to be proportional to land area, and with differences between head-end and tail-end areas acknowledged. The rule was one person should work for one day per 50 *jeribs* of land at the tail-end, and one person per day per 20 *jeribs* of land at the head-end.⁴⁸ The border between head-end and tail-end was considered to be the Mullah Abdul Ramin offtake. Tail-enders contributed less labour because of their lower water access and the rule of labour contribution linked to size of land seemed fairer. In practice, the canal was still divided into three zones, which were basically the same as they were during the sugar beet factory period (see the description in section 6). However, according to Ghafar (a *chakbashi*), less than 90 people per day contributed. To get even that number of labourers the *mirab* and *chakbashis* had to pressure people. Some people were put in jail (belonging to local commanders) for a day as punishment while wealthier people gave bribes to avoid working. Commanders and influential people were not asked to contribute. Not all farmers who did not help were sought, but a few were used to set an example. Ghafar said people were usually "caught" when the *mirab* went to the bazaar and found somebody who should have been working. Bashir backed up these sanctions. "Bashir was especially active when he had small commanders under him who needed money. He would send these men first to be more effective," Ghafar explained. But Bashir did not want to put his farmers under too much pressure, according to Ghafar, since he needed their support and dedication. Another *chakbashi*, Amanullah, also said the new by-law did not work well and resulted in only a few labourers. "The tail-end people always said, 'We will contribute if you can sign us a paper that you can bring us water'," Amanullah explained. In fact, the tail-end farmers participated in the intake maintenance for their first crop but they did not participate (or only a little and under pressure) in the canal desilting. Tail-end farmers were not confident that the desilting would significantly improve water access at the tail-end. They thought that if more water came into the canal it would be wasted at the head-end. After the restoration of the canal, the water did not really reach below the Haji Nizam offtake (see Map 5) and people would need water only for the first crop. This did not really require good conveyance capacity. Overall, some maintenance was done but it was not as efficient as it was during the sugar factory period.

7.1 Reflection on the *mirab* system during the mujahiddin period

During the mujahiddin period, the political change that came when Commander Bashir took control of the entire Jangharoq command area introduced the changes that allowed the emergence of a new *mirab* system. Under the initiative of the former *mirab*, and with the support of the local commander, a supply development phase started again to restore the capacity of the canal.

48 Farmers with less than 20 or 50 *jeribs* (the majority) formed a group with other farmers to provide one labourer per day per group that jointly had 20 or 50 *jeribs*.

However, the commander's power, and maybe even his vested interests (being paid a rice tax and stability in the community), was seemingly not as strong as the Government's position had been in previous times. Management initiatives taken (new by-laws on maintenance or water turns) to limit the unequal water distribution resulted in only limited success. In this new system the *mirab* had no control over key factors, such as regulating water demand, as had been the case in the sugar factory period when government authority was strong. Yet, the trust that Hemat Ali had gained over the years through his different activities and initiatives for the whole community (such as the restoration of Jangharoq Canal without remuneration) was certainly a factor in controlling the chaotic water distribution in Jangharoq. The difference between the performances of the two *mirabs* also demonstrates that, even though the two *mirabs* were backed by the same authority, their ability to succeed differed because of their personal reputations.

Thus overall, the new *mirab* system did not reflect a government-managed system but rather a community-based system in which control remained relatively limited (i.e. the regulation of water demand in the upstream area could not be controlled) and for which the effectiveness of initiatives was limited and dependent on commanders' interests.

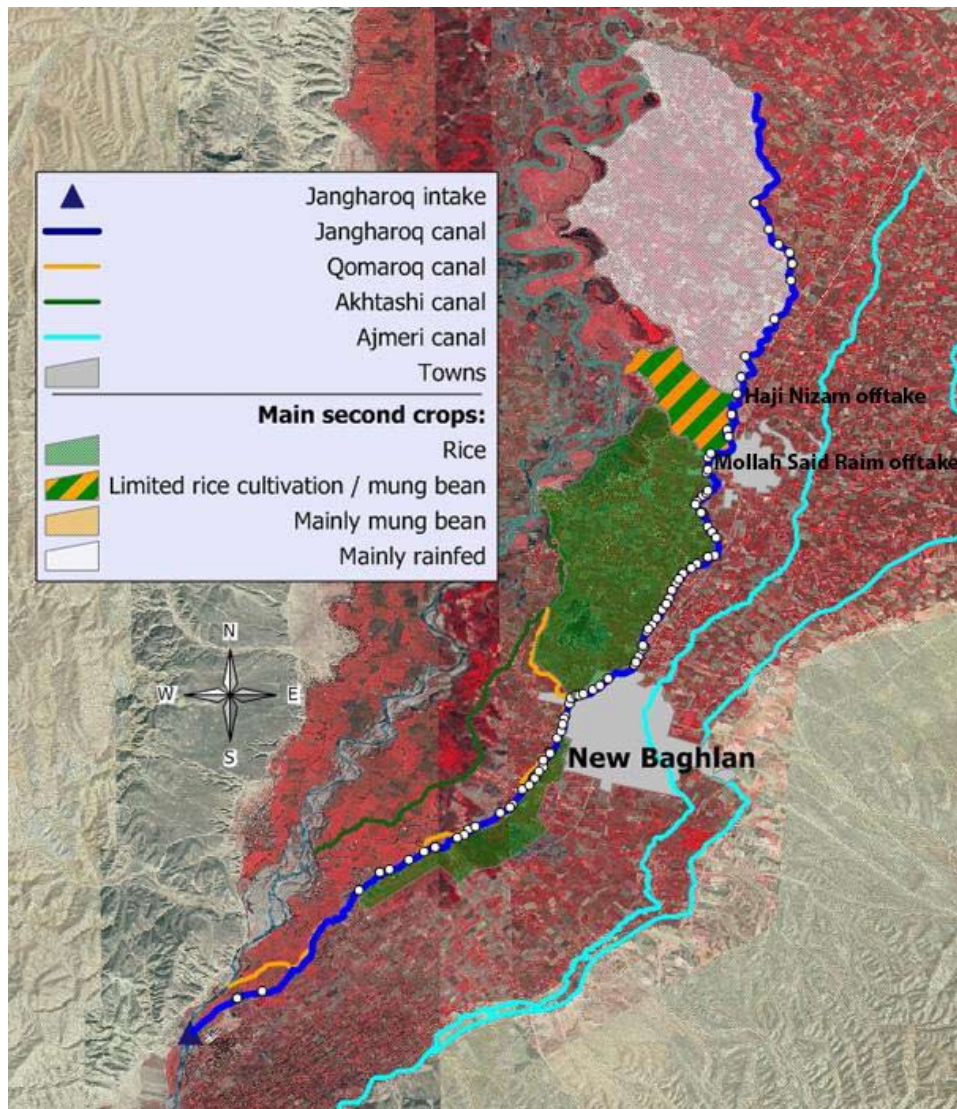
8. The *Mirab* System Under the Taliban Regime (1998-2001)

During the Taliban's rule, Hemat Ali remained *mirab* for the first year but villagers and their leaders did not organise any elections. Said Ibrahim Tahir said, "The Taliban said that it was not necessary to select a *mirab* every year. They asked to keep the current *mirab* and said he would be replaced only if there were problems." But after one year, Jamil Rahman (the brother of Ghafar the *chakbashi*), who had a good relationship with the Taliban of Old Baghlan, managed to get himself elected as a *mirab*. He got a letter of support from the local Taliban government. Said Ibrahim Tahir reasoned that Jamil Rahman "mainly wanted to make money from the different nongovernmental organisations with projects in the area." At that time German Agro Action (GAA) constructed a new intake for Jangharoq.⁴⁹ Jamil Rahman was *mirab* for only one year. Hemat Ali obtained another letter from the Taliban representative in north Afghanistan (Norullah-i-Nuri) asking him to be the *mirab* for Jangharoq. At the same time, another Taliban team replaced the Taliban who had supported Jamil Rahman. His position became weaker and he could not find any support to counter the higher-level Taliban decision. Nobody really knew how Hemat Ali got this letter since he was not considered to be a Taliban or even someone who liked to be linked with commanders or influential people. However, some informants hypothesised that his son (Abdul Rashid, a future *mirab* of Jangharoq) had rapidly developed a good reputation among Taliban leaders when he killed between 30 and 40 people for them in Takhar as they tried to capture Taloqan.⁵⁰ This might have helped Hemat Ali in negotiations with Norullah-i-Nuri to become *mirab* again. Hemat Ali was *mirab* for two years until the first year of President Hamid Karzai's transitional government (2001-2002).

During the Taliban period the most significant change in terms of water access (see Map 6) was brought about by the new GAA intake. According to informants, it allowed a higher flow in the Jangharoq main canal and the increase in water availability led to an extension of the rice-growing area from Mullah Abdul Ramin to the Haji Nizam offtake. Even so, the entire area turned into rice, but in the area below Haji Nizam no changes in water availability were noticed. In addition to the new intake, another factor contributed to the increase in water availability in the Jangharoq Canal. The diversion of water from Jangharoq to Qomarok (at Surong level) became less problematic from the beginning of the Taliban period. Ghafar (a *chakbashi*) explained that during a time in the 2000 irrigation season when the availability of water was critical, Jangharoq's *mirab*, Hemat Ali, asked for help from the Taliban police to patrol the main canal. When they arrived at Surong, the Taliban asked who had made the breakage. The *mirab* and *chakbashis* of Jangharoq tried to downplay the problem by saying it was Qomarok people but that "they did not know that we needed so much water." The experience of two men being beaten by the Taliban in Baghlan (see Box 3) had shocked farmers and they now feared the involvement of the Taliban in conflict resolution. "After these two people were beaten, we were afraid that if the Taliban went to Qomarok they would kill somebody. It would create very bad tension between Jangharoq and Qomarok as it was in the past during the Revolution (between Commander Mahmood Rayoul and Bashir)." The Surong breach was closed and nobody opened it again that season. According to Ghafar, this happened two or three more times during the four

49 The GAA intake was by-passed by the annual flood of 2005 and a new one is currently under construction by KRBP-TA, funded by the European Commission.

50 Abdul Rashid was nicknamed Rogh Lewanai, which in Pashtun means the "intelligent crazy person," for his ability to escape dangerous situations in which he often found himself.



Map 6: Water access for Jangharoq (Taliban period)

years of the Taliban rule, but these had been when new members of the Taliban came to the area to replace a team.

The situation was relatively better at Surong than at Jangharoq. According to Mudir Salem and Said Ibrahim Tahir, the situation improved even further during the year Jamil Rahman was the *mirab*. He managed to completely stop abuses by Qomarok farmers because he had good relationships with the Taliban, who warned Qomarok's elders. Said Ibrahim Tahir remembered that the year Jamil Rahman was the *mirab* was the first time water had reached the end of Jangharoq during summer since the sugar factory period. This was due to Jamil's capacity to get the Taliban local government to enforce the water turns.

Attendance at canal maintenance duties also improved during the Taliban time, according to Ghafar. The main difference with the mujahiddin period was that most farmers feared the Taliban. The farmers heard stories about the Taliban's violent behaviour in other areas and even witnessed it in their own canal. The *mirab* and his *chakbashis* used this to their advantage. Ghafar (*chakbashi*) explained that one day he announced in the Friday mosque that he would give a list of defaulters to the Taliban if farmers would not attend. As a follow-up he actually took a list of 11 people who never helped with desilt-

ing. “The Taliban asked these people to come to their office where they took all their money. Then they beat them and sent them to the canal. The son of Haji Abdul Rizak was severely beaten and could not walk for few weeks, yet he had to desilt,” Ghafar explained. He remembered with a laugh how Haji Abdul Rizak’s son said to him, “You are not human, you are an animal,” for having sent him to the Taliban. After that event, there was much better participation and 150 to 200 people helped with the maintenance instead of the 60 to 90 people there had been before. Ghafar said the list was not used again to increase attendance even more. According to him, it would not have been good to put more pressure on communities; if the *mirab*’s image was poor, it could weaken his position (even though the selection of the *mirab* was not always the water users’ choice). It was also not good to create too much tension among villagers in the area. Another argument, he said, was that “...if you start making this kind of list systematically, people will start saying that some people are not in the list even though they do not come. It is because they give bribes to the *mirab*. This could reflect back negatively on the *mirab*.” Yet it is highly probable that Ghafar got bribes in any case (as it was observed in present time) but maybe in a less open way.

8.1 Reflection on the *mirab* system during Taliban rule

Since the Taliban were external to the Jangharoq Canal area, one may view them at the same level of authority as the Government during the sugar factory period. Although the Taliban did not have a stake in the canal’s management, they influenced local affairs, especially with regard to enforcing rules. Indeed, because the local community feared the Taliban, the *mirab* had more power to implement water sharing and collective maintenance. This underlines that the success of the *mirab* system in the study area depended on the capacity of a higher authority. Referring to the concept of social capital defined earlier, it is the link (networks) with external groups or individuals (in this case, the Taliban) that was one of the key elements leading to a relative improvement in collective action for water management. It should be noted, however, that technical improvement (such as intake construction) was certainly an important contributing factor to water access improvement at that time.

9. The System Under the Transitional Government and President Hamid Karzai's government (2001-present)

The local and national political situation underwent important changes with the fall of the Taliban. The Agriculture Department, Water Management Department (WMD) and especially the local governor were either new or not familiar with the local dynamics of the recent past or they had little influence on local commanders. Mudir Salem described the first years during which the Water Management Department talked with villagers about water sharing. When the head of the district Water Management Department in Baghlan explained his position as representative of the Karzai transitional government, people showed their guns and said to him, "This is our president." Box 4 illustrates a typical example of the Water Management Department's loss of authority over the regulation of water demand. This is especially highlighted when compared with the case outlined in Box 1 at the time of the sugar factory. Bashir tried to come back to the area after he lost his power during the Taliban era, but he was no longer an influential person. The commander with most influence at that time was Amir Gul, who would become district governor later in 2007. Amir Gul lived along Jangharoq Canal in the head-end area. He managed to collect taxes from the farmers

Box 4: Enforcement capacity of the local government (present time - 2006)

In 2006, the head of Water Management Department in Baghlan went to the Ab Qul area (opposite Jangharoq on the other side of the river) to check on the water access situation at plot level. He saw fields of rice in the upstream part and decided to set an example by cutting and removing the crop on part of the plot. The owner was not present. He removed some rice, asked his staff to continue and even asked other farmers to help. He warned the *mirab* not to permit the farmers to grow rice. When the *mirab* saw the plot being cleared, he said, "You shouldn't do this. If the government wants to remove rice, it should bring the police before the land is prepared and give their orders. I can't do this if you don't bring the police to order me and to control. I have not been selected to clear farmers' plots and if I do that I won't be selected next year."

Later, when the farmer saw his field, he called the director of the WMD and said: "If you are the son of your father, please come to this side of the river. I will irrigate my land with your blood."

The WMD head himself related this story in a Baghlan sub-basin working group meeting (in spring 2007) related to the issue of droughts and the control of cropping patterns. The question of the capacity of the local government to take sanctions against defaulters was raised by the WMD director, but his question remained unanswered.

directly for himself for three years, even though this was not government policy. Because the then-District Governor was not familiar with the area, Amir Gul was "in practice" the governor. However, his influence was not as strong as Bashir's influence had been in the past and he did not have as strong a grip on other local commanders under him in the different villages of Baghlan. Both the new local government and local commanders were particularly unsettled and unstable as they tried to find their own place in the new political context. "All of them were busy with other issues and did not have so much time for farmers' problems," Muder Salam explained. As a result, everyone was nervous and defended their own village. There were more tensions between villagers in Baghlan.

In this context, water access at canal level deteriorated during the first years of President Hamid Karzai's transitional government. According to Mudir Salem, as control by either or both commander and local government lessened, water wastage in the upstream area increased. A few new "illegal offtakes" were built during that period (mostly for Commander Amir Gul's land), some of them using money from the National Solidarity Programme (NSP) budget. The issue of increased water use in the head-end area became more pressing when returnees resettled there. Their resettlement led to more intense rice cultivation (which was already high) and an increase in demand for water between New Baghlan and Old Baghlan. The problem of the Surong breach from Jangharoq Canal to Qomarok Canal reoccurred and worsened the water situation for tail-end farmers and it became difficult for Jangharoq farmers to go to the Surong area. Farmers who tried were welcomed with shots from automatic weapons. Two *chakbashis*, Ghafar and Qateb, and a farmer who helped them, Haroon, described how they were shot at one day. They were carrying some sandbags to close the Surong breach that was causing a serious water problem in Jangharoq. "Haroon and I dropped the sand bag and jumped into the canal as soon as we heard the shot fired at us," said Ghafar. "I fell on Haroon's arm which broke on impact, while Qateb was stuck under the sand bag we had dropped and could not move." They finally escaped but, since then, Qateb has not wanted to patrol this area.

Though Jangharoq farmers tried to mobilise Amir Gul as he was the only person who could have done something, the farmers did not succeed in this. Amir Gul argued that it was difficult to find out who reopened the breaches and therefore difficult to punish them. Informants said that Amir Gul also still received taxes from the lucrative land in Qomarok (all under rice). So he had an interest in maintaining the status quo and strengthening his position as a wealthy commander.

From the end of 2006 to June 2007, two important canal infrastructure rehabilitation projects were initiated as part of the Kunduz River Basin Programme: The water flow was continuous until the Wakil Tawakal Shah offtake, but access became a problem from there until the Haji Nizam offtake. Getting water at those offtakes usually required a lot of discussion with head-end farmers (despite the fact that Ekramudin Zia and Mullah Abdul Ramin were very influential people and had land in the command area of those

Box 3: Conflict resolution at the time of the Taliban:

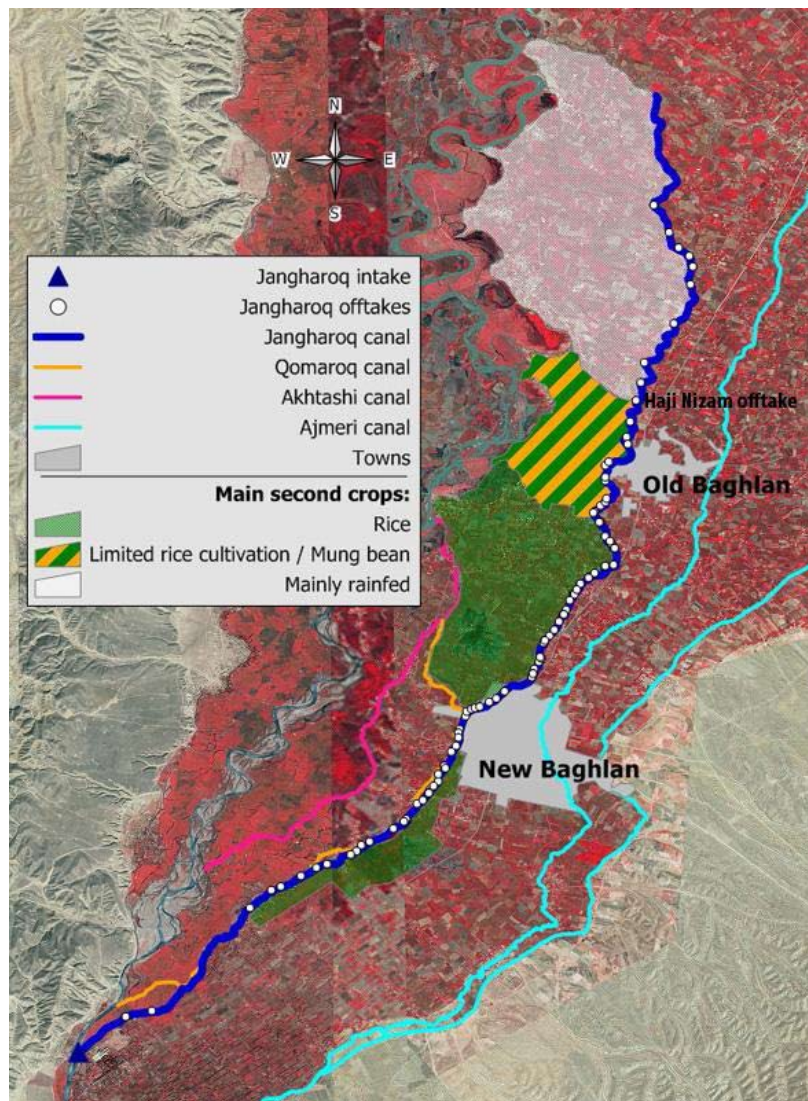
Haji Said Mohammad described an event he witnessed at the beginning of the Taliban regime at an upstream offtake in Jangharoq.

Two farmers had a conflict about water sharing in Ghulam Baye (upstream area). One farmer was from the downstream part of this offtake command area and the other one was from the upstream part. There had been a breach due to erosion in the Jangharoq Canal, which meant that less water was available in the main canal for a few days. Turns had to be organised within offtakes, including upstream ones. The implementation of this caused the two farmers to argue. The downstream farmer said he would ask the Taliban to solve the conflict. A Talib came with a piece of cable and asked "who has conflict with whom?" He didn't wait for an explanation and tied the two people with his turban. Then he used his cable to beat them until their whole body bled. Then before leaving, the Talib said: "If you have another conflict please inform me as soon as possible".

A few weeks later, one of the two men died from his injuries. The second one still has difficulty moving.

offtakes) with unreliable results. Turns were organised only between the offtakes (while some head-end offtakes were closed slightly to limit their flow), but the flow was insufficient for good rice yields. Even at the Wakil Zahir and Ghulam Hazrat offtakes, some people stopped growing rice because there was no reliable access to water. Some farmers (from the tail-end of Ghulam Hazrat offtake) who continued to grow rice explained that their yield was not good at that time. At the Mullah Abdul Ramin offtake, there were only two plots (belonging to Mullah Abdul Ramin himself) of land (10 *jeribs*) that remained under rice. Mudir Salem, Zareef, Zahir Daoulat Zayed and Ghafar explained that from the Haji Nizam offtake until the end of the Jangharoq, the area was rainfed and had no second crop. Farmers from those areas, however, managed to get water from the Ajmeri Canal but it was not sufficient for irrigation and it was used for watering trees and for domestic and livestock uses.

The situation lasted until 2004-05. In 2004, there was a new district governor and, at the same time, Amir Gul started to lose his authority. “At that time Amir Gul was under more and more pressure from the International Security Assistance Force, which was watching these local commanders more closely,” Mudir Salem explained. As a result, Amir Gul could no longer collect local taxes and, in general, the influence of armed commanders was reduced. It became safer for tail-end farmers to go to the Surong area (though



Map 7: Water access for Jangharoq (first years of Karzai transitional government)

it was not completely safe, especially at night) and also to head-end Jangharoq when they wanted to talk to farmers. Thus in 2004 and 2005 the situation improved slightly in the area between Mullah Abdul Ramin and Dama Shakh offtakes, where some farmers managed to start a second crop again.⁵¹ The water even reached the tail of the canal, but very little land could use this water for irrigation (Shekh Malek and Haji Mohammad estimated it to be less than 50 *jerib*).

In March 2007, the Kunduz River Basin Programme - Technical Assistance (KRBP-TA) began reshaping the Jangharoq Canal with the help of the Participatory Management of Irrigation System⁵² (PMIS) project. As the Jangharoq weir was designed to accommodate a larger flow (if possible to also link up with Qomarok) the objective was to increase Jangharoq's capacity, especially in upstream areas. This was to ensure the reshaped canal could accommodate the expected water surplus from the intake. At the time, the Jangharoq Canal was highly silted. As a consequence, in the 2007 irrigation season the conveyance capacity increased by around 20 percent.

Table 1: Changes in cultivated area from 2006 to 2007 irrigation season in Jangharoq downstream areas (Source: PMIS survey)

Zone (see map)	Command area (CA) (in <i>jerib</i>)	2006		2007	
		Area cultivated (in <i>jerib</i>)	% of CA	Area cultivated (in <i>jerib</i>)	% of CA
Zone 1	3,050	33	1	560	18
Zone 2	4,250	55	1	738	17
Zone 3	2,687	1,006	37	2,161	80
Zones 4/5/6/7	7,243	7,243	100	7,243	100

Measurements were made during the 2006 and 2007 irrigation seasons. At the level of Pul-i-Utkhil (a critical point where Jangharoq was close to overflowing during the irrigation season), measurements showed an increase from a maximum of 4.5 m³/s in 2006 to a maximum of 5.5 m³/s in 2007, which led to an improvement in irrigated area, especially for downstream areas. Table 1 shows the change from 2006 to 2007. Zones 1 and 2 saw their irrigated area go up from a few *jeribs* to 17-18 percent of their command area. Zone 3 witnessed a sharp increase from 37 percent to 80 percent. More importantly, Zone 3 saw its rice cultivation increase from 12 percent to 40 percent of the total command area.

The key point made by respondents (including Mudir Salem, Ghulam Haz-

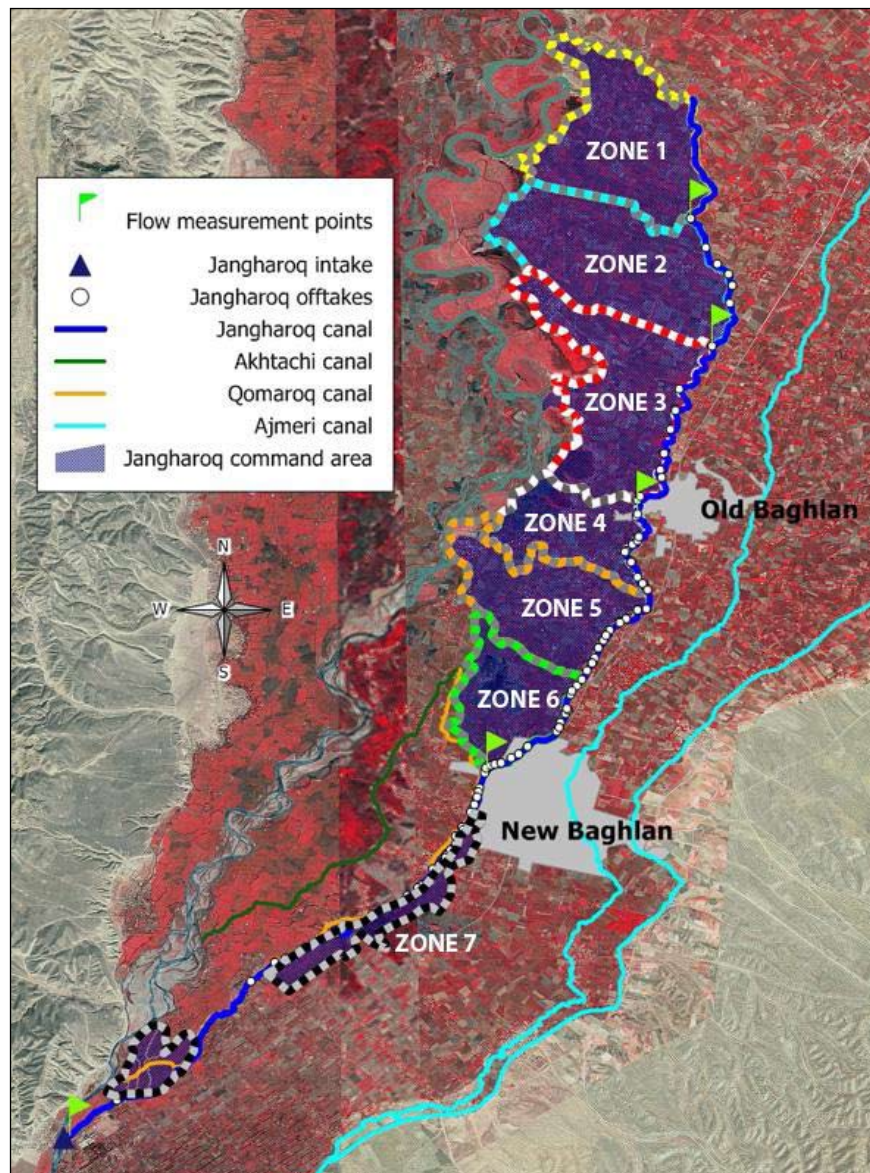
Table 2: Cases of bribes paid to the mirab to get water in the two downstream zones in 2007

Cases of bribes to mirabs in 2007				
ZONE (see map)	Paid	Did not pay	n/a	Percentage of farmers who paid bribes to the mirab to irrigate their land
Zone 1	7	0	7	100
Zone 2	14	3	3	82.3
TOTAL	21	3	10	87.5

n/a = farmers interviewed did not cultivate any land in 2007

51 Despite the fact that in 2005, the Jangharoq intake was by-passed, Jangharoq farmers apparently did not suffer too much since they organised labour to make a diversion from the river to the main canal.

52 The PMIS project is one of two social water-management projects that are part of the Kunduz River Basin Programme (KRBP).



Map 8: The seven zones of Jangharoq canal

rat and Haji Mohammad) was that this improvement came at a high cost. In the context of better water availability at the head of Jangharoq, where the *mirab* had a little more room to improve the situation, Abdul Rashid (the *mirab* elected in 2004) used this as an opportunity to ask for bribes. Tail-end farmers who had not received water for decades agreed to pay. As Table 2 shows, a very large majority of farmers interviewed and who cultivated some land in 2007 in zones 1 or 2 have paid bribes to the *mirab* to get water. Abdul Rashid's strategy was to relieve tail-end farmers from paying any remuneration to him for their first crop so that he would gain their trust. However, he got his money back (and more) from the bribes he then got during the irrigation season.

For Zone 2, in three cases (17.7 percent of farmers who irrigated their land), farmers refused to pay the *mirab*. The reasons for not paying bribes are described next page.

The first and third cases are more the exception than the norm. In the second case, the farmer refused to pay a bribe but did get enough water for a minimum yield. So, not paying bribes affected his output. It was very difficult in 2007 to get water in downstream areas without paying a price.

1) Mullah Yaqoob (three irrigations for mung bean in Zone 2):

He argued with the mirab that in his position as mullah he cannot give bribes. The mirab did not accept this argument and refused him water. In the end, Mullah Yaqoob managed to get water through an influential farmer who had a plot next to his. No compensation seems to have been given for this. His case is probably exceptional as few farmers who paid for water would be ready to support neighbours who did not pay unless there were other, non-material transactions.

2) Shah Mahmoud (one irrigation for clover in Zone 2):

Though he cultivated clover, he managed to get one irrigation. He refused to pay the mirab arguing that he was already paying him. "Those farmers located in my offtake and who have paid to get water did not allow me to irrigate my field," Shah Mahmoud said. Contrary to Mullah Yaqoob's experience, Shah Mahmoud could not irrigate more than once and did not get any yield from his plot. His case is illustrative of the consequences of not paying bribes. During informal conversation with farmers (other than the ones formally interviewed), a significant number deliberately chose not to grow any crops knowing they could not afford to pay the costs for getting water. Clear statistics on these cases were not, however, possible to collect.

3) A. Rahim (four irrigations for mung bean and 15 for melons in Zone 2):

Like Shah Mahmoud he managed to get a first irrigation without paying. But conflict started with the mirab who asked for money. He refused to pay. Luckily, his offtake was relatively close to a point where the Ajmeri Canal drains into the Jangharoq main canal. According to A. Rahim, he managed to build a small aqueduct which channelled Ajmeri water directly into the offtake so that the mirab could not argue that he was using Jangharoq's water. Mahmoud could not irrigate more than once and did not get any yield from his plot. His case is illustrative of the consequences of not paying bribes. During informal conversation with farmers (other than the ones formally interviewed), a significant number deliberately chose not to grow any crops knowing they could not afford to pay the costs for getting water. Clear statistics on these cases were not, however, possible to collect.

Table 3: Costs of bribes to the mirab in 2007 (among farmers who paid) for the two most downstream zones

Cost of bribes to mirab in 2007 (among farmers who paid)						
ZONE	Cost per farmer (Afs)		Cost per irrigation (Afs)		Cost per jerib (Afs)	
	Average	STDev	Average	STDev	Average	STDev
Zone 1	3071	2050	1181	382	1086	687
Zone 2	3642	1797	769	483	545	411
Both zones	3452	1880	710	485	902	547

From these results it is difficult to find any logic to the costs per *jerib* or costs per irrigation, as the results for Zone 1 and Zone 2 do not correlate. Moreover the standard deviation is very high, which shows that there is no generally applicable rule as far as

these two criteria are concerned.

From discussions with the farmers, there does not seem to have been a clearly established rule (even informally) on bribes to the *mirab*. Farmers and elders from downstream areas (zones 1 and 2) appear to have paid the *mirab* in two ways.

First, a collective payment (for the entire irrigation season) was organised in early July. At the time, farmers in zones 1 and 2 complained that there was little water reaching their area and they feared that their crops would not get any yield if the situation did not improve. Downstream elders organised a meeting with farmers and the *mirab*. "Without a motorcycle and some money for fuel and lunch, it is impossible to patrol this canal," said Abdul Rashid. Farmers (and elders) agreed to pay. However, no specific rule was defined to share the costs except that everybody had to pay what he could. In the end, elders paid a higher price (up to 5,000 Afs) while the poorest farmers managed to gather at least 1,000 Afs⁵³. This totalled 76,000 Afs (US\$1,500) gathered by 25 farmers who were at the meeting.

Second, during the irrigation season the *mirab* asked for more bribes but this time on an individual basis. This happened two ways. The farmers could ask the *mirab* directly to bring water to the downstream area. The *mirab* would then request money.⁵⁴ Another opportunity was when the *mirab* (and/or his *chakbashis*) were patrolling the canal to bring water to the downstream area. If the *mirab* saw someone irrigating without having paid, he would directly argue with that farmer.

In both these instances, it seems clear there were ad hoc negotiations with the *mirab*. The *mirab* asked for a certain amount which was discussed. Sometimes the *mirab* accepted the arguments of farmers who pretended they could not pay. It would then be the *mirab's* decision to accept a lower bribe. As some farmers said, the *mirab* would always find different excuses to ask a higher price from time to time. It could be that his motorcycle did not have petrol, he had to buy sandbags, repairing had to be done which involved a lot of work, etc. It is difficult to outline all the factors involved in negotiations, but the average figures seem to be high. In any case, payments could vary from a few hundred to 1000 Afs. The unclear rules support the fact that there are no evident trends in the results in Table 3. Note, however, that the payments recorded during the survey include both individual and collective payments. It could be inferred from the fact that farmers in Zone 1 (the most downstream area) paid more than the farmers in Zone 2; the *mirab* had stronger bargaining power in Zone 1 because it takes more effort to ensure water reaches the tail-end offtakes. This, however, was not discussed in detail with respondents.

Though many tail-end farmers increasingly complained about these practices (partly because the water they received was not as much as they expected), Abdul Rashid was paid bribes until the end of the irrigation season by the majority of farmers in the tail-end area. He was even re-elected in March 2008 when he benefited from the still-strong influence of his uncle⁵⁵ and convinced powerful farmers in the area to elect him with promises of improvements to his behaviour. He also used some of the bribe money to pay

53 This information has been cross-checked and confirmed with different categories of farmers who paid.

54 The *mirab* would often argue that his motorcycle did not have petrol, that he had to buy lunch for his *chakbashis*, or simply that he did not have money to buy sandbags to close some offtakes or a breach in the canal.

55 His uncle was an influential commander under Bashir in previous decades who had a positive impact on local, influential elders.

the same influential farmers from the tail-end area to convince them to give him another chance. As the grandson and son of two respected *mirabs* he also benefited from a large store of trust. His strong personality and that he feared nobody was also thought to be an advantage at a time when relationships between villages were not good. Abdul Rashid himself said, “They chose me as a *mirab* because I did not respect anybody and I was ready to fight anybody. These people (i.e. water users of Jangharoq) are donkeys. They need a dog to bite them and make them work. Only a dog can eat donkey meat. And this dog is Abdul Rashid.” He was able to make people believe that he and his *chakbashis* were the only ones able to allow or deny water to tail-end farmers and that this justified the bribe to be paid. Without strong support either from inside the community or from external actors (such as the Water Management Department) this appeared credible to most tail-end farmers (at least for several years) if we look at their clear acceptance of paying the *mirab* to get water.

Abdul Rashid also convinced farmers that Qomarok water users were making breaches again in Surong and that he was the only one who could solve this issue. Indeed, there were more breaches during that period, from 2001 onwards. However, it was only in 2008 that farmers of Jangharoq fully realised that when Abdul Rashid became the *mirab* of both Jangharoq and Qomarok, he had been the one who controlled the breaches between Jangharoq and Qomarok. Many informal discussions with his *chakbashis* also confirmed that he was getting bribes from both sides to open or close the breach. “Many times he told us, ‘Just go at night and remove some sand bags or make an opening here or there. If Jangharoq farmers complain, I will insult you and your wife publicly or I will fake that I want to beat you. But do not worry about that this will just be fake,’” his *chakbashis* explained. This kind of fake drama also occurred at Qomarok when Abdul Rashid publicly blamed and insulted Qomarok elders to portray himself as a supporter of Jangharoq farmers, all the while getting bribes from the elders. In June 2008, Abdul Rashid’s *chakbashi* Ghafar told some elders: “Please do not repeat it but I have to let you know that Abdul Rashid asked me to make a breach at the level of 9th Street. As Abdul Rashid is my friend I have to do it. But do not worry I will close it in a few days. I had to let you know so that at least you know what is really happening and you can take this into account for next year (i.e. for the *mirab* election).”

Ultimately Abdul Rashid was more interested in supporting Qomarok where there was more money to be made because of rice and where his support was stronger as it was closer to his village. Even though there had been some improvement for the tail-end area in this period, many farmers and elders realise today that it was not as much as it should have been and that it came at a cost (bribes) that was probably not justifiable. “Abdul Rashid was influential at the time because of his uncle who still had influence in the area and particularly in Qomarok area which is close to his nephew’s house,” Mudir Salem explained. “He could have solved the problem of Surong once and for all and he could have done better for the downstream area using this influence. But instead, he exploited the situation to get bribes from both Qomarok and Jangharoq.” Opinions like this were heard many times during informal discussions, including with Ghulam Hazrat, who is known to be a close friend of *mirab* Hemat Ali (Abdul Rashid’s father).

From a water rights perspective, these events show that in 2007, water sharing and water rights were far from being clearly and transparently defined and negotiated. Water rights were evolving towards a free-for-all in the upstream area (zones 4, 5, 6 and 7) where no one would pay bribes and where they got more than enough water to grow rice, while the tail-enders got water only if they paid.

The main change introduced in the *mirab* election (compared with the mujahiddin pe-

riod) was that the Water Management Department asked to organise the election. In the first years of the Karzai transitional government, the elections were organised in the Old Baghlan Friday mosque. From 2005 onwards they were organised at the local WMD office in the presence of the local governor. In both cases, the same procedure was followed. Each candidate had to register with the WMD and produce a list of a few landowners who supported him. There was no minimum number of signatures needed but usually around 15 landowners pledging support would be sufficient, especially if they were influential. From 2001, the registration became a way for the WMD to secure significant bribes.⁵⁶ Though it is not sure that the WMD had that much power to block the election of a *mirab*, it was felt that it was safer to keep the department happy in case it became stronger in the future. The WMD also had its own way of influencing *mirabs* to give bribes. For example, if the *mirab* was not officially registered, the WMD would not take his complaints seriously and would not support him. Another way would be for the WMD to contest the authenticity of the supporters' list and to ask the *mirab* to bring all the land owners who signed it to the department to check their support. This would be difficult for the candidate to organise and paying a bribe would be easier. On the day of the election, discussions were held between the different supporters of the candidates until either a consensus was reached or until a hand vote decided which candidate was elected. In general, such elections involved about 80 to 100 people.

The rule on the *mirab*'s remuneration was still officially the same as it was during the mujahiddin period, basically one-quarter *ser* per crop and per *jerib*. But the *mirab* took some liberties and changed this. In practice, he usually managed to get more by convincing farmers (especially those upstream) that he could not ensure the same level of service in future if he received only a little. Remuneration of around one *ser* per *jerib* became the non official norm.

Ghafar the *chakbashi* managed to get some money (\$2,000) to desilt the Jangharoq in the first year of the transitional government by using his brother's position within the local government in Baghlan. He argued that a run-off flood came from the Ajmeri side and silted Jangharoq, though this was not the case. With this money he managed to pay labourers to desilt from upstream to the Bashir Khan bridge (Old Baghlan). Following this, community-based desilting activities were neglected. There were three reasons given for this. The first was that people thought the desilting organised by Ghafar would last for several years. Secondly, Ghafar explained, in the third year, *mirab* Abdul Rashid got another job with local NGOs at the time of desilting and did not organise desilting in Jangharoq. But the main reason was that there was no support from local authorities. Local commanders were progressively losing their influence or had other more urgent issues to deal with while the new transitional government was too weak to enforce any activities. At the same time, there were NGOs desilting canals⁵⁷ in the Baghlan area and farmers expected them to pay for the work. They also expected *mirabs* and *chakbashis* to play an active role in mobilising these NGOs and donors rather than calling on farmers for work. For two or three years, Ghafar tried to organise labour but failed. Head-end farmers would not attend. Some tail-end farmers did attend but were discouraged when their participation did not have any impact (too much work for poor results) and so they lost interest as well.

56 The *mirab* of Ab Qul said that when he went to the Water Management Department with his list for candidacy, the head of the department in Pul-i-Khumri always said, "I see you want to be the *mirab*, but for this you have to help me, and you know already what kind of food I like." In recent years (2004 to 2007) *mirabs* paid around 30 *ser* of rice to the head of the department in Pul-e-Khumri and 15 *ser* to the head of the department in Baghlan.

57 A Food for Work programme came to desilt the Malakol drainage.

9.1 Reflection on the mirab system during the period of Karzai's government

The very recent past (2007) shows a new trend in the *mirab* system. This current situation is a striking illustration of what the *mirab* system may become after the drastic political, social and technical changes described earlier. In summary, the system saw a collapse of the Government when it was (mainly) a government-managed system. A period of de facto no management followed, after which local commanders and *mirab* could not stop the development of highly unequal head/tail water distribution in which head-end farmers enjoyed a lucrative second crop while tail-enders relied on only rain for their second crop. With a weak and corrupt local government and a lack of any co-ordinated internal management among communities to support and control him, the *mirab* took advantage of improved water availability to set up a system of bribes for water in the most downstream areas. The receiver of this bribe then changed from being the *mirab* to being the WMD, at least during *mirab* election time. More recently, the *mirab*'s ability to get water to downstream areas (if not tail-end) has not been based on a strong local government anymore (as it was in the 1970s), local commanders (in the mujahiddin period) or on his own ability to earn respect for his work. It has been based on his ability to make downstream users believe there is no other way to get water. To a certain extent, it is understandable given the tensions that existed in the past between upstream and downstream communities.

10. Conclusion: Building on the Existing Foundations of the *Mirab* System

Jangharoq: Not an exceptional case

Since intensive irrigated agriculture in the Kunduz Basin was re-established relatively recently, it is questionable whether the experiences of Jangharoq can be transferred to other places in Afghanistan, which have a longer history of irrigation. Certainly within Kunduz the example of Jangharoq is more the rule than the exception. The description by J. Pasquet⁵⁸ regarding the function of the cotton factory in Takhar and the strong influence of the Agriculture Department on cropping patterns is similar to the case of the sugar factory in Baghlan.

An evolving mirab system in a rapidly changing environment

Long-established *mirab* traditions in Jangharoq that are still practised today cannot be generalised to apply to the whole of Afghanistan. So, the observation that “communities continue to maintain their own water management systems, raise finances and organise labour according to traditional and long-accepted norms based on customary law” will not be echoed in large number of canals of North Afghanistan, assuming that Jangharoq is not an exception. This case study suggests that key aspects of water management at canal level—such as the remuneration of a service provider (*mirab*), the organisation of collective labour or the regulation of water demand—have gone through important changes over the course of the canal system’s history. The community (i.e. the end users) has certainly not always been the main actor in these changes. Indeed, the local government and commanders have been, at different periods, the key leaders who imposed or ensured the implementation of new organisational bye-laws on management at canal level. They were the key actors who changed the overall context in which water management took place (i.e. the introduction of a sugar factory in Baghlan or cotton factories in Taloqan or Kunduz). Improvements to or the worsening of water access have been closely related to the external actors’ interests and their ability to enforce them. During the sugar factory period, it was the Agriculture Department; during the Revolution and mujahiddin period, it was influential commanders; it was the Taliban during their short period of rule who triggered a significant improvement or decline in the water access situation, rather than the *mirab*’s character. Of course, *mirabs* still benefited from having room to manoeuvre within which they could act for the better (or worse). But the work performance of even *mirabs* like Ghulam Qader and Hemat Ali (who are still praised beyond Jangharoq command areas for their honest and hardworking personalities) was significantly influenced by the Agriculture Department or a commander. If there has been a general trend in the *mirab*’s influence (in hugely different periods of history) on crucial issues such as water access along the main canal, it is that the *mirabs* have rarely been the key actors in enforcing important changes, though at some points they took successful initiatives (i.e. restoring the canal after the war). Ultimately, this questions whether it is possible to describe local water management in Afghanistan as community-based water management, as suggested by Jonathan Lee (as cited in the introduction).

Collective water management based on praiseworthy traditions

A new trend seems to have developed in the recent past (from 2004 to 2007) probably

58 J. Pasquet, “Participatory Management of Irrigation Systems: Farming Systems Research - Final Report.”

because it is the period during which the *mirab* has had the most room to manoeuvre—with less influence from higher levels of authority⁵⁹. Yet, during this same period, when the situation was closest to being a farmer-managed system (along with, of course, the early years of the Jangharoq Canal), that a system of “bribes for water” has started to develop through the initiative and influence of the *mirab* himself. At a time when reviving a stronger leadership role for the *mirab* in collective water management is being promoted at the national level, this should raise questions. Such an emerging system, with its origins in a history of turmoil, does not echo any “symbiotic relationship between water master and water users” as argued by Lee⁶⁰. It also hardly looks like a system that should be preserved or formalised.

In the end, speaking of reviving, maintaining or strengthening the “*mirab* system” can only be confusing. The “*mirab* system” has meant different things at different periods of time. Indeed, the elements of the system and the way they have connected have constantly evolved and often changed drastically.

Associating the “*mirab* system” with a farmer-managed system is also misleading; again, the influence of government, markets and higher authorities has been strong throughout the history of canals like Jangharoq. Long-term stability and praiseworthy traditions are certainly not definitions that describe canal systems with such a history.

59 The local government (Agriculture Department and Water Management Department) were still weak and had no influence on local management (except to get bribes). The local commanders who had a strong influence over the entire canal area (and beyond) do not have as strong a grip as they used to have and probably do not have as much interest in intervening in daily management issues (except in case of extreme drought where issues and conflicts spread beyond the canal level). As for the elders and influential farmers at village level in the Jangharoq Canal area, they never seemed to play a formal or significantly influential role with the *mirab* to influence collective water management in general or water access and distribution in particular.

60 Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems.”

11. Recommendations for Improving Local Water Management Institutions

In a situation where the Water Law promotes the formation of Water User Associations and where the implementation of this law (constantly evolving) is strongly supported by donors⁶¹, the question is “how should WUAs be formed or organised WUAs in a way that improves, or at least does not worsen the status-quo?” rather than “should the current *mirab* system be changed or promoted?”. The following recommendations outline some principles that will improve collective water management practices and governance, in a context where WUAs are promoted as a matter of policy. These principles are based on the findings from this case study.

Building on existing foundations of the mirab system?

A possible point of discussion is the need to revive or build on local water management institutions that already exist. The idea of building on existing foundations is usually good on paper. It is also strongly praised by Lee as he argues that “it is vital to build on the existing community structures.”⁶² Yet the results of this case study show that (at least in some cases) the assumption that all canals in Afghanistan are managed according to “praiseworthy traditions” that should not be changed needs to be reviewed. Similarly, the idea that just formalising the existing situation means preserving local customs that are well accepted should also be challenged. Consideration should be given to the idea that change and challenging the status quo of the *mirab* system of many canals (at least in the northeast area of the country) might be needed (from water users’ point of view). Challenging the status quo would not necessarily mean rejecting the existing system but adhering to the “praiseworthy traditions” is missing the point. Lee’s notion⁶³ that “there is no justification for abandoning a framework which has survived for generations, both in times of war and peace” might make sense in his study area, but it should probably be more nuanced when discussing many canals in northern Afghanistan, especially from the tail-enders’ perspective.

Finally, the idea of simply reviving a system that used to function well but was disrupted over the last 25 years might be unrealistic (if ever advisable). Even if one accepts the 1970s as being the “golden age” of the *mirab* system, it is difficult to reproduce the example of the Jangharoq Canal management system. This is because some important elements are missing, such as a strong and authoritarian government capable of providing support and being a credible management actor. Also, is the model of the *mirab* system’s golden age (when *mirabs* used to be “the dogs of the Agriculture Department”⁶⁴) compatible with what is promoted in current reforms, influenced by Western models and endorsed by the local government? Is it compatible with the donor-backed models (at least on paper) of fully self-reliant WUAs? Obviously not.

This case study indicates that the numerous changes to the *mirab* system have not al-

61 The European Commission currently funds the Kunduz River Basin Programme as well as the Amu Darya River Basin Programme in northeastern Afghanistan.

62 J.L. Lee, “Water Management, Livestock and the Opium Economy: Social Water Management” (Kabul: Afghanistan Research and Evaluation Unit, 2006),” 55.

63 Lee, “Water Management, Livestock and the Opium Economy: The Performance of Community Water Management Systems.”

64 This expression was used by a local government official during informal discussion along the Jan - haroq Canal in summer 2007. The official spoke nostalgically about a time when the *mirab* were easily controlled unlike in the present.

ways occurred through negotiations and that water users were not necessarily the main decision makers. That rice cultivation has spread in upstream areas (since the war) turning almost 1270 ha from being a profitable, industrialcrop cultivation area into a rainfed area can hardly be interpreted as the result of a non-contested system. The same can be said of the practice of paying costly bribes for access to water in downstream areas.

In canal systems where functions and performance are likely to be contested, a collective diagnosis of the current collective water management practices and governance should be the starting point of any attempt to form a WUA or to management practices.

On the basis of this diagnosis, communities could in a second step:

- propose (or revive) rules, regulations and agreements for collective water management; and
- (re)define roles/responsibilities and, eventually, institutional reorganisation (if necessary).

This second step would in fact be about drafting by-laws that should help solve locally-specific problems highlighted in the collective diagnosis and that take into account the current environment. It is assumed that some by-laws might be a revival of old by-laws that were abused in the past, while others might be new as they seek to overcome more recent challenges. For example, in the case of the Jangharoq Canal it could make sense to rethink local governance at canal level, involving local elders and local government in establishing a new organisational set-up around the *mirab* agent. Indeed at this stage (2007), there is certainly a need to rebuild the “social capital” in the *mirab* system. Using the five elements of the social capital used earlier, the emphasis should be on reviving and strengthening “groups and networks”, “trust and solidarity” for greater “cohesion and inclusion” if “collective actions and cooperation” water management practices have to become more equitable and less contested.

As mentioned earlier, if local government played this role successfully in the 1970s (as most farmers’ comments on this period show), it would not be possible to replicate the same model of government control now. Thus, there is certainly a need to strengthen local communities to enable them to take more responsibility for water management in a more transparent way. One idea to explore is to have a committee representatives from all parts of the canals representing all interests, to better support and control the *mirab*’s work (and not only during elections). This doesn’t mean, however, that the local government should not play a supportive role at all.

Both the collective diagnosis and drafting of by-laws should be part of a strategy to promote farmers’ decision-making in the possible formation of a WUA. A participatory process which puts farmers in the driver’s seat on the possible formation of a WUA is to propose an alternative to the “WUA charter⁶⁵ approach,” which does not favour bottom-

65 Two different water management projects have drafted and proposed two WUA charters for Afghanistan. The first was developed by the Rebuilding Agriculture Markets Program (RAMP) and the Institutional Building and Advisory Service of Development Alternative Inc. through a US Agency for International Development-funded project (February 2006). The second charter (May 2006) was prepared by the Snowy Mountain Engineering Corporation (SMEC) International Pty Ltd., in association with Agrisystems Ltd., through an Asian Development Bank-funded project (the Balkh River Integrated Water Resources Management Project). These documents are in line with what has been done in many other parts of the world (yet bearing little lasting fruit). They provide a blueprint document on internal management and administrative structures that WUAs should follow. Complex organisational structures are suggested. For example, SMEC proposes that the WUA should have not less than a general assembly, a management board, an audit committee, a dispute resolution panel, an operation and maintenance committee, an agriculture commit-

up processes. The PMIS approach supports the idea of a process rather than a pre-defined plan. It shifts away from the classic “how to organise” approach, which usually comes with a comprehensive set of management and administrative structures and focuses on the visible elements of a WUA. Instead, it has moved towards the “what to organise for” approach, which follows Bruns’s⁶⁶ idea of “just enough organisation.” This starts with practical problems and assesses, with farmers, what new forms of organisation might be necessary to resolve them. This process of making rules is inspired by Ostrom’s⁶⁷ approach to WUA formation in which the creation and reproduction of WUAs is seen as a process of rule-making, implementation and adaptation. Her perspective is important for its emphasis on process and underlying principles rather than on an organisation’s observable characteristics. In short, establishing or strengthening WUAs is a process of “crafting institutions.”

Lee’s position that WUAs should “consist solely of mirabs with training and capacity-building being focused on the community level to improve the water master’s performance and skills level”⁶⁸ doesn’t seem viable especially in the light of the Jangharoq case study.

Not promoting local institutional change in a vacuum

WUA formation should not be limited to working with communities only. The findings of this case study suggest there is a need to rethink and/or strengthen communities’ involvement in collective water management. This, however, does not mean that developing WUAs should be done in a vacuum. As mentioned earlier, the Jangharoq case shows that probably many canal systems in Afghanistan are not and have never been fully farmer-managed systems, despite being labelled as such. The government and other authorities have been, and probably will be again, important elements of the *mirab* system. It is the authors’ opinion that, at present, the role of local government and future local institutions, such as river basin agencies and councils, is to be discussed and negotiated among concerned actors to ensure support links between a meso-level of water management and local level (i.e. WUAs). The idea is not to call for a government that would have stronger role in decision-making at canal level on behalf of water users; rather, it is to negotiate how it could support (on demand) local WUA committees or other local forms of organisations in conflict resolution and with other type of services. Here the role of NGOs is particularly relevant for providing facilitation support and for ensuring the participation of local communities. This position is thus very different from Lee’s argument⁶⁹ when he contests the possibility of a more proactive role by government in water management at canal level.

Monitoring and coaching

Following the approach suggested by Ostrom, the formation of WUAs should not be seen as a linear process. It is crucial to have time to monitor and consider adjustments to the collective management practices and governance of the WUA from year to year to tailor the right institutional set-up. Constant feedback loops between the different steps of

tee and executive staff. Election procedures, functions, power, rights, etc. are also extensively developed.

66 B. Bruns, “Just Enough Organization: Water Users Associations and Episodic Mobilization,” http://www.cm.ksc.co.th/~bruns/5_wua.html#References.

67 E. Ostrom, “Crafting Institutions for Self-governing Irrigation Systems,” (San Francisco, USA: Institute for Contemporary Studies, 1992).

68 Lee, Water Management, “Livestock and the Opium Economy: Social Water Management,” 55.

69 Lee, Water Management, “Livestock and the Opium Economy: Social Water Management,” 30.

the methodology have to be considered.

An integrated process

A process to improve collective water management should be integrated into a wider process, including technical improvement and on-farm water management improvements. Technical rehabilitation is a necessary part of a programme aimed at improving collective water management practices. Better management might not be achieved and triggered only by changes in rules and governance structure. Previous experiences in developing WUAs have shown that the facilitation of a process only dealing with “soft” water management issues (including forming a WUA) may be extremely challenging. One reason is that despite the diagnosis of many concerns being partly caused by management issues (such as inequitable water distribution, collective maintenance, etc.), the solutions are often (from the farmers’ point of view) technical solutions; for example, new structures to bring more water to the main canal, desilting the canals to increase their capacity, building offtakes to improve control over flow, and so forth. It does not mean that farmers are not keen to explore institutional improvements, but that technical improvements are often thought to be the priority. Farmers also see these as “something tangible” in their canal system rehabilitation. Bagadion and Korten describe a classic case of the development of irrigators’ organisations by the National Irrigation Agency (NIA) in the Philippines in the late 1970s:

The NIA had limited institutional and staff capacity for developing strong irrigators’ associations. As an interim measure it contracted a different government agency, the Farm Systems Development Corporation, to organize the farmers on communal systems, while the NIA concentrated on physical construction. This arrangement was based on the assumptions that organizing the farmers and constructing the physical facilities were separate tasks, appropriately carried out by different agencies; that problems in coordination at the field level would be minimal; and that most of the organizing could be done during or after the construction. Subsequent experience showed that these assumptions were wrong. The issues that most concerned farmers during preconstruction and construction were technical ones, such as the location of the diversion and the canals, the timing of the construction activities, and the choice of labourers for the construction work. Because the socio-organizational tasks were not carried out by the agency doing the planning, design, and construction of the physical irrigation system, the social organizers could not deal with the issues of concern to farmers - they approaches the farmers empty handed. To generate commitment and organizational strength, the irrigators’ associations needed to be organized well before construction, with the organizing and engineering tasks closely integrated.⁷⁰

Technical rehabilitation should be seen as a necessary step to improve the conditions for better and easier management by offering, for example, better water control opportunities. So, technical rehabilitation can be a key way to support and accompany management change in the *mirab* system.

Note, however, that the other way around holds true since better water management would not necessarily be achieved through technical upgrading of canal infrastructure

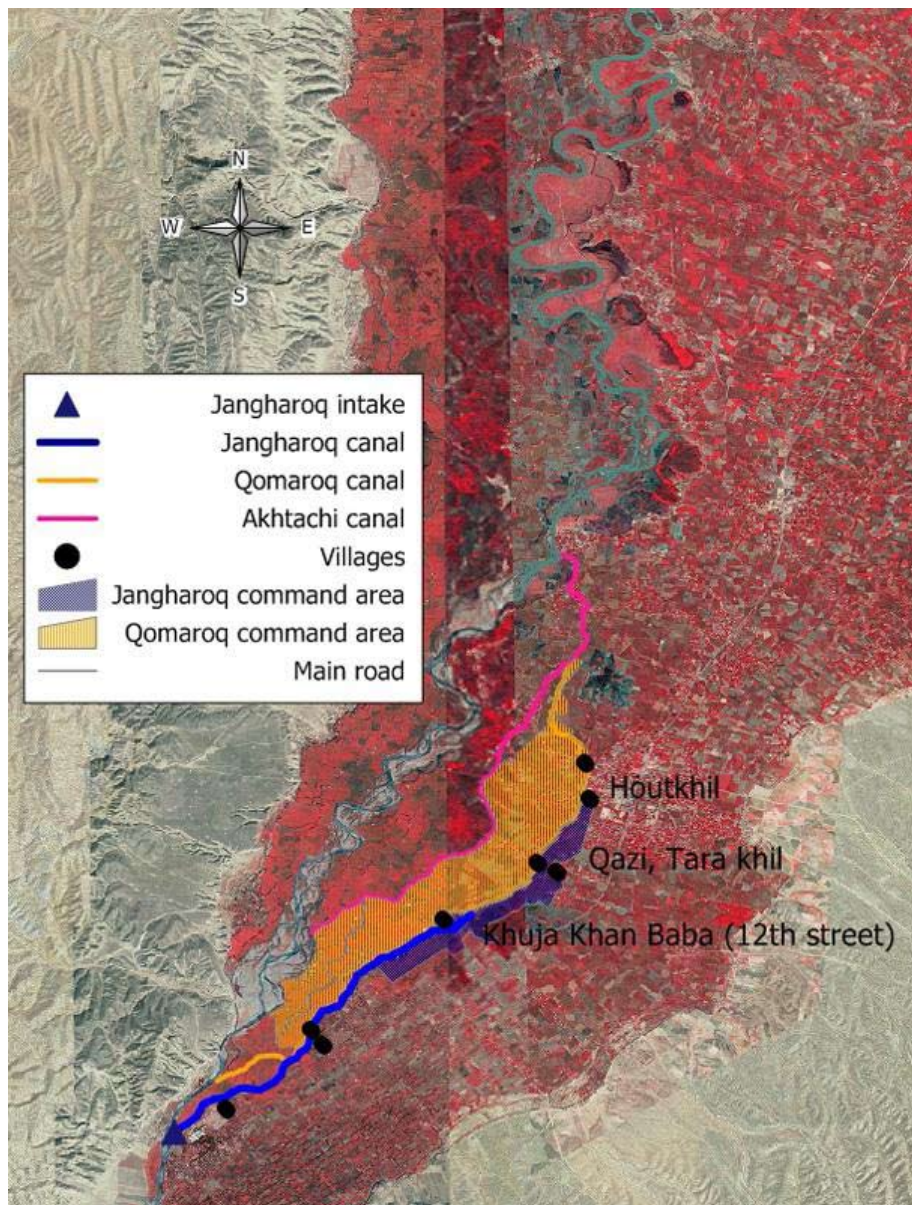
70 B.U. Bagadion and F.F. Korten, “Developing Irrigators’ Organizations: A Learning Process Approach,” in *Putting People First: Sociological Variables in Rural Development*, ed. M. Cernea (New York: Oxford University Press, 1991).

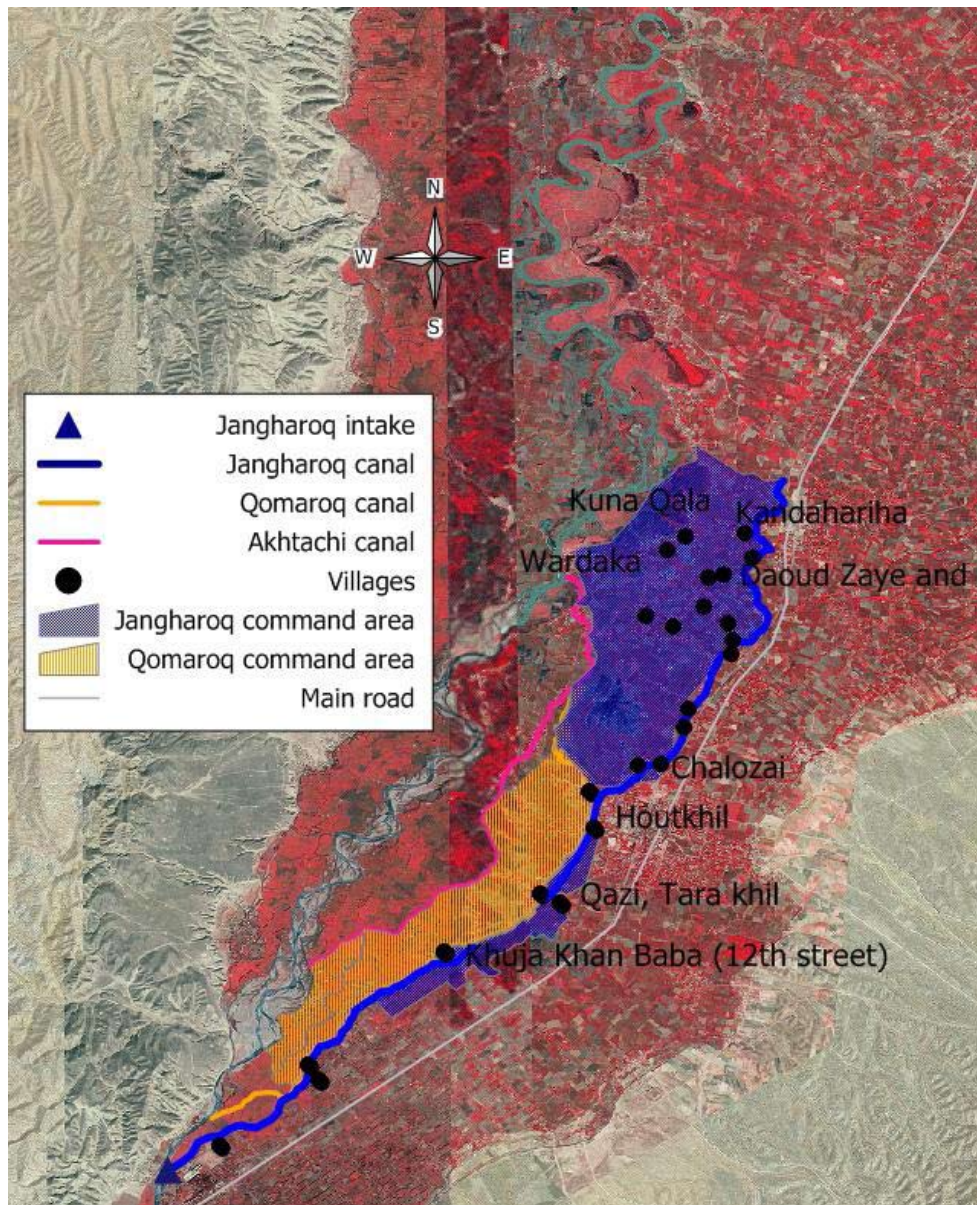
only (offtakes do not create water). The case study of Jangharoq is a good example of what can happen when major technical rehabilitation (like the construction of the Jangharoq intake) is not integrated with the management and institutional change to adapt to the new situation. In the case of Jangharoq, the improved water supply at the intake was used by the *mirab* for his own advantage. The change that technical rehabilitation may bring to the existing *mirab* system has to be properly and collectively anticipated, well in advance, to avoid creating counterproductive effects.

On-farm water management programmes can be a very useful component of an integrated approach towards improvement of water management at canal level. Indeed, such programmes can help reduce the gap between water demand at plot level and water availability. For example, in the context of the Kunduz River Basin, new rice cultivation methods such as System of Rice Intensification can potentially reduce water demand for rice cultivation while increasing yield. From a water management point of view at canal and basin level, it makes a lot of sense; it helps create an environment where there is less pressure on the water availability or demand element of the system and thus less pressure on the *mirab* system.

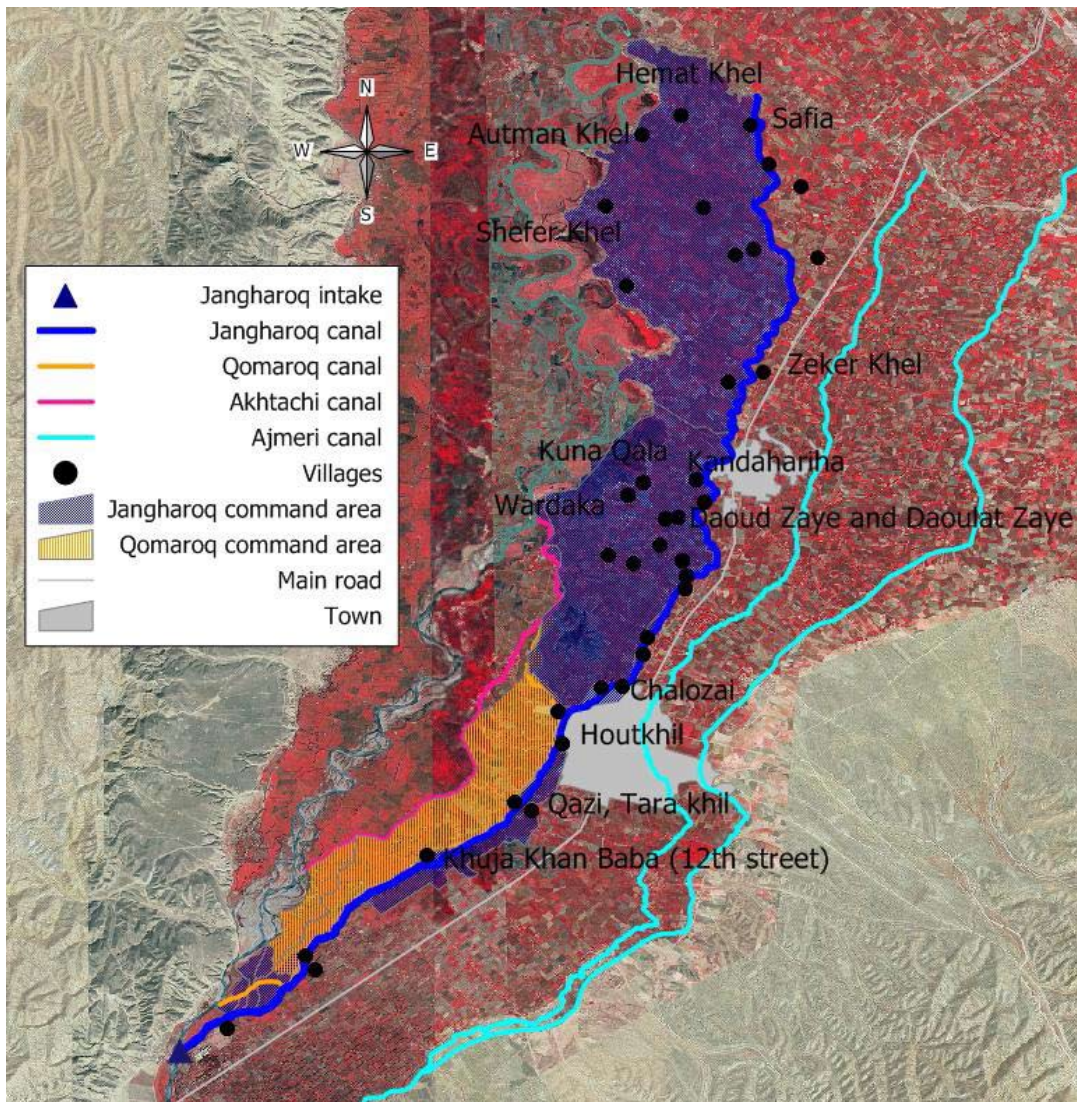
Last but not least, capacity-building is also vital for developing local institutions skills. But capacity-building through trainings should not be restricted to *mirabs* (as suggested by Lee) since they are not the only agents who can trigger improvement in water management at canal level. On one hand, it is important to develop trainings for WUAs based on a continuous and thorough capacity needs assessment as they evolve and face bottlenecks in their development process. On the other hand, local government staff also need to be targeted in any capacity-building programme since their support to WUAs is also important for improving the *mirab* system. Again, trainings are to be designed based on locally specific requirements.

Annex

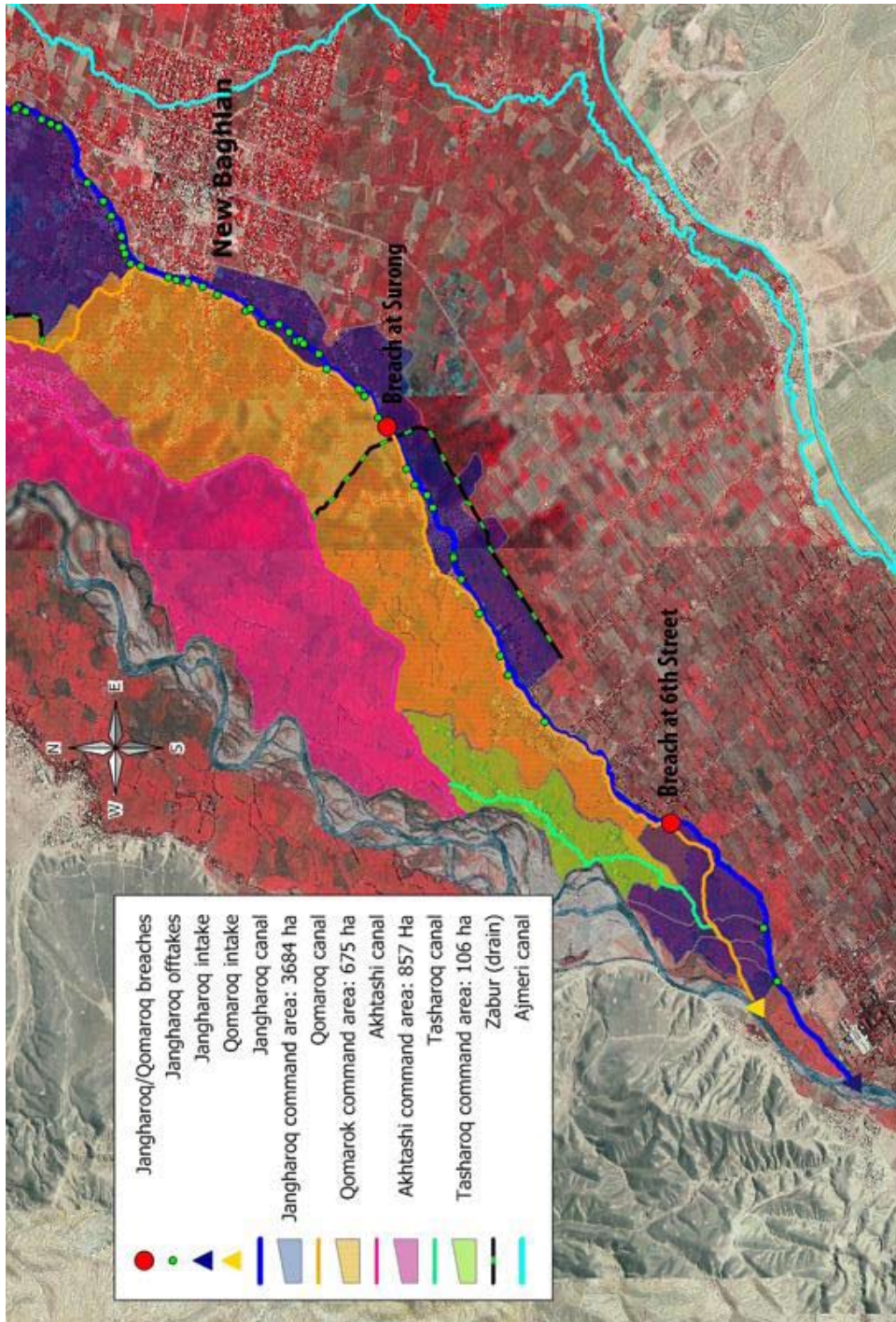




Map 10: Jangharoq command area in the course of the Nadir Shah period



Map 11: Jangharoq command area toward the end of the sugar factory period



Map 12: Location of breaches between Jangharoq and Qomaroq (the non-negotiated water acquisition from Jangharoq to Qomaroq started during the Revolution period)

Photographs of Jangharoq Canal Offakes



Photograph 1: Zahir Janan offtake (concreted during Sugar Factory period)



Photograph 2: Cimeti offtake (concreted during Sugar Factory offtake). On the right side, the main canal is dropping (~2 meters).



Photograph 3: One of the 3 "illegal off-takes" constructed under the name of Haji Khalat Khan during Mujahiddin time.



Photograph 4: Haji Abdul Rasoul "illegal offtake" (approximately 30-50 L/s is flowing for an area of 2.5 ha)

List of Jangharoq *Mirabs* since 1945

Dates of selection		<i>Mirab's</i> name	Duration	Helpers
Afghan calendar	Western calendar			
~1323	~1945	Abdul Amid (1 st <i>mirab</i> – chosen by AD)	4 years	1 <i>chakbashi</i>
~1328	~1949	Mohammad Shafir	2 years	2 <i>chakbashis</i>
~1330	~1951	Ghulam Qader – grandfather of Abdul Rashid	19 years	2 <i>chakbashis</i>
~1349	~1970	Hemat Ali (father of current <i>mirab</i> Abdul Rashid)	8 years	2 <i>chakbashis</i>
~1357	~1978	No <i>mirabs</i> during the war with the Soviet Union	-	-
~1371	~1992	Hemat Ali	5 years	4 <i>chakbashis</i>
~1376	~1997	Mullah Abdul Ramin	1 year	4 <i>chakbashis</i> ?
~1377	~1998	Hemat Ali	1 year	4 <i>chakbashis</i>
~1378	~1999	Jamil Rahman	1 year	3 <i>chakbashis</i>
~1379	~2000	Jamil + Hemat Ali (then Ghulam Hazrat)	1 year	4 <i>chakbashis</i>
~1380	~2001	Hemat Ali – father of current <i>mirab</i> Abdul Rashid	2 years	4 <i>chakbashis</i>
~1382	~2003	Abdul Khaliq + Abdul Rashid + Mangal (from downstream) ¹	1 year	7 <i>chakbashis</i>
~1383	~2004	Abdul Rashid + Ghafar	5 years (ongoing)	7 <i>chakbashis</i>

¹ When Hemat Ali died in 2002, the elders of Jangharoq selected three people as they were not sure who could replace him.

Table of the Main Cropping Patterns in Different Periods of Jangharoq Canal's History

Period	ZONES ¹	
	Upstream area: <i>From intake until Old Baghlan</i>	Downstream area: <i>From Old Baghlan until Jar-i-Khush</i>
Before sugar factory	1 st crop: wheat 2 nd crop: mung bean, corn	1 st crop: fallow or grass 2 nd crop: fodder crop
Sugar factory period (-1940-1980)	On the few suitable sites: 50% sugar beet or cotton (very few cotton on 3 rd street) and 50% wheat followed by mung bean/corn/etc. On other sites: wheat followed by mung bean and corn (but low income)	450 ha exclusively under sugar beet Mostly sugar beet or cotton—the rest of the land would be mostly wheat followed by mung bean (or sesame, millet, sunflower)
Revolution:	—	—
Mujahedin period: (-1990-1997)	1 st crop: wheat 2 nd crop: rice up to Wakil Zahir offtake. 2 nd crop: mung bean (not even all the land) between Wakil Zahir and Haji Nizam	1 st crop: wheat 2 nd crop: mostly rainfed after Haji Nizam (rarely and only on some spot locations)
Taliban (1997-2001)	1 st crop: wheat (if not water logged) 2 nd crop: rice up to Wakil Zahir offtake. 2 nd crop: some rice or mung bean between Wakil Zahir and Haji Nizam	1 st crop: wheat 2 nd crop: <i>lalmi</i> after Haji Nizam (very rarely and only on some spot locations)
Current period (2001-2005)	1 st crop: wheat (if not water logged) 2 nd crop: rice up to Mullah Abdul Ramin offtake	1 st crop: wheat, barley 2 nd crop: some rice up to Haji Nizam offtake (10% of downstream area), then very few mung bean, water melon or <i>lalmi</i>

List of Interviewees

Name	Zone	Area	Remarks
Gul Suliman	1	Downstream	<i>Chakbashi</i> during sugar factory period
Muhamad Aleem	1	Downstream	Influential person from Hemat Khil
Haji Nazir	1	Downstream	Former commander of Bashir – <i>chakbashi</i> during mujahiddin period
Haji Mohammad	2	Downstream	Former commander of Bashir then joint Government side during mujahiddin time
Haji Malik	2	Downstream	Elder from Kandahariha
Haji Abdul Raziq	3	Central/Downstream	Elder from Shahi Khel
Ghulam Hazrat	4	Central/Upstream	<i>Chakbashi</i> during sugar factory period – <i>mirab</i> during Taliban period. Close friend of Allah Mohamad (<i>mirab</i>) and commander of Bashir
Ghafar	4	Central/Upstream	<i>Chakbashi</i> from mujahiddin time until present time. Commander under Najib government
Zareef	4	Central/Upstream	<i>Chakbashi</i> during mujahiddin time
Zahir Daoulat Zaye	4	Central/Upstream	Elder from Daoulat Zaye
Arbab Juma Gull	4	Central/Upstream	Elder from Kona Kala-i-Payan
Jamil	4	Central/Upstream	<i>Mirab</i> during Taliban–commander under Najib government (brother of Ghafar)
Said Ibrahim Tahir	5	Upstream	Former teacher in Baghlan Agriculture School–influential elder in Godan-i-Payan
Abdul Khaliq	5	Upstream	<i>Mirab</i> during Karzai transition government–former commander under Amir Gul
Muder Salam	6	Upstream	Elder from Bale Zaie
Amanulah	6	Upstream	<i>Chakbashi</i> from mujahiddin up to present time
Mudir Salem	7	Upstream	Former employee of Agriculture Department from Najib government until 2007. Elder of Tara Khil
Haji Ali Mohamad	7	Upstream	Former employee from Zahir Shah government until Najib government

This list is limited to the persons who were formally interviewed. Numerous other people were informally interviewed during the course of the project.

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