UNIVERSITY OF CENTRAL ASIA
GRADUATE SCHOOL OF DEVELOPMENT
Mountain Societies Research Institute

AGA KHAN FOUNDATION
(Kyrgyz Republic)

British Embassy
Bishkek

Natural Resource Management Dynamics in Boarder Communities of Kyrgyzstan and Tajikistan

Asel Murzakulova
Irene Mestre

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Abstract:

The Research paper provides insight into the institutions and local dynamics involved in natural resource management in border communities, and to provide solution-oriented recommendations to address natural resource management challenges. The research was conducted between September 2015 and February 2016 in Batken and Soghd oblasts within the framework of the project "Reducing conflict over water and pastures in Kyrgyzstan and Tajikistan."

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Keywords: conflicts, border communities, natural resources management

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Dr. Asel Murzakulova is a Senior Research Fellow with UCA's Mountain Societies Research Institute and Co-Founder of the analytical club «Mongu». She has extensive work experience with governmental, international and civil organizations in Central Asia. Her research area covers conflicts, migration, natural resource management, religion and nationalism. Currently she is engaged in security and conflict-related research, with a focus on resource management challenges across Kyrgyzstan-Tajikistan and Kyrgyzstan-Uzbekistan Border.

Irène Mestre is a geographer from Jean Moulin-Lyon III University, Research Unit UMR 5 600 Environnement-Ville-Société (Lyon, France). She is also affiliated to the French Institute of Research on Central Asia (Bishkek, Kyrgyzstan). Her main fields of expertise are community-based management, conflicts over natural resources, governance and resilience. Her research focused on Kyrgyzstan, but she has experience in Kazakhstan and Tajikistan.

Ak-Say Village

Preface

This report presents research conducted between September 2015 and February 2016 in Batken oblast, Kyrgyzstan, and Soghd oblast, Tajikistan, within the framework of the project "Reducing conflict over water and pastures in Kyrgyzstan and Tajikistan." The project is supported by the United Kingdom's new Conflict, Stability and Security Fund (CSSF).

Research on conflict over natural resources is generally focussed on preventing violence; less attention is paid to the dynamics of disputes and cooperation. Conflicts over natural resources are particularly acute along the Tajik-Kyrgyz border, affecting the livelihood of households in Batken and Soghd oblasts, where around a quarter of the population still lives below the poverty line. Inhabitants are primarily involved in cultivating crops and keeping livestock and rely on the transborder use of water and pasture resources to do so. As border regimes and institutional management rules change, farmers face constraints in accessing these resources. A wide range of stakeholders are involved in both formal projects and informal initiatives to reduce conflicts and facilitate access to resources. This report is based on transversal research on the different types of interventions led by governmental agencies, local NGOs and international organisations and their impact on transborder and border region natural resource management.

The methods of data collection and analysis varied according to the three main phases of research: (1) literature review; (2) interviews with experts in the field; and (3) case studies. The literature review helped define the conceptual framework and analyse reforms relating to the use of irrigation water and pastures and their impact on conflict and cooperation in Batken and Soghd. It also highlighted the lack of academic publications or project documentation on natural resource management efforts and identified key research gaps. Expert interviews held at the national and oblast levels in both countries investigated resource use and management, and tested the hypotheses and underlying approaches of projects aimed at fostering cooperation and reducing tensions. The case studies were conducted in areas of divergent resources dynamics: one was characterised by a high level of conflict, in the other no tensions were reported.

In addition to the three research phases, a roundtable was held in Bishkek on 11 February 2016 to discuss preliminary findings with government institutions, non-governmental organisations and researchers. More than 50 participants shared their views on water and pasture reforms in Tajikistan and Kyrgyzstan and on cooperation processes in transborder areas.

The research found that tensions arise primarily over the use and management of natural resources, and are aggravated by militarisation of the border. The transformation of internal boundaries (in Soviet times) to international borders (post-1991) strongly affected access to natural resources and changed the nature of interactions between border communities. Reforms have led to the creation of community-based institutions in both countries; however these institutions can differ significantly in their capacities and mandates, relying on national decision makers to deal with most transborder issues. In some areas, farmers remain excluded from the formulation of management plans by formal institutions.

This report is distilled into a policy brief (see http://www.ucentralasia.org/Resources/Item/1148) for policy makers, relevant governmental agencies, and oblast, rayon, jaomat and AA representatives as well as international organisations, donors and non-governmental organisations.

The research team included MSRI Research Fellow Asel Murzakulova and Research Consultant Irène Mestre. Their collaborative work resulted in this report, a policy brief, and a series of maps illustrating the geographic distribution of infrastructure and other development interventions by MSRI's partner organizations (MSDSP Tajikistan, MSDSP Kyrgyzstan, Roza Otunbaeva Initiative and CAMP Alatoo) in the framework of the "Reducing conflict over water and pastures in Kyrgyzstan and Tajikistan" project.

It is my hope that this research will be applied within the natural resource management sector and help to shape future policy and development interventions in the border regions of Kyrgyzstan and Tajikistan.

Dr. Dietrich Schmidt-Vogt

Director,
Mountain Societies Research Institute
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Acronyms:

AA	*Ayil Aimak*, village-level administrative unit in Kyrgyzstan
AK	*Ayil Kenesh* the legislative body at *Ayil Aimak* level (Kyrgyzstan)
AO	*Ayil okmotu*, the executive body at *Ayil Aimak* level (Kyrgyzstan)
APUU	Association of Pasture Users Unions
CPR	Common Pool Resources
IWRM	Integrated Water Resource Management
Hukumats	District comprised of several villages (*jaomat*) in Tajikistan
Jaomat	Village-level administrative unit in Tajikistan
LSFME	Local State Forest Management Enterprise, or *leskhoz* (Russian)
Mahalya	Quarter in the village or in the city
MoAM	Ministry of Agriculture and Melioration in Kyrgyzstan
Oblast	Province-level administrative unit in both Kyrgyzstan and Tajikistan
PC	Pasture Committee, executive body of Pasture Users Unions
PUU	Pasture Users Union
Rayon	District comprised of several villages (*Ayil Aimak*) in Kyrgyzstan
WUA	Water Users Association

Introduction

In border area research, scholars must confront a discourse of nationalism that frames issues of ownership over territory, and simplifies the causes of inadequate development trends. Simplification of this kind fails to acknowledge the complexity of the issues, ignoring differences in resource dynamics and offering the demarcation of the border as the sole prerequisite for good governance.

While there are studies investigating natural resource conflicts at the national level, only a few examine the local level implications and offer prospects for applied research. Moreover, research on water-related conflict and cooperation typically focuses on two opposite poles: either on large rivers at the national level or on very small-scale; small tributaries are rarely investigated (Pak *et al.*, 2013).[1] By the same token, interactions between pasture owners from both sides of the border generally remain off researchers' and international organisations' radars. Given these gaps in research, our study examines natural resource management in border territories with a focus on the specific features of resource management models in border communities.

First, we explore the existing literature in order to introduce the main aspects of transboundary conflicts over water and pastures between communities in Tajikistan and Kyrgyzstan, and develop perspectives for the use of the conceptual framework of land-use conflicts developed by Torre and his colleagues (Torre, *et al.*, 2014). Secondly, we analyse two case studies in Batken *oblast* with their dynamics of transborder water and pasture use, as well as related conflicts.

Finally we summarise the international experience in several specific aspects of resource conflict and cooperation and highlight key dynamics with universal application, avoiding the post-modern trend to view Central Asian situations as being entirely unique.

Definition of Resources Within the Scope of This Research

Pastures are areas covered by natural vegetation and used for on-site livestock feeding. They may be used all year long or seasonally. Water resources for irrigation purposes are also considered in this document. This research investigates conflicts over pastures and water as integrated resource systems. Thus, we not only consider the resources *per se*, but also all infrastructure necessary for their use, e.g. roads and bridges to access pastures, water-points in pastures, and channels and pumps used in irrigation.

Territorial Conflict as a Conceptual Framework for Applied Research

This study employs the conceptual framework of land use and proximity conflict elaborated by Torre and his colleagues (Torre *et al.*, 2014). The framework is aimed at supporting data analysis for applied research in social sciences, e.g. statistical enquiries, interviews, focus groups, etc. in the field of territorial conflicts. The framework is multidisciplinary and helps to understand land use related conflicts from a wider perspective in order to facilitate a more comprehensive understanding of their dynamics. Conflict and instability may or may not translate into violence; however it is important to understand their underlying causes before they result in violence. Within the framework adopted in this research, conflicts are further distinguished from tensions, which may also be the result of other unequal relationships. Tension is defined as a situation that involves opposing perspectives (and hence opponents), but in which the parties concerned have not taken concrete action. In contrast, a conflict situation is defined by the application of legal actions, installation of signs (fences, gates, etc.), forms of confrontation, or the initiation of conflict resolution procedures and strategies that attract media coverage undertaken by involved stakeholders. Sustained conflict may lead to violence.

1 Such as the Khodja-Bakirgan and Isfara rivers, which flow into the Syr Darya, the second longest river in Central Asia that originates in the Tianshan mountains and flows into the Aral Sea.

Livestock bazaar, Isfana

This conflict analysis starts with an overview of the territorial entities in which conflict is embedded, including their main socio-ecological characteristics. Parties to a conflict are understood as the conflict's participants rather than as actors or users. This is based on the assumption that participants often combine different uses of the resources, including productive (herding, farming, forestry exploitation, mining, bee-keeping, etc.) and non-productive purposes (nonprofessional hunting, recreational or cultural uses, etc.). Methods for conflict identification included review and analysis of daily regional and national press, surveys conducted by special agencies, and data from administrative legislative courts. Other sources were added in cases where legal courts and regional press were non-existent or unreliable. Ideally, data is always triangulated between different forms and sources.

Tajikistan and Kyrgyzstan: Post Soviet Experiences

Both Tajikistan and Kyrgyzstan are mountainous countries in Central Asia, and both continue to be shaped by Soviet legacies and remain in transition and transformation. They both also have large rural populations with a high proportion of agropastoralists: 73% in Tajikistan, and 64% in Kyrgyzstan in 2013 (World Bank, 2015). Around a quarter of rural inhabitants in both countries were reported to be living below the poverty line in 2013 (World Bank, 2015).[2] Since 1997, substantial economic growth has been observed due to agricultural activities. Despite this growth, Tajikistan still remains the poorest country in Central Asia (KasWag AgriConsulting Worldwide, 2008). For both Kyrgyzstan and Tajikistan, agriculture holds not only economic, but also social and political value. After the collapse of the Soviet Union, all rural households became extremely dependent on agriculture to generate income (Eggenberger, 2011). Both countries identify increased production of livestock and agricultural cultivation in their national strategies as central to stimulating economic growth (see, e.g., the Programme of Pasture Development of the Republic of Tajikistan, 2015; and the National Sustainable Development Strategy For The Kyrgyz Republic 2013 - 2017, 2013).

Water and pastures are crucial natural resources in both Tajikistan and Kyrgyzstan, however their use remains strongly influenced by land use decision approaches from in the Soviet period. Since independence, and par-

2 Specifically, 23.6% of rural inhabitants in Tajikistan and 32.6% in Kyrgyzstan fall under the countries' respective national poverty lines (World Bank, 2015).

ticularly after 2014, violent conflicts over water and pasture resources have become more frequent between border communities in these countries.

Tajikistan and Kyrgyzstan share 978 km of borders, of which roughly 396 km remain unmarked (Kabar, 2016). In Soviet times, several government commissions were appointed to address the matter of border demarcation. As a result, decisions on the border tended to reflect the view that ethnicity and nationality should match, and that view was reinforced by the border's delimitation. Demarcation was also often dictated by land use, with a focus on agricultural cultivation, thus giving an advantage to Tajik farms more oriented to cultivation than Kyrgyz farms more oriented to pasture use for livestock (Bichsel, 2009a). The new infrastructure played the role of *de facto* border; however this was complicated by the long-term land use arrangements (loans) that collective farms could enter into on the other side of the border (Reeves, 2014).

After the collapse of the Soviet Union, borders became less permeable to transhumance of livestock from Tajikistan to the mountains of Kyrgyzstan, which had been a longstanding practice in the Soviet period (Ibraimova, *et al.*, 2015). Reeves (2005) highlights the paradox between international and local discourses. The international discourse tends to underline the potential for violent conflicts in the Ferghana valley[3] because "it does not fit into normative accounts of the 'proper' relationship between territory, ethnicity and citizenship" (ibid, p67), while local inhabitants see the absence of demarcated borders as an asset offering flexibility and an opportunity to share a common resource. However, such discourses can change under the influence of strong messaging on statehood, nationalism and ethnicity.

The flexible nature of the border can be extended to infrastructure. For example, in the past the road to Vorukh was used by both Tajiks and Kyrgyz to reach bazaars where both currencies were used, serving as platforms for exchange between communities from both sides of the border. In this context, the construction of the new road changed the nature of the border as "citizens of neighboring states increasingly use different roads, different routes, and different minibuses to get to different markets using different currency" (Reeves, 2014, p254). This causes dissatisfaction among Vorukh's residents, as it hinders their movement to mainland Tajikistan (ibid).

Soghd and Batken Oblasts

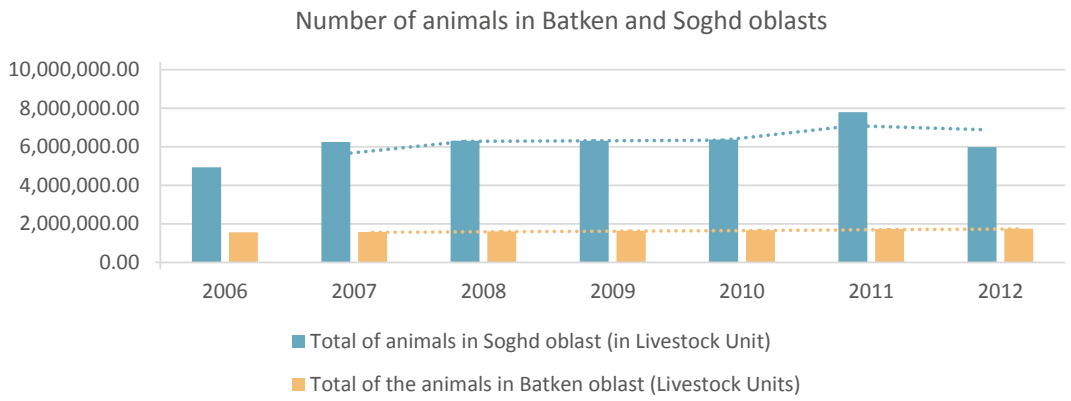
Although Batken and Soghd differ by size (Batken area is 17,000 km^2, Soghd area is 25,400km^2) and by population (Batken and Soghd have 492,600 and 2,349,000 inhabitants, respectively), they are similar in many other regards. Both *oblasts* rely on a combination of cultivation and livestock, and migration also plays an important role in rural livelihoods for both regions.

Soghd is the only *oblast* of Tajikistan that is dependent on external sources of water; however it also is home to the largest proportion of cultivated land of the country: 20.8% of all agricultural land is irrigated for cultivation, 8.5% is rainfed cultivated. The remaining agricultural land is pastureland, of which 62.9% is rainfed and irrigated pastures represent 7.8% of the land (Wolfgramm *et al.*, 2011). In 2010, Soghd oblast reported 724,301 ha of pastures according to official data; this reflected a slight decrease from the 795,685 ha that were reported for 2005, most likely due to changes in land use (Bann, *et al.*, 2012). In 2012, cattle accounted for 70-75% of the livestock in Soghd and Batken[4]. Despite similarities in species composition, the Soghd and Batken livestock sectors differ in the volume of animals kept: Soghd has four times more livestock than Batken, and their total numbers also are increasing faster than in Batken. However, as these figures are reported by official structures, they may underrepresent the actual number of animals.

3 For example, the OSCE project "Enhancing the ability of the Kyrgyz Government to engage in regional cooperation in border security and management" focuses on strengthening governmental bodies for border control.

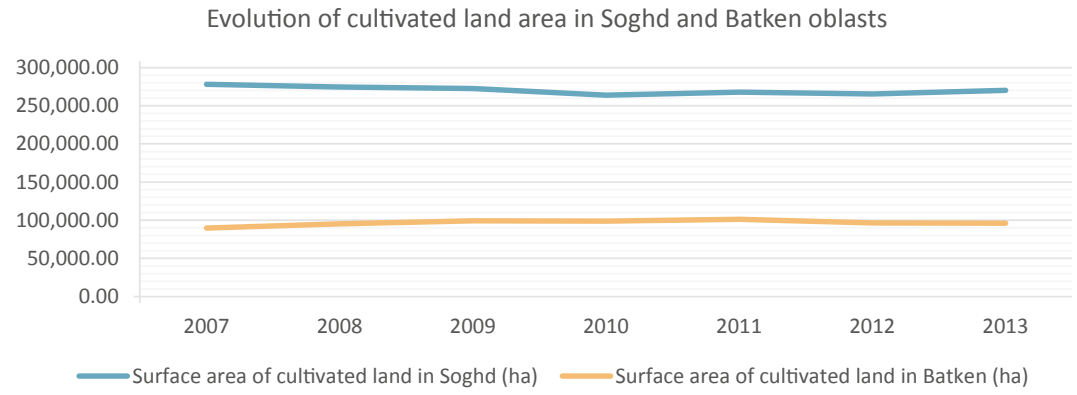
4 Calculations are made in livestock units, according to standards used in Kyrgyz regulations – where one horse or cattle is considered as equivalent to 10 sheep or goats.

Figure 1: Trends in number of animals (in livestock units) in Soghd and Batken oblasts



Agricultural cultivation is a core activity in both regions. The 2006-2012 period in Batken saw the development of all types of grain and rice, while the area under cultivation for cotton, vegetable oils and tobacco decreased. The same period in Soghd also saw a slowdown in cotton production while cultivation of grains and potatoes increased. However further research is needed to assess the impact of these changes on irrigation water needs.

Figure 2: Evolution of cultivated land area in Soghd and Batken oblasts 2007-2013



Natural Resource Management at the Local Level: Institutional Change

Common-Pool Natural Resources and Communities: The Origins of Water User Associations and Pasture User Unions

Debates around common-pool resources (CPR) were inspired by the search for models that facilitated the long-term productivity and use of a resource by a community of users. In this approach, management models for CPR are intended to benefit a group of users. From individuals' perspectives, it often can be demonstrated how staying within the 'common pool' framework is more profitable to them compared to acting independently, due to diminished returns if their individual self-interest were to be pursued outside of the larger group. CPR management models encourage low levels of exclusion because of high user-exclusion costs and the burdens arising from rivalry for the resource. The search for a unified model for irrigation water management

suitable to any region and context began in the 1950s. Central irrigation agencies were believed to be ideal institutions to internalise the externalities incurred from water use. As this initiative failed in some areas, more attention was given to management systems created autonomously by their users. In the 1990s as regional governments' budgets entered a state of crisis, the transfer of irrigation management to farmers through Water User Associations came to be seen as a new panacea within the international donor discourse (Meinzen-Dick, 2007). That decade also saw the advent and development of common-pool resources management theory in which Ostrom (1990) enumerated eight principles characterising robust common-pool resource management. These principles were further refined over the years by Ostrom and her colleagues (Cox, *et al.*, 2010, p15), as follows:

1A User boundaries: Clear boundaries between legitimate users and nonusers must be clearly defined.

1B Resource boundaries: Clear boundaries are present that define a resource system and separate it from the larger biophysical environment.

2A Congruence with local conditions: Appropriation and provision rules are congruent with local social and environmental conditions.

2B Appropriation and provision: The benefits obtained by users from a common-pool resource, as determined by appropriation rules, are proportional to the amount of inputs required in the form of labor, material, or money, as determined by provision rules.

3 Collective-choice arrangements: Most individuals affected by the operational rules can participate in modifying the operational rules.

4A Monitoring users: Monitors who are accountable to the users monitor the appropriation and provision levels of the users.

4B Monitoring the resource: Monitors who are accountable to the users monitor the condition of the resource.

5 Graduated sanctions: Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and the context of the offense) by other appropriators, by officials accountable to the appropriators, or by both.

6 Conflict-resolution mechanisms: Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.

7 Minimal recognition of rights to organise: The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.

8 Nested enterprises: Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organised in multiple layers of nested enterprises.

These principles received great attention in the development sector as well as in academia (Van Laerhoven and Barnes, 2014). While the CPR theory supported an alternative option outside of state ownership and privatisation, it was also subject to criticism. Criticism centered on the concept of community, a key institution of CPR theory (Agrawal and Gibson, 1999). Specifically, questions of how features of a community impact its management needs, and more broadly, how communities, which are rarely homogeneous, should be conceptualised (Agrawal and Gibson, 1999). Such a model of resource management that is open to all users can also have unexpected effects on a community, as participation according to the 'principles' does not take place in a power vacuum (Reed, 2008).

While the above principles were further developed into a socio-ecological framework (Ostrom and Cox, 2010) and also directed towards a multi-tiered diagnosis approach (Ostrom, 2007), they still provide the foundation for the modern conceptualisation of Common-Pool Resources, as well as for other types of natural resource management approaches. It is such concepts related to Common-Pool Resource management that provided the basis for the creation of Water Users Associations and Pasture Users Unions in both Kyrgyzstan and Tajikistan.

Table 1: Types of management of natural resources. (Adapted from Meral, 2004; in Ballet, 2007).

Village land use planning	Land management characterised by the involvement of local stakeholders in the decision making process. It doesn't imply any specific institutional setting, relying primarily on measures to involve local inhabitants in the planning of common activities. The aim of village land use planning is not solely dealing with Natural Resource Management, though NRM is a central issue for societies reliant on agriculture. Presently, village land use planning most often relates to local development and decentralisation initiatives.
Community-based natural resource management	Based on a transfer of management responsibilities over natural resources. The collective management is led by a group of stakeholders empowered to take part in the decision making process, and participation of members of the community is active. The main difference between community-based NRM and joint management is the involvement of state institutions, which are not essential for the management of the ecosystem in this approach.
Joint (forest) management	All types of management, most often involving forestlands, wherein decisions are made by a category of local stakeholders and of state institutions (e.g. a forestry service).
Collaborative or co-management	All types of management wherein decisions are made by appointed institutions upon achieving agreement among local stakeholders.
Adaptive management	Collaborative management wherein decisions are assessed during the implementation process, prompting change or reorientation with the agreement of local stakeholders. This management type differs from the previous by involving researchers in the decision making process.

Irrigation Water: First User-Based Management

Water Resources in Central Asia: Thinking Beyond Scarcity

In Central Asia, where irrigation is the main use of water and irrigated agriculture plays a crucial role in the livelihoods of rural households, the distinction between upstream and downstream countries underpins a major dichotomy that is widely recognized at the national policy level. The Aral Sea environmental crisis also strongly influenced donors, generating a robust discourse concerning water scarcity, often focused on the lack of water (Cariou, 2015). However the per capita amount of water available in Kyrgyzstan and Tajikistan is high in comparison with many European countries, while rates of water withdrawal are proportionally much higher as well (Fig.1). Freshwater withdrawal is particularly high in Tajikistan, where it reaches 51% of the total renewable water resources (Fig. 2).

Figure 3: Total per capita amounts of renewable water resources and water withdrawal (2006 data; from FAO, 2015).

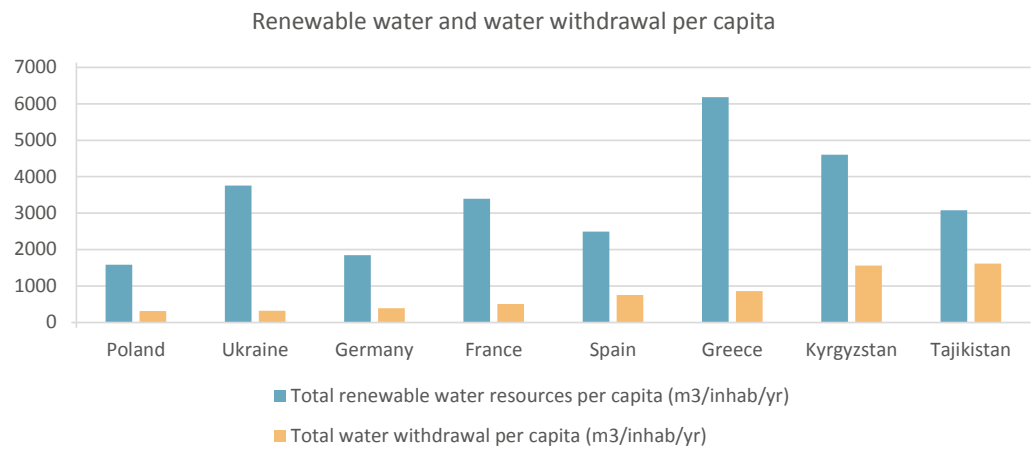
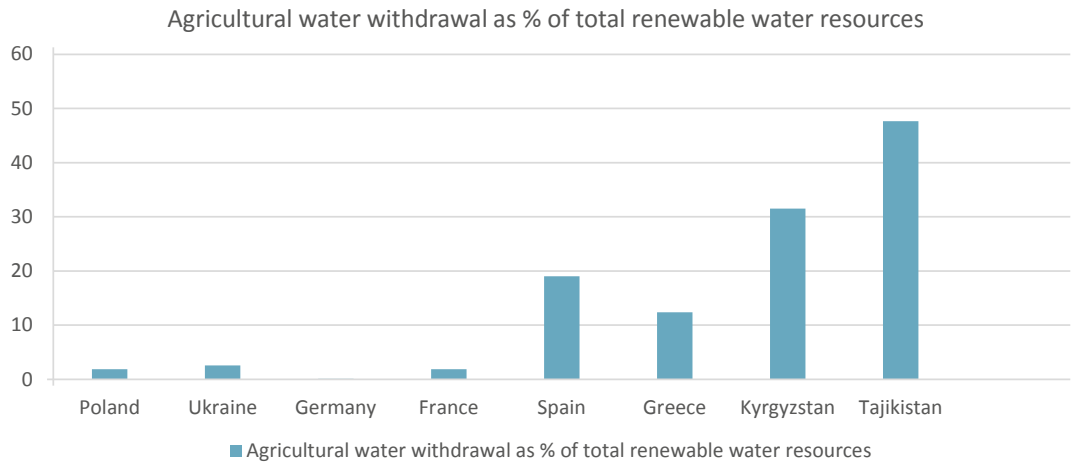


Figure 4: Freshwater withdrawal as percentage of total renewable water resources of Kyrgyzstan and Tajikistan, in comparison to a selection of European countries (data from 2005, 2006, 2007; FAO, 2015).



Absolute measures for water scarcity such as the Falkenmark indicator, which uses a threshold 1,700m^3 per capita per year to determine if a population is under water stress, shows that Kyrgyzstan and Tajikistan are currently not under water stress. According to this indicator, both countries are well resourced with water; inhabitants have access to 4,257m^3 and 2,269m^3, respectively (FAO data 2015). As such, water scarcity in Central Asia is not determined exclusively by the characteristics of the resource per se, but rather by its use. Its effective scarcity is also related to land-use decisions inherited from the Soviet era, and the deterioration of infrastructure equally plays a crucial role as water losses can reach 50% due to evaporation and infiltration (Cai, 2003; *in* Cariou, ibid).

While bilateral agreements and potential for conflict over the allocation of water resources from major rivers such as the Amu-Darya and Syr-Darya are well documented, their tributaries are often outside of the scope of research (Pak *et al.*, 2014b). Additionally, beyond national-level differences and disputes, significant imbalances also occur at the subnational level among neighbouring oblasts.

The Challenge of Water Users Associations: Working Within Institutional and Hydrologic Borders

Since the 1950s, donors and implementing agencies have been searching for a unique solution to managing water resources that is applicable to diverse settings and transferable to different territories. Initial attempts focused on government-centred management, namely through the creation of national agencies for irrigation. In the 1990s, local management systems emerged as the new panacea (Meinzen-Dick, 2007). This also marked the shift in focus from addressing the technical management of the resource towards reforming its governance. The transfer of irrigation management to the local level was implemented in order to internalise the ecological, economic and social externalities of irrigation (Herrfahrdt *et al.*, 2006). In Kyrgyzstan and Tajikistan, as in many other countries, this has in practice translated to implementation of large reforms in the irrigation water sector within a relatively short period of time.

Table 2: Chronology of irrigation sector reform in Tajikistan and Kyrgyzstan

Steps of the water reform	Tajikistan	Kyrgyzstan
Irrigation service fee	1996	1995, implemented 1999
Water Code	2000, amended 2012	2005
Law on Water User Associations	2006	2004
Regulation on Watershed management	2015	2013

In 1994, Kyrgyzstan was the first of the Central Asian countries to introduce Water Users Associations (WUA) through donor-funded projects, though their legal framework was not adopted until 2004. The Water Code was adopted one year later, introducing the concept of watershed management. In 2006, Tajikistan passed the Law on Water Users Associations, which in many aspects is similar to the legal code of Kyrgyzstan. In both countries, non-commercial, non-governmental WUA institutions became responsible for the operation and maintenance of irrigation systems inherited from the *sovkhoz*[5] and *kolkhoz*[6] of the Soviet era. According to the regulations, WUAs are responsible for the implementation of measures against land degradation, in addition to their tasks related to irrigation infrastructure. WUA work is based on a member-based decision-making body, which elects a board to serve as executive body. Members can be individuals, commercial organisations, or farms registered with various legal statuses. However, in many cases users do not actually hold decision-making power (Abdullaev *et al.*, 2010). In Kyrgyzstan, for example, where several international organisations are responsible for the establishment and implementation of WUAs, the law does not clearly define the different institutions' functions. This results in lack of uniform standards, as various donors bring different approaches to implementation (Roudik, 2013).

In Tajikistan, a legal framework leaning towards Integrated Water Resource Management (IWRM) was adopted in parallel with the reform of the agriculture sector, creating the Ministry of Water and Energy and the Agency of Irrigation and Melioration in 2012. The aim of this reform was to clearly divide policymaking responsibilities from operational and management responsibilities (Rahimova, 2016). The Agency is responsible for irrigation administration at the *oblast* and *rayon* levels. A new reform was launched in 2015 centred on Integrated Water Resource Management, watershed management and the division of political and management functions from productive and economic tasks .

While WUAs are meant to follow hydrographic borders, in practice they mostly follow administrative boundaries. In some cases, several WUAs can exist in the territory of one AA (Sehring, 2005; Gunchinmaa and Yakubov, 2010). As new institutions, WUAs need to establish cooperation schemes with other structures in the sector as well as with local level administrations, which often do not work according to the same principles. In Tajikistan, WUAs are under the authority of State Water Institutions such as *Vodkhoz* and they face difficulties working independently and are dominated by local authorities (Sehring, 2007). Often the WUAs' legitimacy is not well recognised among water users, resulting in only partial payment of irrigation service fees and giving rise to challenges for long-term financial sustainability. WUAs currently receive funding from international agencies, but lack the guarantee of a longer-term strategy (Gunchinmaa and Yakubov, ibid). The equity of water allocation is also questionable despite laws stating that WUAs must operate democratically and equitably.

At broader level, these new, institutions based on international principles are undergoing a process of *institutional bricolage*, adapting their tasks and outputs to the context in which they are embedded (Sehring, 2007). A diagnostic approach is now needed to investigate how to hybridise different institutional models and to avoid implementing overly simplistic solutions. While WUAs are essential partners for state agencies, the support they will need in return can vary in form and content as they develop (Meinzen-Dick, 2007).

Another issue facing WUAs is the difficulty in allocating water due to lack of tools for measuring volumes received and distributed amongst users. For example, half of the hydrological and agro-meteorological stations in Kyrgyzstan stopped functioning between 1985 and 2008, and the situation is similar in Tajikistan (Jumaboev, *et al.*, 2009). The lack of multi-level data management impedes the implementation of integrated water management (Abdullaev and Rakhmatullaev, 2014). While a framework does exist to monitor water quality, albeit one in need of improvement, concrete efforts to monitor water quality are almost non-existent.

5 State farm in Soviet Union

6 Collective farm in Soviet Union

Table 3: Main features of the irrigation water management structure in Kyrgyzstan and Tajikistan

	Kyrgyzstan	Tajikistan
Areas under WUA mandate	Only irrigated land depending on infrastructure	Only irrigated land depending on infrastructure
Responsibility for setting irrigation service prices	General meeting of the WUA members	General meeting of the WUA members
Responsibility for budget allocation	General meeting of the WUA members	General meeting of the WUA members
Responsibility for monitoring water quality and quantity	WUAs	WUAs
Sources of higher level support	***From government:*** Department for Support and Development of WUAs under the Ministry of Agriculture and Melioration at rayon, oblast and national level ***From civil society:*** Federation of WUA	***From government:*** Agency for Irrigation and Melioration[7] at rayon, oblast and national level.

Pastures

Land-Tenure of Pasture Lands in Tajikistan and Kyrgyzstan

Tajikistan does not legally recognize pasture as a distinct land type. Thus following independence pasturelands were privatised in the same way as cultivated land. As a result, land tenure for pastures is scattered amongst various owners, managers, and users. Land management falls partly under the authority of *jaomats* and partly under the authority of Local State Forest Management Enterprise (LSFME). Two types of pasture users exist on *jaomat* land: (1) people with inheritable lifetime user rights, and (2) people who hold a leasing agreement with the government, which remains the owner. Collective farms or *dehkan* (individual) farms can use either arrangement. However most households have little understanding of the land tenure and tax systems, and though *jaomats* and *hukumats* (*rayon* level administration) play a crucial role in the land tenure system, they have little interest or incentive to raise household awareness (Kurbanova, 2012). LSFME are also key players in pasture management. Pastures in the State Forest Fund[8] represent 9% of the total area of pasturelands (ADB, 2012), however they only administrate a portion of it : 400,000 ha (Wilkes, 2014). Instead, LSFME often rent pastures to users, thus generating for themselves a major source of income – 38% of their annual budget – resolving at least temporarily their increasing difficulties in mobilising funds. However, the important tasks of pasture monitoring and the development of measures to improve pasture productivity do not fit within the core tasks or competencies of LSFME, which are focused, appropriately, on forested lands. Gaps in the management of grazing activities on forestry land lead to ecosystem degradation as well as disputes between resource users and forestry administration officials (Weperen van, 2015). The total area of pastures is 3.3 million ha (ADB, 2012), and 90-95% of pasture land is affected by land degradation (Bann *et al.*, 2011).

Contrary to the ownership structure in Tajikistan, Kyrgyzstan's pastures remained the property of the State following independence. Their management was divided between LSFME and local administrations at *oblast*, *rayon* and AA levels until the passing of the law "On Pastures" in 2009, which transferred responsibility for their management to the community level through establishment of Pasture Users Unions (PUU). However more than one million hectares[9] of land managed by LSFME in Kyrgyzstan is not covered under the scope of the new law "On Pastures," which are thus subject to other laws and regulations. Leases are organised by

7 Reform of the Water department under the Ministry of Agriculture is ongoing; thus it is more likely, that a new Department that may support WUAs will become operational in the coming months.

8 In Tajikistan pasture land is held by State Forest Fun, Land State Reserve and State Pasture Reserve.

9 They represent 1,137,393 ha according to data from the State Agency for Environmental Protection and Forestry (SPAEF) of Kyrgyzstan (2006).

LSFME, which set stocking rates and prices, and which require the monitoring of vegetation cover through a dedicated apparatus (*lesnoe ustroistvo*).

Kyrgyzstan's pasturelands cover 9 million ha, representing 85% of all agricultural land in the country (National Statistical Committee, 2013). However 72% of pastures are reportedly degraded to various degrees (Giprozem, 2000). While the monitoring of water resources is relatively easy once adequate equipment is in place, monitoring pastures and quantifying their carrying capacities requires a strong methodological approach that accounts for numerous influencing factors. Robinson (Robinson *et al.*, 2012) underlined the difficulty in finding a suitable methodological approach to assess pasture conditions (degradation) in Kyrgyzstan; this is very significant, as concerns over the extent of livestock density-based degradation provides the foundation for current discourse in favour of changing local approaches to pasture management and closing the border to foreign livestock.

Pasture User Unions: Involving Communities in Pasture Management

Implementation of the law "On pastures" experienced some delay due to political instability in Kyrgyzstan at the time of its adoption. This new regulation provides the legal basis for Pasture Users Unions (PUU), which gather all pasture users at the AA level. Pasture users elect Pasture Committees (PC) to serve as their executive body responsible for elaborating and implementing management plans and measures, setting and collecting pasture use fees, constructing and maintaining infrastructure, controlling pasture use, sanctioning unauthorised use, and leading conflict resolution processes. Pasture Committees are also tasked with performing regular monitoring of pasture conditions. Pasture Users Unions can voluntarily associate at the *rayon* level to coordinate their activities. The Kyrgyz Association of Pasture Users Unions works at the national level, together with voluntary *rayon*-level associations, to strengthen capacities and foster collaboration with national governmental bodies. The primary changes from the former regulation are a shift to payment based on head of livestock rather than pasture area (as still done in Forestry areas) and the collection of pasture fees at local administrative level. PCs can also apply for international funding not accessible to municipalities. Leasing is banned for pastures of AO , contrary to the situation of the LSFME, which can rent pasture to livestock owners (however the law "On pastures" does not apply to pasture owned or administered by LSFME). To harmonize the situation, in 2013 a Memorandum of Understanding was launched to foster closer collaboration between LSFME and the Pasture Committees, but due to a lack of interest (from LSFME) such measures proved unsustainable (Mestre, *et al.*, 2013).

Conversely, Tajikistan's law "On Pastures" was adopted in 2013, providing the basis for participatory management involving pasture users. The law created three new institutions: Pasture Users Unions (PUU), Commissions on Pastures (CoP) at the *rayon* level, and the Department of Pasture under the national Ministry of Agriculture.

Pasture Users Unions are non-governmental bodies established to allow users joint access and use of pasturelands. However unlike in Kyrgyzstan, PUUs are not linked to the smallest administrative entity (*jamoat* in Tajikistan, AA in Kyrgyzstan). Any group of households can voluntarily create a union, and any type of user can be a part of the PUU, including *dehkan* farms, commercial structures and individuals. Once the group is formed, they are afforded the rights to apply for pasture lease from the State. Membership is not compulsory, and thus it is likely that some pasture users will not enter a PUU, creating mixed pasture management situations among user unions and individual users. PUUs take part in decision making around management and planning, even though decisions remain the official responsibility of the Commissions on Pastures.

Rayon parliament members (*majilis*) establish Commissions on Pastures at the *rayon* level. The Commissions include *jaomat*, local government and PUU representatives as well as local experts on pasture management among their members, and they are responsible for the main management tasks including: defining pasture boundaries, allocating pastures to users, controlling pasture use, and resolving conflicts related to pasture use. Specifically, the Commissions are tasked to prepare annual and 5-year plans and to monitor pasture conditions.

CoPs also play an advisory role to PUUs in determining pasture rent fees. The Commissions are accountable to the *rayon* parliament.

The Department on Pasture under the Ministry of Agriculture is currently in the process of being established. The Department's main tasks include participating in policy making procedures to implement and reinforce the new management models. This includes defining standards for pasture monitoring in order to oversee the activities of PUUs.

The reform is recent and remains in its initial phase of implementation. It is led jointly by the Ministry of Agriculture and international organisations, and it does not yet cover the whole territory of Tajikistan. Despite changes in the law since its adoption in 2013, the regulation still lacks a clear legal framework. It also does not provide a clear understanding of the newly created institutions' operations. As a result, concerns exist about whether CoP will become a dominating element in pasture management in Tajikistan, with PUUs serving as their executive organ (Wilkes, 2014).

Table 4. Main features of Pasture Management in Kyrgyzstan and Tajikistan

	Kyrgyzstan	Tajikistan
Types of pasture land where PUU can be implemented	Pastures under the authority of *Ajyil okmotu*	All pasture lands
Territorial coverage of PUU	Throughout the country, in all AA with pastures.	Partial (in process); not meant to gather all PU in PUU
Price setting for pasture use	PC with final agreement of local parliaments	PUU with advice of CoP
Budget allocation	PC with final agreement of local parliaments	PUU with advice of CoP
Pasture allocation	By PC within the boundaries of the AA	By lease to PUU or individual PU
Pasture border delimitation	KyrgyzGiprozem	CoP
Pasture monitoring	PC and KyrgyzGiprozem	CoP and PUU
Higher level support	***From government:*** Pasture Department under the Ministry of Agriculture and Melioration ***From civil society:*** Kyrgyz Association of Pasture Users Unions	***From the government:*** Pasture trust (in the process of being reformed)

Challenges facing these new pasture management models include: (1) their basic design and the assumptions related to the role that communities can play in pasture management, especially in Kyrgyzstan where PUUs operate at the level of 'local self-governance' (LSG) (Jacquesson, 2010); (2) the sincerity of government's commitment to decentralise the pasture management process and to adopt more participatory approaches involving resource users (Ribot *et al.*, 2006 ; Dörre, 2015); and (3) the potential for new management models to achieve sustainable pasture use (Wilkes *et al.*, 2010; Saunders, 2014).

Transboundary Use of Irrigation Water and Pastures

Given that reforms in this area are designed to be universally applicable, research found that little to no attention is given to a territory's specificities. Border areas between Tajikistan and Kyrgyzstan, where a national border replaced a previously internal border following the collapse of the Soviet Union, are distinctive for at least two reasons: (1) As a result of the border's shift from internal to international, neighbouring territories now must comply with their respective new national regulations, creating an asymmetry between management models, despite the strong inter-dependencies between communities on both sides of the border; and (2) border areas now also face a transposition to the local administrative level of otherwise high-level national border tensions.

Differences between decision-making mechanisms on both sides of the border render the implementation of conflict resolution mechanisms difficult. Local stakeholders are referred to higher levels of government not directly involved or affected by the issues, but where nationalist concepts of statehood are strongest (Wegerich *et al.*, 2012). As a result, government authorities at national level have little incentive to engage, and local stakeholders have little leverage to compel them to act.

While the post-Soviet transition processes and legal reforms in the two countries' agrarian sectors differ substantially, they share at least one experience in common: most collective and state farms were broken up into a large number of small-scale farms. This process has created a discrepancy between existing (remaining) infrastructure, designed to service large collective farms, and the needs of privatised family farms. It also has led to an exponential growth in the number of potential stakeholders involved in border area and transboundary issues.

Sharing and Managing Natural Resources in Border Territories

In the following section, based on available academic and grey literature, we outline the main aspects of natural resource use and management and their potential influence on disputes and collaboration in the Tajik-Kyrgyz border areas of Soghd and Batken *oblasts*.,

Isfara and Khodja-Bakirgan Watersheds: Development Interventions to Reintegrate Water Management

Donors and academics mostly have focused their attention on the Isfara and Khodja-Bakirgan[10] rivers, the two largest watersheds where projects have been implemented in the Ferghana valley[11] Both watersheds are also covered by international agreements. Rarely included in research or development projects are the Ak-Suu and Bulak Bashy-Say rivers, which flow from Batken oblast into Soghd oblast, and the Kyzyl-Suu river, which is part of the Varsh watershed and flows from southern Osh oblast into the Region of National Subordination.

The Isfara and Khodja-Bakirgan rivers are the two transborder watersheds between Kyrgyzstan and Tajikistan, located predominantly in the Ferghana valley. They originate in Kyrgyzstan and flow into Tajikistan, and in the case of the Isfara river, onward into Uzbekistan. Agreements between the three countries about water allocation along the Isfara River were fiercely debated between the Uzbek, Tajik and Kyrgyz Soviet Socialist Republics during Soviet times, and these agreements have undergone a number of further iterative changes since that time. The ultimate adoption of these water agreements were the result of pressure from the central USSR government complemented by engineering solutions that brought more water to the basin (Reeves, 2014). Water was not the only resource managed in an integrative way; most other resources and infrastructure also were jointly administered throughout the Ferghana valley territory (Megoran, 2007).

After the end of the Soviet Union, the privatisation of *sovkhoz* and *kolkhoz* led to the multiplication of water users, as households created small peasant farms. Management also faced special circumstances as local "administrative boundaries became national boundaries, and irrigation management infrastructure historically built within one country became transboundary infrastructure" (Wegerich *et al.*, 2012, p 540). Both before

10 Khodja-Bakirgan is the name of the river in Tajikistan; in Kyrgyzstan this same river is called Kozu-Baglan, and on some maps Kozy-Baglan or Leylek. As most reports and scientific literature use the Tajik name for the whole river on both sides of the border, we also will use the name Khodja-Bakirgan.

11 Major projects have included: (1) "Management of National Water Resources" (2014-2018) in the Khodja-Bakirgan and Ak-Suu watersheds, implemented by Acted, GIZ and Helvetas and funded by SDC (this is one of the few projects working on Ak-Suu river); (2) "Water Management and Basin Organisations in Central Asia,"(2012-2014) implemented by CAREC and GIZ with EU funding, focusing on several rivers including Isfara; (3) "Stakeholder's partnerships in collaborative policymaking: Fostering Transboundary cooperation on small watersheds in Central Asia," (2012-2015) implemented by CAREC with USAID funding, focused on Isfara river; and (4) "Transboundary Water Management in Central Asia," (2009-2017) implemented by several organizations, funded by German Federal Foreign Office, focusing on Khodja-Bakirgan and Isfara rivers.

and after the USSR was in power, agreements were entered into despite the technically impossibilities of their implementation (Pak, *et al.*, 2013).

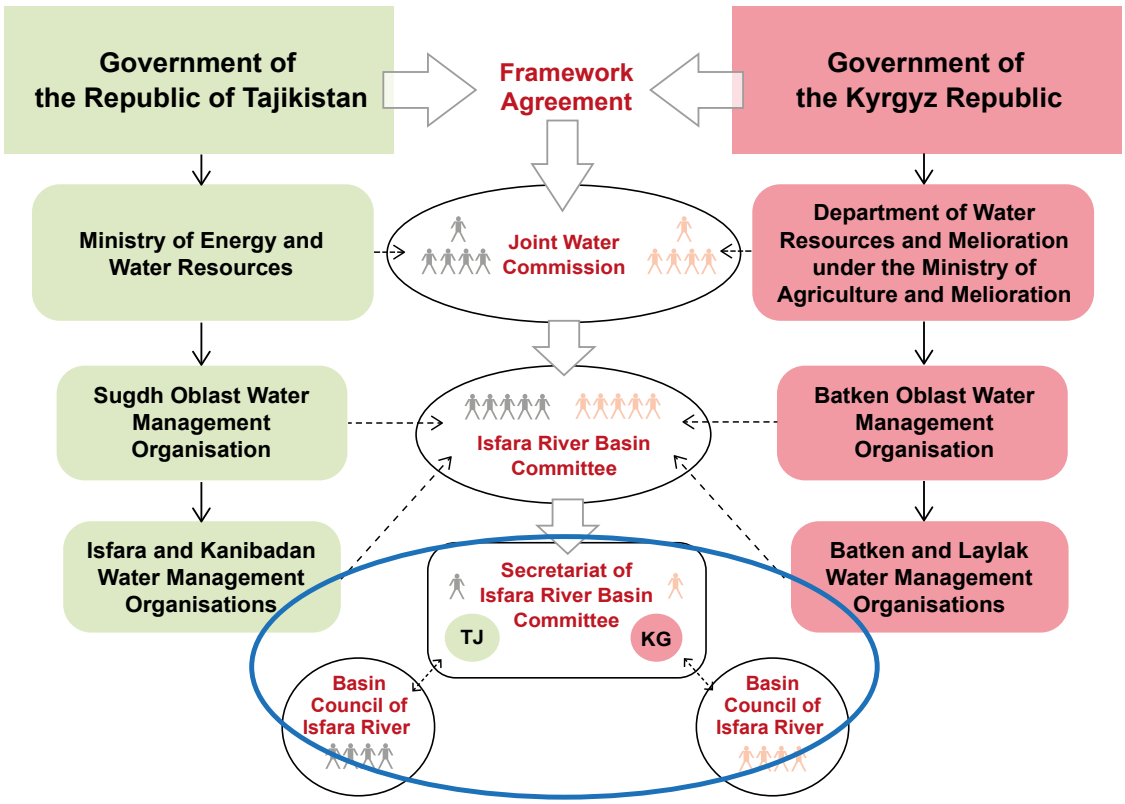
In general terms, disputes arise between communities concerning the amount of water provided when expectations do not match reality. This is related to difficulties in water monitoring and delays in water provision, which critically impact cultivation activities (Undeland, 2013).

Water authorities in neighbouring countries own infrastructure located on opposite sides of the international border. This did not have consequences in a *de facto* free access regime, however as borders become more militarised a number of complications arise, and these can potentially result in users' inability to reach sections of infrastructure to which they still have legal rights (Wegerich *et al.*, ibid).

Since the end of the Soviet Union, several international donors have allocated funding to develop and implement watershed councils to support maintenance of irrigation infrastructure and improvement of transborder coordination. The creation of these institutions is aimed at integrating interests and needs of communities located upstream and downstream, in order to achieve (1) more effective water management, (2) more transparent water allocation decisions, (3) rehabilitation of infrastructure, and (4) strengthening of capacities of WUAs and local irrigation water administration staff. Through their participation in watershed councils, it is expected that all interested parties can access information on management measures and thus participate in all relevant planning processes.

Two councils for the Isafara basin were created in the framework of the Transboundary Water Management in Central Asia programme, one each on both sides of the border, both tasked with developing a watershed management plan (Figure 5). However, challenges to implementing this mechanism have included: (1) clearly defining the core competencies and tasks required of each stakeholder; (2) integrating national institutions without corresponding responsibilities; and (3) securing funding.

Figure 5: Institutional setting, as suggested in the Framework Agreement between Tajikistan and Kyrgyzstan. The operational institutions are highlighted in blue. (Adapted from Dusik and Nurmamedova, 2015).



Additionally the levels of interest or political incentives at the national level to implement these multi-layer institutions has remained low, as signing any agreement about irrigation water is seen as a potential threat. Indeed, the legal recognition of another country's right to manage infrastructure in another country could be extrapolated to the recognition of a new or different border. National authorities are thus waiting for the delimitation of the border before launching a comprehensive system. To date, among the four levels provided in the current Framework agreement, only the preliminary level is operational (Figure 5). As a result, plans for the basins reflect differing priorities for each country, with the Tajik side dedicated to disaster reduction and the Kyrgyz side focused on the need to increase delivery of irrigation water. With disparate objectives and limited common ground, cooperation processes become difficult to implement. Moreover, basin plans are *de facto* operational only in areas under the mandate of *Vodkhoz*, i.e. areas not dependent on infrastructure that falls under WUAs responsibility (also see Part 4.2 in this document).

In comparison, efforts to build cooperation in small transborder watersheds between Kyrgyzstan and Kazakhstan also encounter challenges in the building of a balanced multi-level institution despite varying forms of decentralisation and smaller, incomplete territorial coverage (Box 2). A shift in water use priorities away from irrigation and towards hydropower (as is the case with the Tortgul reservoir on the Isfara river) could have an important impact on future institutional cooperation. Creating additional reservoirs could lead to more active engagement between governments, as this would considerably affect the water regime (Pak, *et al.*, 2013).

Box 1: The construction of cooperation in the Talas and Chu watersheds between Kazakhstan and Kyrgyzstan. Sources: Dolgich, et al., 2014 and Zinzani, 2015.

Experience from the border between Kazakhstan and Kyrgyzstan: Constructing cooperation in the Talas and Chu watersheds

The Talas river originates in Talas *oblast* in northwestern Kyrgyzstan before crossing the border into Kazakhstan and ending in the Muyunkum desert. The Chu's source is located in the Kochkor *rayon* of Kyrgyzstan's Naryn *oblast*. It then crosses the most densely populated area of the country before finally disappearing in the desert as the Talas river before reaching the sea. The watersheds of the two rivers jointly cover 120,200 km2, with 67.9% of this area in Kyrgyzstan. A total of 3 million people live in the basin area. The majority of the extracted water is used for irrigation and the larger portion of the watershed's irrigated land is located in Kyrgyzstan. Despite a shrinking of irrigated land in Kyrgyzstan following independence, the shift from grain production to bean and maize cultivation has required a same level of water consumption. In the communities on the Kazakhstan side of the border, cultivation is oriented to cash crops, winter wheat and greenhouse-based production of vegetables.

National level user rights for the Chu river confer 42% of the water to Kazakhstan and 58% to Kyrgyzstan, according to an agreement signed in 2000, based on the 1983 agreement between the two Soviet Republics. In the case of the Talas river, both countries have equal water use rights. In 2006, with the support of international organisations, the two countries created a Commission to implement the bilateral agreement on use of transborder water infrastructure for the Republics of Kyrgyzstan and Kazakhstan. The aim of this agreement is to share the costs of water infrastructure between the neighbouring countries. The commission is comprised of two bodies of equal weight, representing each country.

The Commission faces practical challenges, including: (1) The absence of a planned financing scheme for the Secretariat of the Commission; (2) specific transborder issues around custom taxes and transport of staff across the border; and (3) incomplete territorial coverage (e.g. the Aspara river watershed is also a transborder waterway, but not part of the Commission's jurisdiction and as a result is not covered, despite being part of Talas basin and sharing transborder infrastructure).

It is also worth noting that the 70 WUAs in Kyrgyzstan cover only 87% of the watershed area on the Kyrgyz side, leaving 13% of the area uncovered by the Commission. A final challenge is that only weak systems are present for monitoring water quantity and quality. Even at its height during the USSR period, the water

quantity monitoring system never met the standards of the World Meteorological Organisation. The number of agro-meteorological stations has further decreased since the 1980s and at present few stations exist. Those that are present each cover only an area around 5,000 km2. Despite satisfactory monitoring of water quality in the Chu river, the lack of quality measures for the Talas river still remains an issue.

Several other matters further limit the proper function of the Commission. First among them is the administrative levels at which water governance decisions are made. While decentralisation has been implemented in Kyrgyzstan, in Kazakhstan canals are considered nationally strategic objects and water management remains under State control. Water users, who in Kazakhstan are predominantly farmers, are not directly represented in the Commission and thus participation is low. Furthermore, the Commission has not anticipated allocating water for ecological purposes, which poses a risk in a context of demographic growth and evolving water management regimes in response to climate change. Conversely, the Commission's main areas of success have been in the management and repair of important infrastructure that are under its purview.

Challenges for Joint Pasture Use Amongst Soghd and Batken Livestock Owners in Batken Oblast

There are few historical sources about transborder use of the pastures of Batken *oblast* by the inhabitants of Soghd *oblast* (RDF, 2010, 2012; Mestre, *et al.* 2013; Ibraimova *et al.*, 2015). These uses include daily grazing on pastures near the borders, considered 'winter pastures' despite the practice of sometimes year-round grazing. This is especially common in pastures where nearest waterpoints are located in Tajikistan. These pastures are not used by Batken inhabitants but are easily accessible for inhabitants from Soghd. A second form of transborder pasture use patterns is when Tajik citizens graze livestock on distant pastures (including spring, autumn or summer pastures) managed by PUUs or by forestry enterprises in Kyrgyzstan. A third transborder practice is the grazing of livestock owned by individuals from Soghd by shepherds from Kyrgyzstan, in exchange of a service-fee. In some cases, informal arrangements are established at different levels of cooperation, both among individuals and through agreements among Kyrgyz PUUs or AO and Tajik *jamoat*. International experience, including from the French-Spanish Pyrenean mountains, highlights how just much time is needed to build effective joint pasture management (Box 4).

Disputes mainly arise in the following instances: (1) when Tajik citizens are arrested by police or border guards while grazing their livestock on Kyrgyz pastures; (2) when livestock thefts occur or when transhumant herds destroy cultivated fields; (3) in the case of outbreak of livestock epidemics, as vaccination of animals crossing the border from Tajikistan is uncontrolled; and (4) when discourse by international organisations and governmental structures focuses on the degradation of pastures. Moreover, these disputes take place in a context where the capacity of PUUs is relatively low and where conflicts over pastures exist with local self-governments, LSFME and protected areas as well as with mining companies (Mestre, *et al.,* 2013).

In 2012, the Kyrgyz government developed an international agreement on leasing of pastures for grazing by foreign-owned livestock, with a fixed seasonal price of $3 USD per head of livestock. Despite interest expressed at the local level, this agreement was not signed by the Tajik government (RDF, 2012, Mestre *et al.*, ibid, Ibraimova *et al.*, ibid).

Mitigation and resolution measures are restricted to the Kyrgyz territory, and oriented towards improving pasture management and lobbying for improved policy aimed at strengthening the capacity of the PUUs and building infrastructure to allow Kyrgyz citizens to better access and use their land. Most NGO-led projects do not explore transborder cooperation mechanisms, as NGOs do not want to risk acting illegally on agreements that have not been formally adopted by government.

Recent natural resources estimates conducted by NGOs in the Khodja-bakirgan and Ak-Suu watersheds on both sides of the border found livestock numbers to be over four times the area's recognized carrying capacity (Сосин [Sosin], 2015; Ibraimova, *et al.*, ibid). This result contrasts significantly with the figures on pastures provided by the National Statistical Committees. There are several reasons for this discrepancy, including the difficulty to accurately track number of livestock, as owners may feel an incentive to underreport their stock in order to avoid taxation (Mestre, *et al,* ibid). The Tajik government also does not recognise grazing in Kyrgyzstan, so no record exists of the livestock that stay on pastures throughout the year. These issues complicate efforts to assess grazing pressure on pastures. Furthermore, reliable data on pasture vegetation and their dynamics is needed, along with standard methodologies, to assess and determine levels of pasture degradation (Robinson, forthcoming). For these reasons, most data collected by local NGOs and international organisations are scattered and also do not cover the entire *oblast*. Moreover, methodologies for data collection are sometimes weak or unclear, making it difficult to compare information from different sources.

Box 2: Transborder pasture use in the Pyrenean massif between France and Spain, the institutionalization of dynamic customary practices in the long term history. Source: Couédic, 2010 and Roigé et al., 2002

Dynamics of formal and informal water agreements in relation to pasture use in the Pyrenees on the French-Spanish border

The Pyrenean massif is located at the border of southern France and northern Spain. Since ancient times, the land has been dominated by agro-pastoralism, oriented to milk for cheese production (cow and sheep) and meat (sheep, cow and horse) with use of transborder pastures. While the border between France and Spain has been stable since 1660, during the 18th and 19th centuries conflicts amongst border communities were frequent as the population grew and local communities became increasingly institutionalised due in part to pressures from tax collection bodies. In that period, customary practices covering a wide range of situations and agreements underwent a process of formalisation. This included tax exemption and free-border regimes for herds, despite contradictory national regulation as well as the right of Spanish and French owners to jointly hire shepherds to graze their animals together. The development of more flexible border regulations was precipitated especially by the case of Llìvia, a Spanish enclave located in France. Shortly after inhabitants of Llìvia gained the right to move livestock to summer pastures through French territory, all Spanish citizens were afforded this right as well.

Agreements took various forms: a municipality could own pastures on the opposite side of the border, or could receive user rights for a pasture either unilaterally or by exchange of pastures negotiated between communities. Specific provisions also could define alternating transhumance routes to limit the destruction of cultivated fields.

Nowadays, despite significant migration towards urban areas and a strong decrease in the number of individuals keeping livestock, some of the aforementioned agreements remain in place and a cooperative dynamic persists in many areas.

At the moment, the two main classifications of pasture tenure are private pastures rented by an individual or a group of livestock owners, and *common pastures*. Some of these common pastures are located in high valleys that cross borders. Shepherds from both countries use these lands and benefit from a local agreement that operates on a system of alternating use. Over the course of five years, for example, shepherds from the French village use the pasture exclusively, followed by similar rights afforded to the shepherds from the adjacent Spanish village for the next five years. Conflicts remain common, especially as tourism exerts additional pressure on land use and land tenure. Conflicts are also triggered when livestock quotas are being set for grazing on common pastures. However, long-standing legal and customary practices allow for cooperation and generally peaceful co-existence in a transboundary area that is used by multiple communities.

Batken-Isfana road

Conflicts and Cooperation in Natural Resource Management

According to the literature, conflicts and stakeholder-implemented cooperation mechanisms are susceptible to a wide range of internal and external influences. The institutional environment plays a crucial role in this domain, as reforms also affect or may even create tensions between institutions. Changes in resource management and decision-making are often seen by stakeholders as a potential opportunity to lobby their interests. Moreover, donors and international organisations implemented the development and establishment of WUAs and PUUs in an environment where management principles in governmental structures are not particularly oriented toward participatory approaches. This also creates the grounds for a reconfiguration of roles and responsibilities, with the potential to trigger disputes. Community-led management models do not always foster peace and collaboration – they can also result in the exclusion of some resource users within a community, or users from other communities if they are unable or unwilling to adopt the management rules. In turn, these excluded users can adopt destructive behaviours towards the resource (Ballet, 2007).

Coordination is considered a crucial aspect of development interventions in two regards. First, it is often a stated central objective or means to implement activities. Secondly, coordination supports efforts to build knowledge and to assess priorities for further initiatives or interventions. Despite considerable efforts invested, interventions aiming to achieve the joint management of transborder resources in the region still face a number of challenges. One difficulty is the lack of an open and integrated database. Without such a repository for information, it is uncertain, time consuming and often very challenging to find information and aggregate data (Abdullaev and Rakhmatullaev, 2014). Another challenge is the discrepancy in objectives between international organisations and local institutions, where the former's promotion of cooperation and joint management may run counter to the political interest of the latter. International organisations working in the field of conflict resolution often misunderstand or are challenged in their understanding of natural resource conflicts in Central Asia. As Bichsel (2009a) argues, development projects may fail when ignoring the complex, multi-layered interactions between the national government and national politics, on one hand, and local specificities of conflict situations, on the other hand. Conflict analysis requires a solid comprehension of conflict situational contexts and the local implications, including social and economic impacts – within and between communities – of natural resources use patterns.

Box 3: The four main assumptions of development projects dealing with conflicts over natural resources in Central Asia. Source: Bichsel, 2009b, p38

The four main assumptions of development projects dealing with conflicts over natural resources in Central Asia:

1. The perspective that conflict is endemic to the local context

The first point of critique concerns the perspective that the sources of conflicts addressed are lodged in the relationship between communities differing in ethnic affiliation. The approach apprehends irrigation conflict as disrupted relations between two or several communities, and thus solvable in the very same context. Bichsel's research demonstrates that such conflicts are not 'local' but embedded in wider political interests and power constellations. Issues at stake are thus often impervious to a 'local' solution.

2. The functional understanding of conflict

The second point of critique addresses the functional understanding of conflict sources and parties that the approach exposes. Conflict is seen to emerge from 'grievances' over scarce resources. Such 'grievances' are expected to lead to violent conflict. Moreover, conflict parties are conceptualized as homogenous and uniform, essentially shaped by solidarity on the basis of their collective goals in a conflict. However Bichsel's research has pointed out the relativity of scarcity, has questioned that primarily unsatisfied needs lead to the adoption of violence, and has deconstructed the monolithic representations of ethnic groups.

3. The assumption of homology between the conflict parties

The third point of critique concerns the assumption of homology between conflict parties. The donors presume such homology not only between the conflict parties, but also between the CBOs and, more abstractly, for the enabling and constraining conditions which conflict mitigation meets in the respective countries. Bichsel's work has pointed out that upstream-downstream configurations in irrigation systems are power relations. Furthermore, it has been shown that conflict and its mitigation do not take place outside of power constellations.

4. The normative nature of proposed social change

The fourth point of critique addresses the normative nature of the social change brought forward by donors. It maintains that both by portraying irrigation conflicts and by proposing their 'transformation'. The approach studied by Bichsel exposes normative accounts of evolution and moral progress and has brought to light some of these assumptions, suggesting that apart from their ethnocentric bias, such prescriptions also lead to forms of depoliticisation and disempowerment.

Transborder areas are more likely to develop cooperation mechanisms than those in the 'centre', largely because they are located on the periphery (Wegerich, *et al.*, 2012). However, the ability of local, *rayon* and *oblast* authorities to cooperate sometimes is hampered by the influence of central government, as evident in attempts to advance a memorandum of understanding on foreigners' (mostly Tajik) grazing rights in Kyrgyzstan.

Natural Resource Management Models in Batken and Soghd Border Communities

Conceptual Framework and Research Methods of Field Study

The situation between border communities of the Ferghana valley is often presented as a broadly generalised conflict, without any differentiation of types of conflict. It is also viewed as a form of violent interaction between local communities. Border areas are normally deemed special areas of interest aligned with the country's national interests. Emphases on strengthening borders as an integral part of national security are

often attributed to such interests. This "security discourse" is an important factor in the perception of conflict potential in border areas. It also serves as an analytical prism through which research of natural resource management and conflicts in border communities is conducted.[12]

Current conceptual approaches to natural resource management:

Definition of conflict			
Local nongovernmental organizations	International organizations	State institutions	Academic researchers
Conflict is a social environment of the border communities (monitoring reports of the Foundation for Tolerance International Batken office)	Conflict is a result of poor communication and lack/ decline in mechanisms for cross-border cooperation between communities. For example, development of the integrated Isfara river basin plan outlined in the first part of this report. Conflict as a result of the decline in infrastructure (its condition and content[13]).	Conflict is a clash between the border communities Conflict is a product of the unresolved border delimitation and demarcation issue. (Speeches in the press by representatives of the governments of KR and RT[14])	Conflict is part of the development of national borders, i.e. nation-building (Reeves, 2005, 2014.) Conflict is a result of the emergence of new institutions declared to be public, but by nature seen as constructs of international organizations (Bichsel, 2005, 2009). Conflict stems from the establishment of new rules. Conflict is highly influenced by signs noting these rules: fenced territories, lawsuits, public meetings (Torre and others, 2014)
Actors			
Border communities (ethnic prism), local authorities	Local communities, local authorities, WUAs, Pasture committees	Local residents, government agencies	State organisations, international organisations, local residents, organised participatory institutions such as WUAs and PCs
Practical approaches: prevention and resolution			
Training local communities in preventative peace-building and mediation skills	Establishing communication channels/ institutions Promoting initiatives such as committees and networks Investment in infrastructure	Negotiations	Finding individual cooperation models, departure from generalizations *(border conflict, ethnic conflict, and etc.).*

12 Мониторинговые отчеты о конфликтах в приграничных сообществах Баткенской области 2010; 2011; 2012;2013; [Monitoring reports on the conflicts in the border communities of Batken oblast. Foundation for Tolerance International 2010; 2011; 2012; 2013]; RDF 2010; 2012; Conflict on irrigation Water in the South of the Kyrgyz Republic. Report. ACTED, December, 2013; Конфликты за пастбищные ресурсы и пути их решения. CAMP Alatoo 11; 20

13 International Crisis Group, "Inter Pressures in Central Asia," 2014 // URL: http://www.crisisgroup.org/~/media/Files/europe/central-asia/233-water-pressures-in-central-asia.pdf

14 See more: Решительные шаги по делимитации границы с Таджикистаном// URL:http://rus.azattyk.org/content/article/27491260.html; Пора сомкнуть границы // http://rus.azattyk.org/content/kyrgyzstan_tajikistan_border/24467095.html

The current approaches include the following gaps:

- The above frameworks attribute a willingness to resolve and/or settle the conflict to the actors involved. However incentives or interest in prolonging the conflict or allowing the conflict to remain unresolved may exist; this aspect is ignored.
- Conflicts are often understood through their ethnicisation resulting in a simplistic contra-distinction between ethnic groups, i.e. Kyrgyz versus Tajiks as two parties to a conflict. However, both sides have common interests and advocate these interests. Their voices are frequently unrepresented.
- Formal institutions are at the centre of research, while informal institutions remain insufficiently explored or analysed.
- An emphasis on early warning systems and conflict resolution can obscure an exploration of the drivers of conflict that lead to violent scenarios.
- The focus is on those players visibly engaged in conflict while the broader chain of actors involved is not considered. Involving a broader spectrum of actors provides a more accurate representation of the interests and perspectives involved.
- Pasture users and water users are treated as separate actors or constituencies, although they are usually the same people.
- Conflict is predominantly understood as a pre-violent state; this understanding prompts solutions like peace-building and negotiation processes. A focus on the outcomes of conflicts, like forming new rules, is not examined.

This study aimed to rethink existing methodological approaches to understanding natural resource conflict in the border areas of Kyrgyzstan and Tajikistan. To identify appropriate research areas, the team went on field expeditions to the regional centres of Batken and Soghd to select research locations.

When selecting villages, the researchers defined territory by Torre's definition (Torre, *et al.*, 2014), in accordance with the definition of 'community' as a unit interconnected by infrastructure and resources. Such a unit may not coincide with the administrative borders of territories or national borders of the state; however this approach allowed the researchers to consider border villages as a single cluster. In addition, this approach allowed for an integrated analysis of issues within border villages, as it prevents the emphasis on resource ownership (a political aspect), and instead allows the research to consider problems of resource and infrastructure use (an operational aspect).

We used the following indicators as criteria for determining territories:

Table 5. Criteria for determining case study territories

Case 1: Territory with registered conflicts over natural resources	**Case 2:** Territory without registered conflicts
• Joint use of natural resources (irrigation water and/or pastures) • Lack of or inadequate research, or available information, about the territory	

The following geographic areas were identified based on the first phase of research, which included reviewing sources and conducting a field visit to Batken region for consultations with local experts:

Case 1: Myrza-Patcha village (part of Isfana city, Kyrgyzstan) and Mahalya Navruz (Korgoncho village. Tajikistan)

Case 2: *Aiyl aimak* Samarkandek (Kyrgyzstan) and *jamoats* Chorku and Surkh, as well as the urban settlement of Shurob.

Data on *jamoats* Surkh, Chorku and urban settlement Shurob in this research were collected at the Isfara district and Sughd regional level.

Key research methods:

We adopted a 'transversal study' approach in the present research, i.e. an observational study of a subset of the population in the project area (in two selected villages), at one specific point in time. Such cross-sectional research may be used to describe certain features of a population, or to support inferences of cause and effect. Specific methods employed included the following:

1. Desk study;
2. Expert interviews (Bishkek, Batken, Isfana, Dushanbe, Khujand, Isfara);
3. Field studies in AA Samarkandek and Myrza-Patcha village: interviews with Chairpersons and members of AO, WUAs, PCs, participant observation in the livestock markets, interviews with residents of territories and social mapping;
4. Observation of the Nawruz squatter settlement in Korgoncho village and the Festival of Friendship in Lyakon *jamoat*;
5. Expert seminars in Batken and Khujand;
6. Mapping.

We did not use the term *conflict* when conducting field research in order to avoid the prevailing language on conflicts in border communities, which in turn becomes the predominant perception of social relations in the Ferghana Valley. Instead, interviews and fieldwork used the term *tension*, with a clarification that the researchers were discussing the concept specifically as related to natural resource management. This approach allowed the team to avoid politicisation of the research language and to consider management-related problems in a specific situation, without inviting references to past experience.

Characteristics of Territories and Their Natural Resource Management Models: Case Study Findings

Case Study I: AA Samarkandek – *Jamoats* Chorku-Surkh-Shurob

Characteristics of the territory:

Samarkandek *aiyl aimak* is part of the Batken district and consists of three villages: Samarkandek, Paska-Aryk, Jany-Bak. A total of 11,567 inhabitants live in the district. Internal borders in Samarkandek *aiyl aimak* changed dynamically between 2001-2005. In 2001, six villages were separated and formed Ak-Say *aiyl aimak*, and in 2002, Ak-Tatyr *aiyl aimak* was formed, comprised of three villages.

Samarkandek borders Tajikistan on three sides with Chorku, Shurab and Surkh *jamoats*. There are some disputed areas on the AA territory; however, during meetings local residents only highlighted the absence of a demarcated border or disputed areas in reference to their experiences communicating with border guards and law enforcement services.

> "Border guards detained me for allegedly crossing their border. It is not clear where the border is, but border guards demanded a bribe. I was going down with a herd of sheep; I had to give them a sheep so that they let me go. This is their attitude towards us. Why should we give them our pasture? These lands are only called "pastures," in fact it is desert – and there is not enough land for us, livestock return in poor condition."
>
> *Interview with shepherd at livestock market, Samarkandek, 28 November 2015*

Chorku, Surkh and Shurab Jamoats

In Tajikistan, the reform of natural resource management systems began only recently. At the time of the USSR's collapse, 257 collective farms operated in the Soghd region on land that is now home to around 65,000 *dehkan* farms. The irrigation water management system also has changed dramatically. Water Users Associations were

established in 2011-2012, and in 2013 the first Pasture Users Associations were established in response to the adoption of the Pasture Law. Despite more than five years of WUAs' activity, these institutions remain new and inexperienced and continue to encounter a number of organisational, financial and status-related problems around their institutional identity. Taken together, these are significant obstacles to a robust management system.

Although access to irrigation water is the key to economic prosperity for the crop-oriented *jamoats*, infrastructure in the Kyrgyz territory is deteriorating and poorly maintained. Trees planted along the irrigation canals have resulted in a narrowing of the channel, and some intervention-free zones along the canals are misused for construction. Collecting fees for water supply services provided by WUAs is one problem, as is a lack of institutional support from the district-level Water Management Department (*Vodkhoz*).

WUAs in the territories explored through this study did not develop homogeneously. Until 2005, Shurab was classified as a city, and its economy was based in coal mining, with Tajikistan's deepest coal mine located in its territory. From the early 2000s, like many other specialisation-oriented small towns in the (former) USSR, Shurab experienced a sharp outflow of residents due to unemployment resulting from the rupture of economic ties that previously had facilitated coal sales. In 2005, the city changed its status and became an urban-type settlement.

The drinking water supply line in Shurab runs through Samarkandek, which shares water with Shurab. Drinking water is supplied without an appropriate payment system in place, as no authorized body is responsible to collects fees or for distribution of water. As a result the drinking water pipeline is nearing collapse and no authorised institution exists that is responsible for its rehabilitation. This is due in part to its cross-border geography, resulting in neither party feeling responsible for the pipeline's maintenance or rehabilitation.

Shurab has no irrigation systems or canals, as it was an industrial coal mining city and irrigation systems were previously developed only in agriculturally-oriented regions. Furthermore, there are virtually no grazing areas within the village territory.

Chorku *jamoat* is one of the most densely populated areas in the Soghd region, where the share of land holdings is four times less than in the whole of Isfara district, with approximately 0.03 ha per person. There are *dehkan* farms on the territory of the *jamoat*, and the administration of irrigation water under the WUA of Chorku is unsustainable given the irregular collection of fees, high turnover rates of the managerial staff and an absence of measures aimed at maintaining or developing the canal. The same issues are present in regard to the WUA of Tort-Kol Tolkunu, in Samarkandek.

Conflicts over irrigation water are found in Chorku, where the Ak-Tatyr canal is in critical condition. The canal, which runs through the Hoja-lo village, has trees planted and homes built on its banks, thereby failing to observe the four-meter no-building zone along the canal. This is an obstacle for its maintenance, as silt and sand must be cleaned by hand and hauled from the banks; the latter is complicated by the absence of any point where specialised machinery can access the canal. The state of the canal complicates the supply of water in the area. In addition, residents of the Kyrgyz villages accuse Hoja-lo villages of discharging water into the river in order to prevent their homes from being flooded along the canal.

Residents of the Kyrgyz villages in the Ak-Tatyr district use water without taking into account the interests of the downstream Samarkandek community. Repeated attempts to reconcile the interests of the two AOs have failed (see FTI minutes), as communities reject the proposed water distribution agreement.

International development interventions also have been unsuccessful in this region. In 2013-2014, several international organizations (GIZ, FTI, UNDP) undertook assessments for prospective canal rehabilitation projects; however, the planned interventions were not implemented due to the high potential for conflict between the communities of Khoja-alo and neighbouring Kyrgyz AOs.

Surkh *jamoat* is the most robust example within the study area, where the Sahovat WUA reports a 70% fee collection rate. In the spring of 2015, a mudflow destroyed the upstream headworks that control the flow of water into the Juynav canal, a 5km section administered by the Sahovat WUA. The second Kayirma canal falls

entirely under the purview of the Isfara district water management department. These two canals provide water for both Tajik and Kyrgyz communities in the lower part of the Samarkandek and Paska-Aryk villages. Thus, in the spring and summer 2016 these border communities are likely to experience a serious shortage of water, which may lead to increased tension between them.

Access to Pasture in the Surkh, Chorku and Shurab Jamoats

The *jamoats* selected for this study have only winter pastures on their territories, which can not satisfy the population's overall pasture needs. These *jamoats* traditionally used Kyrgyz summer pastures; however, the ban on pasture use by foreign citizens in Kyrgyzstan rendered this practice illegal. The current ban affected the interests of both parties: Kyrgyz AAs lost legal income from the pastures' rental, while Tajik communities incurred costs from selling their livestock and paying higher fees for illegal grazing. The ban also led to increased tension between the communities. According to data from the Kyrgyz Republic Border Service, the ban was followed by a series of violent conflicts between the neighbouring communities.

In 2011, the regional administration of the Soghd region initiated the signing of an agreement between the Isfara and Aini districts on access to the summer pastures of Aini (Tajikistan). The agreement between districts partially mitigated the tension, but the distance between the Isfara district and Aini is several times greater than the distance to the Kyrgyz pastures. Driving livestock is also accompanied by high costs, including financial losses, time, and quality, as livestock does not gain weight due to the long distance travelled. For small livestock owners, these costs are particularly burdensome.

Transformation of Pasture Boundaries in Kyrgyzstan

An important aspect of the pasture use problem in Samarkandek is the change of internal AA's boundaries as a result of newly established administrative units in the Samarkandek territory of Ak-Tatyr and Ak-Sai. In 2005, a Governmental Resolution passed by the Kyrgyz Republic transferred Madygen, which was used by Samarkandek as summer pastures, to the neighbouring Leilek district; and Arka LSFME also was formed on its territory. As a result, Samarkandek residents' access to the traditional Madygen pastures became increasingly challenging. This transformation of internal borders between the AA and districts eventually fragmented the common pasturelands and reduced the AA Samarkandek population's access to them.

Tension Related to Pasture Use in Kyrgyzstan

Due to reduced access to pasture lands, Samarkandek residents use the Ak-Sai and Ak-Tatyr pastures in spring, summer and autumn. Pasture committees in Ak-Sai and Ak-Tatyr maintained the price per unit of cattle and small cattle for Samarkandek residents at the same level for several seasons. However in 2015 the Ak-Sai AK decided to raise pasture use fees for external livestock owners, resulting in a 30% fee increase for Samarkandek residents. Samarkandek residents use Ak-Sai pastures mainly in summer. In 2015, the Samarkandek PC decided to change the calculation of monthly fees for winter pasture use and instead introduced annual fees. This measure aimed to legalise the existing practice, wherein residents are forced to graze livestock in winter pastures almost year round. Due to the dynamic narrowing of access to pasture for Samarkandek small herders (due to the inner boundary changes), it became expensive to drive the cattle to distant pastures with different ownership. As a result, they began to intensively use the nearest winter pastures to reduce their costs, which has led to degradation of that pasture's vegetation.

Livestock owners in Samarkandek face the operational problem of needing to provide payment to three different PCs, as well as the Arka and Batken LSFME, to graze their herds. As a result, Samarkandek residents perceive the regular payment system as unfair and a permanent source of discontent and tensions surrounding pasture access.

Unlike Ak-Sai and Ak-Tatyr, Samarkandek is distant from the Vorukh enclave, one of the very densely populated enclaves of Tajikistan located in the territory of Kyrgyzstan. However enclave-related conflicts still relate to Samarkandek directly, as residents drive their livestock to summer pastures through Vorukh. The past 7 years have seen higher incidents of violence related to the use of summer pastures, which intensified between

citizens of neighbouring countries following the ban on the use of pastures by citizens of Tajikistan. As a result, border guards on both sides escort citizens driving livestock through the enclave.

In 2013, Kyrgyzstan attempted to build a bypass road for driving livestock to summer pastures. However construction of the Ak-Sai-Tamdyk road was halted after a violent incident occurred that involved guards using a mortar weapon.

Tension may accumulate not only due to unresolved issues over external borders, but also because of internal contradictions in natural resource management. For example, Samarkandek people have an extremely negative perception of the use of pastures by Tajik livestock owner as a result of the reduction in local access to pastures. Respondents from the Samarkandek AA cited inequitable access to pastures as exacerbating perceptions of encroachment by Tajik livestock owners.

At the same time, AAs located directly adjacent to summer pastures like Ak-Sai report more positive perceptions of Tajik livestock owners' access to pastures; they see a rational basis for allowing this practice as payments by foreign livestock owners, which are higher than those required from residents of Kyrgyzstan, help replenish the PC's budget.

Irrigation Water Dynamics

In contrast to Ak-Sai and Ak-Tatyr, Samarkandek is the most vulnerable area in terms of access to irrigation water, as communities upstream from the canals take water without regard for the interests of the downstream Samarkandek community. This applies to both Tajik and Kyrgyz villages located upstream. During the summer of 2015, the Samarkandek community could water their fields only twice. The territory receives water from three different canals, two of which are under the jurisdiction of the Isfara Water Management Department (Tajikistan) and with the Ak-Tatyr canal under the purview of the Batken Water Management Department (except for the on-farm part of the canal, which is administered by the Tort-Kol Tolkunu WUA). All three canals are sourced from the Isfara River in Kyrgyzstan, but pass through the territory of Tajikistan.

Since irrigation water is a common economic constraint for the three AAs, Samarkandek has initiated the creation of the Tort-Kul Tolkunu WUA; however, Ak-Tatyr and Ak-Sai were not interested. The WUA's capacity remains low, and it periodically lacks a chairperson and a budget. In interviews, experts mentioned frequent changes in staff composition and staff simply pretending to work as significant problems.[15] Residents also reported long periods of time when the WUA did not operate because it lacked staff.

Natural Resource Management Models: Samarkandek, Chorku, Surkh, Shurob

Border areas use cross-border resources, which are administered by state institutions (water management departments) and participatory public organisations (WUAs and Pasture Committees) within the boundaries of the territories. For example, a common practice is one part of the AA receiving water from the Kyrgyz WUAs and the second part receiving water fomr a rural district from the Tajik WUA or water management department of the neighbouring country – as in the case of the Samarkandek AA. However, mechanisms for sustainable cooperation between WUAs and water management departments of both countries do not exist. Cooperation is sporadic and often initiated by international organizations, rather than the institutions themselves.

The GIZ initiative to create the Isfara River Basin Council discussed in the first section of this report remains only at the initial stage of implementation. Despite initial positive responses to the creation of an Integrated Isfara River Basin plan, two separate country basin plans were created; accordingly, they have different agendas. This reflects the current model of natural resource management in border communities, which has increasingly abandoned the traditional practices of joint natural resources use.

The model used in Samarkandek, Surkh, Shurab and Chorku is characterized by a reduction in joint pasture use by Kyrgyz and Tajik border communities, while maintaining interdependence in the use of irrigation wa-

15 Based on the interviews: staff of the Foundation for Tolerance International, Batken office, Batken city, GIZ expert Halil Madumarov, Batken

ter. In such circumstances, resources are tools for pressure in response to tension between the communities. The conflict does not occur due to competition for resources, and the reasons for conflict may be different (i.e. conflicts arise not because of a lack of water, but because the institutions responsible for water management do not function well). In such circumstances, resources can be used as a tool that in fact can exacerbate the conflict.

> "A short road from Surkh to Chorku passes through our territory. This road is now closed due to persistent incidents. We could also reach Batken through Surkh – this is just 10 km. Now we go to Batken using a bypass road 60 km long. Due to constant clashes it is better to use bypass road and have everything separate: roads, water, etc."
>
> *Interview with an employee of Samarkandek AO*

Formal natural resource management institutions such as Water Users Associations do not cover the entire territory. For example, the Paska-Aryk village, which does not receive water from the Ak-Tatyr canal, is actually is not a zone of the Tort-Kol Tolkunu WUA. As a result, village residents do not pay any authority for their irrigation water. The WUA only covers two villages and the collection of fees in exchange for the water supply is supported by the AO. This is due to the weakness of the WUA, which cannot convince those in need of the water to raise money for its delivery.

The capacity of the Samarkandek Pasture Committee is low, and the small size of the pasturelands makes them unattractive to pasture users. Since relevant water and pasture management institutions have weak capacity and do not cover entire territories, the associated infrastructure is in constant decline. However at the local level, the predominant argument for this cites external factors (i.e. Tajik communities) as the cause of this decline; the argument about the need for development of local self-government to resolve problems is not articulated.

Context of tension over natural resource management and use between communities

- The Kyrgyz part of the territory is experiencing dynamic reduction in access to pasture lands due to internal transformation of the AA's administrative boundaries.
- High dependence on irrigation water supplied through the territory of Tajikistan contributes to tension between border communities. Some of the water from the Ak-Tatyr canal does not reach Samarkandek, because of water intake by Kyrgyz upstream villages. However Samarkandek residents do not cite this as a problem caused by the Kyrgyz villages upstream, instead shifting the entire focus to residents of the Tajik Hoja-lo village.
- Conflicts over pasture use can be both violent and non-violent. An escalation of violence was observed after the ban on the use of pastures by foreign citizens was introduced.
- The inter-district agreement on access to summer pastures between the Aini and Isfara districts of the Sughd region only partially eased tensions over access to summer pastures for Chorku and Surkh jamoats. Since the distance between the Isfara district and Aini is several times longer than the distance to the Kyrgyz pastures, driving livestock is accompanied by high costs that small livestock owners find particularly unmanageable.

Case Study 2: Myrza-Patcha Village – Mahalya Navruz, Korgoncho Village

Myrza-Patcha village belongs to the administrative area of the Isfana City. This is the outer village located on the southern border of the administrative territory of the city. The village borders the new Tajikistani village Korgoncho, mahalya Navruz (quarter in the village). An active inflow of new residents to Navruz has been observed since 2010.

In order to strengthen the border, in 2014 Myrza-Patcha residents allocated 100 hectares of village winter pastures to planting wild almond seedlings provided by the Sarkent National Park.

With respect to irrigation water, the village utilises an issue-based irrigation water management system, wherein community members mobilise to resolve problems as they arise. This system demonstrates an inherent inertia and lacks active measures to proactively identify problems and search for solutions, such as the creation of infrastructure to supply irrigation water. The territory of Isfana town is administered by Too-Jailoo WUA, however Myrza-Patcha is not included in its hydrographic zone and instead residents source their water from the Isfana River. The river does not have any water intake structures. In the case of a mudslide, residents of both communities (Myrza-Patcha and Navruz) organize *ashar*[16] and clean the river bed.

Despite the Isfana river flowing along the village, the specific landscape renders drawing water from the river is perceived as a near-impossible challenge. A common expression is "*Sugat jer kop, suu az,*" meaning "A lot of land, but little water." All irrigation water reaches crop lands through the use of pumps. Much potentially arable land is uncultivated due to limited access to irrigation water.

The Isfana Pasture Committee, a well-organised structure, manages local pastures. Due to peculiarities in local administration, the pasture committee is also tasked with the responsibility to issue certificates of property ownership (not only livestock, but also vehicles and other property). Banks and microfinance institutions accept such certificates as proof of collateral. This function was previously implemented by the Mayor's Office; however, in order to improve status of the pasture committee, the mayor delegated the duties to the PC.

The Myrza-Patcha community provides Tajik citizens from the mahalya Navruz grazing opportunities. Despite the current regulatory ban, such practices are recognised and permitted in both localities: people do not deny they are using an illegitimate practice, but they argue that only shepherds have income from such activities. The possibility that the PC and heads of the villages may receive informal reward or compensation is not acknowledged. Because residents of Navruz do not have pasture attached to their territory, they need to ask Myrza-Patcha residents to graze their livestock. At the same time, livestock watering is more convenient in Tajik territory, so the two communities facilitate an exchange: grazing is permitted on the Kyrgyz territory, and watering in the territory of Tajikistan.

In 2009, a conflict arose between Myrza-Patcha residents and border guards patrolling the Korgoncho border over access to one of three Kyrgyz cemeteries on Tajik territory. The border guards prevented the burial of a deceased person, and the Myrza-Patcha residents accompanying the procession seized the border guards' weapons. After the incident, a new cemetery was planned in Myrza-Patcha. A participant of the conflict interviewed during the fieldwork explained that residents do not have any problems with the border guards. Instead, according to the respondent, problems can arise when conscripts from other areas of Tajikistan join the border service. In the cemetery incident, for example, the soldiers were reportedly from Kulyob.

> "We do not understand each other, all local people speak Uzbek, and we don't understand them. We can't use Tajik language when communicating with the Navruz residents – they all are Uzbek-speakers," the respondent said.
>
> *Myrza-Patcha village, November 2015.*

Residents of the Navruz squatter settlement have actively used social facilities in Myrza-Patcha territory, including the local school and mosque. Children from Navruz attended two years of primary school in Myrza-Patcha until 2013, when a new school was built in Korgoncho with support from UNDP. In addition, Navruz residents visit a mosque in Myrza-Patcha, where they make basic arrangements regarding joint grazing: "*I always go to the mosque. And Elders from Navruz come to us asking for permission for their cows to graze with ours,"* one respondent said.

16 *Ashar* is a traditional practice of joint collaboration on the basis of the work of volunteers, generally practiced in the construction of socially-oriented objects such as a mosque, school, or water canals.

In addition to the construction of the UNDP-supported school, the Red Crescent organization rehabilitated the drinking water supply in Myrza-Patcha in 2015. The Babushka Adoption organization also built a sewing workshop; however it lacks a sales system and thus is not functional.

The joint use of pastures and irrigation water is not a source of conflict between communities. Therefore, although conflict-sensitive issues were addressed in this second study area, little conflict was noted. Issues addressed included possible tension arising from the construction of a livestock watering point on the Kyrgyz territory, which in turn means that Kyrgyz herders will no longer need to travel through Tajik territory, disturbing the balance of the exchange in place between countries. The militarisation of the border could also cause a sharp increase in tension. At present, however, while border guards patrol the area, no border checkpoint exists between Myrza-Patcha and mahalya Navruz.

The natural resource management model that is instituted between Myrza-Patcha and Navruz mahalya is a problem-oriented model. In such cases, local communities on both sides of the border find their own resource management mechanisms. But as this model is reactive and sporadic, i.e. aimed at resolving problems as they arise, it does not pre-emptively support the maintenance or development of existing infrastructure.

Prospects for Future Research

Comparison with Other Cases of Transborder Use of Natural Resources in Mountainous Environments

There is a need for deeper investigation of conflicts in the framework of socio-ecological systems. Few systemic approaches consider natural resources and their management as the product of a functioning ecosystem. A striking example is when rural inhabitants plant trees close to decaying water canals, as wood is in high demand for construction. However irrigation water is only sufficient in places where the canal is not losing important volumes of water. Unfortunately, the reconstruction work on canals requires newly planted trees to be cut, creating conflicts with neighbouring households. This issue is linked with the management vacuum surrounding forested areas outside of land under forestry jurisdiction.

A comparison with other cases of transborder use of natural resources in mountainous environments could foster an improved understanding of the factors fostering or hindering collaboration mechanisms and their evolution over time.

Impact of Labour Migration on Natural Resource Management Models

The researched territories are among the major exporters of labour migrants within their respective national statistics. According to the Asian Development Bank, more than 30% of external labour migrants from Kyrgyzstan are from the Batken region.

Migration-related problems are rarely discussed in relation to natural resource use and management. However, as shown by this research, migration actively affects the situation in several areas:

1. The decline in human capital leads to a tremendous shortage of specialists or socially active citizens working within local institutions that deal with natural resource management. For example, the chairperson of the Samarkandek WUA and PC chairperson of the AA have extensive experience working as labour migrants; they were selected for these positions during long stays at home.
2. The purchase and maintenance of livestock comes from saving the remittances that flow into communities from labour migrants. On the one hand, livestock is a socially recognised status symbol in

rural areas. On the other hand, due to the narrow range of opportunities for small investment at the local level, livestock serves as the only affordable and safe investment, and thus individuals tend to invest their savings into this resource. This leads to an increase in the number of livestock and increased burden on pastures.

Climate Change Adaptation

In researching patterns of natural resources use, special attention should be paid to the impact of climate change on pastures and water flow in the border areas. It is necessary to collect comparative data on basic characteristics of the resources and correlate them with the climatic trends in the region. Such information can provide the basis for generating long-term development strategies at the national level in areas such as agricultural adaptation to climate change.

Conclusion

Conflicts over natural resources are a multidisciplinary issue that crosses sectors, raising questions of formal and informal management and monitoring of natural resources, decentralisation, public policies and development interventions. The main findings of our literature review show that irrigation water conflicts are not caused by scarcity, rather scarcity is a consequence of poor management models. Regarding pastures, further research and data are needed to assess to what extent pastures in their current state can meet the livestock demands. The second main finding from the literature review was a lack of any solid analytic framework for understanding conflict, especially with respect to defining conflict and understanding it as a multi-level dynamic that is nested in a territory with specific natural resources characteristics. The third result is related to the community-based natural resource management model, which is not a vector of peace or justice *per se*, but rather an approach that may yield a wide range of social and economic outcomes.

The field research demonstrated that natural resources are not an inherent source of conflict between border communities. The inefficient use of resources and a careless approach to existing infrastructure are both factors that have a critical effect on the tension between communities.

A common argument in researching conflicts in border communities is the unresolved border. This factor acts as a sort of "golden rule" for dispute resolution. However, research showed that the unresolved border issue is not a source of tension. The leading factors of tension between the communities is the national government's tendency to strengthen and militarise the borders on both sides; an emphasis on centripetal infrastructure projects that aim to connect settlements and bypass villages of the neighbouring state; and the politicisation of economic disputes between Kyrgyzstan and Tajikistan.

An absence of open and comparable baseline information on the quantitative and qualitative characteristics of natural resources and their patterns of use also was noted. This situation makes it difficult to obtain a comprehensive overview of the natural resource needs and patterns of use in both countries.

Efforts to create communication mechanisms for cooperation at the official level of the border regional administrations, on all issues, are blocked due to the disparity and incompatibility between the regional administrations in addressing cross-border natural resources management issues. An example is provided by the GIZ initiative, which aimed to create an integrated management plan for the Isfara river basin. Despite the need for such a plan to be adopted by regional administrations of Batken and Soghd regions, the parties failed to create a cross-border joint council. As a result, two separate councils were created – in each of their respective national territories.

The above example is indicative of some of the constraints to cross-border cooperation on natural resource related issues at the district and regional levels. Due to the specific power distribution between national and local authorities in both countries, local level issues are aligned with national level issues (e.g. border related

negotiations). This factor is a constraint to robust cooperation at the regional and district levels between the countries.

The analysis also showed that international organisations lack coordination between projects and programmes implemented in the border communities. They also lack database of information about implemented infrastructure and social projects, which would facilitate more efficient planning of future interventions.

Pastures in the two countries are administered by differing sets of institutions with differing interests. For example, management powers are divided between LSFME and pasture users associations in Kyrgyzstan, and between individual, collective *dehkan* farms, state entreprises and non-state enterprises in Tajikistan. As a result, situations arise where institutional interests often outweigh the interests for cooperation around the effective use of resources.

Over the years, the internal borders of the *AA* have changed in Kyrgyzstan. This factor may also significantly increase tensions in the area of natural resource management. For example, the reduction of the AA Samarkandek territory, as a result of separation of the Ak-Sai and Ak-Tatyr and formation of independent AAs, has led to the reduction and fragmentation of pastures between the three AAs. As a result, residents of three AAs have to pay to three different pasture committees each season, as pastures managed by the pasture committees do not directly correspond to the needs of the pasture users. The Samarkandek PC recommended Ak-Sai and Ak-Tatyr to create an association and implement a transfer pasture ticket,.

Finally, the research showed that institutions responsible for natural resource management are established to manage resources located within the boundaries of specific administrative units (for instance, in AAs). However, these institutions do not cover the entire territory of an administrative unit; instead they manage only those resources linked to a particular infrastructure. For example, the Water Users Association (WUA) in Samarkandek AA only covers two villages, Samarkandek and Jany-Bak, located along the Ak-Tatyr channel; the third village in this AA, Paska-Aryk, is not serviced by this canal, and therefore is not covered by the WUA.

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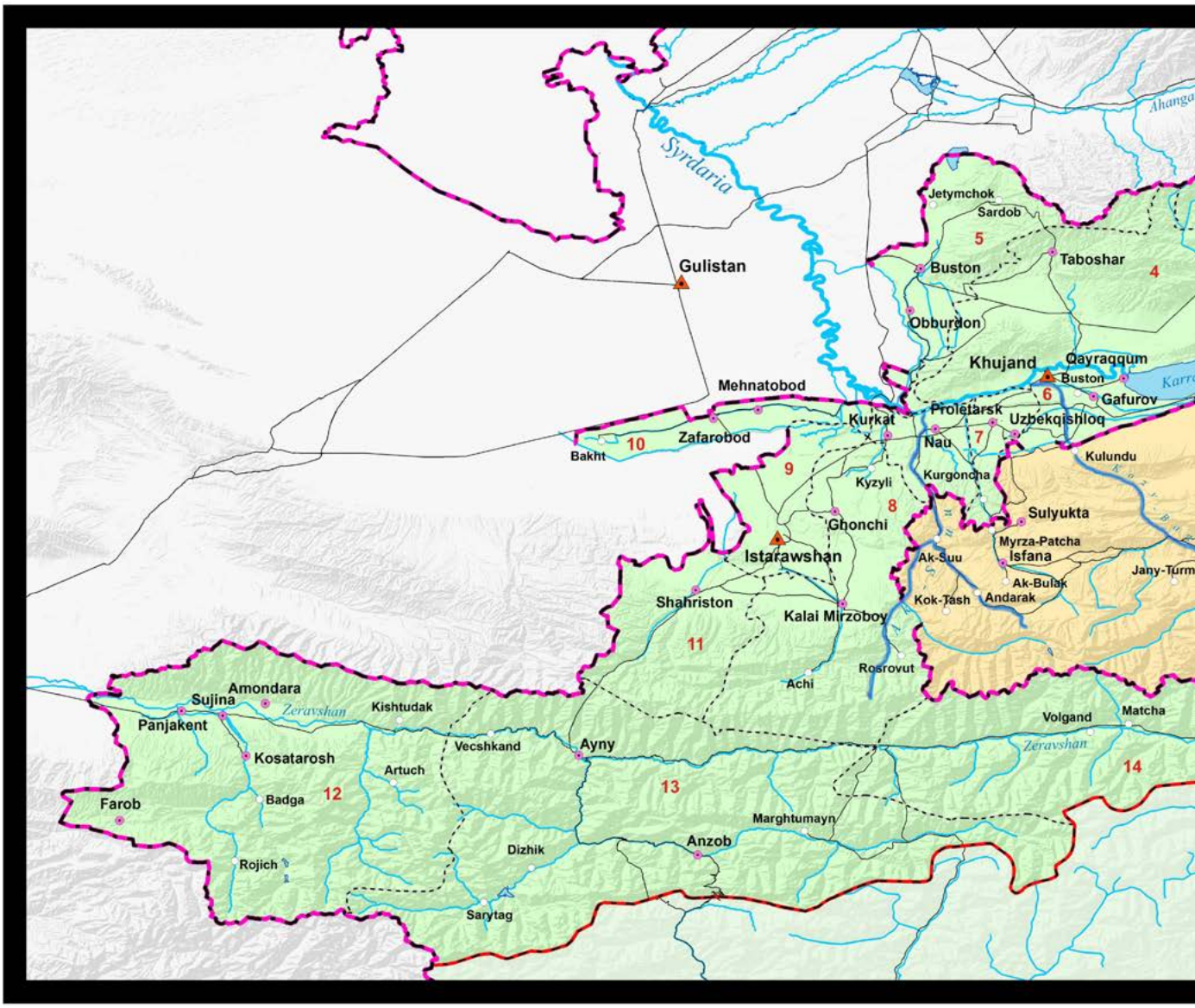
BATKEN PROVINCE,
SOGHD PROVIVCE,



The numbers on the map shows the regions

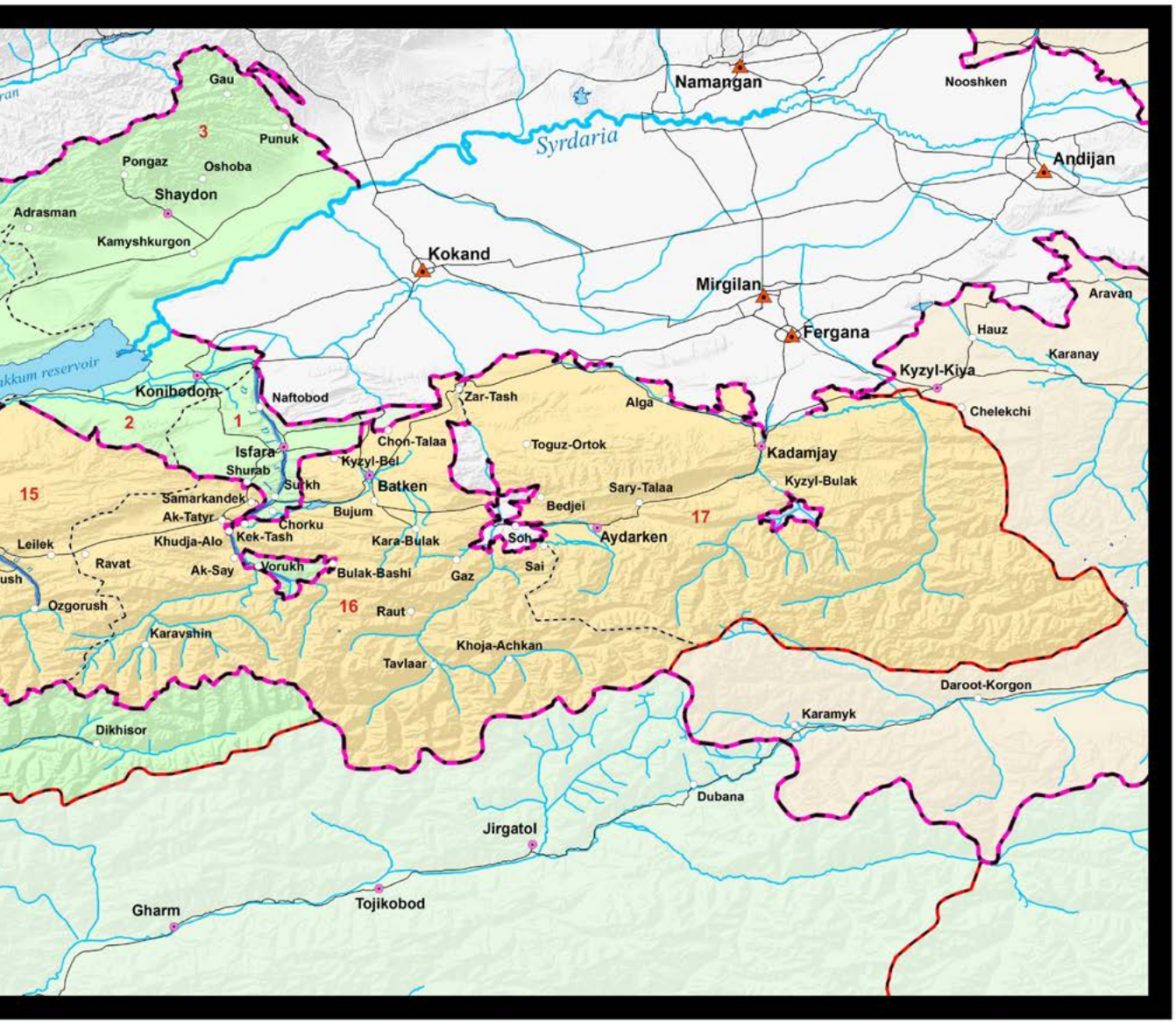
Number	Name of region	Number	Name of region
Tajikistan		10	Zafarobod
1	Isfara	11	Shahriston
2	Konibodom	12	Panjakent
3	Asht	13	Ayni
4	Gafurov	14	Kuhistoni Mastchoh
5	Mastchoh	Kyrgyzstan	
6	Jabbor Rasulov	15	Leilek
7	Spitamen	16	Batken
8	Ghonchi	17	Kadamjay
9	Istaravshan		

1:155000

0 25 50 100

1 cm is equal 15.5 km

KYRGYZSTAN
TAJIKISTAN



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150 200 KM

Legend

Cities	National boundaries	Roads	Lakes
Towns	Province boundaries	Rivers	Kyrgyzstan
Villages	Regions boundaries		Tajikistan

The information on this map was derived from Openstreetmap data-base. The border between Tajikistan and Kyrgyzstan is being demarcated by an intergovernmental commission. MSRI cannot accept any responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied accompanying this product.

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