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Decentralizing Governance of Agropastoral Systems in Kyrgyzstan: An Assessment of Recent Pasture Reforms

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Agropastoral systems in Kyrgyzstan have undergone dramatic change in recent decades. In large part, change has resulted from the introduction of legislation that devolves authority and responsibility for the management of common-pool agropastoral resources to community-level pasture users associations. By applying Ostrom's principles of common resource governance, this paper analyzes the institutions and norms that currently shape local management practices in rural areas of Naryn Province in Kyrgyzstan and the views of different actors on pasture governance, including points of disagreement. Our research and analysis reveal that the community-initiated and -owned systems of pasture governance that were expected to develop and mature under the new Pasture Law have not yet been entirely realized. Decentralization occurred without the participation or awareness of most local resource users. As a consequence, users are creating and reinforcing their own community-defined practices and internal rules, leaving official management plans largely ignored and unenforced. Resource users tend to perceive the government-sanctioned pasture users associations not as public or democratic organizations that represent their interests, but rather as agencies that aim primarily to control the use of resources, exclude some people from decision-making, or impose taxation. Sustainable management of pasturelands therefore may best be served when community perspectives are more suitably integrated—from the planning phase through to collaborative governance and implementation of locally agreed upon management options.

Keywords: *Decentralization; commons governance; agropastoral systems; Naryn; Kyrgyzstan.*

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Introduction

Kyrgyzstan is a mountainous Central Asian country with extensive pastoral resources, including more than 9 million ha of land on which agropastoralism is practiced (85% of the country's agricultural land) (SAEPF 2012). Pastoral resources and pastoralism are central to Kyrgyz national culture and play crucial roles in supporting local and national socioeconomic development. Yet by official estimates as much as 33% of pastures in Kyrgyzstan are substantially degraded (USAID 2007).

The Pasture Law, promulgated in Kyrgyzstan in 2009 and amended in 2011, is innovative in Central Asia for devolving governance of pasture resources to local communities. Simultaneously, the basic pasture management unit has been enlarged from individual to community scale. This realignment of governance systems and spatial aggregation of land management units reflect the biogeophysical scale at which environmental (climatic) variability occurs in mountain areas and the consequent need for livestock mobility if herders wish to respond effectively to variable pasture conditions (Jacquesson 2010; Crewett 2012; Rahimon 2012). The expectation held by the government and development donors is that these changes will lead to more effective and transparent management of pasture resources in accordance with local ecological and social realities. Yet after 5 years of implementation, decentralized/community pasture governance continues to be developed through a process of institutional bricolage (ie step-by-step, piecemeal construction) (Cleaver 2002; Sehring 2009) and has yet to show sufficient tangible results to meet most people's expectations.

Previous research related to the governance of agropastoral systems and community wellbeing in

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Kyrgyzstan have built on resource management and development perspectives (Farrington 2005; Undeland 2005; Kulov 2007; Steimann 2011; Kerven et al 2012) and examined the outcomes of a number of current international development projects and programs (World Bank 2005; Fitzherbert 2006; Bussler 2010; Mestre et al 2013). A key purpose of such papers is to highlight some of the administrative processes at play during decentralization in pasture management. However, few studies in the Kyrgyz context have considered how decentralized administrations develop in terms of participation and input from local communities, the implications of decentralization for social and ecological outcomes in natural resource use, or whether new or ongoing processes of local self-governance are reasserting or strengthening community-initiated rules and practices within an otherwise externally developed governance structure (Sehring 2009; McGee 2011; Crewett 2015a; Dörre 2015; Ulybina 2015).

Using a mixed-methods approach, and drawing on recent research on common-pool resources in social–ecological systems, we provide an empirical analysis of current outcomes of decentralized agropastoral governance in the Tian Shan Mountains of Kyrgyzstan. Our analysis is informed by insights from common-pool resources scholarship that identify key principles commonly associated with sustainable outcomes in specific resource management regimes (Ostrom 2009, 2011).

Commons governance in social–ecological systems

Drawing on decades of empirical scholarship in diverse geographic regions and resource systems (Anderies et al 2004), common-pool resources scholars have generated a compelling list of principles for achieving sustainable and equitable outcomes (Ostrom 2009). The principles can be summarized as follows:

1. **Clear boundaries**—both user boundaries and resource boundaries are well defined.
2. **Local suitability**—rules governing the use of common goods are matched to local needs and local social and ecological conditions.
3. **Collective choice arrangements**—people affected by resource governance rules can participate in modifying them.
4. **Monitoring overseen by resource users**—monitoring of resource conditions and resource users is undertaken by the users themselves or by nonusers accountable to the users.
5. **Graduated sanctions**—people who repeatedly violate resource governance rules face a continuum of increasingly severe consequences.
6. **Conflict-resolution mechanisms**—accessible and low-cost options are in place for resolving conflicts among users and/or with officials.
7. **Local self-determination**—the right of communities to organize and make rules is recognized and supported by higher-level authorities.
8. **Nested governance**—common-property resource governance is organized in interconnected layers from local to regional levels.

While the studies that contributed to these principles span a wide range of resource types (eg forests, fisheries, and pastures) and geographic locales, very little is known about pasture commons governance in post-Soviet Central Asia. Here we explore the principles' applicability to this region, in order to advance understanding of (1) the institutions and norms that currently shape local management practices in the region's agropastoral areas; and (2) the views of different actors about pasture governance, including points of disagreement. Our ultimate aim is to identify potential future pathways for enhanced governance in this particular system so as to meet objectives relating to human wellbeing and long-term ecological resilience.

Study Area

Physical and economic geography

Naryn Province (41°25′50″N; 76°00′00″E) is a remote agropastoral region in central Kyrgyzstan, situated in the heart of the Tian Shan Mountains (Figure 1). Agriculture (cultivation and animal husbandry combined) constitutes around 65% of the economic production in Naryn Province and is the major economic activity for 85% of the population outside of Naryn town (UCA 2014). Biophysical conditions (a growing season of only 2–3 months, little precipitation, and rugged topography) limit most forms of crop production; pasture is thus the dominant type of land use in Naryn Province, comprising 95% of its agricultural land (UCA 2014).

Houses and small plots of land near villages in the valley bottoms are owned privately, but more extensive grasslands, near and far from the villages, are managed communally. Several other types of land also may be accessed by livestock owners and herders—in particular, forestry lands, state nature reserves, and national parks. It is in this patchwork of land ownership and resource management options that community members operate and make their decisions.

Livestock has been an integral part of the historically nomadic pastoral society's livelihoods, wealth, and cultural heritage (Undeland 2005); this remains true today (Figure 2) even if the number of people directly engaged in herding decreased significantly after communities settled during the Soviet era.

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FIGURE 1 Naryn Province in Kyrgyzstan. (Map by Evgenii Shibkov)



Bordering China in the south, Naryn Province also remains part of the Silk Road, because it is situated on a major trade route that connects China with Eurasia and thus links demand and opportunity, for both local and regional trade, particularly in terms of livestock and livestock products.

Shifts in commons governance

Dramatic shifts in governance practices and institutional arrangements for managing pasture resources have taken place over the last century (Ibraimova 2009; Bichsel et al 2010). In pre-Soviet times, local resource users (tribes) moved between seasonal pastures in different valleys and mountain areas. Tribal leaders allocated specific pasture plots to families, who were rarely allowed to operate outside them (Undeland 2005; Jacquesson 2010). More centralized management and a great intensification of agricultural production were introduced regionally and institutionalized through the Soviet system of collective and state-owned farms. The Soviet management system entailed maximization of production through extensive development of transport infrastructure, resulting in large-scale animal transhumance. This approach was later replaced by ad hoc privatization of arable land, livestock, and machinery following the collapse of the Soviet Union in 1991 (Lim 2012). Decentralization and privatization were largely driven by the notion that the Soviet mode of land management needed to be replaced with local decision-making and options for collective action (Bichsel et al 2010). In Kyrgyzstan, principles of common property with clearly defined access rights were advanced with the introduction of the Pasture Law.

Decentralization in this case can be seen as "the transfer of meaningful discretionary power to local representative authorities" (Ribot et al 2010: 1). Following the individual pasture leasing system introduced in 2002, the national Law on Pastures was adopted in 2009 and amended in 2011, leading to the development of a decentralized, community-based pasture management system. This law placed most resource management decisions at a spatial scale more suited to the socioecological context—at the pasture or landscape level, rather than that of households or individuals. The Pasture Law also created formal local institutions to make such decisions—pasture users associations (PUAs) and their executive bodies, pasture committees (PCs) (Figure 3).

PUAs are public organizations open to all pasture users in a subdistrict. Members of PUAs are local residents using pasture land for grazing livestock or for other livelihood purposes (eg collecting herbs and berries, haymaking, tourism and recreation, or beekeeping). Among those who use pasture land for grazing, we differentiate between direct and indirect users. Indirect pasture users include livestock owners, a category that includes almost all households in the case study villages. Direct pasture users, namely herders, are a minority in each community. Livestock owners affect pastures through decisions about the number of animals to be assigned to a herder or to be sold or slaughtered. Herders, on the other hand, make a number of choices that affect pastures, including location of pasture (near the village, intensive, or remote) and the timing and duration of each

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FIGURE 2 A family portrait in the *jailoo* (summer pasture) in Kyrgyzstan. (Photo by Ann Piersall)



stay. Thus, herders have the most immediate impact on livestock and pasture productivity.

Every 3 years at a public meeting, each PUA elects representatives to its PC—*jait comitet* in Kyrgyz. Other PC members come from the subdistrict government (the *ayil kenesh* or local council and *ayil okmotu* or local administration), and still others are specialists, usually in veterinary medicine or land use, who often also work in the local government administration (Figure 3).

According to the Law on Pastures, the PC is responsible for developing annual utilization plans and 5-year pasture management plans. The PC decides the number of livestock that are allowed on a pasture and sets a price for that access (called a pasture ticket). The PC is also responsible for monitoring pasture conditions, pasture use, and the use of pasture ticket revenues, which are intended to improve pasture conditions and to resolve conflicts. Financial oversight of PCs is provided by an independent Audit Commission, while the Department of Pastures monitors policy and regulatory matters and the PCs' role in pasture utilization. The Kyrgyz Giprozem, a central government institute, takes specific responsibility for monitoring pasture conditions, with support provided to PCs for accomplishing this work. The Department of Pastures and Giprozem are under the Ministry of Agriculture and Melioration. Other actors include the State Agency for Environmental Protection and Forestry (SAEPF) with ground-level forestry enterprises, called *leskhozes* in Russian. SAEPF administers forest and nature reserves and other protected areas.

Focal communities

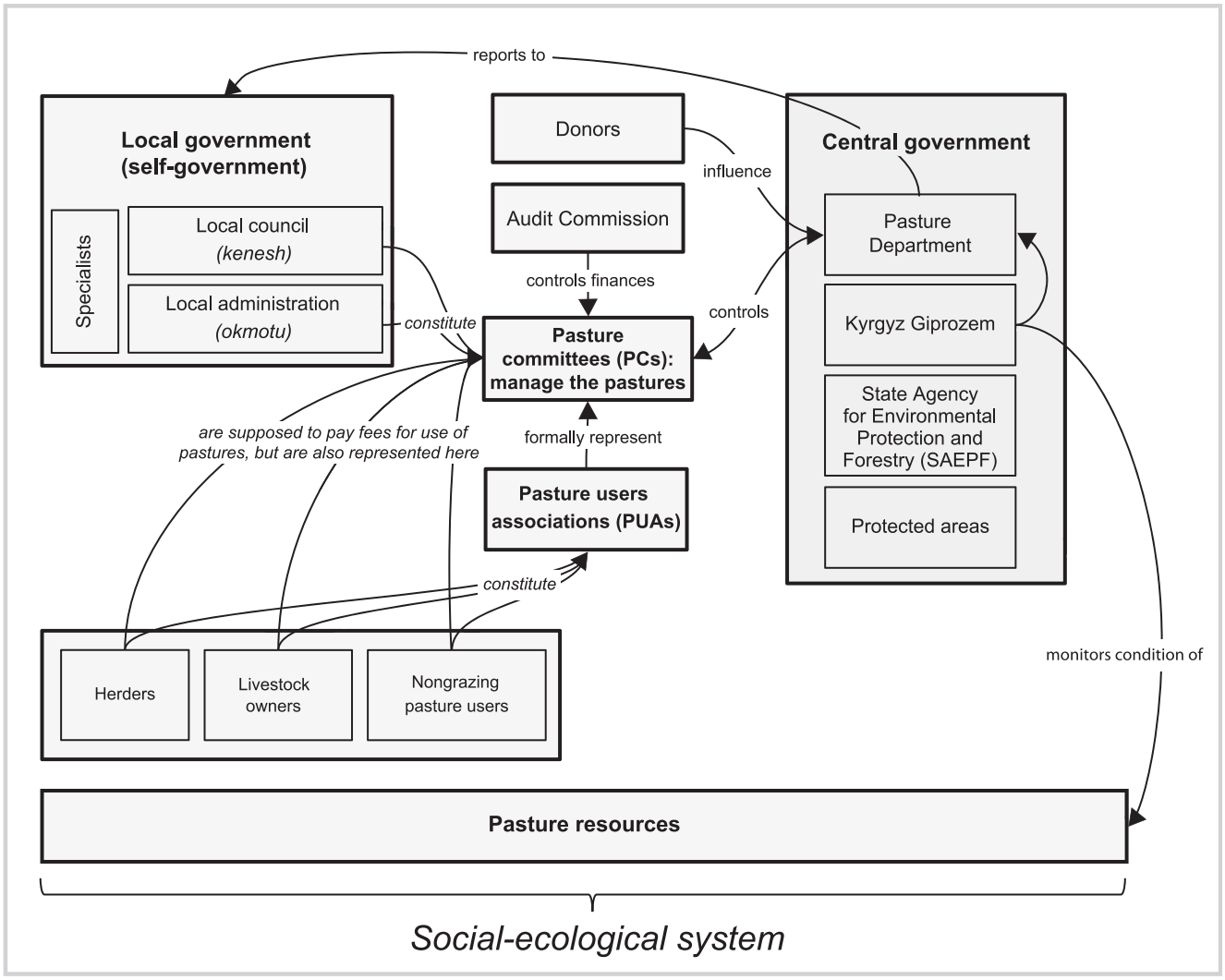
Two *ayil aimaks* (subdistricts) of Naryn Province were investigated throughout 2014. Due to a confidentiality agreement with all respondents, the names of the subdistricts are coded as A and B, and their locations are not identified. They are connected historically through common government administrative boundaries and related legislation and management practices, but they were divided into separate entities in 1998. *Ayil aimak* A is easily accessible by road and economically more developed than *ayil aimak* B; the latter is more remote and situated at a higher elevation. They were selected for similarities in their (limited) livelihoods options; livestock breeding is the dominant activity in both. The results presented below integrate findings from across the 2 study areas, with specific examples drawn from data collected in both.

Methods

Quantitative and qualitative methods were used within a collaborative research design to address the research

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FIGURE 3 Primary actors and related responsibilities and actions in the Naryn Province agropastoral social–ecological system



questions. Different methods were employed depending on the research question and participant group.

To investigate questions relating to livelihood opportunities for livestock owners, we conducted household surveys in the 3 villages of *ayil aimaks* A and B on topics including livestock and land ownership, irrigation issues, social capital, and financial activity. Representatives of 68 households were randomly selected and interviewed in October 2014. The household survey data were analyzed using SPSS.

To investigate questions relating to pasture use, we conducted 7 semistructured interviews with herders between October and November 2014. Topics explored in these interviews included herders' awareness of and participation in PUA and PC operations, payment for pasture use, views about livestock mobility challenges, perceived current pasture conditions, and perceived changes in pasture use.

To investigate questions relating to the views of decision-makers regarding the new Pasture Law, we conducted semistructured interviews in May and November 2014 with people in charge of implementing pasture legislation. Interviewees were selected based on a purposive sampling approach and included 2 heads of *ayil aimak* administrations, 2 heads of PCs, a district representative of SAEPF, and a Naryn Nature Reserve official. Topics covered included views about the advantages and disadvantages of the new Pasture Law, capacity to implement state policies and enforce regulations, setting pasture ticket prices, and allocating pasture ticket funds, as well as current pasture conditions, pasture monitoring, and changes in pasture use.

Interviews with herders and decision-makers were recorded, transcribed, and analyzed using qualitative content analysis (Flick et al 2004). In addition, we reviewed the 2009 Pasture Law, the pasture management

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plans of the 2 case studies, and basic village statistical information.

Results

We analyzed the case study results through the lens of Ostrom's 8 principles for sustainable and equitable management of common-pool resources (Ostrom 2009; Cox et al 2010). Table 1 summarizes these 8 design principles as they apply to the social–ecological characteristics of the 2 Naryn cases.

Principle 1: Clear boundaries

According to the 2009 Law on Pastures, the use of pastures should be managed by local government. All potential benefits of pastures from grazing and other purposes (eg beekeeping, tourism, establishment of mobile telecommunications stations) would then accrue to local governments and local people. This requires clear boundaries in order to maximize profits, minimize losses, manage pasture health, and mitigate conflicts among actors. However, in this case pasture boundaries are not clearly defined, nor are they always accepted and respected. This is true both for the boundaries between locally controlled pastures and other lands and for the boundaries within pastures.

One issue is the unclear boundaries between pastures under control of the PC and those under control of state entities such as the *leskhozes*. Moreover, there are no accurate maps delineating the pastures of the different subdistricts (*ayil aimaks*). Internally, the pasture management plans informally create divisions within the pasture allotted to different herders in order to stay within the carrying capacity of the pasture. However, there are no physical boundaries by which herders can determine whether they are grazing in their allotted area. In addition, various actors make overlapping claims to pasture lands, including those using pastures for nongrazing activities.

The delineation of boundaries is complicated by the fact that livestock migrate between pastures according to the season (from closer winter pastures to generally more distant summer pastures). During the Soviet era, this migration was facilitated by significant infrastructure investment in transportation. However, since the collapse of the Soviet Union reduced the resources available for maintenance, migration to distant pastures is now limited due to poor roads and bridges. This increases pressure on common pastures closer to the communities that tend to be used in winter, requiring either more forage from herders' own arable land or the purchase of fodder. The lack of fodder in winter results in herders often using other lands, such as the nature reserves or *leskhoz* lands. Herders use remote pastures or lease pasture from forest lands, Salkyn Tor National Park, or the Naryn State Reserve when pasture conditions are poor or lack of fodder makes the search for additional grazing options necessary—clearly an adaptive management tool. The lack of clear physical boundaries between such land types sometimes makes it possible for herders to develop new resource management options.

The boundaries of PUAs are often not acknowledged. Although every pasture user is by law a member of the local PUA, in fact few are aware of this, and thus they do not help exercise the PUA's power to make the PC accountable.

Principle 2: Local suitability

One of the reasons the new Pasture Law was introduced was the level of degradation of pastures near villages due to year-round livestock grazing (together with underutilization of remote pastures). According to this law, the PC has the responsibility to develop 5-year pasture management plans as well as annual usage plans and to control their implementation. These plans include assessment of optimal livestock load for each type of pasture.

The pastures in the study area are characterized by remoteness and a mosaic layout: some pastures are situated in At-Bashi *rayon* (district), while others are on the border with Issyk-Kul Province. Moreover, poor or missing infrastructure (roads, bridges, and water sources) limits mobility of livestock. PCs do not have the financial resources to provide this infrastructure, and therefore, remote pastures end up underused. The main share of livestock continue to graze on pastures near villages and intensively used pastures, while recommended optimal livestock loads appear only on paper. Pasture management and usage plans also do not include adjustments for seasonal and extreme weather conditions such as drought.

Interviews and observations demonstrated not only a distinct mismatch between local needs, resource conditions, and regulation mechanisms, but also that sometimes the rules are not clear enough to be implemented. One example of this lack of clarity is how pasture ticket funds, which are the primary funding mechanism for implementation of pasture management plans, should be distributed. According to the Law on Pastures, "Part of payments for pasture utilization should be applied to maintenance costs of the PC, while other portions should go to improvement of pasture infrastructure and pasture conditions, and some of the funds collected should contribute to local administration budgets." The law is also unclear as to who should pay for the pasture ticket. During the interviews, 3 herders said that they pay for pasture tickets, while 3 others said that these payments were made by livestock owners, and 1 herder said he paid only for pastures administered by the *leskhozes*. Inconsistency in fee collection and lack of

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TABLE 1 Ostrom's 8 principles applied to the Naryn Province social–ecological system.

Principle	Relevance to Naryn Province[a)]
1. Clear boundaries Both user boundaries and resource boundaries are well defined.	• The resource system boundaries are often quite contentious and not nearly as well defined as the PC maps suggest.
	• Various actors make overlapping claims on pasture lands, often related to different (non-grazing-related) uses.
	• The social boundaries of PUAs are not acknowledged. For example, every pasture user is by law a member of a PUA, but many users are unaware of this and thus do not help exercise the PUA's power to make the PC accountable.
2. Local suitability Rules governing the use of common goods are matched to local needs and local social and ecological conditions.	• There is a mismatch between local resource conditions and current usage rules and regulation mechanisms (such as the livestock ticketing system, pasture management plans, and institutional sanctions).
	• Pasture management plans usually cannot cope with either the spatial and temporal variations of resource conditions (seasonal vegetation patterns) or the needs of local communities (eg for infrastructure).
3. Collective choice arrangements People affected by resource governance rules can participate in modifying them.	• Formally, all pasture users are members of a PUA and thus have a voice on the PC. However, ordinary PUA members are often unaware of the rights and obligations of PC members and consequently have only limited power to influence rules and decision-making.
	• Herders tend to perceive the PC as representing government rather than local community members, interests, and therefore do not feel enabled or entitled to express their suggestions and concerns.
4. Monitoring overseen by resource users Monitoring of resource users and resource conditions is undertaken by the users themselves or by nonusers who are accountable to the users.	• According to the Pasture Law, the PCs are responsible for assessing and monitoring pasture conditions. However, the PCs do not have sufficient motivation or human or financial resources to conduct pasture monitoring.
5. Graduated sanctions People who repeatedly violate resource governance rules face a continuum of increasingly severe consequences.	• PC members impose fines reluctantly, mostly to avoid harming important social relationships (including kinship ties), and herders usually try to develop informal agreements to solve conflicts.
6. Conflict-resolution mechanisms Accessible and low-cost options are in place for resolving conflicts among users and/or with officials.	• Conflicts between the PCs and herders are solved by negotiation.
	• No low-cost mechanisms exist for resolution of conflicts between the PCs and the *leskhozes*.
7. Local self-determination The right of communities to organize and make rules is recognized and supported by higher-level authorities.	• There are only a few cases in which communities have developed their own rules regarding common-pool resources, but when such rules are developed, they are usually respected by higher-level authorities (unless they conflict with the interests of the authorities).
8. Nested governance Common-property resource governance is organized in interconnected layers from local to regional levels.	• Governance is nested, but lines of responsibility and ownership are poorly developed.
	• The strength of higher levels of governance persists in a Soviet-style mindset of top-down control.
	• District and provincial administrations still exercise a high level of control over PCs, which may help explain why local herders do not perceive PCs as the community institutions they are intended to be.

[a)]PC, pasture committee; PUA, pasture users association.

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transparency on the eventual allocation of funds has led to so-called institutional bricolage.

Principle 3: Collective choice arrangements

A decentralized governance approach is intended to better incorporate and represent the interests of resource users in decision-making. However, the degree of representation varies and does not include the full range of users, including those directly involved in resource use. For example, in *ayil aimak* A, pasture users constitute 33% of the PC (the rest being local government officials and specialists). In *ayil aimak* B, the proportion of pasture users to local government officials in the PC is more balanced. However, neither PC includes even a single herder.

This means that herders are de facto excluded from decision-making on pasture management. Herders perceive the PC as representing the government and are not interested to actively participate in the PUA. This lack of interaction between herders and the PC has resulted in the significant and ongoing efforts at de jure pasture governance not being translated into changes in the decision-making of herders themselves, who continue to graze livestock as they had previously done.

Principle 4: Monitoring overseen by resource users

The PC is responsible for assessment and monitoring of pasture conditions. However, due to scarce human and financial resources, this kind of monitoring is rarely conducted and never covers all pastures each year. In addition, effective governance of the pastures to maintain ecological health requires the PC to develop management plans based on accurate numbers of livestock being grazed. However, the heads of the PC responsible for confirming and approving the number of livestock reported by each owner do not have the authority or the necessary tools and mechanisms to fulfill these institutional functions and enforce their decisions. As one PC leader explained:

> *The owner can debate and try to prove the numbers we provide are wrong. And it was only me and my colleague when this owner reported to us; no one will believe our information in the end. Owners can say that the PC reports higher numbers of livestock in order to collect more money, and everyone will believe them. (interview with the head of the PC in* ayil aimak *A, 5 November 2014)*

To avoid the fees associated with pasture tickets, livestock owners are motivated to underreport livestock numbers. Thus in the household survey, half of livestock owners reported no change in livestock numbers over the prior 4 years, and one quarter reported a decrease. Only one quarter of interviewees reported an increase in their livestock numbers over the previous 4 years. However, all 7 herders interviewed reported increasing livestock numbers during the same time period.

There is also a lack of compliance with the PC plans regarding location and timing of livestock grazing in the common pastures. During interviews, the majority of the herders stated that they themselves decide where, when, and how many livestock to move—despite their limited interaction with the PUA or PC (unlike livestock owners). Several herders further stated they had been using certain pastures for a number of years, regardless of the decisions of the PC.

Principle 5: Graduated sanctions

The initial Pasture Law of 2009 had weak enforcement mechanisms. Subsequent changes have created sanctions for those who violate pasture management plans, including increasing fines so that they become real disincentives. In 2012 fines were increased dramatically, which rendered them more effective than before: "After these new regulations were issued, we explained … you need to move within the period from 15 May till the end of May. … So, to avoid paying 5000–10,000 KGS, people obey" (interview with the head of the PC in *ayil aimak* A, 5 November 2014).

This has not eliminated all problems, however, as there is sometimes a reluctance to apply fines in cases of close social connections. Herders usually try to reach informal agreements to solve any conflicts.

Principle 6: Conflict-resolution mechanisms

Formally, if someone disagrees with the PC, the appropriate state body can resolve the conflict through negotiation. If agreement is not reached, the conflict can be resolved in court. In reality, actors rarely end up in court, as it is a time-consuming procedure.

Two levels of conflict over pastures emerged from our data. The first is internal to governance of the pastures under the control of the PC. These conflicts occur between individual herders about division of pastures and between the PC and livestock owners who are not willing to pay for pasture tickets or who start grazing too early or in unauthorized places. The first type of conflict rarely occurs, and the PCs try to avoid conflicts between new and old herders by not allocating lots to a new herder in an area that has already been occupied by a herder with more seniority. Conflicts between PCs and livestock owners occurred at an early stage after introduction of the Pasture Law, when little information about PCs and PUAs was available and people were not aware of the new pasture ticket process. As the head of *ayil aimak* A noted, "Now people are starting to get used to paying for pasture."

According to the PC heads, administrations of both *ayil aimaks*, and herders, such conflicts are resolved through inclusive negotiation or at village meetings engaging village council deputies.

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The second level of conflict is related to the lack of agreement between institutional actors (eg *leskhoz*, protected areas, and PCs) regarding the physical boundaries of responsibility, in part due to a lack of definitive maps clearly showing the boundaries. For example, *leskhozes* have their own land (also known as Forest Fund land) and leasing rules that use different fee mechanisms (eg charging by area grazed rather than by number of sheep, as the PCs do). Given the ambiguity in the PCs' legal status, especially in relation to other authorities, the performance of a PC depends largely on its head and that person's personal relationships with other actors. However, differing institutional responsibilities create confusion for herders regarding rules and regulations. In some cases, herders believe they unfairly pay grazing fees twice—to the PC and to the *leskhoz*—and refuse to pay.

Principle 7: Local self-determination

Only a few communities have developed their own rules regarding common-pool resources, but when they do, the rules are usually respected by higher-level authorities (unless they conflict with the interests of the authorities). One successful example is that of one of the study villages, where inhabitants decided at a village meeting to give some rest to pastures near the village. Another example is the common decision among villagers on prices for herder services. Such community rules and decisions usually do not impinge on the interests of district and provincial administrations, and therefore they neither support nor hinder them.

Principle 8: Nested governance

Interviews with PC members, herders, and livestock owners revealed confusion regarding responsibilities, functions, and accountability of the PC and the PUA. Weak information sharing has led to misunderstanding of the PCs' status among rural inhabitants. Some respondents view the pasture ticket as a tax they pay to the subdistrict administration (*ayil okmotu*). This conflation of the PC and the *ayil okmotu*, and of the purpose of pasture tickets and taxes, leads to a view of the PC as a state organization, not a community organization working to advance their interests. This is reinforced by the fact that, while local deputies should represent the interests of local people on the PC, local inhabitants do not know which individuals represent their interests on the PC. None of the respondents mentioned local deputies as key decision-makers on pasture governance.

At the same time, there is overlapping jurisdiction between the local authorities and other levels of government. The head of one PC said that despite the law prohibiting interference of state and local administrations in the work of the PCs, "our district department asks us to report on a monthly basis, even if they have no right to do so. … When I explain matters to them, they do not really understand" (interview with the head of the PC in *ayil aymak* B, 27 November 2014).

However, even such top-down control seems ineffective to achieve sustainable pasture management at the community level. There is a mismatch between legislation and its enforcement and actors. Although the PC is considered by law as the primary implementing body to improve seasonal mobility of livestock through pasture management plans, the real capacity of PCs does not allow them to solve external challenges such as difficult access to distant pastures, blurred multilevel boundaries, and internal institutional weakness.

Discussion and conclusion

This paper advances knowledge about common-pasture governance under Kyrgyzstan's Pasture Law by applying Ostrom's 8 principles for sustainable use of common-pool resources. The findings from the 2 Naryn cases indicate that the greatest barriers to effective pasture governance in this region relate to principle 3, collective choice. Local pasture users are unaware of the rights and obligations of PUA and PC members and therefore do not participate in modifying the formal rules for pasture management. This is partly due to the fact that decentralization and the creation of community-based institutions has remained a top-down process. The PC and PUA structure was imposed by higher-level government agencies rather than being co-created by and representative of the needs, values, and knowledge of local communities. Our 2 case studies illustrate that unclear rules have led to misunderstanding, different interpretations, and consequently distortion of the ideas of participation and local decision-making.

Our findings also indicate that the basic roles, responsibilities, and functions of key institutional actors (like the PC and members of the PUA) are often misunderstood by resource users. For instance, rather than seeing the PUAs as belonging to them and representing their interests, many users perceive them as a way for the government to exercise control, exclude them from decision-making, and raise taxes. This indicates the continuing need for full and equitable involvement in resource use and community-based pasture management. Given that the expected levels of local autonomy and self-determination have not been realized, and that an endogenous (community-initiated and -owned) system of pasture governance has not been established, local users are asserting their own practices while official management plans are largely ignored and unenforced.

The discrepancy between the rules governing the use of pastures and real grazing practices results not only from issues with inclusion in governance systems but also because the externally imposed rules do not match local

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needs and conditions (principle 2). This includes factors such as the lack of infrastructure, spatial and temporal variations in pasture conditions, and the capacity of PCs to implement their duties. Before introducing any community-based resource management, there is a need for "contextual analysis and [a] balanced view of community capacity" (Ulybina 2015: 79).

A particularly important mismatch between rules and local conditions is the lack of appropriate boundaries (principle 1). There is a mismatch between the ecological boundaries of the relevant natural resources, community-level social boundaries (which can extend across the country and beyond with social networks), and administrative boundaries attached to different land types and land use purposes (eg *leskhoz*). This creates both opportunities to diversify grazing options and challenges for local resource users in dealing with multiple authorities. Additionally, it introduces confusion inasmuch as different boundaries (and opportunities) may be implicit and seen only when considering animal husbandry through the eyes of individual livestock owners and herders, as compared to the explicit geographic and administrative-legal perspective of village and subdistrict PCs, each with different geographic scales and land classifications under consideration.

While there are a number of mismatches between Ostrom's principles and implementation of communal pasture governance on the local level in Kyrgyzstan, there are also positive signs of communities collectively making decisions. For instance, resource users in one of the villages collectively decided to "give pastures some rest" by declaring a moratorium for one pasture unit near the village that they considered to be degraded—not because it was required by a formal pasture management plan, but as a collective agreement for their own longer-term individual and collective interests. Unfortunately, the current system does not appear to promote this type of communally beneficial behavior more broadly.

Application of the 8 principles is useful in structuring an analysis of the functioning of the governance system, but we recognize that there are no ideal measurements for assessing commons governance. For example, some publications critique the design principles as incomplete (Singleton and Taylor 1992; Harkes 2006), others underline the importance of external factors, which was not a focus in Ostrom's principles (Agrawal 2002; Tucker et al 2007), and some authors (Schlager et al 1994; Young 2002) suggest inclusion of more properties of the resource system (eg ecosystem properties and structures).

However, the 8 principles are still relevant for assessment of community-based pasture governance. They allow an evaluation of participatory decision-making, the sustainability of the PUA/PC system itself without external support, and the degree to which the PUA and PC can be mobilized as an institution for collective action.

In this case, application of the principles indicates that policy-makers and implementing organizations should avoid blueprint approaches to participatory management, taking into account that "resource user participation requires a well-designed, time-consuming strategy" (Crewett 2015b: 3169). As shown by a great deal of research on common resources in Central Asia over the past decade (Kerven et al 2011), all efforts by external stakeholders (such as international organizations and researchers) in regard to pasture management should build upward from the ground level, taking communities' and individuals' perspectives into account, with a view to collaboratively work with them to identify and enable the best resource use options. This would require, in the case of the Naryn region, clarity about the roles and responsibilities of different actors, better delineation of boundaries, greater inclusion of relevant actors, and development of a governance process that is adaptable to changing conditions and creates incentives for effective participation and collective action.

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