Understanding Causes of Conflict Over Common Village Pastures – A Comparative Analysis of Property Rights in Azerbaijan and Georgia

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ABSTRACT
Conflicts in the management of renewable natural resources are situations in which actors have diverging opinions on issues of natural resource use. In the literature, among the causal factors for conflicts discussed are resource wealth or scarcity and the role of governance. The evidence, however, is contradictory. In order to analyze the role of governance in more detail, we propose a combined analysis of property rights and conflicts. In this way, an improved understanding of the causes of local conflicts over renewable natural resources can be achieved. We use comparative case study data from pasture management in the Caucasus region, first, to classify conflicts according to the bundle of property rights approach and, second, to explore how the causal factors resource scarcity and current governance contribute to those conflicts.

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Introduction
Conflict is a basic feature of actors’ relationships in the management of renewable natural resources, as is cooperation (Folke et al. 2005, Ratner et al. 2013, Schusler, Decker, and Pfeffer 2003). Conflicts arise mainly from disagreements among stakeholders on how the management of these resources should take place (Sanginga, Kamugisha, and Martin 2007, Turner 2004, Ratner et al. 2013). When it comes to common resource use, in particular, multiple interests and overlapping claims occur (Turner 2004). In this paper, we adopt the perspective that nearly every conflict over natural resource use and management has an implicit or explicit property rights dimension since actors have
diverging opinions about who has the right when, where, and under what conditions to access, use, or manage the resource (Ratner et al. 2013, de Jong, Ruiz, and Becker 2006; Pradhan and Pradhan 2002). We argue that an explicit property rights perspective on conflicts is currently underdeveloped in the existing literature (the closest is Gooch 2019). Hence, a clearer elaboration of this can help to categorize and analyze, and, finally, to understand the nature of the conflict.

A central question in conflict analysis is the underlying cause (Le Billon 2001; Collier and Hoeffler 2005, Homer-Dixon 1999; Alston, Libecap, and Mueller 2000). Property rights scholars mainly attribute conflicts to institutional failure or misfit, such as incompletely defined property rights (Ratner et al. 2013), their spatial or temporal misfit to the biophysical characteristics of the resource (Yandle 2007), or the existence of conflicting governance systems with incompletely enforced rights (de Jong, Ruiz, and Becker 2006; Pradhan and Pradhan 2002). Besides resource governance, an important part of the literature investigates the relationship between conflict and resource availability (Le Billon 2001; Collier and Hoeffler 2005, Homer-Dixon 1999; Alston, Libecap, and Mueller 2000). Although the relationship between resource wealth and extraction, weak governance, and conflict has been investigated mostly at higher spatial scales and with regard to nonrenewable resources (Le Billon 2001; Collier and Hoeffler 2005, Ross 2015), the relationship between resource scarcity and conflict over renewable resources has been described for local conflicts (Homer-Dixon 1999; Alston, Libecap, and Mueller 2000). However, more recent publications argue that not only resource availability in general but also inappropriate governance (footnote 1 in Supplementary Annex 3) can contribute to conflicts (Turner et al. 2012; Koubi et al. 2014, Alston, Libecap, and Mueller 2000). Thus, conflicts occur based on diverging claims over resources by different social groups and are likewise shaped by the political regime and administrative processes as well as by environmental factors, such as climate change (Seter, Theisen, and Schilling 2018, Van Leeuwen and van der Haar 2016). We contribute to the literature on causes of conflict with a qualified analysis of resource scarcity and governance as triggering factors, using comparative case studies.

We focus here on local conflicts over pasture resources in the Caucasus region as an example that offers insights into the causes of conflicts in natural resource management. While much has been written about conflicts among pastoralists in Africa (Adano et al. 2012; Hagmann and Mulugeta 2008) and about farmer-herder conflicts in Africa (Moritz 2010; Kuasaana and Bukari 2015; Brottem 2016), the literature on the same topics for the Central Asian and Caucasus regions is scarce. Although pasture use is prevalent in this region (Kerven 2006), authors touch only marginally on the issue of conflict as a part of studies about pasture governance (Upton 2009; Tenzing, Millar, and Black 2018; Vanselow, Kraudzun, and Samimi 2012). This paper aims to fill this gap by explicitly investigating conflicts about pasture resources in the Caucasus region. Although the Caucasus region is known for long-lasting political and ethnic conflict (Bayramov 2018), we focus here on small-scale local resource use conflicts with limited linkages to wider political and ethnic issues.

We concentrate on common village pastures, which are a mainstay of the livelihoods of local smallholders and an important resource for mobile pastoralists in the region. Due to the common-pool characteristics and high grazing pressure near settlements,
collective management challenges occur particularly regarding village pastures (Neudert et al. 2013; Baibagushev 2011; Robinson and Whitton 2010). In the Caucasus region, major management challenges of village pastures are caused by a growth in livestock numbers along with the political and social transformations in the post-socialist period after 1990 (Roland 2000). Thus, declining pasture quality, erosion, and pasture degradation are noted for the whole region (Didebulidze and Tarkhan-Mouravi 2011; Babayev 2007; Etzold, Munzner, and Manthey 2016).

Drawing on comparative case studies from Azerbaijan and Georgia, we thus investigate the causes and contributing factors leading to conflict over pasture resources in two countries with fundamentally different governance approaches to pasture resources, yet similar biophysical and resource use systems. Since case studies were selected along a gradient of village pasture resource availability, we are able to analyze the impact of varying resource availability on conflicts.

Thus, the aim of the paper is two-fold. First, to systematically analyze conflicts and the current governance, we use the bundle of property rights approach (Schlager and Ostrom 1992; Galik and Jagger 2015). With this approach, we are able to establish a direct relationship between de jure and de-facto governance, the stakeholders involved, and characteristics of the conflict itself. Second, based on this categorization of conflicts, we can show the extent to which resource availability and current governance are related to the particular characteristics of conflicts.

Adopting a dynamic view on conflicts and property rights, it becomes obvious that in the common management of natural resources some level of conflicting opinions and views is inevitable since they are part of a productive governance process in which communities design, enforce, and renegotiate their own rules. Thus, we distinguish between mainly constructive conflict, which is a part of social learning and institution building (Schusler, Decker, and Pfeffer 2003), and mainly destructive conflict, which has escalated beyond the conflict resolution capacities of the communities (Van Laerhoven and Andersson 2013; Yasmi, Guernier, and Colfer 2009; Moritz 2010).

Further to the relevance to pasture management in the case study region and beyond, our contribution is mainly conceptual. We show that disentangling current property rights and categorizing conflicts according to property rights yields a consistent, insightful classification and contributes to understanding the causes of conflict in natural resource management.

**Theoretical Framework: Property Rights and Conflicts**

The concept of property rights is useful for analyzing the human use of natural resources, which is partly driven by the cost and benefit stream to be expected from an action. These costs and benefits are, in turn, determined by the assignment of property rights. As such, property rights are defined as a social relationship between one person and others with respect to an object or place offering varying degrees of security over a benefit stream from a resource (Bromley 1997: 3/4). Research has shown that the de-facto property rights regimes for natural resources are more complex than the four clear-cut categories, i.e. private-property, common-property, state-property, and open-access property regime (Feeny et al. 1990). Despite their value for conceptual
distinction, in practice, there is considerable overlap between diverse property rights regimes (Frey, Villamayor-Tomas, and Theesfeld 2016; Meinzen-Dick 2014).

In post-socialist countries, we often observe a discrepancy between formally assigned property rights and informal (customary) rules of daily routine, which results in legal pluralism (Theesfeld 2019; Klüumper, Theesfeld, and Herzfeld 2018). Such rights and claims may contradict or reinforce one another (Meinzen-Dick 2014; Soliev et al. 2017). De-facto property rights functioning on the ground could be made up of combinations of both formal secured rights and customary claims (Thwaites et al. 1998). Conflicts may arise because of the plurality of legal and informal rights system or the mismatch between legal rights and reality since diverse systems may provide support for different opinions about how resource use should take place (de Jong, Ruiz, and Becker 2006; Pradhan and Pradhan 2002).

Studying property rights requires disentangling the individual bundles of rights and duties which can be outlined in accordance with Schlager and Ostrom (1992) as access, withdrawal, management, exclusion, and alienation rights (Table 1). Each of these rights might be held by a different actor or is differently determined depending on the actor, such as the access rights to pastures of sedentary villagers in contrast to those of mobile external herders. The approach was used in a number of studies focusing on the governance of local resources (e.g. Quinn et al. 2010, Colding et al. 2013, Klüumper, Theesfeld, and Herzfeld 2018).

At the operational level, access and withdrawal rights prescribe who has spatially, temporally, and under which conditions, a right to pass through or to graze on the pasture. The operational level rules can be changed by those actors who hold the right to decide on management or exclusion rights – and thus to alter access and withdrawal rights. Galik and Jagger (2015) added the right of alteration, which is a particular form of a management right. Alteration rights are of particular relevance for pasture management since a complete alteration of land use (e.g. to hay meadows or arable land) is often discussed in relation to pasture resources. Full ownership of a resource also

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Table 1. Pastures bundles of property rights.

| Choice level      | Bundles of rights | Definition                                                                                     | Application to village pasture                                                                 |
|-------------------|-------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Operational level | Access            | The right to enter a defined physical property                                                  | Right to pass through the territory                                                             |
|                   | Withdrawal        | The right to obtain the “products” of a resource                                                | Right to rest and graze                                                                          |
| Collective-choice | Management        | The right to regulate internal use patterns and transform the resource by making improvements  | Right to set internal procedures for pasture restoration or preservation, such as letting parts rest or rotate |
| level             | Exclusion         | The right to determine who will have an access and withdrawal right, and how that right may be transferred | Right to decide on who has the right to pass, rest or graze, and for how long                    |
|                   | Alteration        | The right to change the set of goods and services provided by a resource                        | Right to change the land use on the territory to hay meadow or arable land                      |
| Constitutional    | Alienation        | The right to sell or lease either or all of the above collective choice rights                  | Right to transfer management, exclusion and alteration rights                                    |
| level             | Policy design     | The right to alter the complete structure of rights assignment                                 | The right to alter the complete structure of pasture rights                                       |

Note: Based on Schlager and Ostrom (1992) and Galik and Jagger (2015)
comprises the right of alienation, i.e. the right to transfer rights partly or completely to others.

State administrations often hold a crucial part of the management rights—representing the collective-choice level—by assigning positions, rights and duties to different stakeholders (Schlager and Ostrom 1992, Quinn et al. 2010, Colding et al. 2013). They may hold the right e.g. to distribute lease contracts, to monitor resource conditions, or to create user groups with management responsibilities. State agencies may also prescribe operational level rules, e.g. directly defining who has access rights or under which conditions and to what extent withdrawal is allowed.

The fact that the government also has the right to completely alter the property rights structures with land reforms is important for post-socialist countries with frequently changing laws, responsibilities, and principles of natural resource governance (Kornai and Rose-Ackerman 2004). One result could be a regime shift, e.g. from a mainly common-property regime to a private-property regime. To represent this decision-making power of the parliament, we added a property right at the constitutional level, a policy design right, i.e. the right to alter the complete structure of rights assignment.

For the analysis presented in this paper, we employ the bundle of property rights perspective (Table 1) for characterizing the current governance of pasture resources and for categorizing conflicts.

The term conflict refers to situations where actors have diverging opinions on issues of natural resource use. Conflicts may occur at different levels of intensity ranging from disputes or discussions to incidents of violent conflicts at the local level (Ratner et al. 2013). While we are aware of the existence of stronger escalation levels, such as armed conflict at the regional or national level or civil war, we do not cover these conflict types with primary data.

Conflicts over natural resource use are mainly about specific bundles of property rights (Pradhan and Pradhan 2002). Thus, to investigate the link between conflicts and property rights closely, we categorize conflicts according to the property rights bundle under question (Table 1) and clarify the stakeholder groups involved. Based on this, we can distinguish between intra-community conflicts involving stakeholders from the same municipality, inter-community conflicts among individuals from different municipalities and supra-community conflicts, which occur between villagers and administrations or formal organizations (Sanginga, Kamugisha, and Martin 2007). In addition, we distinguish different intensity levels: (A) discussions; (B) prevalent topic as indicated by extensive discussions; and/or official statements of non-agreement and (C) single incidents of physical violence (footnote 2 in Supplementary Annex 3).

While several authors agree that conflicts can potentially enhance collective action and improve the common management of natural resources (UN-HABITAT 2012; Van Laerhoven and Andersson 2013; Yasmi, Guernier, and Colfer 2009; Schusler, Decker, and Pfeffer 2003), a clear conceptual distinction is difficult. We follow Van Laerhoven and Andersson (2013) in the view that constructive conflicts enhance cooperation when they are nonviolent, goal oriented, and the parties strive for realistic goals. In contrast, destructive conflicts decrease incentives for cooperation and are characterized by violence, escalation beyond specific goals, and the unrealistic aims of the conflict parties (Van Laerhoven and Andersson 2013).
We use the above-mentioned dimensions to characterize the conflicts based on case study material.

Methods and Background on Study Area

Methods

We apply qualitative research methods, given the advantages of these for understanding complex socio-ecological problems (Rust et al. 2017), especially in poorly researched areas such as the South Caucasus. We use a comparative case study approach (Yin 2003) based on three case study villages in each country. The location of all study villages in an altitudinal belt between 700 and 1,600 m above sea level where common pasture use by village smallholders is dominant ensures that the case studies are comparable regarding biophysical and resource use characteristics. The final selection of the six villages was based on preliminary statistical information collected for 35 villages meeting these initial search criteria. While comparative case studies in two countries allow us to study the influence of different governance approaches to village pasture management, we use variation in available pasture per household and livestock unit between the study villages as an indicator of resource scarcity (Allahverdiyeva et al. 2015) (footnote 3 in Supplementary Annex 3).

The first round of the empirical study was conducted in 2015 with an interdisciplinary research team investigating institutional, socio-economic, and ecological aspects of pasture use (Allahverdiyeva et al. 2015). Using empirical methods based on rapid rural appraisal (Freudenberger 1999), information on pasture use and management as well as conflicts was obtained (Allahverdiyeva et al. 2015).

This information was complemented by reviews of respective laws and decrees and by studying state government websites and thematic regional literature. For Georgia, the material was mostly available online in English and was complemented by six interviews with local administrations (local representatives of municipalities, extension service). In Azerbaijan, material was less accessible, thus, in 2016, information on administrative structures and regulations as well as on actual implementation was obtained from 10 interviewees with local and 13 with regional administrative bodies (local self-administration (Belediyye), local representatives of the state (Icra numayendeliyi), and district administrations and their departments (Icra hakimiyetti)).

A second round of field visits continued in 2016 covering all six case study villages. This included semi-structured interviews with local stakeholders focusing particularly on de-facto pasture management and conflicts. In Azerbaijan, 44 semi-structured interviews with villagers representing the relevant stakeholder groups (Atteslander 2000) were conducted. In Georgia, information is based on 25 interviews with relevant stakeholder groups, and a Master’s study for the village Shakhvetila based on primary field data (Dragne 2017). Due to difficulties gaining access to the field, the semi-structured interviews in Georgia turned out to be more sporadic, drawing on a couple of individual visits to the three case study villages with explorative interviews.

Interview data, including the results of the rapid rural appraisal study, were analyzed using qualitative approaches including coding of data, descriptive within-case narratives and cross-case conceptually ordered displays (Miles and Huberman 1994) (footnote 4 in
Supplementary Annex 3). Coding with the software Atlas.ti was started with a pre-established list of codes based on the interview topics covered. These codes were discussed with researchers from the region at a joint workshop. In iterative coding steps, the coding scheme was further revised and extended. Findings from all codes and interviews were documented in a report. Intra-coder agreement for an exemplary set of interviews reached 93% (Mayring 2014; Friese 2018). Based on the coded interview data on conflicts and related background information, descriptive within-case narratives were established for conflicts mentioned repeatedly by different interviewees using guiding questions/topics which were answered based on the case study evidence (Yin 2003) (Supplementary Annex 1). Attention was paid to contrasting positions and arguments of the stakeholders involved in the conflict. Cross-case conceptually ordered displays were set up for analyzing the distribution of property rights and conflicts (Miles and Huberman 1994). Furthermore, the preliminary analysis underwent a process of communicative validation in discussions of findings with researchers from the region and stakeholders from the villages in joint workshops (Mayring 2014).

**Study Area in Azerbaijan and Georgia**

Azerbaijan and Georgia have a post-socialist transition background and have experienced far-reaching political reforms and socio-economic transitions since the early 1990s (Roland 2000), including a complete reorganization of property rights (Verdery 2004). Agricultural reforms (in Azerbaijan in 1996 and in Georgia in 1992) comprised the dissolution of state and collective farms and far-reaching privatization of agricultural land (Lerman 2006). From the outset, both countries allowed full transferability of land and real property. Georgia directly applied a one-step land allocation strategy, i.e. transferring physical parcels to individual owners. Azerbaijan initially implemented paper land shares and later converted these shares on a mass scale into physical plots (Salukvadze and Medvedkov 2011). In both countries, village pasture land was not privatized but registered under municipal ownership with bundles of rights being transferred to the local communities.

While Azerbaijan experienced massive growth in oil exports from 2000 to 2010 with associated rapid economic development and the economic marginalization of agriculture, agricultural development along with tourism are important for the Georgian economy. In 2016, agriculture contributed 5.6% to GDP in Azerbaijan and 9.3% in Georgia (National Statistics Office of Georgia 2018; State Statistical Committee of Azerbaijan 2017).

Livestock keeping and pasture use has a centuries-long tradition in both countries, involving sedentary livestock keeping by smallholders for the subsistence production of milk and meat, as well as various mobile and semi-mobile livestock keeping forms using summer pastures at high elevations in the Greater and Lesser Caucasus and/or winter pastures in the lowlands in both countries (also referred to as transhumance) (Aliyev et al. 1965). After the 1990s, livestock numbers first decreased and then increased in both countries. In Azerbaijan, the number of small ruminants nearly doubled from 4.5 million in 1995 to more than 8.6 million in 2014. This can be explained by an increase in the demand for sheep meat due to recent economic development and the profitability
seen in that sector (Neudert 2015; Neudert, Ruehs, and Beckmann 2015; State Statistical Committee of Azerbaijan 2017). In Georgia, there was a smaller increase from 724,800 small ruminants in 1995 to 936,500 in 2016 (National Statistics Office of Georgia 2018). In addition, since the break-up of the Soviet Union, transnational mobility patterns have come to an end. This resulted, especially in Georgia, in an effective deficit of winter pastures compared to summer pastures and hampered the growth of livestock numbers (Didebulidze, Bregvadze, and Imnadze 2015). Current livestock keeping practices in both countries can be described as traditional since artificial fertilizers, pesticides and imported concentrated feed are almost totally absent (Didebulidze and Plachter 2002).

The study focuses on two neighboring districts: the Ganja-Gasach region in Azerbaijan and the Kakheti region in Georgia. The Ganja-Gasach region in western Azerbaijan has the second largest total pasture capacity of Azerbaijan’s economic regions and at 22.8% the largest share of village pasture area of the total area (State Statistical Committee of Azerbaijan 2017). The mountainous part of the Kakheti region in eastern Georgia also has a strong focus on livestock keeping and 55% of sheep and 10.1% of the cattle in Georgia are kept there (National Statistics Office of Georgia 2018), while in the plains, the main land use is viticulture. In the temperate, humid forest zone of the case study villages, sedentary livestock keeping with grazing on village pastures and winter stable feeding is an important activity for smallholders in both countries.

The term “village pasture” refers to grazing land in the vicinity of villages that is under common use by villagers. In Azerbaijan, it is a special land category defined by law and designated for the common use of villagers’ livestock. In Georgia, however, pastoralists face long-term insecurity as the government is still aiming for pasture privatization (see Section “Stakeholders and the Legal Basis Administering Village Pastures”).

In Table 2, the case study villages Keremli and Atabey in Azerbaijan and Gombori and Shakhvetila in Georgia show comparably large total pasture areas. Shakhvetila suffers additionally from poor infrastructure, leading to high rates of abandonment and outmigration (Dragne 2017). In contrast, Plankend and Arashenda have few total pasture areas on their village territory. Setting the pasture area in relation to the number of households – and considering the fact that the percentage of households engaged in livestock keeping is not the same in all villages (Supplementary Annex 3) – allows us to establish an ordinal indication of relative pasture scarcity in the case study villages.

### Table 2. Pasture scarcity in case study villages.

| Item                  | Azerbaijani case study villages | Georgian case study villages |
|-----------------------|---------------------------------|-----------------------------|
| Altitude (m a.s.l.)   | Atabey 1,300 | Keremli 996 | Plankend 1,450 | Shakhvetila 680 | Gombori 1,150 | Arashenda 760 |
| Total number of households | 186      | 97          | 276          | 89         | 655^a       | 720^a       |
| Total pasture area (ha) | 863      | 517         | 94           | 411^a     | 1,846^a     | 350^a       |
| Pasture area (ha/household)^b | 4.64     | 5.33        | 0.34         | 4.62      | 2.82        | 0.49        |
| Relative pasture scarcity^c | 1        | 2           | 3            | 1         | 2           | 3           |

Notes:
^aData for community comprising several other villages in addition to case study village
^bThe percentage of households engaged in livestock keeping is not the same in all villages, leading to some variances between the villages as regards actual resource pressure, as shown in Supplementary Annex 3.
^cRelative pasture scarcity per country: 1: abundant; 2: medium; 3: scarce. Since the actual grazing pressure is higher in Keremli than in Atabey (Neudert et al. 2019a), we reorder Atabey and Keremli.

Source: Allahverdiyeva et al. (2015) based on local information and own data.
Results

In the following, we introduce the administrative and local stakeholder groups, including the property rights held by them. We further categorize conflicts over pasture use and link their occurrence to governance and pasture scarcity.

Stakeholders and the Legal Basis Administering Village Pastures

National government and local administration in Azerbaijan
The most important legal body for village pasture management in Azerbaijan is the local self-administration authority (Belediyye) which is responsible mainly for land and infrastructure management (Law “On status of local self-administration”, No. 698-IQ, issued 2.07.1999). It manages its own budget, which is derived mainly from land taxes and income from the sale of household plots as well as from renting out arable land and village pastures to external mobile herders. The national government has no direct responsibilities with regard to common village pastures.

The actual management of common pasture (i.e. decisions on grazing management, stocking rates, and in some cases improvement and resting) is placed by law in the hands of the local residents without further provisions, meaning that if villagers do not elaborate their own rules system, it represents de jure a pseudo collective-property regime, but de-facto an open-access property regime.

National government and local administration in Georgia
Georgia is still reorganizing its land tenure system and currently pastures are placed under the responsibility of the Ministry of Economy and Sustainable Development. The principles of ownership on agricultural land were initially laid out by the “Law of Georgia on Agricultural Land Ownership” in 1996. From 2005 to 2008, pasture land was in the process of being transferred to municipalities. However, this process was stopped and, since 2010 as an amendment to the old “Local Self-Government Code”, responsibility for pasture lands was transferred to the Ministry of Economy and Sustainable Development, which left municipal administrations with no agricultural land (Mushkelishvili et al. 2012). Thus, current prescriptions concerning pastures are scattered and contradictory. The Civil Code does not offer a special category for land in common use, i.e. pastures or roads for pastoral mobility (Raaflaub and Dobry 2015). A legal framework for agricultural cooperatives has been implemented recently (Law “On agricultural cooperatives”, No. 816-ES, 12.07.2013) that also makes provision for collective livestock enterprises to lease pastures. Interviewees in the case study villages expected that pasture lands would be privatized to individuals or cooperatives via auction in the near future (similarly to arable land), while there are no provisions on how common lands accessible to a village community should be dealt with. Thus, as there are nearly no legal provisions for common pasture use, property rights mainly arise as result of de-facto actions.

With regard to the practices of pasture use and conflict, responsibility is sometimes taken by the representative of the municipality, although that body legally has only very limited rights regarding land management (“Organic Law of Georgia – Local Self-Government Code”, No. 1958-IIб, 5 February 2014). The representative of the
municipality manages a local administrative-territorial unit (temi, comprising 5-10 villages in our case studies), which is a part of the self-governing municipality.

**Stakeholders Using Village Pastures**

Different stakeholder groups and their use patterns on village pastures are outlined below (footnote 5 in Supplementary Annex 3). Supplementary Annex 3 quantifies the stakeholder groups for each village.

**Sedentary livestock keepers from the village**

Most households in the case study villages possess a small number of cattle and sheep that graze almost year-round on the village pasture, with a stall-feeding period in winter (Supplementary Annex 3). The average number of livestock ranges from 1 to 9 cattle and 3 to 11 sheep per household in the case study villages and constitutes the most important income source of households besides arable farming (Allahverdiyeva 2018).

**Mobile and semi-mobile herders resident in the village**

The mobile herders – in most cases a minority of households in a village – possess a greater number of livestock and use the village pastures temporarily during the spring and autumn movements of their herds for several days to, at most, some weeks. Stopovers on village pastures are used for acclimatizing the livestock, selling animals, preparing for further migration, and for veterinary checks. Herds spend the summer and/or winter months on distant pastures.

Semi-mobile herders are a sub-group. They use the village pasture during summer (May-October) but move to other pastures during the winter. Staying on the village pasture in summer is only feasible for larger livestock owners if there is enough fodder available on the village pasture, as is the case e.g. in Atabey. Another form of semi-mobile herding widely practiced in Plankend, a village with scarce village pasture, uses other pastures during summer, as the pasture area is not sufficient for the village livestock. In winter, livestock is stall-fed in the village, but the village pasture is used for moving around on snow-free days. Thus, as also confirmed in interviews with herders, the decision of livestock keepers about whether or not to become mobile is partly influenced by the availability of pasture resources in the village of residence.

**Mobile herders resident elsewhere**

Mobile herders resident elsewhere access and/or withdraw from village pastures in spring and autumn during their seasonal migrations between summer and winter pastures. In Azerbaijan, there is a system of official migration routes for mobile livestock managed by the state, with intermediary veterinary and police posts checking documents. Migration from winter pastures to summer pastures takes 7–10 days in the Ganja-Gasach region, but herds may be on the road for a longer time. In Georgia, the migration infrastructure for mobile herds lacks regulation as veterinary controls are not implemented properly and official migration roads are sometimes blocked by private land. In spring and autumn, herds in the Kakheti region may be on migration for over
a month. Only since 2017 have veterinary controls at “biosafety points” begun to be implemented.

**Property Rights Bundles Held by Stakeholders**

In Table 3 the individual bundles of property rights of the various stakeholder groups are summarized based on the empirical material. All three herder groups have unconditional access rights in both countries, except mobile herds resident elsewhere in the Georgian village Arashenda. However, while sedentary livestock keepers have uncontested withdrawal rights in all villages, withdrawal rights for mobile herders are gradually being restricted (Neudert et al. 2019a).

In Azerbaijan, management and exclusion rights are formally mainly held by the village community, e.g. sedentary livestock keepers and mobile herders from the village, although the latter face de-facto restrictions to this property right. The local administrative authority has an important role as the facilitator of collective action, i.e. to organize common meetings, make suggestions, and prepare decisions. Rights to alter land use are formally only held by the local administrative authority. Alienation rights are not specified and formally assigned to any stakeholder group.

In Georgia, de-facto management rights of herders, based on the case study information, are currently not backed up by the legislation. The representative of the municipality might participate in and facilitate decisions (as e.g. in Arashenda), but has no factual and legal decision rights. Rights to alter land use or transfer rights to others are held by the Ministry of Economy and Sustainable Development and the parliament. If the legal privatization of pasture resources is implemented, all property rights will be held by a single user or user group. Thus, the Georgian situation represents a discrepancy between formal regulations indicating privatization objectives and the current collective management with rather limited property rights specifications.

| Bundle of rights | National government | Local administration | Sedentary livestock keepers | Mobile herders resident in village | Mobile herders resident elsewhere |
|------------------|---------------------|----------------------|----------------------------|-----------------------------------|----------------------------------|
| Access           | AZ                  | GE                   | AZ                         | GE                                | AZ                              |
| Withdrawal       | AZ                  | GE                   | AZ                         | GE                                | AZ                              |
| Management       | AZ<sup>b</sup>      | GE<sup>h</sup>       | AZ                         | GE<sup>g</sup>                   | AZ<sup>d</sup> GE<sup>e</sup> |
| Exclusion        | AZ<sup>f</sup>      | GE<sup>h</sup>       | AZ                         | GE<sup>g</sup>                   | AZ                              |
| Alteration       | GE<sup>i</sup>      | AZ<sup>j</sup>       | GE<sup>i</sup>             | AZ<sup>j</sup>                   | GE<sup>i</sup> |
| Alienation       | GE                  |                       |                            |                                   |                                  |
| Policy design    | AZ                  | GE                   |                            |                                   |                                  |

*Notes: AZ denotes rights in Azerbaijan; GE in Georgia.
<sup>a</sup>Rights contested (Arashenda).
<sup>b</sup>Rights temporally restricted (Keremli) and contested (Plankend).
<sup>c</sup>Rights contested (Arashenda).
<sup>d</sup>Rights not granted (Plankend) or contested (Keremli, Atabey).
<sup>e</sup>Rights temporally restricted (Shakhvetila) or contested (Arashenda, Gombori).
<sup>f</sup>Facilitating role in preparing decisions.
<sup>g</sup>Right limited, changes in land categories need to be agreed upon with the State Property Committee.
<sup>h</sup>de-facto Right without legal back-up.
<sup>i</sup>Azerbaijan: Parliament; Georgia: Ministry of Economy and Sustainable Development/Parliament.
<sup>j</sup>Azerbaijan: Local self-administration; Georgia: Representative of municipality.
In both countries, the parliament has the general right to change the policy design, i.e. to change the assignments of any pasture rights to villagers or authorities. In Georgia especially this is relevant due to the pending privatization process. The situation leads to insecurity for all the other stakeholders in pasture management. To cope with the legal institutional vacuum concerning various property rights assignments, informal regulations appear – yet they provide less security for investment in the provision and care of the natural resource and lower incentives to engage in long-term social management agreements.

Groups of Conflicts Based on Property Rights Bundles and the Influence of Relative Pasture Scarcity and Governance

As displayed in Table 4, we formed a total of six conflict groups, which are mainly differentiated by bundles of property rights affected, in order to categorize the ten empirical cases of conflict. This characterization is based on descriptive narratives of conflicts over pasture use derived from case study data (Supplementary Annex 2). Moreover, the table details the occurrence of conflicts in Azerbaijan and Georgia relevant for the analysis of the influence of current governance on conflicts and the relative resource availability (Table 2).

Conflict groups derived from property rights bundles

Table 4 shows that conflicts over pasture use in the case study villages can be clearly categorized according to the specific property rights bundles under question (compare Table 1).

Conflict group 1 displays conflicts over access and withdrawal at the operational level with mobile herders resident elsewhere. Stakeholders have diverging opinions about whether these mobile herders have rights to pass through and rest on the common village pasture during seasonal migration. In both study villages affected, the conflicts of group 1 have the highest intensity with incidents of physical violence between stakeholder groups, while incidents in all other conflicts groups are mainly verbal.

In conflict group 2 stakeholders are concerned with similar questions only concerning withdrawal rights (but not access rights) to village pastures of mobile herders resident in the village. Thus, the conflicts take place within the village community, and mostly do not include incidents of physical violence.

Conflict group 3 concerns the management right of sedentary livestock keepers over the question of whether the overused village pasture should be rested or not. Although, finally, the topic relates to the access and withdrawal rights of all herder groups, the villagers discuss it as a part of a collective choice process, in which up to the date of data collection no agreement was found.

In conflict group 4 the local administration and sedentary livestock keepers in two villages discuss the exclusion right for common village pastures. While the local administration has an interest in giving use rights to mobile pastoralists elsewhere, sedentary livestock keepers would like to keep the common village pasture for their purposes.

In conflict group 5 on the alteration right of sedentary livestock keepers, villagers discuss whether a piece of village pasture can be used as hay meadow or rented out to mobile
Table 4. Types of conflicts and their characteristics in the case study villages.

| Conflict group | Property rights under question | Stakeholders involved | Topic | Intensitya | Countryb | Relative pasture scarcityc | Occurring in\d |
|---------------|--------------------------------|-----------------------|-------|------------|----------|---------------------------|----------------|
| 1             | Access/withdrawal right of mobile herd resident elsewhere | Sedentary livestock keepers vs. mobile herd resident elsewhere (inter-community) Mediating/supporting role of local administration | Whether mobile herd resident elsewhere have the right to pass through and rest on the common village pasture during migration | Incidents of physical violence between stakeholder groups (Q) | AZ, GE | 2, 3 | Keremli, Arashenda I |
| 2             | Withdrawal right of mobile herd resident in village | Sedentary livestock keepers vs. mobile herd in village (intra-community) Possible mediating role of local administration | Whether mobile herd resident in the village have the right to rest for a medium time-span on village pasture | Discussions/Prevalent topic in village (A/B) | GE, AZ | 3, 3 | Arashenda II, Plankend I |
| 3             | Management right of sedentary livestock keepers | Sedentary livestock keepers (intra-community) Possible mediating role of local administration | Whether the overused village pasture can be rested or not | Prevalent topic in village (B) | AZ | 3 | Plankend II |
| 4             | Exclusion right of local administration/sedentary livestock keepers | Sedentary livestock keepers vs. local administration (and mobile herd resident elsewhere) (supra-community) | Whether the local administration gives the right to use common village pasture to mobile herd resident elsewhere | Discussion in village/ Untruthfulness (A) | AZ, GE | 1, 2 | Atabey, Gombori |
| 5             | Alteration right of sedentary livestock keepers | Sedentary livestock keepers (intra-community) Possible mediating role of local administration | Whether a piece of village pasture can be used as hay meadow or rented out as pasture to mobile herd resident elsewhere | Prevalent topic in village (B) | AZ | 3 | Plankend III |
| 6             | Policy design/ Alienation right of national government | Sedentary livestock keepers vs. national government (supra-community) | Whether villagers have common rights to their village pasture or whether it will be privatized | Official statements of non-agreement (B) | GE, GE | 1, 3 | Shakhvetila, Arashenda III |

\aIntensity level: A: discussions; B: prevalent topic as indicated by extensive discussions or official statements of non-agreement; C: single incidents of physical violence.
\bGE: Georgian case study villages; AZ: Azerbaijani case study villages, indicates the influence of different current governance forms (Table 4) on conflicts.
\cRelative pasture scarcity (Table 2): 1: abundant (Atabey, Shakhvetila); 2: medium (Keremli, Gombori); 3: scarce (Plankend, Arashenda).
\dCorresponding to the conflict cases in Supplementary Annex 1.
herders resident elsewhere. The discussed topic concerns a complete change of the management regime of common village pastures.

Conflict group 6 concerns the most fundamental property rights bundle of policy design or alienation of the national government and describes the opposition of villagers in Georgia to the planned privatization of village pastures.

Factors influencing the occurrence of conflict groups
Differentiating conflicts according to their occurrence in Azerbaijan or Georgia reveals the influence of the different governance systems on conflicts. It becomes obvious that the fundamental conflicts in policy design (conflict group 6) occur only in Georgia, which is clearly caused by the unclear legal situation and the threat of pasture privatization in Georgia (Section “Stakeholders and the Legal Basis Administering Village Pastures”). Conflicts similar to those in the case study villages are reported in the media (e.g. Human Rights Center Tbilisi Office 2019). The conflicts at the collective-choice level occur mainly in Azerbaijan and are intra-group among villagers or with the local administration. These conflicts can be attributed to the rights of the village population to design their own rules for pasture use according to the Azerbaijani pasture governance regulations (Section “Stakeholders and the Legal Basis Administering Village Pastures”). An exception is the conflict group 4 in the Georgian village Gombori, which concerns the de-facto actions of the representative of the municipality without legal backing.

Conflicts between pasture user groups occur in both countries similarly, which is probably a result of the similar biophysical and de-facto management characteristics of village pastures in all case study villages. High-intensity conflicts between sedentary villagers and mobile herders from elsewhere occur in the villages Arashenda (GE) and Keremli (AZ), while nearly no conflicts are reported in Shakhvetila (GE) and Plankend (AZ), despite the latter two villages experiencing high levels of mobile herd traffic (Supplementary Annex 3). However, an important distinction is that in the latter two villages the migration routes are official, while in the former cases high-intensity conflicts evolved over popular bypasses of official migration routes, i.e. on informal routes. Thus, a legally fixed right for mobile herd passage seems to prevent conflicts in the latter cases.

Relative pasture scarcity clearly influences the existing property rights of and conflicts with mobile pastoralists in the case study villages. Neudert et al. (2019a) found that mobile pastoralists from elsewhere are granted fewer rights than mobile pastoralists resident in the village and that with increasing scarcity of the village pasture fewer withdrawal rights are granted to mobile pastoralists. Access and withdrawal rights at the operational level are granted in line with a certain time dimension, such as short-term access rights at one end and a whole season withdrawal right at the other end of a continuum. Conflicts usually occur with regard to the most far-reaching right for each case. Table 4 exemplifies this. For instance, in the villages Gombori and Atabey, where pasture is comparably abundant, it is discussed whether mobile pastoralists from elsewhere should be granted withdrawal rights over a whole summer season (conflict group 4). In contrast, in the villages Plankend and Arashenda, with the scarcest pasture area, it is disputed whether mobile pastoralists resident in the village are allowed to rest
temporarily on the village pasture (conflict group 1). Withdrawal rights to mobile pastoralists from elsewhere are not granted and not discussed in these villages at all.

An important observation is made for the role of the local administration in conflicts. While the administration can be an opponent in conflicts at the collective-choice level (conflict group 4), for conflicts between pasture user groups it frequently takes a mediating and supporting role, which is partly legally determined (Section “Property Rights Bundles Held by Stakeholders “) and partly derived from personal commitment. Thus, depending on networks, power relations, and perceived legitimacy, the administration may be able to mediate between different stakeholder groups in pasture use conflicts. While in some cases the administration was able to de-escalate conflicts successfully, in other cases its role is questioned or dubious (Supplementary Annex 2).

Discussion and Conclusion

We investigated conflicts over pasture use and their dependence on governance and resource scarcity using the property rights approach as an analytical lens. We applied this approach to comparative case study data from the Caucasus region.

The case study data came from a detailed analysis of the legal framework for pasture use in Azerbaijan and Georgia and interviews with stakeholders, from which descriptive narratives of the conflict cases were derived. We could identify ten conflict cases in the six case study villages. The narratives describe conflicts that were repeatedly mentioned by stakeholders in the villages. While we are certain we have captured the main conflict cases in the case study villages with our approach, the analysis cannot guarantee that all cases of pasture-related conflicts have been captured, especially with the somewhat thinner data set for Georgia. Nevertheless, the data yielded a detailed description of conflicts and connected them closely to an analysis of current property rights. The data set served mainly to illustrate our conceptual contribution to the literature on conflicts about property rights bundles. This grouping can provide initial information toward forming a typology of conflicts based on the property rights concerned.

Our analysis showed that a categorization of conflicts according to bundles of property rights yielded a consistent analysis on a topic that has received little scholarly attention so far (de Jong, Ruiz, and Becker 2006; Yandle 2007; Pradhan and Pradhan 2002). This explicit property rights perspective yields an improved understanding of the characteristics and sources of the conflict, potentially contributing to steps toward its resolution. We are aware that this approach is most applicable to low-intensity local level conflicts, while for conflicts with higher levels of escalation beyond the local level other theoretical approaches might be useful. In particular, the burgeoning literature on pastoral conflict in Africa illustrates cases which have escalated beyond the original resource use questions to violent ethnic conflict (Moritz 2010; Benjaminsen 2008). Such escalation levels were not observed directly in the case study villages at hand.

We also found evidence that the different governance systems on village pasture use influence the property rights under question in the conflicts (Turner et al. 2012, Alston, Libecap, and Mueller 2000, Ratner et al. 2013). Fundamental questions of policy choice are sources of conflict in the Georgian cases, which are linked to the unclear legal situation of village pasture use (Raaflaub and Dobry 2015; Egiashvili 2011), while this conflict group does not occur in Azerbaijan. This fact links to the theoretical proposition
that secure property rights reduce the level of conflict (Ratner et al. 2013) – at least for this conflict group. In contrast, we found more conflicts at the collective-choice level (on management, exclusion and alteration rights, Table 1) for the Azerbaijani cases, which relate to the rule design and enforcement processes as legally foreseen. Thus, this group of nonviolent conflicts (conflict groups 3-5) for the Azerbaijani cases can be seen as constructive, i.e. as part of the normal regulatory process of community-based natural resource management (de Jong, Ruiz, and Becker 2006; Van Laerhoven and Andersson 2013, Yasmi, Guernier, and Colfer 2009, Fisher et al. 2019).

The unclear property rights situation and the political discussion on the privatization of pasture resources in Georgia raises the question of whether private property rights might decrease the level of conflict. This links in to debates on the relative advantages of privatization or common use of pasture resources in Central Asian and Caucasian countries (Neudert 2015, Robinson et al. 2012). Fit and adjustment according to the cultural context and livestock management regimes are important for this question (Neudert 2015) similarly to the literature on property rights and conflicts (Yandle 2007, de Jong, Ruiz, and Becker 2006). Given that most households have little livestock and common herding is used to save household labor (Neudert et al. 2019b) and that pastures are ecologically heterogeneous, individualizing pasture access would imply the destruction of herding groups and an extremely inequitable allocation of pasture resources with similar immediate consequences to those described by Zhaoli et al. (2005) for China. Thus, the potential that privatization – without a deep transformation of the smallholder livestock management regime – can reduce conflicts seems rather limited.

Adopting a long-term dynamic view of property rights and conflict, conflicts on access and withdrawal with mobile herders can also be seen as part of a negotiation and refinement process in self-governance. The fact that access and withdrawal rights for mobile herders (resident in the village or elsewhere) are more restricted with increasing scarcity of pasture resources (Neudert et al. 2019a) is probably the result of past self-governance processes on similar issues to those observed now in conflict groups 1 and 2. However, an escalation of the conflicts of sedentary villagers with mobile herders from elsewhere indicates destructive tendencies (Yasmi, Guernier, and Colfer 2009). Considering the existing property rights and the long-distance migration of mobile herders, a regulation of conflicts at the village level is not feasible. Here, we observe a missing spatial fit of property rights and conflict resolution mechanisms (Yandle 2007), as a mediating role is taken by the local administration which, however, has only regulatory power at the local (and not at the regional) level. As officially secured migration rights seem to prevent conflicts, measures for resolving those conflicts should be found at the appropriate spatial and administrative level. Thus, to de-escalate the conflicts of group 1, we recommend participatory processes involving all stakeholder groups and the refinement of migration routes at the regional level covering the spatial scale of the migration routes of mobile pastoralists.

The evidence from the case studies also supports the tendency that village pasture scarcity leads to more numerous and more intense conflicts. In sum, we find, however, stronger evidence for the influence of resource governance on conflict than for scarcity, while both factors are most likely contributing (Van Leeuwen and van der Haar 2016; Turner et al. 2012). In line with theoretical considerations about the governance of
natural resource use we suspect that, given the same governance type, relative resource scarcity increases the need for the regulation of resource governance (Bromley 1991), whereas low-level conflict is an important component of rule design (Van Laerhoven and Andersson 2013).

Another important finding concerns the diverse roles of the local administration. While the local administration can be the opponent in conflicts at the collective-choice level, it often plays an important role in conflict mediation and resolution at the local level. While this role is legally fixed in Azerbaijani regulations for village pasture management, the active roles taken by local administrations in Georgia derive solely from personal interest and commitment. Here probably a phenomenon of resilience of local institutions, despite dysfunctional higher-level administrations and an institutional vacuum, can be observed (Adhikari and Adhikari 2010). Nevertheless, whether local administration plays a constructive or dubious role seems to be largely driven by personal characteristics, credibility, and power networks.

To summarize, our analysis shows that grouping conflicts according to property rights bundles yields important insights into the characteristics of low-intensity conflicts, opening up potential for their management and resolution (Yandle 2007, Ratner et al. 2013). We found evidence that resource governance influences the group of conflicts occurring (Turner et al. 2012, Alston, Libecap, and Mueller 2000) and a tendency for relative resource scarcity to increase the number of conflicts. Beside these factors, other contextual factors, such as historical and cultural legacies and socio-political and economic developments, are likely to influence the occurrence of conflicts. There is a need for further comparative studies on the factors influencing conflicts over renewable natural resource use (Seter, Theisen, and Schilling 2018, Van Leeuwen and van der Haar 2016). The property rights perspective also stresses that low-intensity conflicts, especially over common pool resources, are strongly influenced by the existing governance regime, which provides, depending on the design of rules and its fit to resource management practices, potential for destructive, escalating conflicts or constructive conflicts as a part of an ongoing self-governance process by resource users (Van Laerhoven and Andersson 2013, Yasmi, Guernier, and Colfer 2009).

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References

Adano, W. R., T. Dietz, K. Witsenburg, and F. Zaal. 2012. Climate change, violent conflict and local institutions in Kenya’s drylands. Journal of Peace Research 49 (1):65–80. doi:10.1177/0022343311427344.
Adhikari, J. R., and B. Adhikari. 2010. Political conflicts and community forestry: Understanding the impact of the decade-long armed conflicts on environment and livelihood security in rural
Nepal. Paper presented at CAPRi workshop on collective action, property rights, and conflict in natural resources management, Siem Reap, Cambodia, June 28 – July 1, 2010.

Aliyev, R. A., V. D. Hadshijev, J. M. Isajev, A. I. Mailov, D. G. Nabi, and L. I. Prilipko. 1965. Ulushenije i razionalnoje ispolsovanije zimnih i letnih pastbish Aserbaidshana [Improvement and rational use of Azerbaijans winter and summer pastures]. Baku: Akademija Nauk Aserbaidshanskoj SSR.

Allahverdiyeva, N. 2018. Socio-economic survey of farming households in the case study villages of Azerbaijan and Georgia. Greifswald: Co4 research project.

Allahverdiyeva, N., Z. Bregvadze, A. Didebulidze, S. Guliev, B. Imnadze, N. Mammadov, M. Merabishvili, R. Neudert, and M. Rühs. 2015. Baseline study of Co4 project: Final report. Greifswald: Agricultural University of Georgia, State Agrarian University of Azerbaijan and Greifswald University.

Alston, L. J., G. D. Libecap, and B. Mueller. 2000. Land reform policies, the sources of violent conflict, and implications for deforestation in the Brazilian Amazon. Journal of Environmental Economics and Management 39 (2):162–188. doi:10.1006/jeem.1999.1103.

Atteslander, P. 2000. Methoden der empirischen Sozialforschung. Berlin: de Gruyter.

Babayev, A. H. 2007. Struggle against desertification in Azerbaijan. South Caucasian Annals of Agrarian Science, 5:57–61.

Baibagushev, E. 2011. Recent changes in pastoral systems. In Case study on Kyrgyzstan in pastoralism and rangeland management in mountain areas in the context of climate and global change: 14–21 July 2010 regional workshop in Khorog and Kashgar, eds. H. Kreutzmann, K. Abdulalishoev, L. Zhaohui and J. Richter. Bonn, Germany: Deutsche Gesellschaft für Internationale Zusammenarbeit, Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung.

Bayramov, A. 2018. Review: Dubious nexus between natural resources and conflict. Journal of Eurasian Studies, 9 (1):72–81. doi:10.1016/j.euras.2017.12.006.

Benjaminsen, T. A. 2008. Does supply-induced scarcity drive violent conflicts in the African Sahel? The case of the Tuareg rebellion in Northern Mali. Journal of Peace Research 45(6): 819–36. doi:10.1177/0022002708096158.

Bromley, D. 1991. Environment and economy – property rights and public policy. Oxford: Blackwell.

Bromley, D. W. 1997. Property regimes in environmental economics. In The international yearbook of environmental and resource economics, ed. H. Folmer and T. Tietenberg: Cheltenham: Elgar.

Brottem, L. V. 2016. Environmental change and farmer-herder conflict in agro-pastoral West Africa. Human Ecology 44 (5):547–63. doi:10.1007/s10745-016-9846-5.

Colding, J., S. Barthel, P. Bendt, R. Snep, W. van der Knaap, and H. Ernstson. 2013. Urban green commons: Insights on urban common property systems. Global Environmental Change 23 (5): 1039–51. doi:10.1016/j.gloenvcha.2013.05.006.

Collier, P., and A. Hoeffler. 2005. Resource rents, governance, and conflict. Journal of Conflict Resolution 49 (4):625–33. doi:10.1177/0022002705277551.

de Jong, W., S. Ruiz, and M. Becker. 2006. Conflicts and communal forest management in northern Bolivia. Forest Policy and Economics 8 (4):447–57. doi:10.1016/j.forpol.2005.08.011.

Didebulidze, A., and G. Tarkhan-Mouravi. 2011. Priorities for sustainable development of Georgian highlands. Annals of Agrarian Science 9 (1):153–7.

Didebulidze, A., and H. Plachter. 2002. Nature conservation aspects of pastoral farming in Georgia. In Pasture landscapes and nature conservation, ed. B. Redecker, P. Finck, W. Härdtle, U. Riecken and U. Schröder. Berlin: Springer.

Didebulidze, A., Z. Bregvadze, and B. Imnadze. 2015. Influence of live sheep export on the sheep breeding in Kakheti region of Georgia. In Fourth International Conference problems of bio-safe food and business environment, Kutaisi, Georgia. p. 12–19.

Dragne, G. 2017. Implications of land tenure on rural livelihoods – a case study from Shakhvetila, Georgia. Greifswald: Institute for Botany and Landscape Ecology, University of Greifswald.
Miles, M. B., and A. M. Huberman. 1994. Qualitative data analysis. London: Thousand Oaks; New Delhi: Sage Publications.

Moritz, M. 2010. Understanding herder-farmer conflicts in West Africa: Outline of a processual approach. Human Organization 69 (2):138–48. doi:10.17730/humo.69.2.aq85k02453w83363.

Mushkelishvili, M., L. Mezvrishvili, B. Natshvili, and M. Elizbarashvili. 2012. The role of social capital in rural community development in Georgia. Tbilisi: Centre for Social Studies.

National Statistics Office of Georgia. 2018. Statistical information about Georgia. Tbilisi: National Statistics Office of Georgia. http://www.geostat.ge/index.php?action=0&lang=eng. (accessed 20 September 2018).

Neudert, R. 2015. Is individualized rangeland lease institutionally incompatible with mobile pastoralism? – a case study from post-socialist Azerbaijan. Human Ecology 43 (6):785–98. doi:10.1007/s10745-015-9792-7.

Neudert, R., A. Salzer, N. Allahverdiyeva, J. Etzold, and V. Beckmann. 2019a. Archetypes of common village pasture problems in the South Caucasus – insights from comparative case studies in Georgia and Azerbaijan. Ecology and Society 24 (3):1–20. doi:10.5751/ES-10921-240305.

Neudert, R., J. Etzold, F. Münzner, M. Manthey, and S. Busse. 2013. The opportunity costs of conserving pasture resources for mobile pastoralists in the Greater Caucasus. Landscape Research 38 (4):499–522. doi:10.1080/01426397.2012.728204.

Neudert, R., M. Ruehs, and V. Beckmann. 2015. Implementation of pasture leasing rights for mobile pastoralists – a case study on institutional change during post-socialist reforms in Azerbaijan. International Journal of the Commons 9 (2):648–69. doi:10.18352/ijc.515.

Neudert, R., N. Allahverdiyeva, and V. Beckmann. 2019b. Common herding in the South Caucasus – What motivates smallholders and how do they sustain cooperation? Paper Presented at IAMO Forum, Halle, June 26–28, 2019.

Pradhan, R., and U. Pradhan. 2002. Negotiating access and rights: Disputes over rights to an irrigation water source in Nepal. In Negotiating water rights, eds. R. Meinzen-Dick and B. R. Bruns. New Delhi: Vistaar.

Quinn, C. H., E. D. G. Fraser, K. Hubacek, and M. S. Reed. 2010. Property rights in UK uplands and the implications for policy and management. Ecological Economics 69 (6):1355–63. doi:10.1016/j.ecolecon.2010.02.006.

Raaflaub, M., and L. M. Dobry. 2015. Pasture management in Georgia. Tbilisi: Swiss Agency for Development and Cooperation.

Ratner, B. D., R. Meinzen-Dick, C. May, and E. Haglund. 2013. Resource conflict, collective action, and resilience: an analytical framework. International Journal of the Commons 7 (1):183–208. doi:10.18352/ijc.276.

Robinson, S., and M. Whitton. 2010. Pasture in Gorno-Badakhshan, Tajikistan: common resource or private property. Pastoralism 1 (2):198–217.

Robinson, S., C. Wiedemann, S. Michel, Y. Zhumabayev, and N. Singh. 2012. Pastoral tenure in Central Asia: Theme and variation in the five former Soviet Republics. In Rangeland Stewardship in Central Asia, ed. V. Squires, 4–13. Netherlands: Springer.

Roland, G. 2000. Transition and economics: Politics, markets, and firms. Cambridge: MIT Press.

Ross, M. L. 2015. What have we learned about the resource curse? Annual Review of Political Science 18 (1):239–59. doi:10.1146/annurev-polisci-052213-040359.

Rust, N. A., A. Abrams, D. W. S. Challender, G. Chapron, A. Ghoddousi, J. A. Glikman, C. H. Gowan, C. Hughes, A. Rastogi, A. Said, et al. 2017. Quantity does not always mean quality: the importance of qualitative social science in conservation research. Society and Natural Resources 30 (10):1304–10. doi:10.1080/08941920.2017.1333661.

Salinga, P. C., R. N. Kamugisha, and A. M. Martin. 2007. The dynamics of social capital and conflict management in multiple resource regimes: A case of the southwestern highlands of Uganda. Ecology and Society 12(1):1–17. doi:10.5751/ES-01847-120106.
Schlager, E., and E. Ostrom. 1992. Property-rights regimes and natural resources: A conceptual analysis. Land Economics 68 (3):249–62. doi:10.2307/3146375.

Schusler, T. M., D. J. Decker, and M. J. Pfeffer. 2003. Social learning for collaborative natural resource management. Society and Natural Resources 16 (4):309–26. doi:10.1080/08941920390178874.

Seter, H., O. M. Theisen, and J. Schilling. 2018. All about water and land? Resource-related conflicts in East and West Africa revisited. Geojournal 83 (1):169–87. doi:10.1007/s10708-016-9762-7.

Soliev, I., I. Theesfeld, K. Wegerich, and A. Platonov. 2017. Dealing with “baggage” in Riparian relationship on water allocation: A longitudinal comparative study from the Ferghana Valley. Ecological Economics 142:148–62. doi:10.1016/j.ecolecon.2017.05.002.

State Statistical Committee of Azerbaijan. 2017. Statistical information about Azerbaijan 2017. http://www.azstat.org/indexen.php (accessed July 30, 2017).

Tenzing, K., J. Millar, and R. Black. 2018. Exploring governance structures of high altitude rangeland in Bhutan using Ostrom’s design principles. International Journal of the Commons 12 (1):428–59. doi:10.18352/ijc.828.

Theesfeld, I. 2019. The role of pseudo-commons in post-socialist countries. In Routledge Handbook of the Study of the Commons, eds. B. Hudson, J. Rosenbloom and D. Cole. London and New York: Routledge.

Thwaites, R., T. De Lacy, L. Y. Hong, and L. X. Hua. 1998. Property rights, social change, and grassland degradation in Xilingol Biosphere Reserve, Inner Mongolia, China. Society & Natural Resources 11 (4):319–38. doi:10.1080/08941929809381085.

Turner, M. D. 2004. Political ecology and the moral dimensions of “resource conflicts”: the case of farmer-herder conflicts in the Sahel. Political Geography 23 (7):863–89. doi:10.1016/j.polgeo.2004.05.009.

Turner, M. D., A. A. Ayantunde, K. P. Patterson, and E. D. Patterson. 2012. Conflict management, decentralization and agropastoralism in dry land West Africa. World Development 40 (4):745–57. doi:10.1016/j.worlddev.2011.09.017.

UN HABITAT. 2012. Toolkit and guidance for preventing and managing land and natural resource conflict – land and conflict. New York: United Nations Interagency Framework Team for Preventive Action.

Upton, C. 2009. Custom” and contestation: Land reform in post-socialist Mongolia. World Development 37 (8):1400–10. doi:10.1016/j.worlddev.2008.08.014.

Van Laerhoven, F., and K. P. Andersson. 2013. The virtue of conflict: an institutional approach to the study of conflict in community forest governance. International Forestry Review 15 (1):122–35. doi:10.1505/146554813805927219.

Van Leeuwen, M., and G. van der Haar. 2016. Theorizing the land-violent conflict nexus. World Development 78:94–104. doi:10.1016/j.worlddev.2015.10.011.

Vanselow, K. A., T. Kraudzun, and C. Samimi. 2012. Grazing practices and pasture tenure in the Eastern Pamirs. Mountain Research and Development 32 (3):324–36. doi:10.1659/MRD-JOURNAL-D-12-00001.1.

Verdery, K. 2004. The property regime of socialism. Conservation and Society 2 (1):189–98.

Yandle, T. 2007. Understanding the consequences of property rights mismatches: a case study of New Zealand’s marine resources. Ecology and Society 12 (2):1–18. doi:10.5751/ES-02181-120227.

Yasmi, Y., J. Guernier, and C. J. P. Colfer. 2009. Positive and negative aspects of forestry conflict: lessons from a decentralized forest management in Indonesia. International Forestry Review 11 (1):98–110. doi:10.1505/ifor.11.1.98.

Yin, R. 2003. Case Study Research - Design and Methods. London: Sage.

Zhaoli, Y., W. Ning, Y. Dorji, and R. Jia. 2005. A review of rangeland privatisation and its implications in the Tibetan Plateau, China. Nomadic Peoples 9 (1):31–51. doi:10.3167/082279405781826155.