

Community-based Natural Resource Management among Kazakhs in the Tian Shan and Altay Shan Mountains of Xinjiang

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Cover Photo: Group herding in Xinjiang (*Tony Banks*)

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Introduction

The purpose of this paper is to describe and explain institutional arrangements for the management of rangelands in the Tian Shan and Altay Shan mountains of Xinjiang, with a particular focus on herding arrangements. The paper takes a 'bottom-up' approach by both focusing on de facto arrangements in the field and drawing extensively upon pastoralists' own explanations for these arrangements. The specific study region is the Yili Kazakh Autonomous Prefecture. Most of Xinjiang's fertile rangelands, and the majority of its 1.2 million mobile pastoralists, are found within this region. Starting in Yili Valley in the central Tian Shan mountains, the prefecture stretches northwards along the Kazakhstan border to the Altay mountains of northern Xinjiang. Virtually all of the rangeland in the region is utilised on a seasonal basis. There are three major seasonal types of rangelands: winter pasture, comprised of desert steppe; spring-autumn pasture, comprised of low-montane shrubland or forest steppe; and summer pasture, comprised of alpine and sub-alpine meadow and steppe and forest steppe (Zhang 1992). Although some 80% of pastoral households in Xinjiang have been officially 'settled', settlement has not essentially changed these seasonal migratory patterns.

This paper is based on a series of participatory appraisals of institutional arrangements for rangeland management that were conducted in all four prefectures and 11 pastoral counties of the Yili-Kazakh Autonomous Prefecture in 1998 and 2001². It is organised as follows. Key characteristics of institutional arrangements for rangeland management are described first. This is followed by a discussion on the social, economic, and environmental benefits associated with contemporary institutional arrangements. Implications and recommendations for rangeland policy are then considered in the last sections.

¹ The official household settlement criteria include: a permanent household dwelling; a livestock shelter; and the cultivation of fodder crops and/or artificial pasture.

² The pastoral counties where participatory tenure appraisals were conducted were: Altay and Buerqin (Altay Prefecture); Bale and Wenquan (Bertala Prefecture); Ermin and Wusu (Tacheng Prefecture); and Huocheng, Zhaosu, Cabucaer, Tekeshi and Gongliu (Yili Prefecture). All of these are located in northern Xinjiang, where its extensive rangelands and mobile pastoralists (principally Kazaks and Mongolians) are also concentrated. The appraisals undertaken in 1998 formed part of the author's fieldwork towards a DPhil (Development Studies) from the University of Sussex. The 2001 appraisals were undertaken by the author for the World Bank's Gansu and Xinjiang Pastoral Development Project.

Institutional arrangements for natural resource management

Communes were de-established in Xinjiang in 1984, and the legal and regulatory framework for pastoral tenure has been evolving since then³. Contemporary rangeland policy in Xinjiang emphasises the assignment of rangeland use rights to individual households and the establishment of exclusive boundaries in rangelands via fencing. Stocking rates for individual household pastures are to be derived, monitored, and enforced by Grassland Supervision Stations. Rangeland policy has been implemented in the field through the issuance to pastoral households of Grassland Use Certificates in 1989 and Grassland Use Contracts starting in 1993. By 1999, some 94% of Xinjiang's useable rangelands had reportedly been contracted to individual households (Xinjiang Animal Husbandry Bureau statistic). On the surface, Xinjiang's rangeland policy differs little from national rangeland policy, or for that matter, rangeland policies in North America and Australasia. All are essentially based on the 'household ranch model'. However, an important proviso needs to be added. Although Xinjiang rangeland policy may emphasise the establishment of the individual household ranch, it simultaneously provides wide and varied grounds for exceptions. For example, the grassland contract system should "be appropriate for local conditions" and "take into account pastoralists' lifestyle and herding traditions" (XG 1996). Furthermore, the contracting of rangelands to groups as opposed to households is explicitly encouraged in the case where the rangeland is serviced by only one water source (XAHB 1994) and for those rangelands in the vicinity of collective facilities such as stock routes, shearing sheds, watering holes, stock dips, and stud stations (XG 1996, XAHB 1994). The rest of this section considers key aspects of de facto pastoral tenure, and in doing so sheds light on if and how rangeland policy has actually been implemented in the field.

Group tenure

As mentioned above, Xinjiang rangeland policy emphasises the establishment of individual household tenure but provides grounds for exceptions. One of the key characteristics of contemporary pastoral tenure in Xinjiang is the persistence of group tenure arrangements. The origins of these group tenure arrangements (hereafter called pasture groups) dates back to 1985 when commune rangelands were initially distributed to small groups of households as opposed to individual households. Data on these pasture groups for two case study Kazakh villages in Buerqin County, Altay Prefecture, is presented in Table 1 below. Two points in particular are worth noting. First, there is a strong kinship basis to the pasture groups, with 89% and 90% of the members of groups in Ak Tubeq and Sarkum, respectively, being immediately related to all or some of the other households in their group. This basing of the pasture groups in pre-existing social structures, coupled with the tendency for pasture group members to cooperate across a range of social and economic spheres (including herd supervision, hay cutting, cropping, and seasonal movements), suggests that there is a high degree of social capital among group members.

The second point to note from Table 1 is that although some of the original pasture groups subdivided between 1985 and 1998, the majority of them have persisted, and

³ Significant contributions to the Xinjiang legal and regulatory framework include the: Xinjiang Rangeland Law (1989); Regulation on the Collection and Use of Grassland Management Fees (Xinjiang Government Regulation No.247, 1992); and Regulation on the Grassland Contract in Xinjiang (Xinjiang Government Regulation No.88, June 1996). See Banks (1999) for a fuller exposition of the legal and regulatory framework.

Table 1: Pasture groups in two Kazakh villages

	Number of households in group		Kinship relationship of sample household to other households in group (%)			Original groups that have subdivided (%)
	Range	Mean	All related	Some related	None related	
Ak Tubeq						
- 1985	3 – 6	4.6	74	15	11	6
- 1998	3 – 12	6.0				
Sarkum						
- 1985	1 – 5	2.7	84	6	10	36
- 1998	1 – 8	3.2				

Source: semi-structured survey of a 30% random sample of households in Ak Tubeq and Sarkum village, 1998 (143 households total).

the average size of the groups in both villages has increased because of the creation of new households. It is also worth noting that pasture groups in Sarkum have persisted, despite the official settlement of the village between 1989 and 1994 (as part of World Food Programme Project No. 2817) and the implementation of the grassland contract system in both villages in 1996. Grassland use contracts issued to households usually do not delineate individual household boundaries, and although they specify the area of different seasonal pastures contracted to the household, this area is calculated on the basis of household population and labour force in 1984 and does not usually refer to any defined area. Indeed, the incidence of individual household tenure has remained nil in Ak Tubeq and actually decreased from 10% to 5% in Sarkum between 1985 and 1998.

Fuzzy boundaries

A second key feature of pastoral tenure is the presence of fuzzy boundaries. There has been virtually no fencing of rangeland boundaries in Xinjiang. The monitoring and enforcement of boundaries is instead undertaken through the direct observation and action of community members in the field. The degree to which boundaries are monitored and enforced varies considerably according to the type of boundary (external or internal) and the seasonal type of pasture. External (community) boundaries in rangelands are quite closely monitored and enforced during the season by pastoralists in the field and during other seasons by 'grassland protector households', or households that are paid by the collective to reside in pastures all year round and prevent encroachment. The monitoring and enforcement of internal (pasture group or household) boundaries varies according to the seasonal type of pasture. In spring-autumn pasture, internal boundaries in pasture are often not enforced at all, and a form of internal open access prevails. In summer pasture, in contrast, there is some adherence to internal boundaries, particularly with respect to the herding of small livestock, and in winter pasture for small livestock, internal boundaries are strictly enforced. Adding to the overall fuzziness of boundaries is the informal rule that pastoralists may transit across another community's or group's boundaries during the course of their regular migrations between seasonal pastures or in order to access scarce water resources. This rule has the most implication for boundaries in spring-autumn pasture, given its location in the transition zone between summer and winter pasture, coupled with the relatively patchy distribution of water resources within these landscapes. Thus, the rule contributes to and helps to explain the high degree of boundary fuzziness in spring-autumn pasture.

Regulation of seasonal use

Village leaders, in coordination with county and townships officials and with the support of community members, play an important role in the regulation of the seasonal use of pasture. Usually, at least one village leader or deputy leader will be represented in each major seasonal pasture during their season of use, thus providing governance in the field. A key task of the village committee is the announcement, monitoring, and enforcing of rules relating to the timing of movements between seasonal pastures. The county sets general times for seasonal movements to help ensure inter-village coordination in the timing of migratory movements, and these are announced by the village leaders at village meetings. Village leaders, however, also have some discretion to adapt movement times in response to extreme climatic and/or irregular forage conditions. Village leaders play a major role in the monitoring and enforcement of seasonal movement rules. The timely movement of livestock away from villages' winter bases is particularly closely watched, as this is essential for the protection from livestock damage of natural cutting land and cropland in the vicinity of the winter bases. The transparency of seasonal movements, coupled with social pressure, helps to ensure high voluntary household conformity to movement times. However, village leaders can and do impose fines on those households that violate seasonal movement rules, particularly if there are no special circumstances surrounding the households' non-compliance. A second role played by village leaders is the organisation of the year-round stationing of 'grassland protector households' in the major seasonal pastures of the village to protect them against out-of-season encroachment by others. This is a particularly common practice for pastures that are susceptible to encroachment because of their proximity to agricultural villages also engaged in livestock raising.

Non-regulation of stocking rate intensity

Although rangeland policy prescribes to the Animal Husbandry Bureau (AHB) the tasks of calculating and enforcing stocking rates for household pastures, these tasks remain incomplete. In Yili Prefecture, for example, stocking rates for household pastures have yet to be calculated. In Altay Prefecture, stocking rates for household pastures have been ascertained and are specified in households' grassland use contracts, but are not currently monitored or enforced. The lack of official stocking rates and/or their enforcement may not in itself be a problem, if for example, the official stocking rates are poorly calculated, or more generally, the fixed stocking rate approach used by the AHB is inappropriate given the high degree of environmental variability in northern Xinjiang (Banks 2001; Behnke et al 1993; Ho 2001). Nevertheless, there appears to be widespread evidence that spring-autumn pastures in particular have been subject to long-term degradation and that this is in part due to actual stocking rates surpassing long-term carrying capacities. This in turn signifies a current unmet need for some form of regulation of stocking intensity.

In summary, although there may be some room for institutional improvement in terms of the better regulation of stocking rate intensity, the overall pastoral tenure situation in Yili Kazakh Autonomous Prefecture is characterised by considerable exclusion and regulation of resource use. De facto use rights to pasture reside with clearly-defined groups or households, and in all but the case of spring-autumn pasture, internal boundaries in rangelands are largely observed and respected by resource users, despite the absence of fencing. At the community level, there is effective exclusion of non-community members from village pastures (even in spring-autumn pasture)

throughout the year, and also reasonably effective regulation of the timing and duration of use of different seasonal pastures. Thus, the pastoral tenure situation is far from one of open access or unregulated 'common property'. Any effort to facilitate the improvement of pastoral tenure needs to proceed from an understanding of the social and economic factors that underpin the contemporary pastoral tenure system. These factors are the focus of the next section.

Explaining institutional arrangements for NRM

Recent literature on property rights reform in rural China acknowledges the diversity of land tenure arrangements that can be found and explains this in terms of a decentralised process of land tenure change that has enabled local conditions to shape such arrangements (Kung 2000; Liu et al 1998). Similarly, this section proceeds on the basis that the conditions and interests of pastoralists have significantly influenced the implementation of rangeland policy in Yili-Kazakh Autonomous Prefecture and can help to explain the contemporary pastoral tenure system. During discussions with pastoralists, four social and economic objectives that underpin contemporary pastoral tenure were identified: 1) minimisation of exclusion costs; 2) realisation of economies of size with respect to herd supervision; 3) provision of social insurance via equal access rules; and 4) abatement of environmental risk. These are dealt with consecutively below, and a fifth, the minimisation of governance costs, is also considered.

Minimisation of exclusion costs

Exclusion activities at the village and group pasture level are subject to economies of size, and pastoral tenure arrangements facilitate the capturing of these economies. As previously noted, exclusion from village pastures during seasons of non-use is achieved by the collective placing of 'grassland protector households' in different seasonal pastures year-round. In turn, the collective ownership of pasture underpins this institutional innovation. It would be much more difficult and costly, from a transaction cost perspective, for pasture groups or individual households to make their own arrangements for the protection of pasture from out-of-season encroachment. During the season in which pasture is in use, exclusion from group pasture is achieved by herders in the field. As will be elaborated on below, group herding arrangements save on the cost of herd supervision, and thus implicitly, save on boundary monitoring and enforcement costs as well. Group herding arrangements in turn are facilitated by group tenure arrangements.

Economies of size with respect to herd supervision

Pastoral households must economise on their use of labour, because the spatial demands on their labour are high. Contributing to the high spatial demands on household labour is the common practice of households grazing different types of livestock in different pastures at the same time of the year. The duration of this practice over a year is summarised for two case study villages from Buerqin County, Altay Prefecture, in Table 2 below. In the case of Ak Tubeq village, large and small livestock are grazed in separate locations for a total of seven and a half months per year; the comparable figure for post-settlement Sarkum village is four months. The second major reason for the high spatial demand on pastoral household labour is the need for households to simultaneously provide for the cutting of their hay and/or cultivation of their crops and the herding of their livestock in pastures over one

hundred kilometres distant. Thus, while small and large livestock are herded together in summer pasture (see Table 2), Ak Tubeq and Sarkum households must also cut their natural hayfields during this time of year, and Sarkum households must tend artificial pasture and crops.

Table 2: Number of months during which small and large livestock are kept separately in different seasonal pastures

Village	Winter	Spring	Summer (herded together)	Autumn	Total Months Per Year
Ak Tubeq	3	3	0	1½	7½
Sarkum					
- Pre-settlement	3	2	0	2	7
- Post-settlement	1	1	0	2	4

Source: village leaders and other key informants in the villages, 1998

Households can and do economise on the use of labour through the formation of group herding arrangements. A typical household can supervise a herd of 400-500 livestock, whereas the average household herd size for the region is around 120 head of livestock. Households realise these potential economies of size through forming group herd supervision arrangements. Herd supervision arrangements in the two case study villages are recorded in Table 3 below. The table highlights two characteristics of herding arrangements. First, group herding arrangements involving relatives and/or friends are the predominant type of herding arrangement, with their incidence in summer and winter pasture ranging between 72% and 80% of the households sampled in the two villages. Conversely, the percentage of households that individually supervise their herd (and only their herd) in summer and winter pasture ranges between 8% and 22%.

Table 3: Herd supervision arrangements (% of surveyed households)

Herd supervision arrangement	Summer		Autumn	Winter		Spring
	AT	SAR	AT	AT	SAR	AT
Individual household herd supervision	23	8	24	20	10	46
Group herd supervision (with relatives and/or friends)	77	76	76	80	72	54
Commercial herd supervision	0	16	0	0	18	0

Source: semi-structured survey of a 30% random sample of households in Ak Tubeq and Sarkum village, 1998 (143 households total). AT = Ak Tubeq; SAR = Sarkum

An exception to the clear predominance of group herd supervision occurs in springtime. In Ak Tubeq during spring, the incidence of individual household herd supervision (46%) is nearly as high as that of group supervision (54%). This reflects the reduction in potential economies of size in herding during the lambing season, when intensive supervision is required. A second characteristic of herding arrangements is the relatively low incidence of commercial herd supervision, with only 16% and 18% of Sarkum's sampled households using commercial herders in summer and winter, respectively, and none of Ak Tubeq's sampled households. That there are economies of size to be realised in herd supervision is best exemplified by the practice of commercial herders, who are paid per head of livestock, and thus have

an incentive to reap economies of size by grouping together several household herds until they have between 400 and 500 head of livestock to herd. Thus, commercial herd supervision usually also entails a form of 'group' herding arrangement.

Because group herd supervision implies joint household use of the same pasture, group herding arrangements are usually exclusive to members of the same pasture group. The same applies to commercial herding arrangements that involve the herding of more than one household's livestock. Group tenure arrangements therefore facilitate group herding arrangements, which in turn enable households to realise economies of size with respect to herd supervision.

Provision of social insurance via guaranteed access

It is well documented that the rural land tenure system in China provides 'social insurance' through guaranteeing household access to productive land (Dong 1996; Kung 1995; Kung 2000; Liu et al. 1998). Several characteristics of pastoral tenure in the case study region help to guarantee households access to pastoral resources. First, the area of pasture to which the household is entitled remains based on the households' population and labour force in 1985, despite the polarisation of household herd sizes (and wealth) since decollectivisation. In Table 4 below, pastoral households in Altay Prefecture are grouped according to their herd sizes. The size of household herds ranges from less than 50 to over 800 head of livestock. Some 28% of households have less than 50 head of livestock, whereas 23% of households have 300 or more head of livestock. Because households' entitlement to pasture, as given in their grassland use contracts, hasn't changed since 1985, but livestock ownership has become polarised, on-paper use rights to pasture are now more equitably distributed than livestock, and most significantly, poor households retain minimal formal rights of access. Second, access is also facilitated by group tenure arrangements, which guarantee their member households (and their offspring) access to all group pasture. Nevertheless, the proviso needs to be added that guaranteed household access doesn't translate into equal access or appropriation: those households within groups (and groups within villages) that have relatively large herds are likely to be appropriating more forage than those households (and groups) with smaller herds. Furthermore, the lack of adjustment of 1985 pasture entitlements in response to demographic changes (new households are expected to share the pasture of the husbands' fathers) means that the theoretical distribution of pasture has become less equitable on a per capita basis over time. This contrasts with the practice in cropland regions of villages of periodically reallocating land use rights in response to demographic change and in accordance with an equal entitlement rule (Dong 1996; Kung 1995; Kung 2000).

Table 4: Household herd sizes, Altay Prefecture, June, 1998

Herd Size	<50	51-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	800+
Number of households	6154	5372	5540	2963	1434	498	208	58	10	7
% of households	28	24	25	13	7	2	1	0.3	0	0
Cumulative %	28	52	77	90	97	99	100	100		

Source: Xinjiang Animal Husbandry Bureau, 1998

The pastoral tenure system also facilitates minimal access in cases where the distribution of pastoral resources is spatially uneven. Spring-autumn pasture in Altay, for example, has patchy forage and limited water sources. This contrasts with the case of summer and winter pasture, where forage is less patchy and water more evenly distributed via numerous mountain streams in summer pasture and snow in winter pasture. To bypass the problem of fairly distributing patchy pastoral resources in spring-autumn pasture, villages have often not demarcated internal boundaries in such pastures or, if they have, they agree not to observe them. Thus, an internal open access situation prevails, and every household is ensured access to water and forage.

Abatement of environmental risk

There is considerable climatic variability in the Yili-Kazakh Autonomous Prefecture, and periodically, extreme climatic events such as prolonged droughts or severe snowstorms. This induces a relatively high degree of variation in the spatial and temporal distribution of accessible forage in the region, and thus exposes pastoralists to a significant degree of environmental risk. The pastoral tenure system helps to facilitate the abatement of environmental risk in several ways. First, as discussed in the previous section, leaders represented in the field have some discretion over movement times between seasonal pastures, and therefore can vary these slightly in response to available forage and climatic conditions. Second, within some village pastures (such as Altay's spring-autumn pasture) where there is significant spatial and temporal variation in forage, internal open access prevails, and this helps to ensure that environmental risk is shared between all groups and households. In contrast, if the use rights to such pastures were divided up between groups (or households), the exposure of individual groups (or households) to environmental risk would be much greater. Third, during particularly heavily snowstorms, it is common for those villages with both mountain and plateau winter pasture to transfer pastoralists and livestock from the former to the latter. Rangeland use rights in the plateau winter pasture are temporarily re-allocated to provide pasture to the new arrivals. This, of course, is facilitated by collective rangeland ownership and flexible boundaries.

Minimisation of governance costs

The overall costs of resource governance are minimised through a co-management approach, in which the state and community play complementary roles (Baland 1996). As previously noted, the state facilitates the coordination of seasonal movements through establishing dates for movements between pastures, and village leaders, with the support of community members, monitor and enforce these dates. This represents a lower transaction cost approach than either the state or community going it alone with respect to seasonal regulation. Likewise, the state acts as an arbiter of last resort, by providing formal land conflict resolution mechanisms, but village-based informal mechanisms offer a more timely and cheaper mediation process for pastoralists – hence the preference of pastoralists for utilising them. Potentially, the transaction costs associated with the derivation, monitoring, and enforcement of appropriate stocking rates could also be minimised through the adoption of a co-management approach. Currently, however, the community lacks any role in such tasks, and the Animal Husbandry Bureau arguably lacks sufficient resources to effectively undertake them by itself.

Implications for rangeland policy

Chinese and Xinjiang rangeland policy emphasises the need to establish individual household tenure and concrete boundaries (via fencing) in rangelands. The establishment of the household ranch appears to be the ultimate goal of rangeland policy. Whether or not this should be the case is contestable (Richard 2000; Miller 2000). However, less contestable is the fact that the contemporary pastoral tenure system in Yili Kazakh Autonomous Prefecture does facilitate the realisation of certain benefits and that some of these benefits will necessarily have to be foregone, or realised through other mechanisms, if pastoral tenure becomes more exclusive over time.

The first benefit of contemporary tenure identified in the previous section was the minimisation of exclusion costs. Exclusion, to the extent that it currently occurs, is achieved through institutional, rather than technological, means. Pastoral development strategies invariably emphasise technological means for achieving exclusion, and a higher level of exclusion than that which currently exists, in the future. However, the cost of exclusion by fencing is high relative to the income of pastoral households, in part because of the expansiveness of rangeland resources. Furthermore, fencing in itself does not guarantee greater exclusion. The problem of protecting pasture from out-of-season encroachment still exists, regardless of whether or not the pasture is fenced, and the current institutional mechanism for dealing with this problem, the 'grassland protector household', appears to have no immediate substitute. In Altay, some pastoralists who have been involved with fencing experiments note that fencing material itself, not just pasture, is susceptible to theft during seasons of non-use. This implies the need to constantly monitor and enforce fences, which defeats the purpose of fencing in the first place. Possible changes in the future, including greater social acceptance of fencing and a decline in its cost relative to the rising opportunity cost of herding labour, may make fencing a more feasible and economic means of exclusion. However, even then, it will not completely replace exclusion (or herding) labour, because problems of livestock theft, predator attacks, spring lambing, and the invariable tendency for fences to be leaky will necessitate the continuing presence of herders in the field. In the meantime, the usefulness of fencing is likely to be limited to key pastoral resources (such as hayfields, fodder croplands, and winter/winter-spring pastures) within the vicinity of households' winter bases, and institutional means of exclusion must be maintained elsewhere.

Another benefit of contemporary pastoral tenure, particularly group tenure, is that it facilitates the realisation of economies of size with respect to herd supervision. Theoretically, under a completely individualised tenure system, economies of size could be realised through other mechanisms, such as markets for grazing rights and herding labour. Because rural land markets typically involve high transaction costs (Dong 1996), they don't necessarily represent a low-cost mechanism for achieving size economies, when compared to existing group tenure arrangements. The policy implication is that whichever pastoral tenure path is followed, it must enable households to continue to capture, at relatively low cost, size economies in herd supervision.

The value of the social insurance role that the contemporary pastoral tenure system plays could conceivably decline in the long term. As the populations of pastoral communities stabilise, pastoral households diversify their sources of livelihoods

and/or out-migrate, and the state perhaps develops other social security mechanisms. Yet, in terms of the here-and-now, it is obvious that the distributional and welfare implications of any shift towards more exclusive tenure need to be thoroughly considered. Regarding the environmental risk management role that pastoral tenure plays, it should be acknowledged that this is relatively minor in comparison to other existing environmental risk management mechanisms, including the government provision of feed on a credit basis during the winter and pastoral households' cultivation of irrigated artificial pasture and fodder crops. Moreover, the further development of markets for grazing rights, credit, and feed could further reduce the need for the contribution to environmental risk abatement that contemporary tenure mechanisms make. Nevertheless, the effect of more exclusive tenure on environmental risk management needs to be considered, and the attenuation of group or individual rangeland use rights during extreme climatic events may well continue to serve a useful risk abatement role.

Finally, village authorities, with the support of community members and in conjunction with township and county governments, play important roles in the management of pastoral resources and perform these at lower cost than would other potential actors. Care must be taken that the existing authority of village leaders in the resource management sphere, which is underpinned by the collective ownership of pastoral resources, is not eroded through the introduction of a more exclusive tenure regime. In addition, existing village governance structures provide a potential basis for institutional improvement, including the better regulation of stocking intensity.

Conclusions: tenure for the times

The reason for which household ranches have yet to materialise on the steppes and mountain slopes of the Tian Shan and Altay region is that they are not yet appropriate, given the local socioeconomic and environmental conditions. The existing pastoral tenure system facilitates the realisation of numerous benefits: external exclusion; economies in herd supervision; social insurance; abatement of environmental risk; and seasonality of pasture use. In the absence of underlying changes in local conditions or the development of alternative mechanisms for the realisation of the above benefits, the enthusiastic implementation of the household ranch model could have detrimental impacts on pastoral livelihoods and natural resource management. This is not to imply that the de facto pastoral tenure system is flawless and shouldn't be changed. On the contrary, the lack of stocking rate regulation appears to be a major problem with the current system. Rather, the point to be emphasised is that the socioeconomic and environmental consequences of pastoral tenure change need to be carefully considered. And as difficult as it may be to devise, win-win pastoral tenure change that preserves the benefits of the current system but remedies its defects should be sought, rather than the still distant and elusive household ranch. Let's call this more modest goal 'Tenure for the Times', with Chinese Kazakh characteristics.

Whilst it is relatively easy to theorise about Tenure for the Times, implementing it is another issue altogether. To the author's knowledge, there is no known and proven pastoral tenure model in Yili Kazakh Autonomous Prefecture that is compatible with the Tenure for the Times goal. This absence in part reflects the traditional focus of pastoral development strategies on technological, rather than institutional,

improvement. Not much thought, let alone resources, has been devoted to improving the institutional arrangements that govern rangeland use. Given this legacy, the only way to realise Tenure for the Times is through a learning-oriented, experimental, and participatory approach to institutional improvement. The region, in short, needs more pilot pastoral tenure/natural resource management projects. Lessons learned from pilot projects in other regions of western China may have some relevance to Yili Kazakh Autonomous Prefecture.

One potentially promising idea to explore, and to which many Kazakh pastoralists have responded enthusiastically, is the greater formalisation of group tenure arrangements. This could enable the improvement of exclusion at lower cost, because the cost of fencing group pasture is less expensive per household than that of fencing individual household pasture. The persistence of group tenure would also facilitate the continued reaping of economies of size in herd supervision. Group tenure could also be compatible with improved stocking rate regulation, as the total number of stock units that could be grazed on the joint pasture could be calculated and divided among households according to a mutually agreed upon formula. Guaranteed access and a measure of social insurance could still be provided. For example, poor households that had small herds and grazed less than their quota of stock units could be compensated, in cash or in kind, by those that grazed more. Through preserving the benefits but rectifying the deficiencies of contemporary tenure, the strengthening of group tenure arrangements represents one possible pathway towards Tenure for the Times and is probably worthy of serious attention and trial.

References

- Baland, J.; Platteau, J. (1996) *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?*. Oxford: FAO and Clarendon Press
- Banks, T.J. (2001) 'Property Rights and the Environment in Pastoral China: Evidence from the Field'. In *Development and Change*, 32(4): 717-740
- Banks, T.J. (1999) 'State, Community and Common Property in Xinjiang: Synergy or Strife?' In *Development Policy Review*, 17(3): 293-313
- Behnke, R.H.; Scoones, I.; Kerven, C. (eds) (1993) *Rangeland Ecology at Disequilibrium*. London: Overseas Development Institute
- Dong, X. (1996) 'Two-Tier Land Tenure System and Sustained Economic Growth in Post-1978 Rural China.' In *World Development*, 24(5): 915-928
- Ho, P. (2001) 'Rangeland Degradation in North China Revisited? A Preliminary Statistical Analysis to Validate Non-Equilibrium Range Ecology.' In *Journal of Development Studies*, 37(3): 99-133
- Kung, J.K. (2000) 'Common Property Rights and Land Reallocations in Rural China: Evidence from a Village Survey.' In *World Development*, 28(4): 701-719
- Kung, J.K. (1995) 'Equal Entitlement versus Tenure Security under a Regime of Collective Property Rights: Peasant's Preference for Institutions in Post-Reform Chinese Agriculture.' In *Journal of Comparative Economics*, 21: 82-111
- Liu, S.; Carter, M.R.; Yao, Y. (1998) 'Dimensions and Diversity of Property Rights in Rural China: Dilemmas on the Road to Further Reform.' In *World Development*, 26(10): 1789-1806
- Miller, D. (2000) 'Tough Times for Tibetan Nomads in Western China: Snowstorms, Settling Down, Fences, and the Demise of Traditional Nomadic Pastoralism.' In *Nomadic Peoples*, 4(1): 83-109

Richard, C. (2000) *Rangeland Policies in the Eastern Tibetan Plateau: Impacts of China's Grassland Law on Pastoralism and the Landscape, Issues in Mountain Development 2000/4*. Kathmandu: ICIMOD

XAHB (1994) *Document No.26, October 1994*. Urumqi (PRC): Xinjiang Animal Husbandry Bureau

XG (1996) *Regulation No.88 Articles 5, 15, and 16, June 1996*. Urumqi (PRC): Xinjiang Government

Zhang, X. (1992) 'Xinjiang.' In National Research Council (ed) *Grasslands and Grassland Sciences in Northern China*, pp109-120. Washington, D.C.: National Academy Press

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