

The Paradox of the Individual Household Responsibility System in the Grasslands of the Tibetan Plateau, China

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Abstract—Grasslands of the Tibetan plateau are commonly believed to be degrading as a result of unsustainable grazing practices. In response, the Grassland Law attempts to allocate grasslands based on the Individual Household Responsibility System model that has worked in the agricultural areas of China. However, the actual tenure scenario in the rangelands of Tibet is not as open access as is commonly implied. Communal forms of pasture tenure and management (including village level and kin-group arrangements) are advantageous given the socio-economic and ecological context. This paper will review the inherent logic of opportunistic movement in these high altitude rangelands, the “rationale” for existing grassland policies, and the impacts of these policies in the Tibetan Plateau. It will then discuss models for policy implementation that allow flexibility in legal tenure contract and management arrangements that better reflect the de facto common property situation in these areas. These models reflect local interpretations of policy that promote more equitable resource rights within a common property regime rather than individual “usufruct” property rights as proposed in more strict interpretations of law.

Keywords: grassland tenure, individual household responsibility, collective management, grassland policy

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Introduction

Grasslands of the Tibetan plateau are extensive, covering an expanse of over 2.5 million km² (Miller 1997). These cold alpine rangelands extend from the moist sub-humid grasslands of the eastern plateau to the semi-arid alpine desert steppe in the west. These rangelands display a diverse array of plant and wildlife species, and support a large livestock population (over 40 million head) central to the livelihoods of people on the Tibetan Plateau. These ecosystems are extremely resilient, as evidenced by the rapid response of “degraded” rangelands to rainfall and fencing of wetland areas (Banks and others 2003, Miller in press).

Many claims have been made regarding overgrazing and degradation particularly the perceived link between upper basin degradation and lower basin flooding, leading to a number of policy initiatives in recent years, notably a timber ban through the upper Yangtse and Yellow river basins of China (Xie and others 2002) and enactment of environmental legislation that relocates pastoral populations out of upper watershed areas (Richard and Benjiao 2004).

Several causes of degradation have been proposed, including: (1) a drying climate (Miehe 1988); (2) in-migration and population increase (Miller in press); (3) increase in burrowing mammal populations due to ineffective control and rampant hunting of predators (Smith and Foggin 2000); (4) increasing concentration of livestock near winter settlements (Wu 1997);

(5) reduced mobility due to restrictive pasture tenure (Richard 2002, Yeh 2003); (6) breakdown of traditional regulatory mechanisms (Richard 2002); and; (7) lack of government investment in rangeland and livestock marketing infrastructure (Miller 1997). All but the first are strongly influenced by policies.

Pastoralists of China have experienced a number of policy changes affecting how livestock were managed and marketed, and how pastures were distributed, although there were strong continuities in land management systems and herding techniques. (Miller in press, Williams 1996, Wu and Richard 1999). With the advent of a new socialist regime in the early 1950's, livestock were redistributed among households to decrease the disparity between rich and poor. By the end of the 1950's, the commune system was in place in the eastern plateau, although started later in the west. Livestock became the property of the collectives and remained this way until the early 1980's, when economic reforms swept the nation. At this time, livestock were again redistributed to individual households but rangelands were still used communally. Over time, increasing human and livestock populations and redistributions of communal land holdings due to administrative boundaries have led to conflicts over resource use (Yeh 2003) and to subsequent overgrazing, a result of restricting movements as more and more households have settled (Miller in press, Richard 2002).

To address perceived issues of rangeland degradation, the government of China, citing the success of reforms in the early 1980's (specifically the Individual Household Responsibility System in cropping areas), formulated the Grassland Law in the mid-1980's and has been implementing it throughout western China (Banks and others 2003, Thwaites and others 1998, Williams 1996, Wu 1997). Land contracts are granted to individual households as a long-term lease (50 years), renewable provided that land management is satisfactory, while ownership of the land remains government property. The Chinese government justifies its policies due to the difficulty in providing nomads with social services like education and health care, and in responding to heavy snowfalls that have historically led to livestock losses (Wu and Richard 1999).

However, implementation of the law is proving to be difficult in non-arable lands (Schwarzwalder and others 2004), particularly in remote landscapes such as the Tibetan Plateau that are socially and environmentally marginal. Tibetan rangelands are heterogeneous in terms of water and forage availability, and display typically non-equilibrium patterns (Miller in press), even in the more sub-humid alpine grasslands of the eastern Tibetan plateau. The majority of locals depend on diverse livelihood practices besides animal husbandry, such as seasonal cropping, trade, migratory labor, and crafts. Given this reality, the allocation of grasslands to individual families (and its concomitant settlement) may not be the most efficacious means of ensuring access to pasture resources. Given the lack of information on the impacts of grassland policy implementation in China, the International Center for Integrated Mountain Development initiated a series of case studies to understand the actual realities of grassland allocation on the Tibetan plateau.

Study Sites

Figure 1 shows the main counties in the Tibetan plateau of China where research studies have been conducted. Most of the sites are in the more humid eastern plateau of Sichuan, Gansu, Yunnan and Qinghai provinces, situated at an average elevation of approximately 3600 m, where carrying capacity is higher than the more arid western plateau and where implementation of the Grassland Law is further along. Dominated by alpine meadow species from the genera *Elymus*, *Deschampsia* and *Kobresia*, these grasslands are quite productive and may have the highest stocking densities of any natural grassland in the world, even though they are periodically subject to drought and heavy winter snow falls.

We also include a case study from Naqu Prefecture, in the northern Tibetan Autonomous Region. Here much of the grassland is situated at extremely high elevations (greater than 4500 m), yet receives sufficient moisture to support an alpine meadow community.

Grassland Tenure and Management Arrangements

Table 1 provides a typology of tenure and management arrangements that currently and potentially exist on the Tibetan plateau. Tenure is distinguished from management as the right to claim benefits from a particular resource or set of resources. Management refers to the ways a particular resource is maintained. For example, each household may hold individual plots of land for hay but choose to share labor to plant and plow, yet harvest their own hay crops (individual tenure – collective management). This type of arrangement exists in an agro-pastoral village in Zhongdian County in northwest Yunnan (Xie and others 2002).

Arrangements range from individual household contracts, where land is individually managed (the upper left-hand corner of the matrix in table 1), to large-scale collective arrangements among contract holders across a landscape (bottom right). The former is more suited to crop lands, small winter and spring pastures, and hay fields. Large scale collective arrangements facilitate more effective protection and management of landscape amenities such as biodiversity or hydrological functions. An example of such an initiative would involve agreements whereby downstream users compensate upstream residents for protecting their landscapes to reduce flooding incidences. Such approaches have been tried elsewhere (Koch-Weser and Kahlenborn 2002), but not in China to date.

Figure 2 shows three simplified models of land allocation and management to illustrate how the Grassland Law has been implemented to date. These examples reflect real situations, based on data collected from Hongyuan County, Sichuan Province, and Maqu County, Gansu Province. These models represent the following situations: strict enforcement of the Individual Household Responsibility model (household tenure - household management); customary communal tenure and management

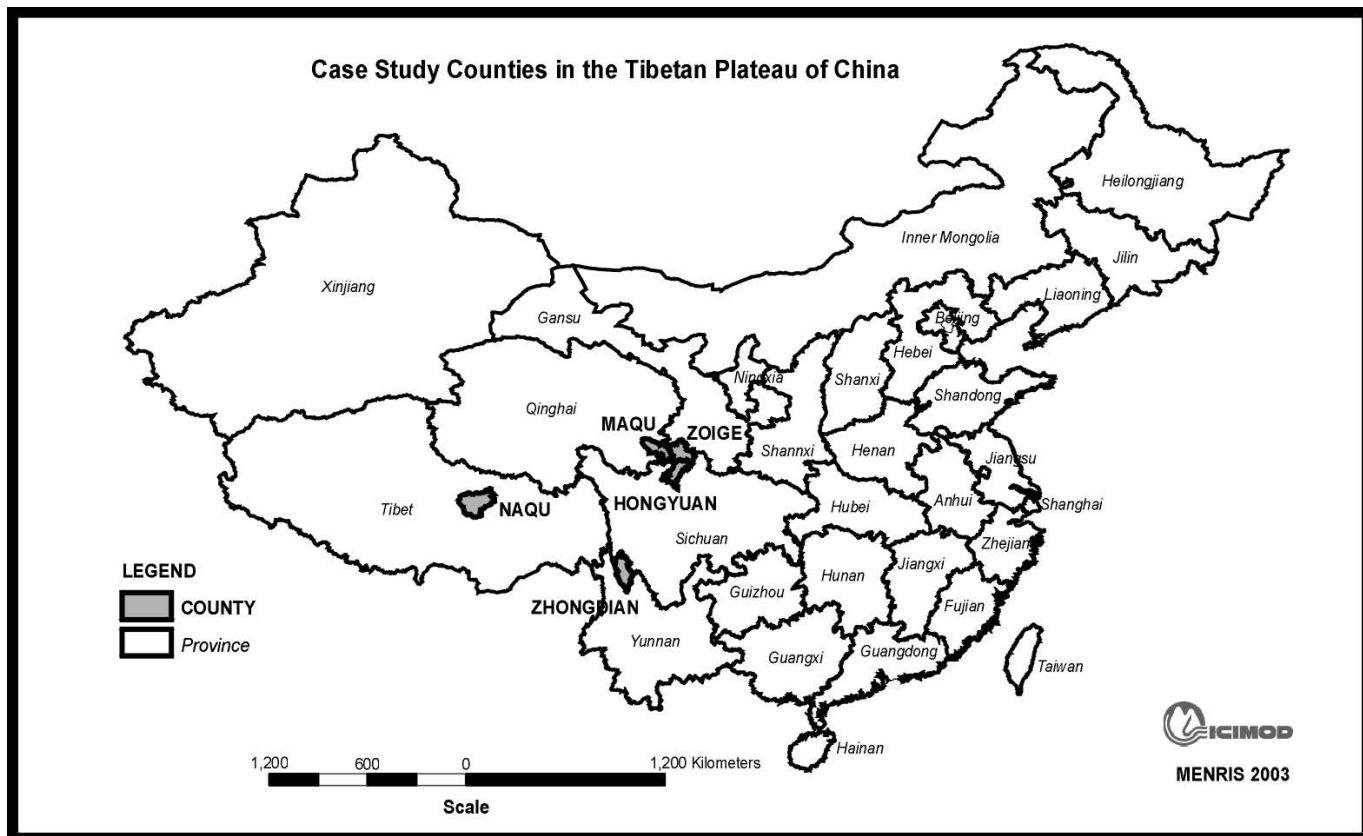


Figure 1—Map of China showing provinces and the main case study counties located in the Tibetan plateau.

Table 1—A typology of potential tenure and management arrangements for rangeland landscapes in the Tibetan plateau. Adapted from Richard (2003).

		MANAGEMENT ARRANGEMENTS		
		Household	Household group	Village collective
TENURE (legal contracts)	Household	<ul style="list-style-type: none"> ➤ Grassland contract with individual household ➤ Management by individual household ➤ Each household derives benefits from their own land <p><i>Example: Hongyuan County, Sichuan – see fig. 2 (Yan and others 2002)</i></p>	<ul style="list-style-type: none"> ➤ Grassland contract with individual household ➤ Management by household group ➤ Resources shared communally based on household and livestock population <p><i>Example: Maqu County, Gansu – see fig. 2 (Du and Zhang 2000)</i></p>	<ul style="list-style-type: none"> ➤ Grassland contract with individual household ➤ Cooperative of individual contract holders for pasture or landscape management ➤ Each household derives benefits from their own land <p><i>Example: Zhongdian County, Yunnan (Xie and others 2002)</i></p>
	Household group	-	<ul style="list-style-type: none"> ➤ Grassland contract with household group ➤ Management by group ➤ Resources shared communally based on household and livestock population 	<ul style="list-style-type: none"> ➤ Grassland contract with household group ➤ Pasture or landscape management by cooperative of household groups ➤ Resources shared communally based on household and livestock population
	Collective (village level or larger)	-	-	<ul style="list-style-type: none"> ➤ Grassland contract with village (no internal land division) ➤ Management by village or collective of villages ➤ Resources shared communally based on household and livestock population <p><i>Example: Naqu County, TAR (Banks and others 2003, Richard and Tan 2004)</i></p>

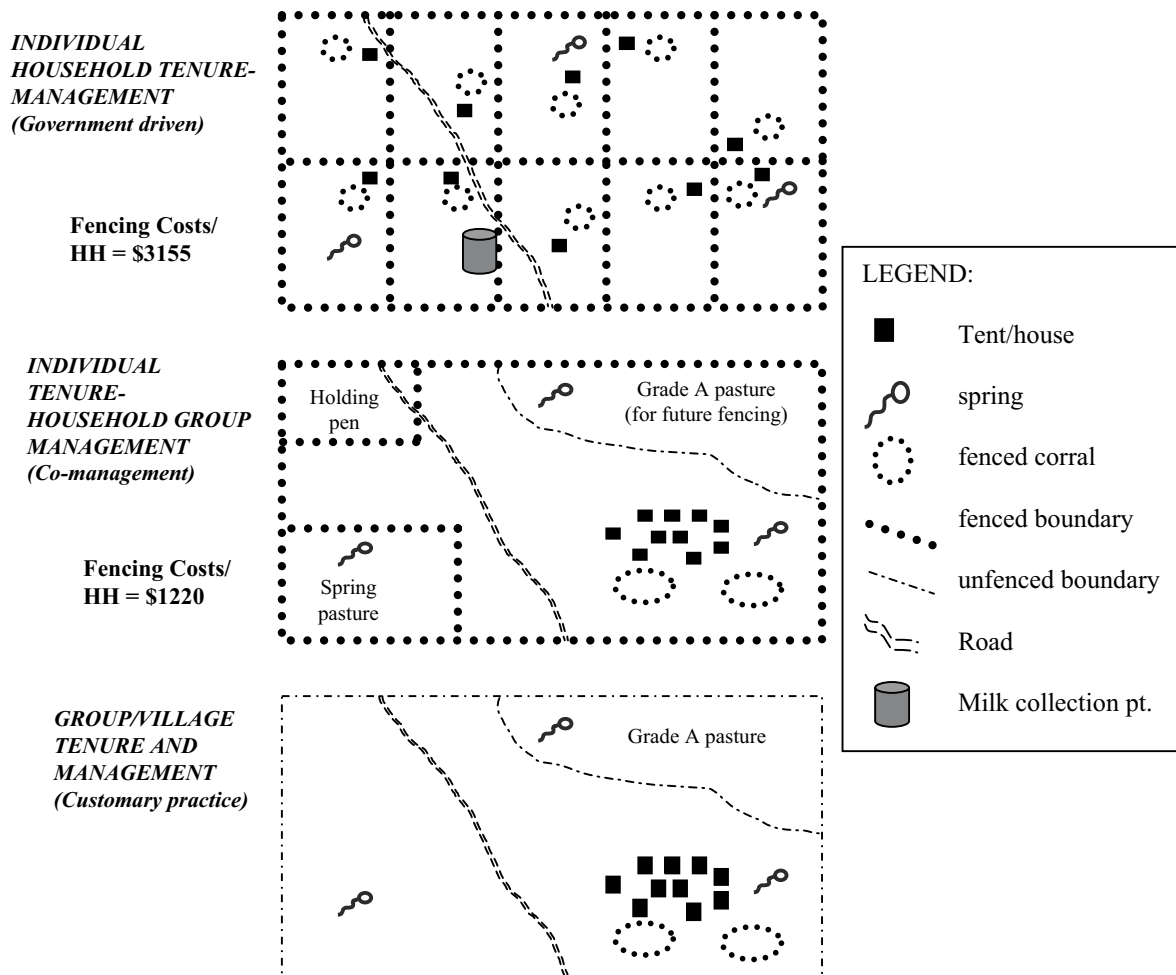


Figure 2—Comparisons of tenure and management arrangements for the eastern Tibetan plateau. The area of each large box represents the total pasture area (ha) required for ten households (HH), each with 300 sheep equivalency units (1 adult sheep or goat = 1 SEU; 6 sheep = 1 horse; 5 sheep = 1 yak), on a total of 1,600 ha of land. Fencing costs are calculated based on the price of 7 RMB/meter (approximately US\$1) for fence (Adapted from Richard 2003).

(no enforcement of the Grassland law); and a co-management model that brings together indigenous and scientific strategies, allowing for more flexible policy interpretations and locally appropriate adjustments.

Government driven model—strict interpretation of law

A pilot program has been established by the Sichuan Animal Husbandry Bureau in Hongyuan County, Sichuan Province as a demonstration site for livestock and pasture development programs. Here, families have been settled on individual allotments for year-round use and household management (Yan and others 2002). Although some positive outcomes have arisen from this strict implementation of the Grassland Law (where contracts are allocated to individual households and management is conducted by the household), such as reduced overall labor demand for households and

increased survival of herds in the winter, researchers have noted several disadvantages to such an approach. One is that fencing costs per household are often prohibitive without heavy government subsidies. As an example, each household would pay US\$3,155 to fence their 160 allotted hectares. Individual allotments also restrict access to water for many households, forcing them to travel long distances to riparian areas (Du and Zhang 2000, Richard and Tan 2004, Yan and others, in preparation). This has led to increased bank erosion along water courses due to concentration of livestock at watering sites. In addition, Hongyuan County has been designated a milk production zone, which has dramatically impacted herd distribution. Most families want to keep their lactating herds near the road and milk collection points, renting tent sites and pastures from those families who were allocated roadside allotments. The impacts of overgrazing have become quite severe along roadsides near collection points.

These studies have also noted significant social impacts of the individual tenure, individual management model, such as increasing conflicts due to poor allocation of pastures, and widening gender gaps. Although reducing household labor overall, fencing has drastically reduced men's grazing responsibilities, in fact, transferring them to women and children, and reducing the opportunity for children to attend school. The impacts of the individual tenure, individual management model, both positive and negative, are summarized in Table 2.

Allocation of pastures and management responsibilities to the household level appear to be more successful where environmental conditions are more amenable to the cultivation of

hay, or where moisture is high enough to ensure relatively good grass growth, such as the eastern plateau. In areas of higher carrying capacity (for example, 0.5 ha/SEU¹ in Maqu County), individual households may be able to obtain enough pasture to maintain small but viable herds. Another important factor is the proximity of county or township government offices, which provide important subsidies for large-scale fencing. In most sites where the government has imposed individual tenure-management, people fence as they can afford it, meaning that wealthier families fence first and continue to graze outside their fence on other's "property" (Williams 1996). Unfenced

¹ sheep equivalency unit is defined locally as one yak equals five sheep and one horse equals six sheep.

Table 2—The impacts of the individual tenure, individual management model, in case study sites of the eastern Tibetan plateau (Du and Zhang 2000, Ma and others 2000, Richard 2002, Yan and others 2002).

	Positive	Negative
<i>Allocation process</i>	On paper the allocation is perceived to be fair and equitable	In reality, poor allocation of pastures in many areas: some receive good quality lands and others poor land
<i>Size of pastures</i>	Has required herders to fix number of livestock	Individual pastures often too small; herders liquidate herds/ rent pasture from those with excess land. Flexibility reduced during drought
<i>Water availability</i>	None documented	Lack of water on individual pastures and lack of access to neighbor's water sources; high cost of water development
<i>Risk management</i>	Livestock mortality reduced through use of reserve pastures	Costs per household high for improvements—require significant subsidies by the government
<i>Social services</i>	Better access to veterinary care and government services where holding pens constructed	Greater isolation of individual households in remote areas
<i>Household labor distribution</i>	Reduced labor for overall household	Gaps between men's and women's labor increased as men spend less time herding; increased labor for children reducing opportunities for schooling
<i>Social conflicts</i>	If boundaries clearly demarcated - reduced conflicts	Increased conflicts over water and pasture resources
<i>Market access</i>	Increased access to markets with use of holding pens, feedlots, settlement	None documented
<i>Eco-system protection</i>	Improved productivity within the fence due to protection during growing season	Degradation of surrounding "commons"; no responsibility for landscape amenities, such as riparian areas which are heavily grazed "outside the fence"

areas experience more grazing pressure as a consequence, resulting in increased weed invasion outside fences.

Inevitably, conflicts arise. However, there are a few examples of government sponsored “demonstration areas” where heavy subsidies have ensured that most households concurrently fence their pastures, such as in Heibei, northern Qinghai (Wu and Richard 1999). In these cases, most households receive fencing and technical oversight so that conflicts are minimized and, for the most part, people stay within their allotted boundaries.

Customary communal tenure and management

Many pastoral communities throughout the Tibetan plateau currently manage pastures communally—with legal rights given to ‘administrative villages’, government units comprised of smaller ‘natural villages’ or herding groups that are not officially contracted under current law. Until now, ‘natural villages’ and herding groups have retained autonomy and set their own rules for pasture access and management, using collective herding and border patrols to enforce boundaries. Some county governments, such as Maqu, refuse to provide government subsidies to such groups if they fail to allocate grasslands according to the strict interpretation of the Individual Household Responsibility policy (Richard and Tan 2004), thus these communities lack government inputs such as fencing and pest control. The obvious advantage to this approach is that fencing costs are nil (see customary model, fig. 2). However, disadvantages include higher labor requirements and greater potential for encroachment by outside communities without effective legal recourse.

Co-management model—flexible interpretation of law

In Maqu County, southwestern Gansu Province, many families have also been legally allocated individual winter pastures and manage at an individual level. They express varying degrees of satisfaction with the allocation process and outcomes (Du and Zhang 2000, Yan and others in preparation, Zhao and others 2004). This county has adopted an approach that allows groups (up to ten households) pool their pastures for use as a collective, although usufruct rights are held legally at the household level (fig. 2: individual tenure, household group management arrangement). Locally perceived benefits include lower fencing costs, estimated to be only \$1,220 per household.

In addition, herders share labor. The number of livestock a household can graze depends primarily on the number of people per household and secondarily on the number of livestock the household possesses. Households that graze fewer livestock than the hypothetical carrying capacities of their share of the joint pasture are compensated by those households that graze more animals. Poor households are ensured access to the forage equivalent produced by their share of pasture, and they can earn supplementary income in the form of rents (Banks and others 2003).

The county government has declared Maqu a meat and butter producing zone, and has established marketing facilities. Consequently, herds are more evenly distributed across the landscape than those in Hongyuan County because these more durable products can be carried to market instead of being collected near the site of production, such as for milk (Richard and Tan 2004). With this type of policy, incentives are in place to ensure that the rangeland areas are more effectively utilized.

Table 3 summarizes the strengths and weaknesses of the three land management models presented. The co-management approach better bridges local knowledge with government support and gives greater legitimacy to practices local communities are already enacting. This is an effective option given the complex nature of rangeland ecosystems and the realities of poverty and subsistence still prevalent on the plateau.

The Paradox of Policy Implementation

An obvious paradox lies in the fact that a strict interpretation of the law, which favors individual usufruct rights and true “individual household responsibility”, simply does not match Tibetan cultural or rangeland characteristics. As it is, the vast majority of areas in western China are still managed by common property regimes, despite government claims of over 90% allocation to the household level (Banks and others 2003, Schwarzwald and others 2004, Sheehy 2001). The *de facto* situation reflects traditional norms and the persistence of village and kinship commons. These groups exclude others at the village level, with varying degrees of exclusion at the group boundary level, and possess informal mechanisms to arbitrate grassland disputes (Banks and others 2003). However, many of these groups lack internal regulation of pasture use leading to unequal appropriation among rich and poor households.

Local county and township governments are increasingly recognizing that pasture boundaries at the household level are not effective beyond smaller winter pastures and hay fields. They have thus been issuing group- and village-level contracts for fall and summer pastures which are typically in more remote areas (Richard and Benjiao 2004). As these groups mature, poorer members with fewer livestock are starting to demand greater benefits from their resource rights, forcing negotiations at the township or county level. They are working out arrangements *within* groups so that poorer households receive compensation for their “rights to grass”. In this way, individual rights are ensured within the group, without the ineffective parceling of pastures across the landscape. The paradox is that local interpretation and implementation of “individual household responsibility” is actually providing each household access to grazing resources that are still perceived as common property.

Maqu County in the northern Tibetan Autonomous Region (TAR) is an example of a co-management approach in which resource rights are allocated at the village level and management is collective, but resource rights are fairly accrued to individual

Table 3—A comparison of policy implementation models for resource tenure-management arrangements and their relative strengths and weaknesses.

Government Driven	Co-Management	Customary Practice
Easier to provide services such as credit and veterinary care	Lower risks/costs per household	Lack financial resources and technical inputs
Tenure more secure under situations of conflict and instability	Legal rights ensured per household	Individual households lack equitable rights
Ignores community strengths	Subsidies and technical inputs provided	High (but shared) labor to protect traditional pastures
Creates higher costs/risks	Decisions regarding management made by community	Increasing external encroachment
Creates unintended conflicts due to poor allocation process	Communities' skills are strengthened (social capital)	Greater mobility for grazing
Does not protect large landscape amenities	More facilitation required, especially with larger population	
Reduced flexibility during dry years	Greater mobility for grazing	

households through benefit sharing arrangements (Richard and Tan 2004). Here the government, with assistance from an international non-governmental organization, has established a number of fattening pastures that have been, or will be, formally contracted to a group or village (either administrative or natural). Locations for these improved pastures were selected through consultation with beneficiary communities, and fences were constructed where they serve to protect wetland functions and facilitate rapid growth response. Each beneficiary group has developed rules for pasture use, including stocking rates and timing of grazing, which vary from site to site.

Households are not required to join a group contract. Once the formal grassland contracting process begins, households may choose to take individual winter allotments or to combine land access rights at the group or natural village levels, provided that they decide to do this prior to the land division process. Use rights per family—be they individual or collective contracts—are calculated based on household population (70%) and livestock number (30%). For collective contracts, the county has established a use tax of 0.05 RMB²/day for each SEU, so that those that graze more animals pay more. This “grazing fee” is then collected by the village or group leader and redistributed among member households within the village or group, based on the formula above.

² At time of publication, one US dollar was equivalent to 8.26 Chinese RMB.

Opportunities and Constraints for Future Policy Implementation

A number of factors currently favor a more community-centered approach to rangeland management on the Tibetan plateau in China. For one, customary practice and native perception of resource rights favors communal arrangements. Historically nomadic populations worked in groups to achieve economies of scale for livestock management in this harsh environment. These customary norms build community cohesion and can facilitate the shift for poorer households toward increasingly market-oriented production practices, provided that individual rights are protected within groups.

There is a growing awareness among policy makers that tenure policies for non-arable rangeland areas require different strategies than those for agricultural lands (Schwarzwalder and others 2004). Since rangelands are not homogenous landscapes, local communities and governments should have the flexibility to create tenure regimes that match local cultural and ecological characteristics. Fortunately, current laws allow site-specific interpretation while simultaneously protecting rights of poorer households. The newly revised Rural Land Contracting Law (2002), while still maintaining emphasis on contracting rural land to the household, allows joint management where individual households can invest their individually

allotted rights in a common pool. The revised Grassland Law states that pastures may be contracted to individual households or groups of households acting as a collective entity.

In addition to these laws, the central government is currently drafting a new rural cooperatives policy (Li Ping pers. comm.). Promotion of local marketing cooperatives in the region can indirectly enhance collective efforts for grassland management as groups that herd together typically market together. Organized group marketing at the township level is a growing trend across the plateau (Richard and Benjiao 2004). A rural cooperatives policy, combined with flexible interpretations of land contracting laws, will grant these fledgling groups more legitimacy.

A constraint to community-based rangeland management is that the new grassland law vests greater power in county, prefecture and provincial governments to regulate land contracting, which could undermine local efforts to influence land use planning and the allocation process. Those mandated to implement these policies often do not understand the laws' inherent flexibility. They often are at the mercy of higher-level decision-makers, and thus there is poor local representation in the grassland allocation process (Yan and others 2004).

A key strategy in promoting community-centered approaches will be to develop implementation guidelines, based on co-management principals, which enable local governments and communities to jointly define and adopt appropriate land management models that accommodate site-specific conditions and aspirations. This will require government officials and technicians to re-orient toward co-management approaches, both through formal training and through involvement in a participatory planning and implementation process at the local level. This can be combined with development interventions that strengthen rural marketing cooperatives and increase access to rural credit for both individuals and groups, which will in the long run reduce vulnerabilities and give pastoralists tools to deal with the risk inherent to the nomadic way of life on the Tibetan plateau.

References

- Banks, Tony.; Richard, Camille E.; Li Ping, Yan Zhaoli. 2003. Community-based grassland management in western china: Rationale, pilot project experience, and policy implications. *Mountain Research and Development*. 23(2):132-140.
- Du Guozhen and Zhang Degang. 2000. Final report of ICIMOD Regional Rangeland Programme — Maqu County, Gansu (Phase I). Project report submitted to International Centre for Integrated Mountain Development, Kathmandu. Unpublished.
- Koch-Weser, M. and W. Kahlenborn. 2002. Legal, economic, and compensation mechanisms in support of sustainable mountain development. Thematic Paper for UNEP / Bishkek Global Mountain Summit (draft). 29 October – 1 November 2002. Available: <http://www.mtnforum.org/resources/library/kochx02a.htm>.
- Li Ping. Representative for the Rural Development Institute. Beijing. Personal communication.
- Ma, Y., Li, Q., and Li, Y. 2000. Final Report of ICIMOD Regional Rangeland Programme — Dari County, Qinghai (Phase I). Project report submitted to the International Centre for Integrated Mountain Development. Unpublished.
- Miehe, G. 1988. Geoeological reconnaissance in the alpine belt in southern Tibet. *GeoJournal* 17(4): 635-648.
- Miller, Daniel J. 1997. Rangelands and pastoral development: an introduction. In: D.J. Miller and S.R. Craig (eds.) *Rangelands and Pastoral Development in the Hindu-Kush Himalayas: Proceedings of a Regional Experts Meeting*; November 5-7, 1996; Kathmandu, Nepal. Kathmandu: International Centre for Integrated Mountain Development: 1-6.
- Miller, D. (in press). The Tibetan Steppe. In: Reynolds, S. Ed. *Grasslands of the World*. Rome: FAO.
- Richard, C.E. 2002. The potential for rangeland management in yak rearing areas of the Tibetan plateau.' In: Jianlin, H.; Richard, C.; Hanotte, O.; McVeigh, C.; Rege, J.E.O. (eds.) *Yak Production in Central Asian Highlands. Proceedings of the Third International Congress on Yak held in Lhasa P.R. China, 4-9 September 2000, Nairobi: ILRI (International Livestock Research Institute)*, p. 11-20.
- Richard, C.E. 2003. Co-management processes to maintain livestock mobility and biodiversity in alpine rangelands of the Tibetan plateau. In: Lemons, J.; Victor, R.; Schaffer, D. (eds.) *Conserving Biodiversity in Arid Regions: Best Practices in Developing Nations*. Dordrecht, The Netherlands: Kluwer Academic Publishers: 249-273.
- Richard, C.E. and Ben Jiao. 2004. Pastoral development sector consulting report submitted to the Bridge Fund, USA. Unpublished.
- Richard, C.E. and Tan, J. 2004. Resource tenure models for rangeland improvements. In: Richard, C.E.; Hoffman, K. (eds) *The Changing Face of Pastoralism in the Hindu-Kush Himalaya Tibetan Plateau Highlands: Forging a Sustainable Path for the Future, Proceedings of a Strategy Workshop Conducted in Lhasa, TAR, PRC, May 2002*. Kathmandu: International Centre for Integrated Mountain Development. Volume 2: 37-46.
- Schwarzwalder, B.; Zheng, B.; Li, P.; Su, Y.; Zhang, L. 2004. Tenure and Management Arrangements for China's Grassland Resources: Fieldwork Findings and Legal and Policy Recommendations. In: Richard, C.E.; Hoffman, K. (eds.) *The Changing Face of Pastoralism in the Hindu-Kush Himalaya Tibetan Plateau Highlands: Forging a Sustainable Path for the Future, Proceedings of a Strategy Workshop Conducted in Lhasa, TAR, PRC, May 2002*. Kathmandu: International Centre for Integrated Mountain Development. Volume 1: 15-36.
- Sheehy, D. 2001. The rangelands, land degradation and black beach: A review of research reports and discussions. In: N. van Wageningen and Sa Wenjun (eds.) *The Living Plateau: Changing Lives of Herders in Qinghai*. Kathmandu: ICIMOD: 5-9.
- Smith, A. and M. Foggin. 2000. The plateau pika is a keystone species for biodiversity on the Tibetan Plateau. In: Lu, Z. and J. Springer (eds.) *Tibet's Biodiversity: Conservation and Management*. Beijing: China Forestry Publishing House: 131-140.
- Thwaites, R.; De Lacy, T.; Li, Y.H.; Liu, X.H. 1998. Property rights, social change, and grassland degradation in Xilingol Biosphere Reserve, Inner Mongolia, China. *Society and Natural Resources*. 11: 319-338.
- Williams, D.M. 1996. Grassland enclosures: catalyst of land degradation in Inner Mongolia. *Human Organization*. 55:307-313
- Wu, N.; Richard, C.E. 1999. The privatisation process of rangeland and its impacts on the pastoral dynamics in the Hindu Kush Himalaya: the case of western Sichuan, China. In: Eldridge, D.; Freudenberger, D. (eds) *People and Rangelands. Proceedings of VI International Rangelands Congress, Townsville, Australia. Aitkenvale, Australia: VI International Rangelands Congress, Inc: 14-21*.

- Wu, N. 1997. Ecological Situation of High-frigid Rangeland and its Sustainability - A Case Study on the Constraints and Approaches in Pastoral Western Sichuan. Berlin: Dietrich Reimer Verlag, 281 p.
- Xie, H., Richard, C.E., Xu, J., and Wang, J. 2002. Collective management of improved forage in Zhongdian County, Deqin Tibetan Autonomous Prefecture, Northwest Yunnan, P.R. China. In: Jianlin, H., Richard C.E., Hanotte O., McVeigh C. and Rege, J.E.O. (eds.) Yak Production in Central Asian Highlands. Proceedings of the Third International Congress on Yak held in Lhasa P.R. China, 4-9 September 2000. Nairobi, Kenya: International Livestock Research Institute: 158-164.
- Yan, Z.; Richard, C.E.; Du, G. in preparation. Striving for Equitable and Environmentally Sustainable Rangeland Management Strategies: Case Studies from the Eastern Tibetan Plateau, China. Kathmandu: ICIMOD.
- Yan, Z, W. Ning and Richard, C.E. 2004. Nomad people should be the major concern in grassland policy: Case study from the north-eastern Tibetan plateau, China. In: Richard, C.E. and Hoffman, K. (eds.) The Changing Face of Pastoralism in the Hindu-Kush Himalaya Tibetan Plateau Highlands: Forging a Sustainable Path for the Future. Proceedings of a Strategy Workshop Conducted in Lhasa, TAR, PRC, May 2002, Kathmandu: International Centre for Integrated Mountain Development: Volume 1: 87-89.
- Yan, Z., L. Guangrong and W. Ning. 2002. A probe into the pastoral production system in Hongyuan, eastern Qinghai-Tibet plateau. In: Jianlin, H. Richard, C.; Hanotte, O.; McVeigh, C.; Rege, J.E.O. (eds.) Yak production in Central Asian highlands. Proceedings of the Third International Congress on Yak held in Lhasa P.R. China, 4-9 September 2000, Nairobi, Kenya: International Livestock Research Institute: 120-127.
- Yeh, Emily T. 2003. Tibetan range wars: spatial politics and authority on the grasslands of Amdo. *Development and Change*. 34(3): 499-523.
- Zhao, Q.; Ma, J.; Niang, M. 2004. Integrated application of technical skills and participatory approaches in rangeland improvement in pastoral areas. In: Richard, C.E. and Hoffman, K. (eds.) The Changing Face of Pastoralism in the Hindu-Kush Himalaya Tibetan Plateau Highlands: Forging a Sustainable Path for the Future. Proceedings of a Strategy Workshop Conducted in Lhasa, TAR, PRC, May 2002, Kathmandu: International Centre for Integrated Mountain Development: Volume 2: 73-94.