

The potential for rangeland development in yak-rearing areas of the Tibetan Plateau¹

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1. Sections of this paper have been previously published in Richard (2000).

Summary

Rangelands of the Tibetan Plateau are more than just a resource to sustain livestock. This region is an ecological and cultural landscape that fosters a rich diversity of human interactions within a complex socio-political and biophysical environment. This paper initially highlights the general characteristics of rangelands and pastoral production systems of the Tibetan Plateau. Given the realities of life in such a heterogeneous and marginal environment, the issue of secure resource tenure, both customary and legal, is fundamental for effective rangeland management. Using examples from the eastern Tibetan Plateau, the paper discusses important policy changes that have affected resource tenure and the positive and negative impacts these changes have had on the lives of pastoralists and the environment in which they live. We argued that a simple shift in tenure from the communal (traditional and subsistence) to individual household level (ranching and commercial) would not be enough to facilitate a change in behaviour toward 'rational' livestock operations. Many institutional mechanisms must be in place, including those that: 1) achieve economy of scale in operations (including means to manage pastures in communal groups); 2) ensure against disasters; 3) facilitate timely marketing and off-take; 4) protect commercial interests; and, 5) promote collective action to soundly manage larger landscape amenities. Promoting and building such institutional mechanisms takes time for commercial ranching to work well, a socio-economic environment that is far from the current reality on the Tibetan Plateau. In conclusion, the paper highlights certain pastoral-friendly policies that may facilitate a slow and sustainable trend towards market-oriented enterprises on the Plateau.

Keywords: Landscape heterogeneity, pastoral friendly policies, privatisation, subsistence economy, tenure

Introduction

Rangelands of the Hindu Kush-Himalayan (HKH) region, primarily located on the vast Tibetan Plateau, are much like rangelands of other parts of the world. They are a marginal resource, naturally low in productivity and diverse in character in terms of both precipitation and forage availability. They also represent a diverse cultural landscape, concurrently shaped by physical forces and human use. In this context, it is important to view rangelands as something more than just a resource to sustain livestock, but rather as a complex environment with a diverse array of amenities and possibilities, and a rich cultural milieu. In total, rangeland resources encompass approximately 2 million km² or over 60% of the HKH region (Miller 1995), and are managed as a common property resource by millions of farmers and pastoralists.

The rangelands of the Tibetan Plateau are important for a number of reasons. For one they form the headwaters of the six major river systems of Asia. They comprise diverse ecosystems ranging from forest-alpine ecozones, high Himalayan alpine valleys rich with medicinal herbs, the vast basin and range alpine meadows of the eastern Plateau, to the high and dry alpine desert steppes of the western Changtang (Miller 1995). Much of this region offers important wildlife habitat² and many areas are now designated as protected areas with high potential for tourism development. Last, but certainly not least, these rangelands, especially the verdant pastures of the eastern Plateau, offer vast reserves of forage for grazing livestock, the products of which account for a significant percentage of the gross national product (GNP) of these areas (Wu 1997).

2. Much of the region offers important habitat for many wildlife species such as blue sheep (*Pseudois nayaur*), kiang or Asiatic wild ass (*Equus kiang*), Tibetan antelope (*Pantholops hodgsoni*), which are rapidly being hunted to extinction for their fine underbelly hair called shatoosh, black necked crane (*Grus nigricollis*), and the endangered snow leopard (*Panthera uncia*), valued for its pelt.

The quintessential animal among the domestic breeds of the Tibetan Plateau is domestic yak. The vast majority of the world's yak population resides in the eastern Tibetan Plateau of the Tibetan Autonomous Region, Sichuan, Gansu and Qinghai Provinces of China, which have the grassland resources to sustain relatively large numbers compared to the drier regions to the west. Despite their relatively low number compared to other livestock types in the western Plateau and the Himalayan, Karakorum and Pamir mountain ranges, they are no less important, providing important subsistence amenities such as fuel, meat, fibre, dairy products and transport across vast harsh terrain. Although domesticated 10 thousand years ago, the domestic yak has not genetically diverged greatly from its wild relative (Han Jianlin, personal communication,

2000), or even in grazing behaviour.

Domestication of this animal has led to the evolution of an extremely rich cultural heritage on the Tibetan Plateau. Culture is expressed in all facets of daily life: from religion and the arts to the way local communities manage their livestock and utilise resources. Therefore, when we talk of rangeland management, we must consider the importance of culture, as a base for future economic development in tourism, and by the manner in which particular ethnic groups perceive their landscape. This affects how particular commodities from, say, yak, will be produced, managed and marketed.

Characteristics of traditional pastoral production systems

Diversity and mobility characterise the pastoral production systems of this region. Pastoral production systems are diverse in order to minimise risk in unpredictable conditions. Pastoralists engage in multi-resource economies and usually maintain large, diverse herds. Livestock products are, of course, the bases of subsistence, providing such goods as dairy products, meat, live animals for trade, wool, manure, fuel and labour. Pastoralists of the Plateau also engage in other economic and subsistence activities such as cropping, timber extraction, handicrafts for both tourism and local consumption, trade in manufactured goods and medicinal plant extraction, to name a few. Traditionally they have always been itinerant traders; modern opportunities have merely helped them to expand their networks.

It is also an ecological reality that livestock must be mobile to maintain rangeland health, the basis of extensive grazing systems. This is true whether one is talking about large arid rangelands or small intensively managed pastures. The mere difference is that, as the harsher the environment becomes, the further herders must move to acquire forage for livestock. Livestock mobility has been shown to be a good indicator of sustainable rangeland health (Sneath 1996), and can be compatible with biodiversity conservation (Wu and Richard 1999). If one can identify the factors that lead to changes in mobility, one can often address the causes of rangeland degradation. Factors that have led to a restriction of livestock mobility include: growing populations of human and livestock; expanding agriculture into the best quality rangeland areas; forestry or protected area initiatives that restrict grazing rights; government policies that promote settlement; and the changing aspirations of the pastoralists themselves. As elsewhere, the region is experiencing the growing pains of globalisation with new technologies, larger regional market economies, and aspirations for material wealth only attainable through cash income.

Given this rapidly changing context, there is certainly a need for improved rangeland management to meet the growing demand for forage in an increasingly commercial livestock economy. However, rangeland improvement schemes rely on continued capital investment and maintenance by livestock owners, which, in turn, only functions when there is secure access to various resources, such as pasture, water, credit and labour. Thus resource tenure becomes a fundamental aspect of effective rangeland management. Given this, a basic understanding of the types of tenure is necessary for the sake of this discussion.

Table 1 summarises the types of tenure that might exist in a given rangeland area. Tenure at its most basic level simply means a bundle of rights to control and access a particular resource or set of resources (Gilmour and Fisher 1991). Tenure is not merely ownership as commonly believed. Tenure can be legal or informal (and therefore sometimes technically illegal), private or public, common or individual. It involves those entities that make decisions and those who get the benefits from the resources and implies a dynamic process of negotiation. There are two points I wish to make from this comparison. First off, just because a particular rangeland pasture is used by a group of herders does not imply open access (or uncontrolled grazing). Many indigenous systems of communal management exist and operate effectively throughout the region. Second, many types of tenure can be simultaneously operating in the same area. If these tenure systems do not compliment each other, for example, state driven policies that privatise control of pastureland in an area previously managed communally, newly introduced rangeland management schemes are most likely to fail.

Table 1. *The types of tenure (rights to control and access resources) that can be operating in rangeland areas of the Tibetan Plateau.*

Formal (<i>de jure</i> or legal)	Informal (<i>de facto</i> or customary)
State—land 'owned' by the government	(State control may not be recognised locally)
Individual—legal control by individual through lease or ownership	Individual—access by customary norm or rule
Common property—formalised through committees or co-operatives and sanctioned by the state	Common property—informal group norms and rules for control and access which may or may not be governed by local committees
(Open access not recognised legally by the state)	Open access—no rules or norms for access

With this brief framework on the complexities of resource tenure, the question is raised as to whether fencing is the answer for improving rangelands of the Tibetan Plateau. As previously discussed, Tibetan Plateau

landscapes are heterogeneous in terms of water and forage availability, they are naturally low in productivity, and the vast majority of the local population still depends on diverse subsistence livelihood strategies. Given this context, a rapid shift from pastoralism³ to ranching might well have serious negative sociological and ecological consequences, as discussed below.

3. The term 'pastoralism' as used in this paper refers to traditional subsistence livestock rearing, usually herded in family groups, to distinguish it from 'ranching' which refers to commercial livestock rearing managed by an individual entity such as a household or co-operative.

Impacts of China's grassland law

This section focuses on policy changes in the eastern Tibetan Plateau, located in the Chinese provinces of Qinghai, Gansu and Sichuan. This region is undergoing drastic changes in land tenure, with settlement policies promoting the individualisation⁴ of rangeland stewardship as a means to mitigate the effects of the perceived 'Tragedy of the Commons'.⁵ The Chinese government, citing the success of Deng Xiao Ping's reforms of the early 1980's, specifically the policy of Individual Household Responsibility System in cropping areas, formulated the Grassland Law in the mid-eighties, based on the assumption that grasslands of China were degrading due to lack of secure tenure and stewardship (Williams 1996; Thwaites et al. 1998).

4. The term 'individualisation' is used here in lieu of the term privatisation as the Grassland Law of China facilitates long-term leasing of land to individual households rather than land ownership.

5. A term coined in the now-much-refuted writings of Hardin (1968), perhaps the one theory to do more damage than any other with regards to rangeland tenure throughout Africa and now Asia.

The Chinese government offers sound rationale to justify settlement policies such as the Grassland Law. For one, it has been difficult to provide nomads with social services such as education and health care, and heavy snowfalls have historically lead to loss of livestock (Wu and Richard 1999). It was felt that fencing could help provide reserve pastures during these critical periods. However, underlying these justifications is a general lack of faith in traditional migratory grazing systems. Factors often mentioned are the 'irrational' structure of nomads' herds, with too few breeding females and too many unproductive animals, and the consequent severe overgrazing and desertification due to lack of individual responsibility (Zhang 1989).

Although late to come to the eastern Plateau compared to other parts of China, implementation of the policy is happening rapidly. In the past few years, pastures have been allocated to individual households and large areas fenced to demarcate these boundaries. However, little effort has been made to monitor the impacts of such policies on either the environment, or the people most affected. The International Centre for Integrated Mountain Development (ICIMOD), in partnership with regional research institutes in the provinces of Qinghai, Gansu, Sichuan and Yunnan, has initiated participatory action research projects to evaluate the effects of such policies and to identify sustainable alternatives where needed.

Table 2 highlights the preliminary findings of these studies. Not all positive and/or negative characteristics are found in all studied sites. This table merely summarises some general findings. The actual situation reflects the local policies that have been adopted to implement the general guidelines of the Grassland Law. For example, in Hongyuan County, Sichuan, individual households cannot recombine individually allocated land that would help to facilitate economy of scale in operations. Meanwhile, in Maqu County, Gansu, local officials have allowed recombining of land, provided that households initially accept an individual allotment, a requirement for future government subsidies for rangeland improvements. Issues such as access to water and high individual household costs will more likely reflect situations similar to those found in Hongyuan where individual households borne all the burden of pasture management. More details of these studies will be forthcoming in publications by ICIMOD and partner institutions.

Table 2. *Impacts of the Grassland Law through individual tenure and fencing.*

Positive	Negative
Where fencing is used for reserve pastures, livestock mortality has been reduced	Poor allocation of pastures in many areas with some receiving good quality land and others poor land
Reduced labour for overall household, although the gap between men's and women's labour has increased as men no longer spend time in long-distance herding	Individual pastures are often too small forcing herders to liquidate herds or rent pasture from those with excess land
Serves as border protection which has reduced conflicts in some areas	Lack of water on individual pastures/lack of access to neighbour's water sources
Increased access to markets where fencing is used for constructing holding pens	Costs per household too high for improvements-high subsidies required by the government

Better access to veterinary care and other services	Degradation of surrounding 'commons'-no communal responsibility for landscape amenities such as riparian areas
Has forced herders to fix number of livestock (although this could reduce long-term flexibility under drought conditions)	Increased labour for children-as parents find time to seek employment in nearby towns, children now required to maintain herds and have lost opportunity to attend school
In some areas poorer households can combine their pastures which cuts cost to individual household	In other areas, households are not allowed to recombine, thus creating more economic hardship and reduction of herds

Sources: Field visits by author to Maqu County, Gansu, Dari County, Qinghai, and Hongyuan County, Sichuan, in 1999 and 2000; field study conducted by participants of a Participatory Rangeland Management training in Hongyuan, Sichuan, July 2000; Regional Rangeland Programme Annual reports by: Du and Zhang (2000), Ma et al. (2000) and Yan et al. (2000).

As these policies sweep the region, it is important to look at the situation for what it is—an attempt to convert a pastoral way of life to an 'efficient' ranching enterprise. This is based on the assumption that a simple change in land tenure will facilitate a shift from subsistence to market-oriented behaviours. However, the behaviour and rationale of pastoralists are dictated first and foremost by an awareness of the realities of the marginal landscape in which they live, a landscape that has sustained their way of life for centuries. A rapid conversion to a new mode of thinking cannot be done without resulting in substantial socio-economic and ecological consequences. To illustrate this point, I make a comparison between a western ranching operation (for example, from Colorado, USA, with a similar environment to the eastern Plateau) and Tibetan pastoralism (Table 3). This table is not meant to make a value judgement, such as one system being better or worse than the other type. It is mainly meant to show that, if ranching is to work well, the socio-economic context must be amenable to such a mode of operation, something that is far from the current reality on the Tibetan Plateau.

Table 3. Tibetan Plateau pastoralism vs. a ranching operation in the Rocky Mountains of Colorado, USA.

Tibetan Plateau pastoralism	Colorado ranching
Subsistence oriented, diverse products for home consumption with some surplus for sale	Commercial, single product oriented (e.g. Meat)
Majority of population engaged in pastoralism (livelihood necessity)	Very few ranchers with most people engaged in other economic activities (ranching is a lifestyle choice)
Several households have access to a large area which is communally managed	One operator has exclusive access to the same amount of area and livestock
<i>De facto</i> tenure (customary, common property)	<i>De jure</i> tenure (legal, individual)
Low capital and high labour investment	High capital investment-only larger operations are profitable
Risk averse, engage in multiple economic strategies	Risk-taking (insurance schemes and legal mechanisms to protect commercial interests)

Conclusions and recommendations

The potential for rangeland and pastoral development is vast, if certain pastoral friendly policies are put into place that facilitate a slow and sustainable trend toward market-oriented enterprises on the Plateau. Initial enterprise development should be based on the premise that animal husbandry and livelihoods on the Plateau are still subsistence-based and that the environment upon which these livelihoods depend is marginal, with limited potential for intensification. Given this, the following general policy guidelines are recommended for the Tibetan Plateau:

- Promote livestock mobility. Settlement of communities can work but livestock must stay moving to prevent environmental degradation. This is the basis of 'scientific' (and indigenous) pasture management.
- Promote economic diversification, keeping in mind that livestock cannot be a viable commercial enterprise for all those who currently depend on subsistence animal husbandry. We need to improve our efforts to provide education, vocational training and credit to promote diverse industries and vocations to get people off the range so that those remaining can develop commercially viable and sustainable livestock operations.
- Initially reduce risk to the individual household by legitimising communal tenure and management of pasture resources so that those now dependent on the rangeland resource can have equitable access to resources. This should be accompanied with development of credit schemes and legal mechanisms to protect both individual and communal rights to resource access.

- Build social cohesion through collaborative management of rangeland resources, with local communities in partnership with government extension, research and administrative entities.
- Promote social and gender equity to ensure a fair livelihood base for all.

Only when we build on the strengths of local communities will we successfully achieve our collaborative goal of improving pastoral livelihoods through sustainable rangeland management. This requires a new way of thinking, a new approach that legitimizes and embraces the diversity of knowledge among people, from the herder to the scientist and policy maker. This will only come about when there is first a willingness on the part of governments to promote more democratic mechanisms for research and development planning and implementation.

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