Briefing

Drylands and pastoralism, governance

Keywords:
Adaptation, climate change, livestock, land tenure, community conservation

iied

Issue date
August 2015

Making the most of variability: innovative rangeland management in China

Policy pointers

Recognising the variability of the environment's resources, valuing local knowledge and using innovative local governance systems adapted to local social and ecological characteristics can improve rangeland management.

Community-based grazing quota systems can retain the benefits of group tenure and improve the fair use of rangeland by individual community members.

Herder co-operatives, based on traditional reciprocity and working with modern market mechanisms, can remedy the ecological and social fragmentations that result from privatising rangeland.

Joint rangeland management by government and communities can be effective in contexts where the social capital of community management did not previously exist and community-based management is not feasible.

China's pastoralist communities are facing numerous challenges: climate change, degradation of the drylands their animals graze on and top-down policies that have broken up large areas of rangeland and introduced grazing bans. Despite this, some pastoralists are successfully rebuilding the productivity of their livestock. We present three examples of innovative rangeland management systems that work with local climatic variability, developed by herders in Inner Mongolia and the Qinghai-Tibetan Plateau. These management systems — community-based grazing quota management, herder co-operatives and joint management by herder communities and government — are all designed to allow real-time adaptive responses to the annual and seasonal resource variation that affects their rangeland. Although these systems are created for specific locations, the thinking behind them is of wider geographical value and interest.

Pastoral communities have adapted to the unique natural and geographical environments of China's Mongolian Plateau and Qinghai-Tibet Plateau for more than 1,000 years. Traditionally, herders moved freely across the rangelands, tracking the temporal and spatial variation of grazing and water resources. They adjusted to natural disasters and formed effective rangeland management and social institutions and arrangements. But from the 1950s to the present day, a number of government interventions, deeply influenced by modernism, have changed the face of pastoralism and the rangelands themselves.

Many of these government policies — driven by social, economic and political factors — fail to fully understand the nature of the rangeland and its variable climate or the culture and nature of the people living there. Herder communities are living more stationary lifestyles on land that has become degraded as a result of declining livestock mobility, increasing livestock numbers and the warmer and drier climate.

China's contemporary scientific literature is increasingly arguing that the country's Rangeland Household Contract Policy (RHCP) does not allow for the dynamic characteristics of rangelands ecosystems. Indeed, the literature argues that this policy is leading to rangeland fragmentation and may have a negative social and ecological impact in some areas.[1]

New ways of managing rangeland

Solutions to these problems are coming from the interaction between the authorities and the herder communities. Those who live and work on the rangelands are our greatest source of

knowledge; they understand the negative impacts of government policy on livestock mobility and the consequent decline in productivity. And are the people facing an increase in adverse weather events and weakened social reciprocity systems.

Pastoralist communities have long-term interest in good rangeland management

Herders are working together with local authorities in Inner Mongolia and the Qinghai-Tibet Plateau to develop alternative systems of rangeland management that are showing promising results. In this paper we explore these new management systems through case studies from these regions. We examine how grazing quotas, herder co-operatives and joint-management between herder communities and local governments are increasing livestock productivity in a way that works both for the lifestyles of those pastoral communities and for the land itself.

Community-based grazing quotas: a case study from Qinghai-Tibetan Plateau

"Our institutional reforms not only improve livestock production and reduce the gap between rich and poor with equal access to rangeland resource distribution, but we also realise that such system improves rangeland ecosystems. We are seeing obvious improvement in vegetation growth, density and coverage" — local herder

Grazing quota systems aim to:

- Maintain community organisations in use of rangeland resources, such as seasonal livestock mobility
- Provide equitable access to rangeland resources among individual herders
- Conserve rangelands
- Improve livestock productivity.

Location. Xiareer village, Qinghai-Tibetan Plateau, western Sichuan Province.

Context. Facing the pressures of population growth, unequal access to pasture and rangeland degradation, herders in Xiareer decided to strengthen community management. In 2009, they began to set grazing quotas while maintaining collective tenure. They set a stocking rate based on experience, which they can modify according to the rangeland's current condition. Keeping collective tenure ensures seasonal mobility and achieves flexible use of heterogeneous rangeland resources at a landscape scale (ie over a large area, offering diverse topography, soil and vegetation).

How it works. Xiareer village has a population of around 800 people in 140 households. A total of 12,000 hectares of rangeland supports more than 6,000 yaks, 20,000 sheep and 500 horses. By controlling livestock numbers, the community-based grazing quota system improves livestock and rangeland productivity, and gives villagers more equal access to rangeland resources.

The villagers devised their system without external intervention, allocating a quota of livestock to every village member (young and old). Village leaders monitor livestock numbers in each household during October–November when the cold season begins and the household head takes a cultural vow to not cheat on livestock numbers.

After considering the topography, productivity, quality of forage, water sources, the temporal dynamic of pasture and their livestock's diverse needs, they estimate a 'carrying capacity' for the year. They base this on their own knowledge of the rangeland and adjust it according to annual weather and rangeland conditions. From 2009–2011, the quota was set at 15 yaks per person. This was increased to 18 yaks per person in 2011–2012 due to better weather.

Effect. The innovation behind Xiareer's grazing quota system is that it focuses on land use (grazing), not the land itself. The supervision and sanction system is effective because most Tibetans are Buddhist and very serious about taking an oath. The grazing quota is untradable and is designed to promote equal livestock development for all community members. The better-off households loan their excess livestock to poorer households to help them expand their herds and get more profit. This reciprocity promotes community identity and a sense of co-operation, which in turn opens up potential for increasing knowledge and flexibility for rangeland management.

From 2009 to 2014, the mean mortality rate for yaks fell from 19 to 8 per cent; for sheep it fell from 24 to 10 per cent.

Box 1. Definitions

Rangelands. These vast verdant pastures provide a home to millions of herders who interact within a complex social and biophysical environment in pursuit of their livelihoods. China's rangelands foster critical ecological functions that affect both local and regional ecosystem processes.

Land degradation. This is when land becomes less productive as a result of a combination of poor land management, increase of livestock and climate change.

Table 1. Top-down government interventions and their effect on rangelands

Date	Government policies and projects	Overall effect on rangelands
1950—70s	Herder Settlement Policy (HSP) Intensification of pastoralism (IOP): building livestock shelters, drilling wells, planting forage and improving livestock breeds	• HSP and IOP encouraged settlement and promoted intensive animal husbandry. This led to rangeland degradation around wells, campsites, river and lake banks, particularly in agro-pastoral areas where the concentration of grazing pressure combined with a change of land use from rangeland into farmland.[2]
1980s	Rangeland Household Contract Policy (RHCP) (1984): contracted pasture use rights to individual households to protect rangeland and improve animal husbandry	• Rangeland degraded as grazing concentrated to individual plots. • Traditional natural disaster management strategies through long-distance movement rendered unusable[3] • Grazing in small fixed pasture areas fails to meet livestock's diverse resource intake needs • Higher production costs as herders rent additional pastures, plant and buy fodder during disasters[4] • Increased social conflicts over pasture boundary disputes.
2000s	Ecological construction projects (ECPs): • Grazing ban • Grazing rest • Reducing livestock population	• Rangeland conditions improve in some areas, but herder livelihoods decline as production costs increased • Increased conflicts between herders and local government • In some areas, illegal and unplanned grazing increases rangeland degradation.[5]

Herder co-operatives: a case study from Inner Mongolia

"The biggest benefit of herding together is to protect the rangeland. It also requires less labour. The sheep and cattle gain more weight because they can graze on a larger rangeland and graze different types of forage" — local herder

Herder co-operatives aim to:

- Allow collective grazing, thus enabling livestock mobility
- Reduce production costs through shared labour and collective purchasing
- Explore the market for animal products in order to increase collective income.

Location. Manglai Gacha and Hulun Nuur Gacha, in New Baerhu Right Banner and Harigaobi Gacha, in East Uzhumuchin Banner, Inner Mongolia.

Context. RHCP caused rangeland fragmentation, led to the decline of social capital and increased conflicts among herders. To address these issues, herders in Inner Mongolia have spontaneously established co-operatives to re-aggregate their rangelands, bringing together the land, livestock and labour of individual households.

How it works. The co-operatives are based on traditional reciprocal norms but also work with modern market mechanisms to distribute the benefits of using pastures, promoting higher product prices for all herders and a more stabilised income. We studied three herder co-operatives in Inner Mongolia. All were established under the leadership of the gacha (administrative village) to help prevent the leasing of rangeland to outsiders, reduce livestock production costs and improve pastoral capacity to cope with disasters. Activities focused on:

- Re-aggregating individually contracted rangelands to help restore livestock mobility over wider areas
- Joint herding to reduce labour requirements and costs
- Collectively producing or purchasing emergency fodder to reduce individual costs during periods of natural disaster
- Raising the quality of native sheep breeds and trading collectively to ensure higher product prices for wool and livestock.

Effect. The co-operatives are helping herders recover livestock mobility and forage production. In their short period of operation to date, the three co-operatives we studied have seen increased productivity, reduced production costs and improved incomes. Benefits include more flexible access to resources (such as nutritious pastures) over larger scales, economies of scale — for example, through collective purchasing of services such as veterinary support — and improved stock: they can now sell their lambs as breeding stock not only for meat.

The co-operative system re-aggregates rangeland on a large scale, allowing more flexibility in land use. Co-operatives spread the risks among the community, reduce the costs of market-based approaches and increase individual herders' ability to manage disasters. When land was leased to external herders, short-term leases and a lack of passion for rangeland often resulted in over-grazing. In the co-operative, long-term collaboration is based on trust and mutual benefit, giving herders the rationale to plan and monitor the use of all rangeland and reduce unreasonable use.

Co-operatives have been successful in Inner Mongolia because the people had not lost their traditions of reciprocity, which provided a promising starting point. Leadership is key to initiating co-operatives, and is mainly provided by community elites. They are inspired by a sense of social responsibility, hoping to motivate all villagers to achieve common wealth, and have good management skills. They are accepted and respected by the herders, which ensures more effective co-operative development.

Community and government joint-management: a case study from Inner Mongolia

Joint-management between herder communities and local governments allows herders to actively and collectively improve rangeland conditions by:

- Controlling livestock numbers
- Enhancing livestock mobility
- Planting forage and shrubs.

Location. Pifang village, Hexigten Banner, Inner Mongolia.

Context. Pifang is in the transition zone between farming and pastoralist areas. Its 19 households have only eight mu (1.3 acres) of arable land each and rely on sheep husbandry for cash income. In 2006, Pifang's wider shrub and tree lands were part of the Public Welfare Forest Protection Project, which included a grazing ban. Until then, the village had conducted seasonal rotational grazing, with sheep herded collectively on distant pastures in the summer and kept around the village in winter. With the grazing ban, villagers lost access to distant pastures and the rangeland around the village became severely degraded. As a result, incomes reduced and conflicts with the authorities increased. In 2007, an experimental joint-management project was facilitated by the Research Centre of Rural Environmental Protection and Development of Chinese Academy of Social Sciences and the Women's Association of Hexigten Banner.

How it works. The 2007 joint-management grazing plan set a livestock limit of 15 sheep per person, and reinstated seasonal grazing. It classified rangeland according to distance and forage conditions, and encouraged villagers to plant forage shrubs in degraded areas. The government was responsible for rangeland monitoring. If the rangeland degraded further, the experiment would fail and the grazing ban reinstated. To avoid this, herders supervised each other to ensure everyone followed the grazing plan, thus protecting the rangeland. In this case, outside pressure from government made the herders work together for common benefit.

Effects. As a result of this joint-management approach, villagers have maintained stable livelihoods and improved rangeland productivity. Common interest has motivated a relatively young — and not very socially cohesive — village towards greater collective action, as a result of external government pressure.

Conclusion

Pastoralist communities have a long-term interest in good rangeland management and a detailed knowledge of rangeland resources and climatic variation. The innovative management systems we explore in this paper have improved rangelands from a degraded state and have increased livestock productivity levels. The three case studies show that land governance by pastoralist communities — sometimes working together with authorities — can ensure the effective management of such environments. It is also clear that community-based management approaches should vary according to local social context. Although the systems we describe are born of the specific conditions of Inner Mongolia and the Qinghai-Tibet Plateau, we believe that the methodology behind them is of wider geographical value and interest.

Yanbo Li, Gongbuzeren and Wenjun Li

Yanbo Li is an assistant professor at the Institute of International Rivers and Eco-Security, Yunnan University, China. Gongbuzeren is a PhD candidate at the College of Environmental Sciences and Engineering, Peking University, China. Wenjun Li is a professor at the College of Environmental Sciences and Engineering, Peking University, China.

Notes

[1] Y B Li, Gongbuzeren, W J Li (2014) *A Review of China's Rangeland Management Policies.* IIED country report. IIED, London. http://pubs.iied.org/10079IIED / [2] J G Wang (2006) *Agro-pastoral ecology and traditional Mongolian society*, Jinan: Shandong People's Publish. / [3] Y N Xie and W J Li (2008) Why do herders insist on 'otor'? Maintaining mobility in Inner Mongolia. Nomadic Peoples 12 (2):35–52 / [4] C C Zhang et al (2013) 'Adaptation of herders to droughts and privatization of rangeland-use rights in the arid Alxa Left Banner of Inner Mongolia', *Journal of Environmental Management* (126):182–190. / [5] See note 1.

Knowledge Products

The International Institute for Environment and Development (IIED) promotes sustainable development, linking local priorities to global challenges. We support some of the world's most vulnerable people to strengthen their voice in decision making.

Peking University is one of China's national key universities. It is a centre for teaching and research which embraces diverse branches of learning such as basic and applied sciences, social sciences and the humanities, and sciences of medicine, management and education.

Contact
Wenjun Li
wjlee@pku.edu.cn
Ced Hesse
ced.hesse@iied.org

80–86 Gray's Inn Road
London, WC1X 8NH
United Kingdom

Tel: +44 (0)20 3463 7399
Fax: +44 (0)20 3514 9055
www.iied.org

IIED welcomes feedback via: @IIED and www.facebook.com/theiied

This briefing has been produced with the generous support of Ford Foundation.

FORD FOUNDATION