

Protecting a Himalayan icon: The need for transboundary cooperation to secure the future of yak in the Kangchenjunga Landscape

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Background

Yak (*PoepHagus gruniens*) are the cornerstone of life in mountain areas. By providing milk, fibre, meat, transport, fuel, and labour for agriculture and tourism, yak form a foundation on which pastoralists are able to support themselves in these hostile environments.

The culture and economy around yak rearing have connected people in adjacent parts of Bhutan, India, and Nepal for centuries. The transboundary movement of herders among the highlands of the three countries is an age-old practice important for the prosperity of herding communities and the vitality of their herds in the Kangchenjunga Landscape.

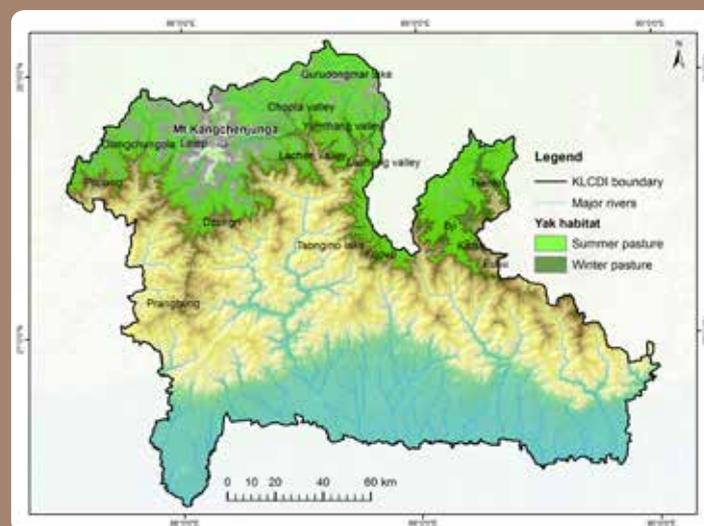
However, rapid development, climate change, and evolving geopolitics have affected pastoral practices by isolating herders and impacting traditional pastures. As a result, the productivity and populations of yak are declining. With limited market opportunities, the younger generation has little interest in pursuing a way of life that involves such hardship (Wangda, 2016). Furthermore, yak herders have new livelihoods options, including tourism and trade of yartsa gunbu (*Ophiocordyceps sinensis*) – the high-value caterpillar fungus.

Highlights

- Yak herding plays a critical role in livelihood development in highland areas, which is not acknowledged in current policies.
- Transboundary cooperation can help encourage technological innovation and counter the genetic degradation arising from restricted movement of yak between countries.
- Supporting and connecting local yak networks to each other, as well as to government and research agencies, can help address issues related to animal health and nutrition and access to markets.



Yak habitat in the Kangchenjunga Landscape



Total yak population in the Kangchenjunga Landscape: 18,520
Bhutan: 8,000 (DoL, 2016)
India: 6,220 (DAH, 2011)
Nepal: 4,300 (MoAD, 2013)

Policies and legislation

In Bhutan, the National Assembly (1953) gave individuals full rangeland ownership, but the Land Act (1979) reverted this ownership to the state, with grazing rights given to individuals (Dorji, 2014). The Land Act (2007) nationalized rangelands through a generous compensation scheme. Grazing allotments under a leasehold system are yet to be implemented (Tshering, 2016).

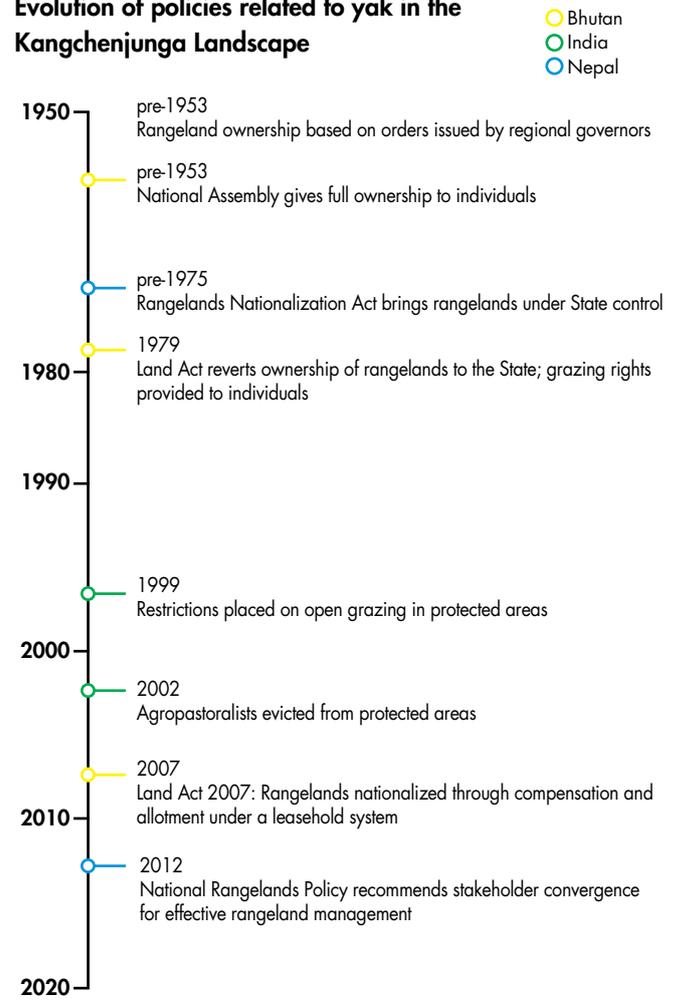
In Nepal, the enactment of the Rangelands Nationalization Act (1975) brought all rangelands under state control, with compensation provided to land owners. In some areas, community forest user groups forbid yak herders from passing through areas once part of traditional migratory routes (Bhusal, Banjade, & Paudel, 2018). The abolition of *kipat* – a communal land tenure system under which land belonged to the local community – has obscured the property rights regime and affected traditional pasture management practices (Sharma & Khanal, 2010).

In both Bhutan and Nepal, changes in ownership, use rights, and access to grazing land have contributed to rangeland degradation. In 1999, the state government in Sikkim, India, placed restrictions on open grazing in protected areas. Selective enforcement of this ban in the mountainous part of Khangchendzonga National Park resulted in the eviction of agropastoralists from protected areas adjacent to the park in West Sikkim by 2002 (Chettri, 2015). This resulted in conflicts between yak herders and the park management. In North Sikkim, yak herding continues under the *Dzumsa* system. *Dzumsa* is a traditional institution in the Lachen and Lachung valleys of North Sikkim (Thapa & Sachdeva, 2017). It regulates the number of herd animals and allocates grazing pastures for different herders for a pre-determined period. It has also effectively managed the carrying capacity of rangelands in Sikkim and highlighted the importance of integrating traditional knowledge, rights, and practices in yak and rangeland management policies.

In all three countries, legislation focuses on increasing the productivity of livestock through crossbreeding with high-yielding breeds or by developing new breeds (Phuntsho & Dorji, 2016). At the same time, the conservation and genetic improvement of important indigenous breeds of livestock are also promoted. However, conventional veterinary services are rare in remote, high-altitude areas, and traditional veterinary practices (like *amchi*) are declining. Livestock policies are supportive of these traditional practices, but implementation is inadequate.

In Bhutan and Sikkim, government agencies are promoting small yak enterprises in line with organic agriculture pathways outlined in national and state

Evolution of policies related to yak in the Khangchenjunga Landscape



frameworks on organic agriculture.

Policy constraints

The stoppage of transborder movement of animals between Nepal and the Tibetan Autonomous Region, China (Rai & Thapa, 1993; Yonzon, 1998), disrupted centuries-old annual movement of yak herding across the borders. This has led to the degradation of pastoral areas and has impacted trade, livelihoods, social connections, and germplasm exchange.

At times, existing practices have changed the herding pattern in the landscape, particularly in border areas. For example, the ban on livestock grazing in Khangchendzonga National Park and Singalila National Park in India resulted in the sale of large numbers of livestock to Nepal (Sharma, Tambe, Rawat, & Arrawatia, 2016). This coincided with the yak population in Nepal nearly doubling from 4,093 in 2009 to 7,565 in 2012, placing considerable pressure on the country's rangeland management. On the other hand, the stringent regulation on one side of the border (for example, in Singalila National Park, India) can result in the exploitation of natural resources on the other side (Nepal) due to the open border between the two countries (ICIMOD, WCD, GBPNIHESD, & RECAST, 2017)

Greater understanding of mountain farming will support the formulation of more effective policies. For example, the Bhutan Tiger Action Plan 2006–2015 (2006) implemented compensation schemes for the loss of livestock to depredation. However, the time taken for and costs of processing the compensation often outweigh the benefits to herders since they live in remote highlands.

Interventions in highland landscapes require a multi-sectoral approach, but current legislation does not support this type of collaboration. While Bhutan's Department of Livestock promotes yak development, protected area managers are concerned about the negative impacts of grazing, resulting in contested implementation schemes (Rinzin, Vermeulen, Wassen, & Glasbergen, 2009; Wangdi, 2016).

Socioeconomic constraints

Access to alpine meadows – major feed resources – is being increasingly restricted, partly due to the establishment of protected areas and the expanding network of community forests at lower elevations (Bhusal et al., 2018). In addition, restrictions on the movement of herds across borders prevent them from grazing in pastures that have been part of transhumance migration patterns for centuries (Wu, Joshi, & Bisht, 2015). More and more yak herders are pursuing alternative income sources in the tourism sector, from high-value non-timber forest products like yartsa gunbu, and through out-migration. Trade of yartsa gunbu - the rare caterpillar moth fetching around USD 6,000–10,500 per kilogram – is driving people from the mountains to towns (Wangchuk & Wangdi, 2009). Policies and programmes must encourage investment in activities that will build yak herders' resilience and ability to deal with the risks that come with high dependence on climate-dependent products like yartsa gunbu.

Technological constraints

Other yak-herding areas in China and Mongolia have seen significant technological developments in value-added yak products and renewable energy (like solar and wind), which fill critical energy gaps in areas devoid of fuelwood and where supplying electricity through the grid is cost prohibitive. However, efforts to bring these innovations to the Kangchenjunga Landscape to optimally utilize and promote this niche livestock product have been inadequate. Conventional technologies, poor feed quality, and a growing fodder crisis during the winter have created additional challenges. Limited investment in veterinary outreach and financial opportunities for credit, investments, and insurance mechanisms have further constrained yak production in the landscape.

Yak exchange between Bhutan and India promotes stronger breed

In 2005, the governments of Sikkim and Bhutan joined forces to improve yak breeds in Sikkim. Around 30 good-quality yak were selected from Haa District in Bhutan and transported to two yak breeding stations in North Sikkim, India (Zema, winter station; Chopta, summer station). The offspring with parent from Bhutan showed increases in body size, body conformation, inter-calving period, and milk yield. This success demonstrates the effectiveness of cross-border cooperation in countering the genetic degradation arising from restricted movement of yak between countries.

Institutional and stakeholder landscape

Multiple stakeholders are engaged in yak herding in the Kangchenjunga Landscape. Local governments include formal institutions such as block, municipal, and district administrations. Customary institutions such as *Dzumsa* in North Sikkim continue to provide strong governance for yak herding, and yak herder groups and cooperatives play an increasingly critical role in developing yak value chains.

Yak extension services are delivered through livestock departments. Research councils – such as the Indian Council of Agricultural Research and the Nepal Agricultural Research Council – conduct research on yak. Civil society organizations such as the Red Panda Network in Nepal are promoting energy-efficient stoves and improvised tents. Businesses and state-owned enterprises such as private cheese producer Himalayan French Cheese and the national Dairy Development Committee are active in Nepal; however, private sector engagement is limited in Bhutan and India.

At the regional level, ICIMOD's Regional Programme on Transboundary Landscapes provides a platform to promote yak husbandry in the region. The South Asian Association for Regional Cooperation (SAARC) Development Fund supports joint proposals from member countries on thematic areas that could include yak production. The SAARC Chamber of Commerce facilitates cross-border trade. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) can be leveraged to develop highland-focused proposals by Kangchenjunga Landscape member countries.

Potential global partners include the Food and Agriculture Organization (FAO) of the United Nations as part of their Pastoralist Knowledge Hub and the International Livestock Research Institute (ILRI), which has a global mandate for livestock research. The World Organization for Animal Health (OIE) provides policy and technological frameworks for livestock health and disease management at a transboundary scale.

Key policy pointers

Promote highland-specific policies with transboundary perspectives

High-altitude agropastoral systems are uniquely dependent on rangeland ecosystems, are inaccessible, and have sparse and highly mobile populations; this means that models for improving livelihoods and conserving the landscape need to integrate multi-stakeholder participation. Better policy coherence and coordination across borders, along with efforts to harmonize policies among the Kangchenjunga Landscape member countries would support more effective conservation and development initiatives. ICIMOD's current efforts to establish yak networks at sub-national and regional levels could provide a basis for highland-specific strategies that foster transboundary cooperation.

Facilitate transboundary exchange to improve the yak gene pool

Yak breeding stations are key for genetic improvement of yak. Facilitating close cooperation among these stations and introducing participatory breeding schemes following a harmonized methodology will help establish an efficient breeding programme. Within this arrangement, the exchange of germplasm and introduction of reproductive biotechnologies including artificial insemination could be initiated.

Improve cross-border coordination to prevent the spread of yak diseases and improve management of rangelands and nutrition

Veterinary services are limited in remote yak habitats, and diseases that affect yak can easily spread across borders. Some of these diseases also affect wildlife species. Working together, actors in the three countries can develop a more effective system for disease surveillance and monitoring and managing yak-related diseases in the landscape. Furthermore, collaborative multi-location testing of fodder varieties and rangeland management practices that can address winter feed shortages.

Develop transboundary yak value chains

Poor accessibility, distant markets, and low product volumes continue to limit yak value chain development. A common, transboundary platform for sharing best practices and facilitating the transfer of innovative technologies from China and Mongolia could accelerate development. Private-sector partnership can help in the development of new yak products, certification, and common branding at the landscape level that could lead to a better market position and economies of scale.

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For further information

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