

Technological Innovation: Use of Digital App for Pasture Survey and Mapping

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SUMMARY

Pastoralism is a vital part of Bhutan's agricultural system, with about 70% of the population relying on livestock and crops for their livelihoods. Yak herding is especially significant in the 11 highland districts, involving over 1,100 households and contributing 4% to the nation's livestock products. Ethnic nomadic communities like the Brokpas and Bjops are central to yak herding, sustaining a symbiotic relationship between the people and their environment. Yaks provide milk, meat, and wool, while pasturelands offer essential grazing grounds. This traditional practice has been passed down through generations, forming an integral part of Bhutanese culture and traditions.

To protect the grazing rights of highlanders and ensure sustainable use of pasturelands, the Bhutanese government enacted the Land Act of 2007. This act led to the nationalization of pasturelands (Tsamdro), with non-domicile elites and religious institutions being compensated for relinquishing their rights. In 2017, highland communities appealed to His Majesty The King to retain their Tsamdro rights, emphasizing their importance in border security, environmental conservation, and cultural preservation. His Majesty supported their appeal, leading to the development of the Tsamdro Implementation Framework by the National Land Commission Secretariat (NLCS).

The framework emphasizes community engagement and participation, incorporating local knowledge and expertise. A significant innovation in this process was the introduction of the TsamdroApp, a mobile application enabling herders to participate in surveying and mapping their pasturelands using their smartphones. The app is designed to function offline, making it suitable for remote areas. Comprehensive training was provided, and additional smartphones were distributed to facilitate the app's adoption. The Gewog Verification Committees (GVC), comprising local government representatives and land record officials, ensure the accuracy of the surveyed

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boundaries before data is uploaded to the NLCS database.

The TsamdroApp has resolved persistent conflicts among herding communities, allowing them to collectively map shared boundaries and avoid unsuitable areas for pasture. This participatory approach has fostered a sense of ownership and responsibility towards pasturelands, enhancing trust and collaboration between highlanders and the government. Over two years, about 5,130 parcels covering 381,530 acres have been surveyed and mapped, with efforts expected to conclude by 2024.

This project demonstrates the successful integration of traditional knowledge with modern technology for sustainable land administration and management. Bhutan's approach highlights the importance of community engagement in advancing national development objectives, respecting both environmental conservation and cultural heritage.

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