

Sloping lands in transition

Participatory research on landscape management for forest ecosystem service provision and adaptation to change in Bhutan [SLANT-Bhutan]

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Key messages

1. Countries in mountain regions are reorienting forest policies toward a multipronged strategy involving conservation, restoration and production.
2. CIFOR's Sloping Land in Transition (SLANT) research program is expanding to Bhutan with an aim of finding causal pathways between up-slope forest management and down-slope security.
3. Forests figure strongly in Bhutan's philosophical and operational framework of Gross National Happiness (GNH).
4. Expected project outcomes are the following:
 - development of stakeholder capacity in participatory research and decision-making processes
 - increased awareness by district and national sectorial management units and policy makers about the role of upland smallholder communities in management of forest landscapes
 - support to a cadre of forestry professionals through their integration into the project team.

Introduction

In recent decades, countries in mountain regions have been reorienting their forest policies. Specifically, they are moving from a focus on timber extraction toward a multipronged strategy involving conservation, restoration and production. Policies created to manage environmental risks on sloping landscapes — such as soil and riverbank erosion, flooding and desertification, and loss of biodiversity — are common across different national contexts. These policies center on a watershed management approach that integrates the needs of both upstream and downstream stakeholders.

A CIFOR research team has been looking at the outcomes of landscape restoration programs such as China's Conversion of Cropland to Forest Program (Gutiérrez Rodríguez et al. 2016; Zhang and Putzel 2016), Ethiopia's participatory forest management and restoration program (Gobeze et al. 2009; Kidu et al. 2017), and Nepal's community-based forest landscape restoration (Paudyal et al. 2015, 2017). The team has recently expanded the CIFOR program on Sloping

Lands in Transition (SLANT) to Bhutan, a small nation in the eastern Himalaya. The SLANT-Bhutan project aims to enhance understanding of the links between up-slope forest condition, and the production and protection of ecosystem goods and services relevant to down-slope residents and land users.

Modernization, population growth and new wealth increase demands on forest services around the world. However, climate change is creating a more uncertain context for the design of landscape management for the provision of those services. Mountain nations with glacial cover experience multiple environmental problems, including glacial lake outburst floods, river flooding, soil erosion and landslips. These problems are of grave concern, threatening public safety, investments in development infrastructure and livelihoods. Governments and residents alike recognize the critical importance of the restoration and protection of forests in sloping landscapes to mitigate these and other threats.



Agrarian landscape in the Tang Valley, Bumthang, Bhutan. Photo by Robin R Sears

An ongoing concern for the government is to protect Bhutan's fragile mountain ecosystem, while providing a continuous supply of sustainably harvested forest resources to residents and businesses. Multiple policies relate to landscape management, including the National Forest Policy and the National Environment Strategy. These policies prioritize an integrated landscape approach to forest management, balancing forest conservation with sustainable use of forest resources. They recognize that landscape stewardship by upstream land and natural resource users is critical to downstream residents and water users. Thus, the government is calling upon residents of the upland landscapes in mountain regions, who are the farmers and herders, to shift their land use toward practices that favor forest cover restoration or conservation. These practices should have a distinct emphasis on water management, with respect to both overland flow and groundwater stores.

The government prioritizes restoration and the reclamation of degraded lands with reforestation and watershed development programs. Restoration approaches include establishment of plantations (timber and tree crops), enrichment planting, and support for community and private forestry. These programs and approaches

necessarily involve rural residents and farmers and have implications for their land-use practices.

Community forest (CF) is one of the notable social forestry programs. It was initiated to encourage peoples' participation by shifting forest management authority and responsibility to local populations. Among other things, the CF program encourages communities to restore degraded hillsides through reforestation. What is the burden on these forest managers and what is the payoff?

Opportunities for connecting forests to well-being

The philosophical and operational framework of Gross National Happiness (GNH) underpins the Royal Government of Bhutan's development goals and strategies. The multidimensionality of happiness is expressed through four broad goals: equitable and sustainable socioeconomic development, cultural preservation and promotion, environmental conservation and good governance. While forests provide essential goods and ecosystem services related to slope stabilization and water regulation, they also figure strongly in the GNH framework and the country's development agenda.

How this project will contribute to assessing forest ecosystem services

CIFOR scientists and their partners in Bhutan employ a combination of participatory research methods, multistakeholder capacity development and policy analysis to generate data, information and analysis on the forest ecosystem services related to down-slope security. This project will inform strategies and actions for corrective measures to ensure the people of Bhutan receive critical ecosystem goods and services.

Research

The project seeks to generate field-based data and analysis that inform evidence-based forestry strategies. Specifically, the strategies will support up-slope forest rehabilitation and protection, and ensure delivery of forest provisioning services (goods) and soil and water regulating services to *in situ* and down-slope dependent communities. The three research components are directly linked to government priorities of assessing the sustainability of current forestry practices and other forest uses.

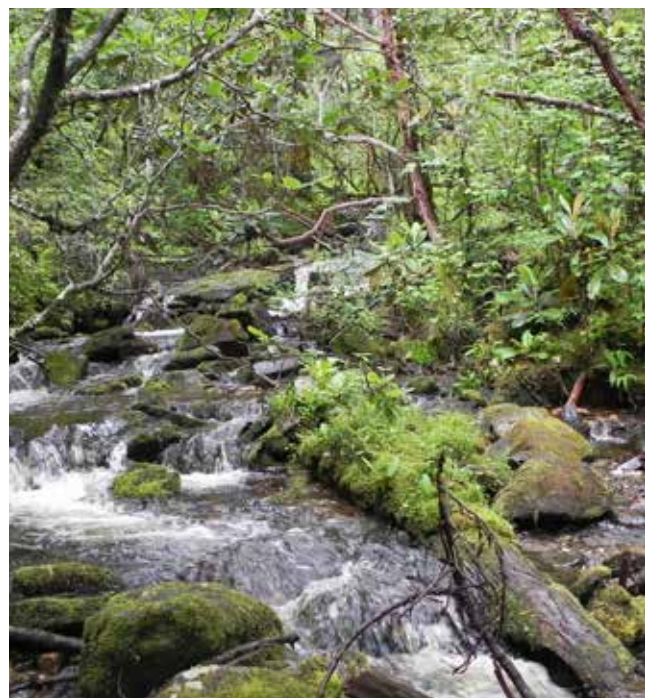
- **Research Component 1. Community perceptions of ecosystem services.** In the first year, the team is assessing priority ecosystem services and perceptions of their status at selected study sites. Results will lay a foundation for the design of research on the bio-physical characteristics of forested slopes. We will adapt the methodologies used elsewhere by CIFOR researchers (Baral et al. 2014; Bhatta et al. 2015; Paudyal et al 2015, 2017) to study the perceptions of forest ecosystem services among multiple stakeholders.
- **Research Component 2. High-altitude oak forests.** Bhutanese research partners will assess the status of the forest goods and ecosystem services provided by forests dominated by evergreen oaks (*Quercus semecarpifolia*). Grazing, and perhaps climate change, seem to threaten these mid-level elevation forests, which lie at the top of watersheds, and their regeneration. We will assess the regeneration dynamics in these forests, the drivers of change and their capacity for provision of critical ecosystem services.
- **Research Component 3. Community plantations.** In the early 1990s, a government initiative established forest plantations to restore degraded hillsides around the country. Community members were enlisted to contribute labor to these activities, and some areas were eventually formally integrated into Community Forest areas. Our team will endeavor to assess the long-term benefits of these forest restoration efforts, from bio-physical and social standpoints.

Stakeholder engagement

Various government agencies with mandates related to watershed management and rural livelihoods were involved in setting the project agenda and identifying research components. Through the research component on perceptions of forest ecosystem services, we will engage local stakeholders in setting the agenda for, and participatory research in, subsequent activities.

Capacity development

Scientists at the partner institutions are fully integrated into implementation of project activities. CIFOR scientists and associates will provide guidance on data analysis, project reporting and the development of research manuscripts and presentations. Project activities are designed to enhance stakeholder capacity, especially in participatory research and decision-making processes. Among its goals, the project aims to increase awareness of district and national sectorial management units about the role of upland smallholder communities in management of forest landscapes for provision of ecosystem goods and services. Research and training seek to encourage prioritizing forest management in the delivery of forest ecosystem goods and services. Finally, the integration of young professionals and students in the project team is meant to enhance a cadre of forestry professionals with new concepts and competencies about research and integrated forest management.



Water protection services of Shingkar Community Forest, Bhutan. Photo by Robin R Sears



Harvest operation in a community forest near to UWICER center, Bhutan. Photo by Robin R Sears

Acknowledgement

This research is being carried out by Center for International Forestry Research as part of the CGIAR Research Program on Forests, Trees and Agroforestry and funded by the Republic of Austria. The authors thank the Ugyen Wangchuck Institute for Conservation and Environmental Research (UWICER) and many civil servants in Bhutan's Ministry of Agriculture and Forests for sharing their knowledge and vision for ensuring a sustainable forest landscape in Bhutan.

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