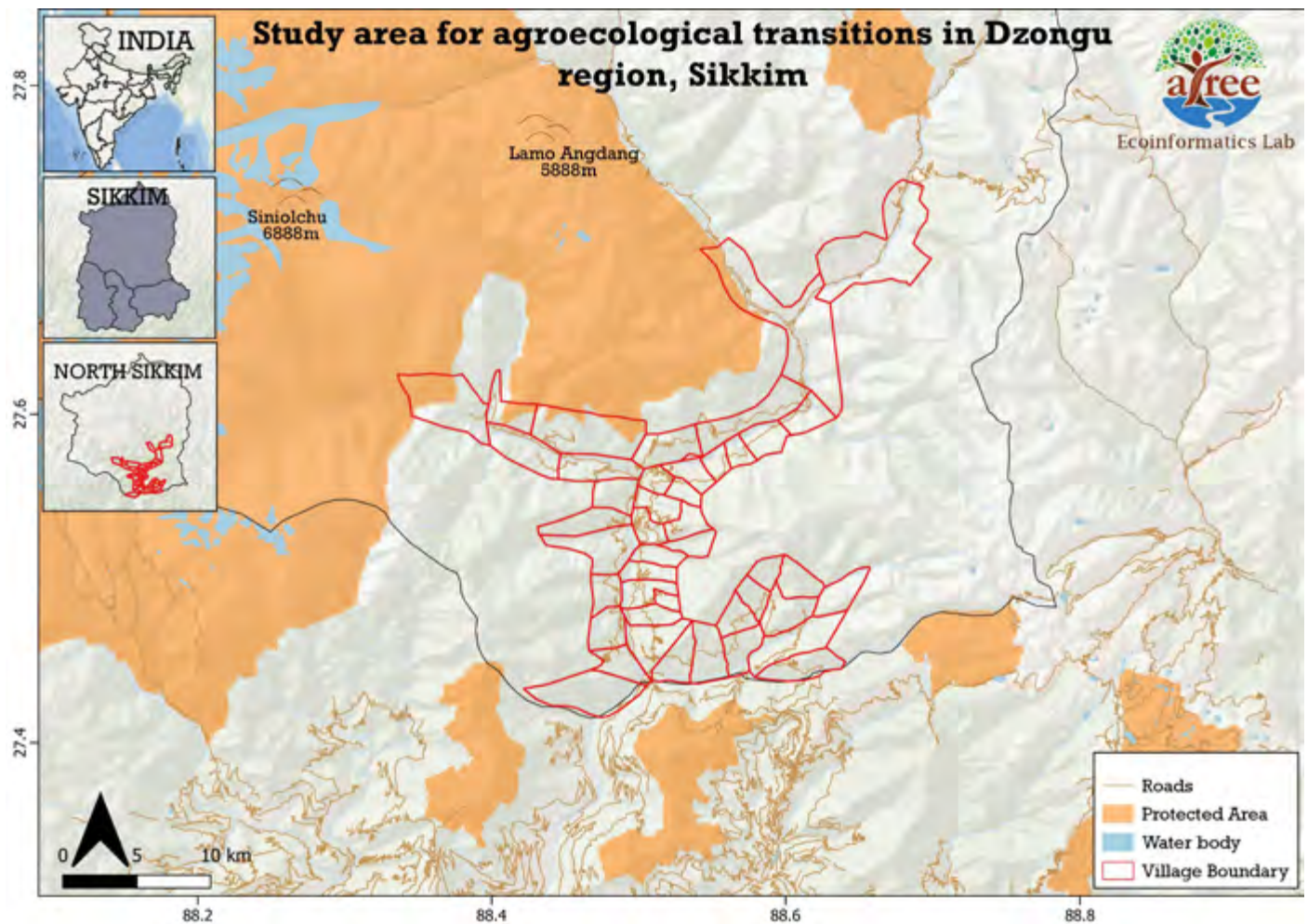


Traditional Agroecology in Transforming Landscapes



Dzongu region map of Sikkim



Executive Summary

Development and modernisation in agroecological landscapes can have unintended consequences on environment and health. We studied this phenomenon in agroecological communities of the Dzongu region of Sikkim. We found that access to imported food and increased household incomes have reduced farming and foraging for local and nutritious foods. Modernisation has also led to greater dependence on non-local foods and farming of non-food crops for income, reducing self-sufficiency. Government schemes that are implemented in silos were also observed to have wide-ranging impacts on these mountain agro-ecological landscapes.

In this brief, we explore the nutritional and ecological aspects of agricultural transition, and suggest the following measures to address concerns of dietary and on-farm diversity:

1. Support integrated agroecological farming infrastructure
2. Invest in innovative supply chains and products
3. Enable farming of local resilient foods

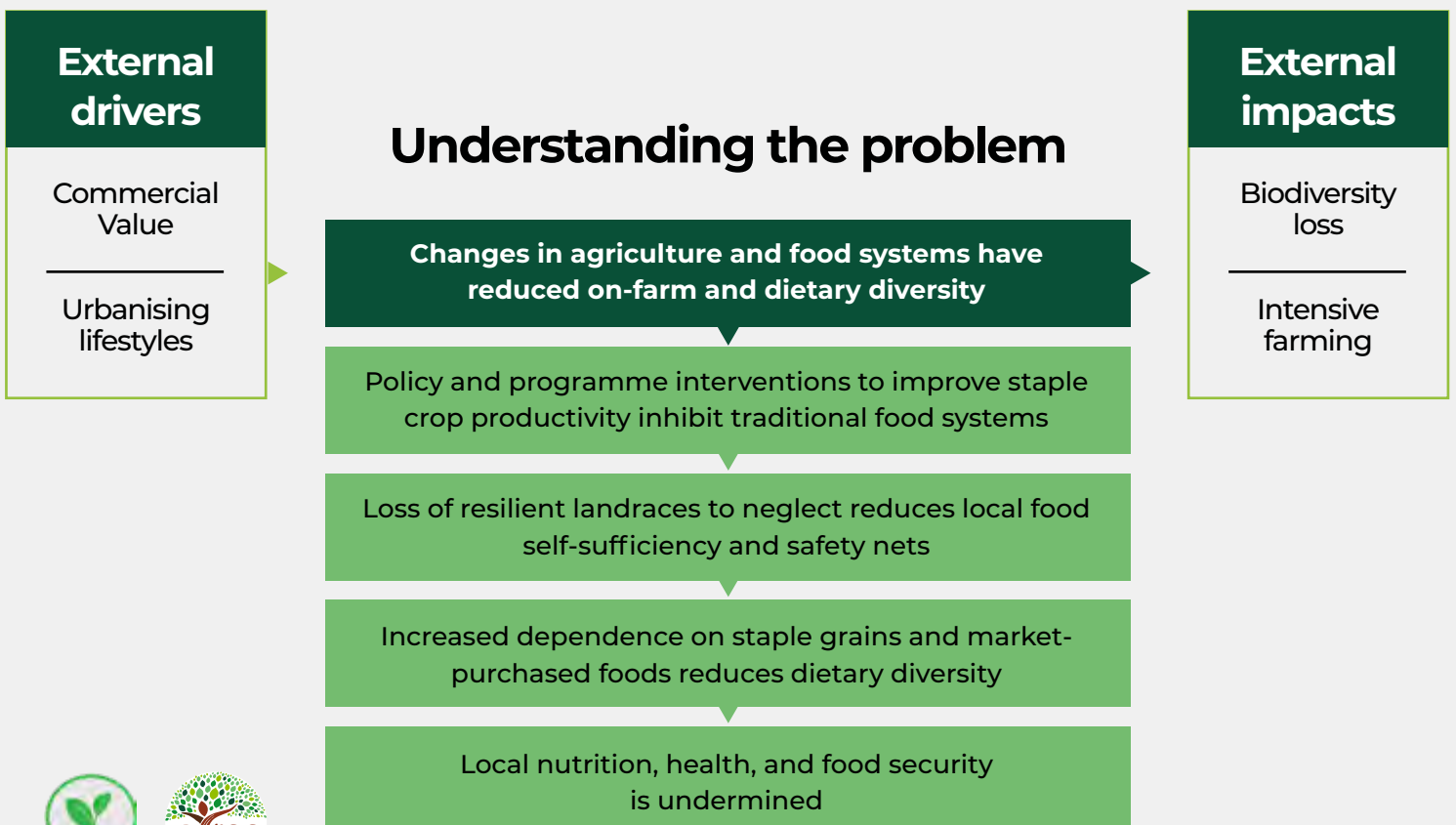
What is the Problem



The Dzongu region in Sikkim is located in the North District of the smallest Himalayan state of India-Sikkim. It spans about 78 square kilometres, ranges in elevation from 700m to 6000m, and hosts a population of about 8000 people spread over 38 villages. The majority of the people in Dzongu are dependent on agroecological farming for their livelihoods. Traditionally, these households farm cash crops alongside local food crops and also forage for wild edibles from the forest.

However, diets are increasingly becoming more reliant on rice from the Public Distribution System (PDS), and food imported from other provinces/states of the country, and there is an increased tendency to farm more cash crops than food crops. This change in diet can result in less nutritional diversity for the households, and greater dependence on food imports. At farm level, the change to staple and cash crops can reduce the biodiversity, self-sufficiency, and food availability locally.

Access to affordable imported food through the PDS and commercial farming, as well as increased incomes from cash cropping appear to be driving these changes. Other factors making farming less viable include increasing population, reducing land holding sizes, unavailability of water, friable soil, and labour, climatic uncertainty, crop depredation by wildlife and loss of interest in the youth. Together these changes threaten the ecological, cultural, and nutritional integrity of local food systems.



The Research

Introduction

In Dzongu, North Sikkim the rapidity of development has given rise to transportation, access to mass media and infrastructures developments such as roads, bridges connecting to external markets enriching the access to foods from across the world. From cultivation to consumption patterns of foods affecting both culturally and well-being of the people. There has been significant agricultural intensification focusing on cash crops. However, due to various drivers there has been a decrease in agricultural activity when it comes to growing food crops for sustenance. Productivity of major food crops has slowed down leading to increased dependence on processed food from lowland. As income rises, there is an increase in purchasing power and changing youth aspirations. Homogenization of food intake has reduced the dietary diversity and has led to once a self-reliant food to totally dependent on processed foods from distant markets.

Methods

Data collection was initiated from October 2019 till September 2021. Focus group discussions with over 250 participants were done in 27 different locations. Using a snowball sampling strategy, 60 key informants participated in in-depth interviews. Participants were selected to represent the different sites, socioeconomic status, gender and age groups. Additionally, Google Forms was used to conduct an online survey for the age group between 18 to 40 years. People's perspectives on the change in local agriculture practices and its impact on the food system in Dzongu were documented. Secondary data was collected through literature, reports, photographs, census to support the primary data.



Findings

A socio-cultural shift from subsistence to market economy is driving increased pressure on cash crops, which is aided by the government's improved supply of staple food grains at subsidised prices. Public distribution system has made it possible to become self-sufficient in food but people have shifted away from growing food crops and toward commercial agriculture and daily wage employment. Easy access to markets, infrastructure development, and changing youth aspirations leading to dearth of manpower for farming are some of the major drivers of agriculture change in Dzongu. Preference for growing cash crops over food crops for income has made communities dependent on the near and distant markets for all the food that is part of their everyday lives.

Local agroecological crop cultivation now is done in small patches of land by few farmers, and is confined to rituals. Many local foods have been substituted by non-local high yield varieties to enhance productivity and compatibility with technologically advanced agricultural processors in regions. The dietary diversity has reduced and there are now homogenised rice-based diets as cheap rice is readily available. Even the diversity of wild edibles which once was a major component of their diets has reduced.

82% households
are completely dependent
on external sources
(market and food subsidy)
for staples (rice, wheat).

What can be done?

Supporting agroecological farming includes developing structural and human capacity to practise integrated farming. Infrastructure such as seed banks help farmers preserve and propagate local varieties of food crops, and home and school gardens provide opportunities to educate and involve the public in their propagation. Training farmers in agroecological design and techniques is equally important.

Increasing accessibility and awareness of local food species among consumers can help sustain markets for farmers and nutrition uptake among communities. This can be done by linking with fresh produce markets, food vendors, and tourism enterprises to provide outlets for local foods. Processing such as milling or pickling of local foods can make them more appealing to consumers.

Legal hurdles to integrated agroecological farming include relatively recent prohibition on fire, grazing, and gathering. These practices form local-level land stewardship strategies, and strict segregation of wildlife from agriculture inhibits co-creation of productive landscapes. Allowing agroecological practices in the vicinity of forests can help close nutrient loops and create biodiverse and healthy farms.



Solving the problem



Support integrated agroecological farming

Invest in local seed banking, crop propagation, farmer training, and home and school gardens to sustain and popularise local resilient foods

Related SDGs



Support innovative supply chains and products

Invest in development of diverse local food supply chains to fresh produce markets and convenient long-life local food products to make local resilient foods more accessible



Enable farming of local resilient foods

Reconsider strict wildlife protection laws that inhibit grazing and gathering, thereby undermining integrated agroecological farming of local resilient foods



How?



Support

Farmer training and setting up of seed banks through:

- Krishi Vigyan Kendra
- Indian Council of Agricultural Research
- Paramparagat Krishi Yojana
- Biodiversity Monitoring Committees

Agrobiodiversity commitments through:

- Agrobiodiversity Agenda
- National Mission on Sustainable Agriculture
- Organic Mission of India
- Spice Board

Integrated farm inputs from State Departments of:

- Agriculture
- Horticulture
- Animal Husbandry & Veterinary Services

Public awareness and access through actions by:

Municipalities, panchayats, schools to promote local foods in nutrition gardens (Poshan Vatikas), school gardens, and home gardens.



Investments

Supply chain and product development through:

- NABARD
- Ministry of Commerce & Industries
- Ministry of Food Processing Industries
- SIMFED
- State Department of Tourism
- local food aggregators and enterprises



Enablement

Legislative action by State Departments of:

- Forests & Environment
- Tribal Affairs
- Agriculture
- Horticulture
- Animal Husbandry & Veterinary Services

to allow specific practices (e.g. selective gathering and grazing) by local agroecological communities.