

**The System adaptation for OneHealth under Climate change for Vulnerable groups and Ecosystems (SOLVE) project is a transdisciplinary initiative under the Belmont Forum and the FABLE Consortium.**

SOLVE co-develops local adaptation roadmaps with societal partners to build resilient, healthy, equitable, and prosperous food and land systems. Using a suite of models, SOLVE integrates future climate extreme risks into long-term planning and promotes a OneHealth approach to better understand and address the complex interactions between people and nature.

## THE CHALLENGE

Nepal's food and agricultural systems are increasingly vulnerable to the impacts of climate change. Shifting rainfall patterns are disrupting the rice-wheat cropping cycle, which is critical to national food security. These disruptions, especially during critical stages like grain-filling, have led to declining yields, lower grain quality, and rising food insecurity.

Agricultural productivity is further constrained by high input costs and low mechanization, particularly in hill and mountain regions. Rural outmigration, especially of young men, has placed increasing responsibility on women for managing farms. However, women farmers often lack access to appropriate technologies, extension services, and financial resources.

Nepal has taken important steps through its National Adaptation Plan and Local Adaptation Plans of Action. Yet, implementation remains weak due to limited institutional capacity, fragmented coordination, and challenges in mainstreaming adaptation into routine agricultural practices.

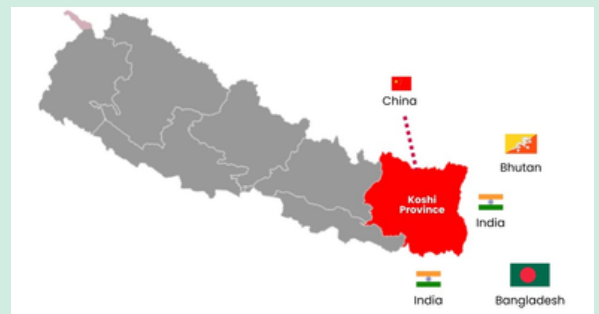


Nepal

## FOCUS AREA

The case study is focused on the Koshi province, often referred to as Nepal's "rice bowl". Koshi is characterized by rainfed rice-wheat farming systems, mostly managed by smallholder farmers.

Koshi is key for the province's food security and livelihoods, but increasingly vulnerable to climate shocks such as erratic monsoons, recurrent flooding, prolonged droughts, and frequent landslides. These risks are aggravated by deforestation, land degradation, unplanned urban expansion, and rural communities' limited adaptive capacity.



Koshi farming systems are mostly rainfed, with average farm sizes under 0.5 hectares. Most households grow staples like rice, maize, and wheat for their consumption, while they cultivate limited cash crops (e.g., jute, sugarcane, ginger) for local markets. Incomes remain low and climate-sensitive, with increasing feminization of agriculture.

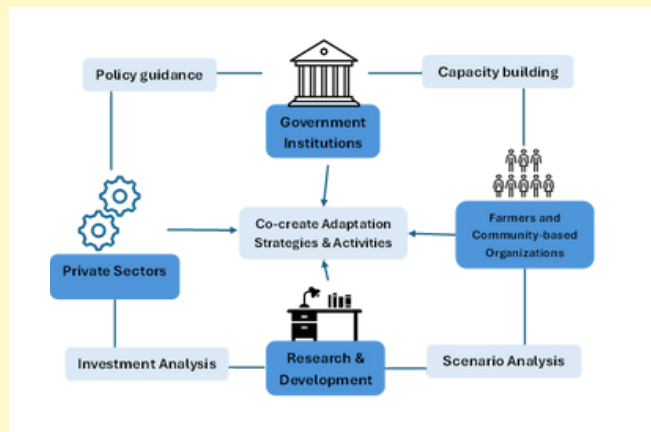
Koshi also suffers from persistent nutrition challenges, leading to high rates of child stunting, anaemia among women, and low dietary diversity. These issues are rooted in poverty, poor access to diverse foods, and climate shocks.

## STAKEHOLDERS & PROCESS

This project will be implemented through a collaborative, multi-stakeholder process to co-create climate adaptation strategies.

### Key stakeholders:

- The Ministry of Industry, Agriculture, and Cooperatives (MoIAC)
- Smallholder farmers
- Women's groups
- The private sector



### Methods to be used in this case study:

- Conduct farm-household surveys to assess current adaptation strategies (e.g., drought-tolerant seeds, water-saving practices, adjusted cropping calendars), resource use, productivity, and gender-related barriers.
- Survey food consumption patterns, dietary diversity, and seasonal nutrition gaps to establish baseline indicators.
- Use the FABLE Calculator to explore adaptation scenarios and assess trade-offs across food security, land use, and emissions.



## IMPACT

### Who will benefit?

- Smallholder farmers
- Koshi local government institutions
- Local policymakers and researchers

### How?

- By co-developing climate-resilient adaptation roadmaps, the project will enhance local capacity to plan and implement evidence-based strategies that address food security, land use, and climate risks.
- Farmers will benefit from more targeted support, access to climate-smart practices, and improved nutrition.
- Local governments and researchers will gain insights from the FABLE integrated tools, data, and scenario model to incorporate adaptation measures tailored to local agricultural planning.

This case study will contribute to and benefit from the global open modelling infrastructure of the FABLE Consortium, helping to refine and apply tools that link national policies with global sustainability goals.

The Nepal case study is led by Southasia Institute for Advanced Studies, Nepal & International Rice Research Institute (IRRI). To get involved, contact Dr. Shyam Basnet <[shyam.basnet@cgiar.org](mailto:shyam.basnet@cgiar.org)>

This case study was approved under the Belmont Forum CRA "Climate, Environment, and Health 2" (2023). Due to recent budget cuts, the team is now seeking alternative support, in coordination with the Belmont Forum.

