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# Living with too much and too little water: Community led Climate Change Adaptation in the Ganges Basin of Nepal

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# Climate Change & Community-led Adaptation

- Himalayan Water tower: Nepal forms a major headwater region of the Ganges Basin
- Ganges Basin: climate extremes, dependence on agriculture and water system, weak economy and high vulnerability

- Studies shows increasing intensity of rainfall and significant rise in drought due to climate change ([Karki et al., 2017](#); [Poudel et al., 2021](#))
- In 2024 alone, flood led to the death of 250 people, around 8400 families displaced, hundreds injured and estimated economic loss of 300 million USD
- communities have a long history of adapting through local knowledge, social networks, and indigenous practices

*Despite decades of donor and government adaptation programs, many rural communities continue to rely more on their own networks, rather than external aid. Why is this still the case?*

# Review Approach and Scope

- Focus: Nepal
- Key words: climate change adaptation, flood and drought, social capital, grassroot institutions, Community institutions
- Reviewed: Peer-reviewed papers, Gray literatures (NGO/INGO reports, news reports, research briefs), Policy reports
- Aim: Understand how rural communities in the Ganges Basin, especially in Nepal adapt to floods and droughts using local knowledge, social capital, and community institutions, and how current governance systems address (or miss) this critical adaptation capital.



# How communities Adapt?

- For decades and even centuries—farmers in Nepal have **organized themselves skilfully** to construct and maintain irrigation systems (Martin & Yoder, 1987)
  - Informal women groups, youth groups and community networks have important role to play (Agrawal, 2008)
  - CBOs like micro savings and cooperatives for financial support, community forest and water user groups for resource management
  - CSOs (local NGOs, think tanks/ research based organizations)
  - Examples: **Successful revival of natural springs and construction of recharge ponds** to restore water sources in drought-prone areas (Poudel & Duex, 2017; Panwar, 2020)
- align external climate finance with local priorities- mediating between international donors and grassroots needs



MoFE, GoN

- *For example, in drought-prone Surkhet District (Nepal) poorer households relied on community-led strategies rather than expensive technologies.*
- *villagers formed cooperative water-sharing groups to equitably distribute scarce irrigation, and established communal seed banks of indigenous, drought-tolerant crop varieties (Gautam, 2025).*

# What Governance misses?

- Policies support community-based adaptation, but **implementation remains top-down**—often excluding the most marginalized (Nagoda & Nightingale, 2017)
- Most LAPAs are externally funded, projectized, and suffer from weak local government ownership (PRC, 2018; Regmi and Bhandari, 2013); **treat communities as just implementers, not planners or decision-makers.**
- Pure top-down approach adaptation is often technocentric, overlooking social, political, and cultural contexts (Ojha et al., 2016; Eriksen et al., 2015; Craig-Scheckman et al., 2025).
- In Nepal projects which have been received relatively as a lesser priority by the local stakeholders have been financed as priority projects by donors (Regmi and Bhandari 2013).
- Grassroots institutions and civil society play a crucial role in adaptation but are often overlooked in formal plannings

# Social capital: The missing link in adaptation?

- Evidences of collective action during crises (e.g., informal flood response networks) (Aldrich et al. 2016; Bixler et al. 2021)
- Institutions like community forestry has proven to be **more equitable than the top-down centralized approach** in forest governance (Dahal and Chapagain, 2008).
- Community with strong social capital are more likely to initiate adaptation actions and collaborate (Bihari & Ryan, 2012)
- Chen et al. (2014) explore how both policy support and social capital influence farmers' drought adaptation strategies in China.
- Low social capital at the community level further deepens vulnerability, making **communities extremely dependent on external aid** (Aldrich, 2012)



Photo: Digo Bikas Institute

# Research Gaps/Challenges

01

While there is significant critique of top-down, donor-driven adaptation, there is limited understanding of **how grassroots communities and institutions actively navigate, negotiate, or resist these interventions** .

02

Social networks have a role in shaping adaptation response (Wolf 2011); yet very **limited empirical work on existing social capital as a key enabler of community adaptation** (Sharma, 2023).

03

Studies need to explore how leveraging social capital and integrating grassroots institutions as key adaptation actors can enhance communities role in effective adaptation (Khan et al., 2024)



# Takeaway

- While adaptation gaps remain, communities are not passive victims they are active agents innovating and adapting every day. These solutions deserve recognition, support, and scaling up.



Photo: Recharge pond in Kavre District  
[Digo Bikas Institute/APRN](#)



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Thank You!