

# Reviving the springs of Godavari

The springs in Godavari are used for drinking, domestic use, and agriculture. The water is also supplied downstream to Lalitpur and Kathmandu where it is used by approximately 11,000 households. Springs are important for biodiversity and some, such as Godavari Kunda and Naudhara, have religious and cultural significance. They are under stress due to in-migration and land use change, increased water demand upstream and downstream, declining and erratic rainfall, groundwater extraction, and point source and non-point source pollution.

## Springshed management efforts

We implemented the ‘[Six step protocol for reviving springs](#)’ to revive critical springs in the Godavari area. We have completed Steps 1-4, and are planning to implement **Step 5**: Developing springshed management and governance protocols and **Step 6**: Measuring impacts of spring revival activities.

## Findings

Some findings from each of the steps implemented:

### STEP 1

#### Comprehensive mapping of springs and springsheds

- Study area: 23.8 hectares
- 40 springs mapped, four of which dried after the 2015 earthquake

### STEP 2

#### Setting up a data monitoring system

- Average annual rainfall: 1,600 mm
- Spring flow measurements in 11 springs
- Godavari Kunda, Naudhara, Kuna Khola, and Devithan springs have comparatively high discharge (above 500 litres per minute) during the monsoon
- Higher levels of total coliform bacteria detected during monsoon than in winter

### STEP 3

#### Understanding social and governance systems

- Communities depend on multiple sources (traditional stone taps, wells, treated jar water, water tankers, and piped water) to meet their water needs
- 11,000 households from 24 water users’ groups (WUGs) use spring water for drinking; eight WUGs are dependent on springs in the Chapakharka watershed and 16 WUGs on springs and streams in the Godavari watershed.
- Users believe spring flow is decreasing
- Spring water is generally not treated before drinking

### STEP 4

#### Hydrogeological mapping, conceptual layout, and recharge area identification

- Dominant rock types: dolomite, slate, sandstone, and limestone, generally dipping southwest
- Spring types: depression, fracture, and karst springs, or a combination of these
- Potential recharge area demarcated for 11 critical springs; their recharge areas are within the same watershed or across multiple watersheds

## Urgent actions required

The springs of Godavari require recharge interventions that are gender and socially inclusive and address biodiversity conservation aspects. It is important to raise general awareness and establish collaboration between Godavari Municipality, wards, WUGs, research institutions, and other stakeholders.



23.8

hectares study area



40

springs mapped



1,600 mm

annual rainfall



11

springs monitored



~11,000

households use the water

## Conceptual map of Godavari springs and upstream (Godavari) and downstream (Lalitpur and Kathmandu) water users

### Chapakharka watershed

- 5 local water systems (50 households)
- 3 community-scale water systems

### Godavari watershed

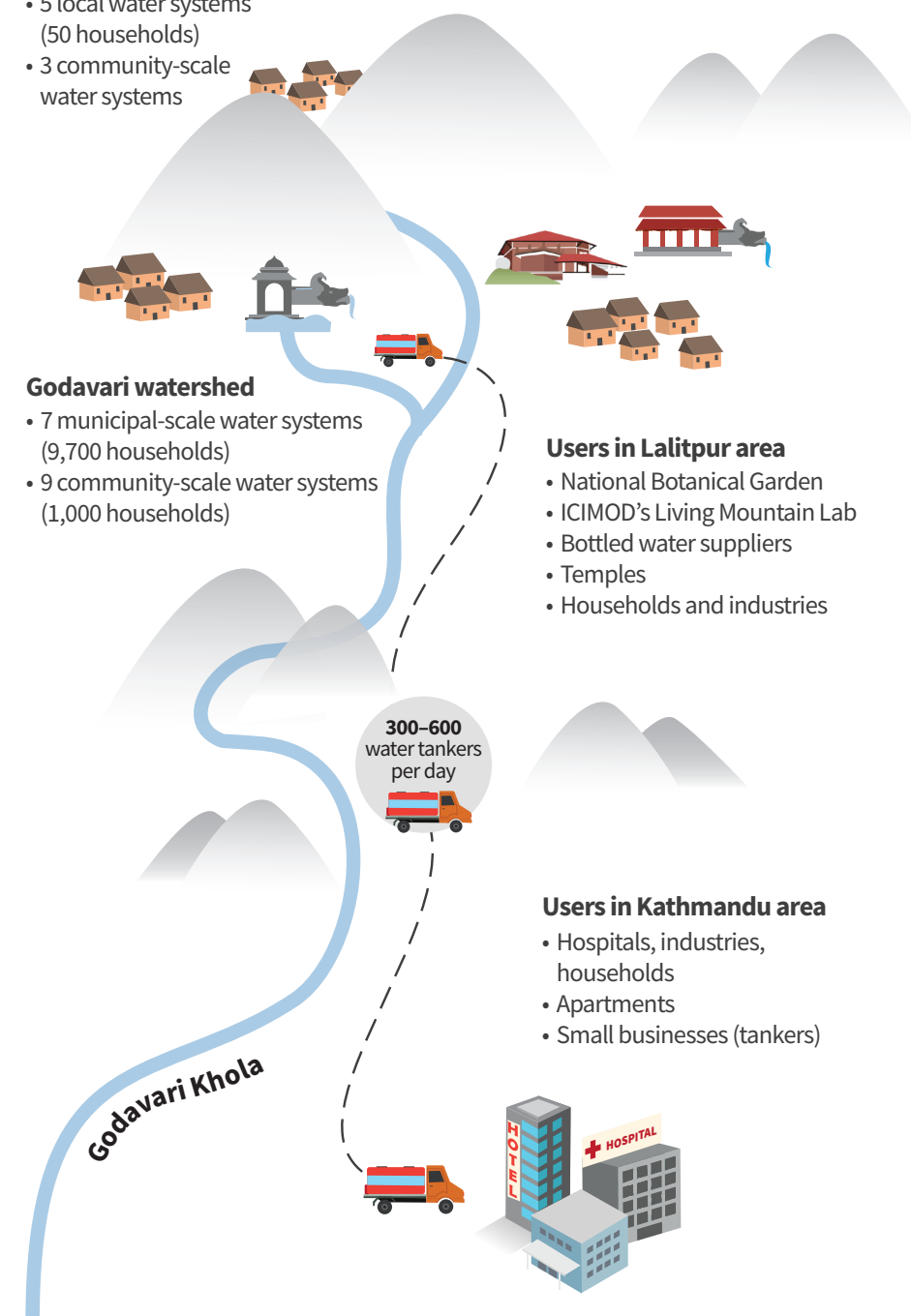
- 7 municipal-scale water systems (9,700 households)
- 9 community-scale water systems (1,000 households)

### Users in Lalitpur area

- National Botanical Garden
- ICIMOD’s Living Mountain Lab
- Bottled water suppliers
- Temples
- Households and industries

### Users in Kathmandu area

- Hospitals, industries, households
- Apartments
- Small businesses (tankers)



### For further details

Dhakal, M.P., Khadka, K., Pokhrel, G., Desai, J., Kingsley, C., Barola, Y., & Bhuchar, S. (2021). Springs in the Godavari landscape, Nepal: Mapping, governance, and revival (Working Paper). ICIMOD. <https://lib.icimod.org/record/35671>