

Responding to Mountain Water Challenges



International Centre for Integrated Mountain Development

ICIMOD

and the

Hindu Kush Himalayas

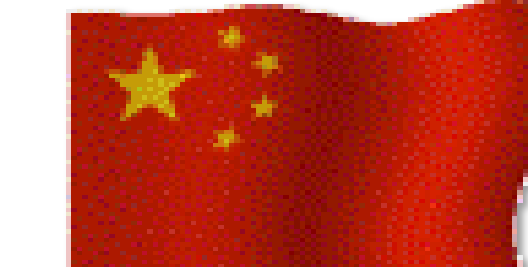
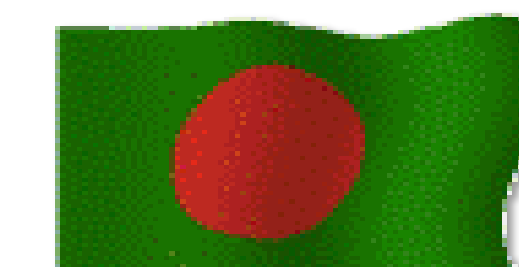


- A regional mountain knowledge, learning and enabling centre devoted to sustainable mountain development for mountains and people
- Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan
- www.icimod.org

The Hindu Kush Himalayan Region



Extends over 3,500 km from Afghanistan to Myanmar and home to 210 million people



Elixir of Life – Mid Hills of Hindu Kush Himalayas as basis for Water Security

ICIMOD

90% population in hill and mountain regions of Himalayas depend on springs

- Drying Springs (women and children drudgery)
- Science of Springs
- Springs as groundwater
- Inadequate public policy focus
- Springsheds cut across, administrative units

ICIMOD Research on Springs:
WLE; KSL; HI AWARE

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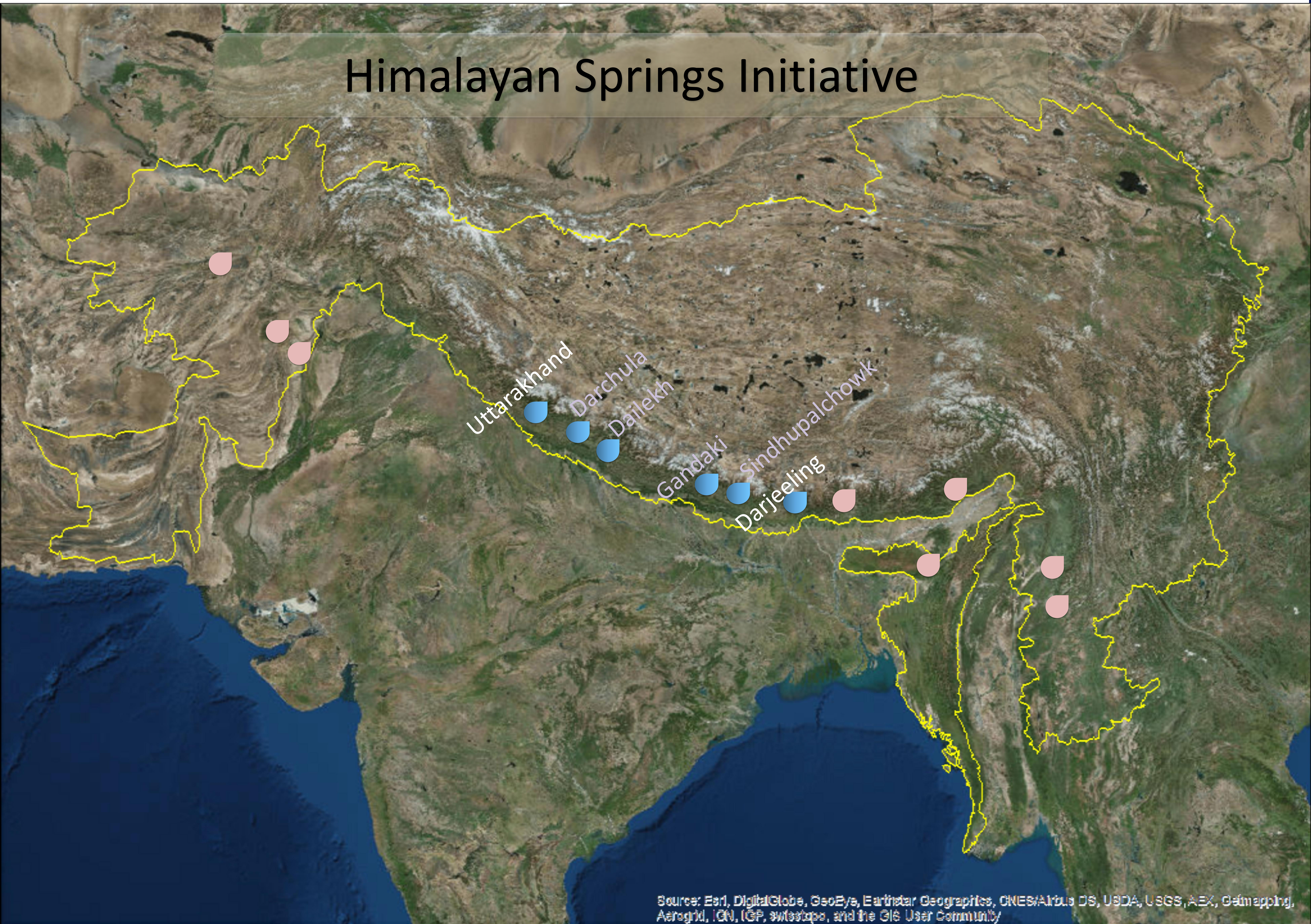
FOR MOUNTAINS AND PEOPLE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomapping, Aeregrid, IGN, IGP, swisstopo, and the GIS User Community

Advocacy of Springs in Hindu Kush Himalayas

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Himalayan Springs Initiative



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Reviving Himalayan Springs as a Climate Change Adaptation Action

Nawraj Pradhan¹, Aditi Mukherji¹



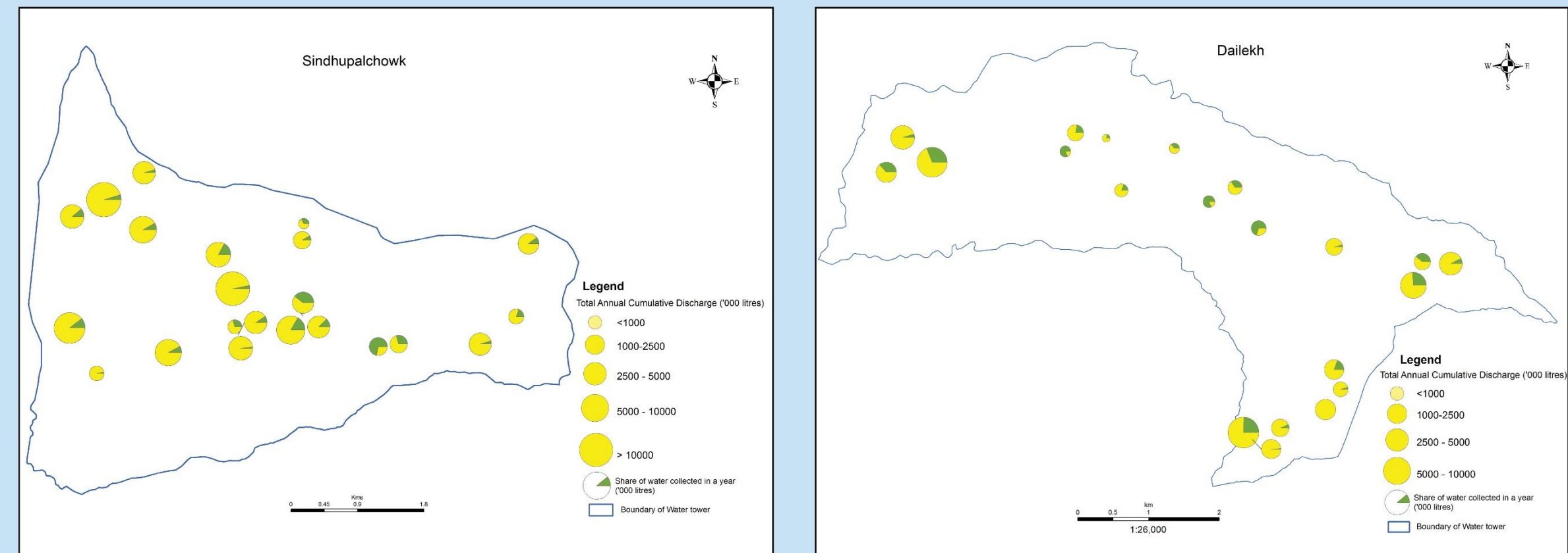
Research Questions

- Why are springs drying and what can be done to revive them?
- What are the social and governance aspects of spring management?
- What are the impacts of drying springs and related consequences at spatial and regional scales?

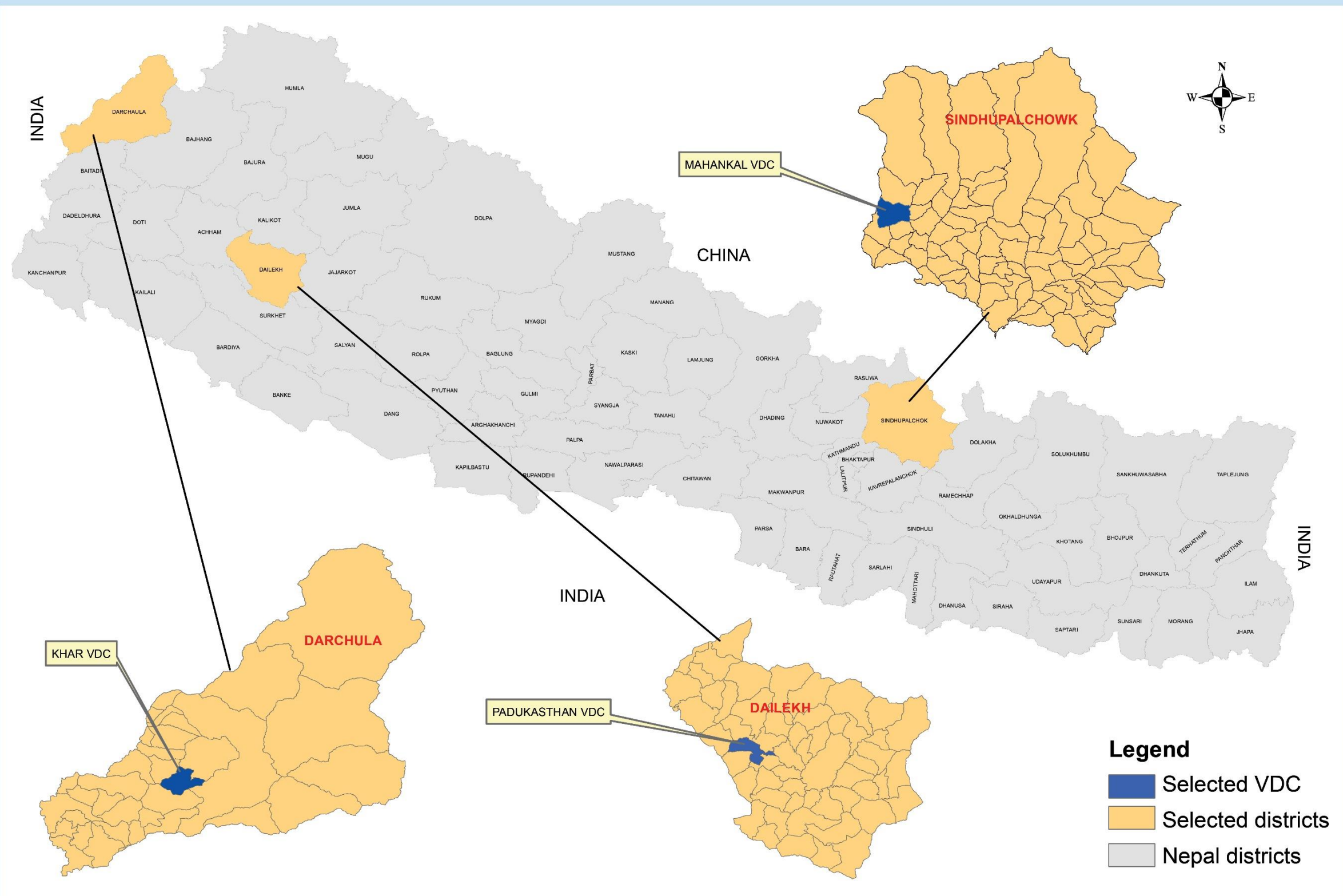
Methods and data

- Step 1:** Comprehensive mapping of springs and springsheds
- Step 2:** Setting up a data monitoring systems
- Step 3:** Understanding Social and Governance aspects of Spring
- Step 4:** Hydrogeological mapping
- Step 5:** Creating a conceptual hydrogeological layout
Classification of springs type, aquifers and recharge areas
- Step 6:** Classification of spring type, identifying mountain aquifer and demarcating recharge area
- Step 7:** Developing springshed management protocols
- Step 8:** Measuring hydrological and other impacts of spring revival activities

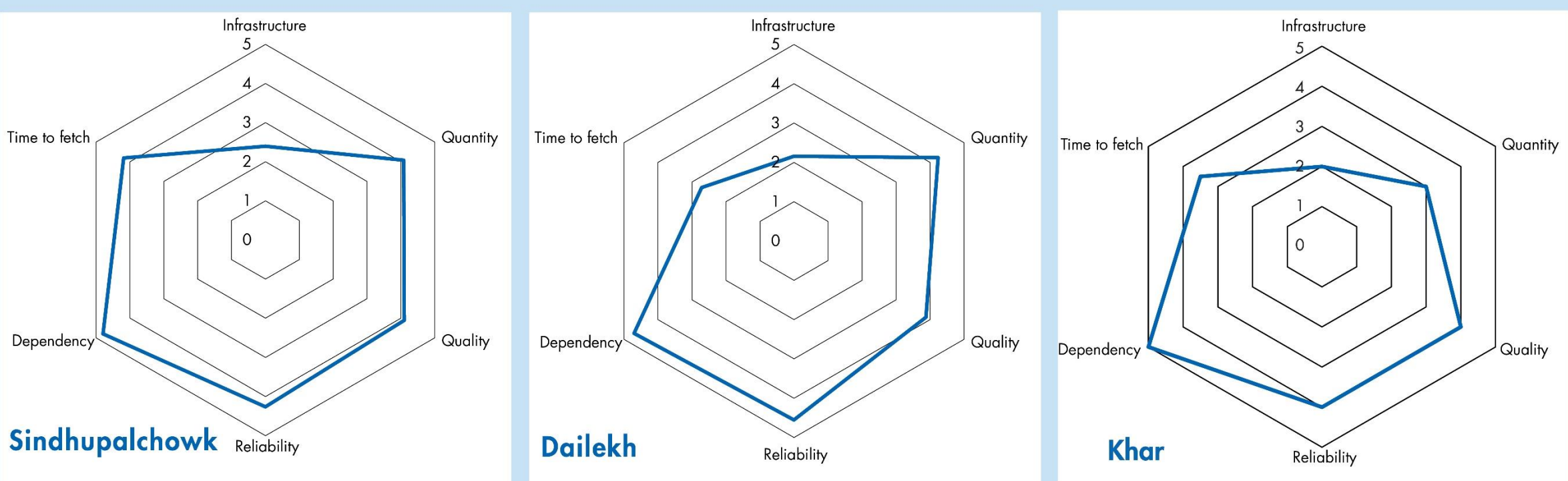
How much water is collected from springs as a percentage of total discharge?



Location of study sites in Nepal

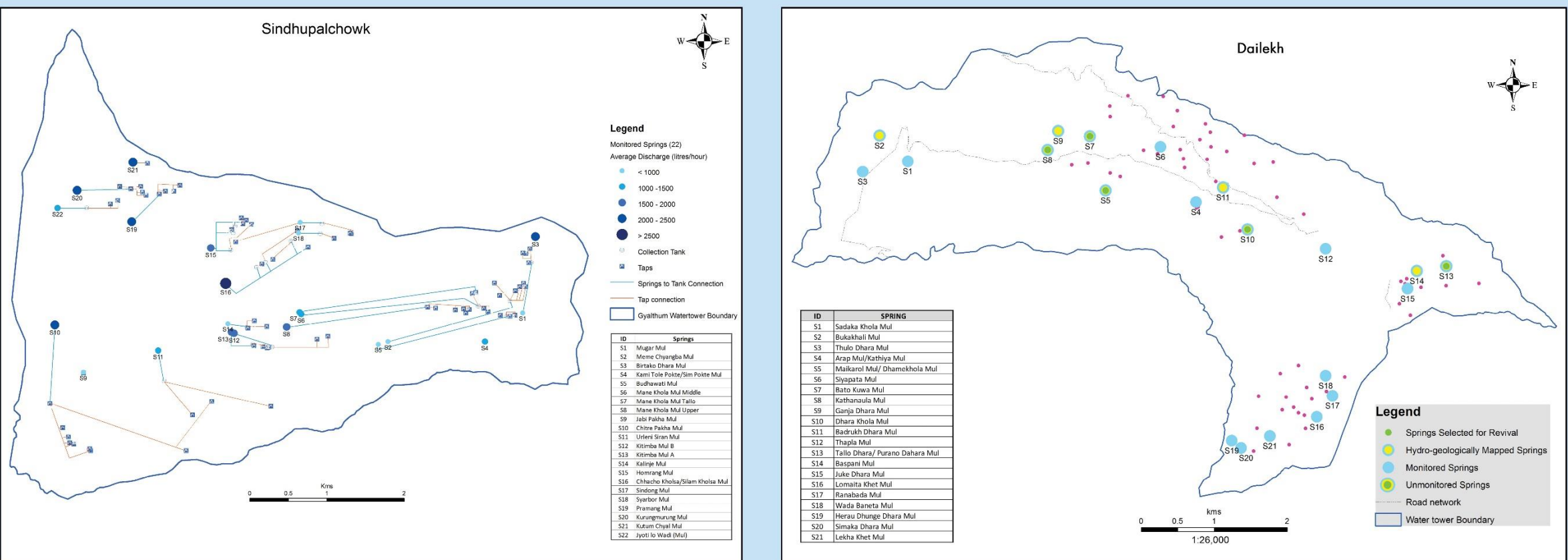


Local perceptions of spring water aspects

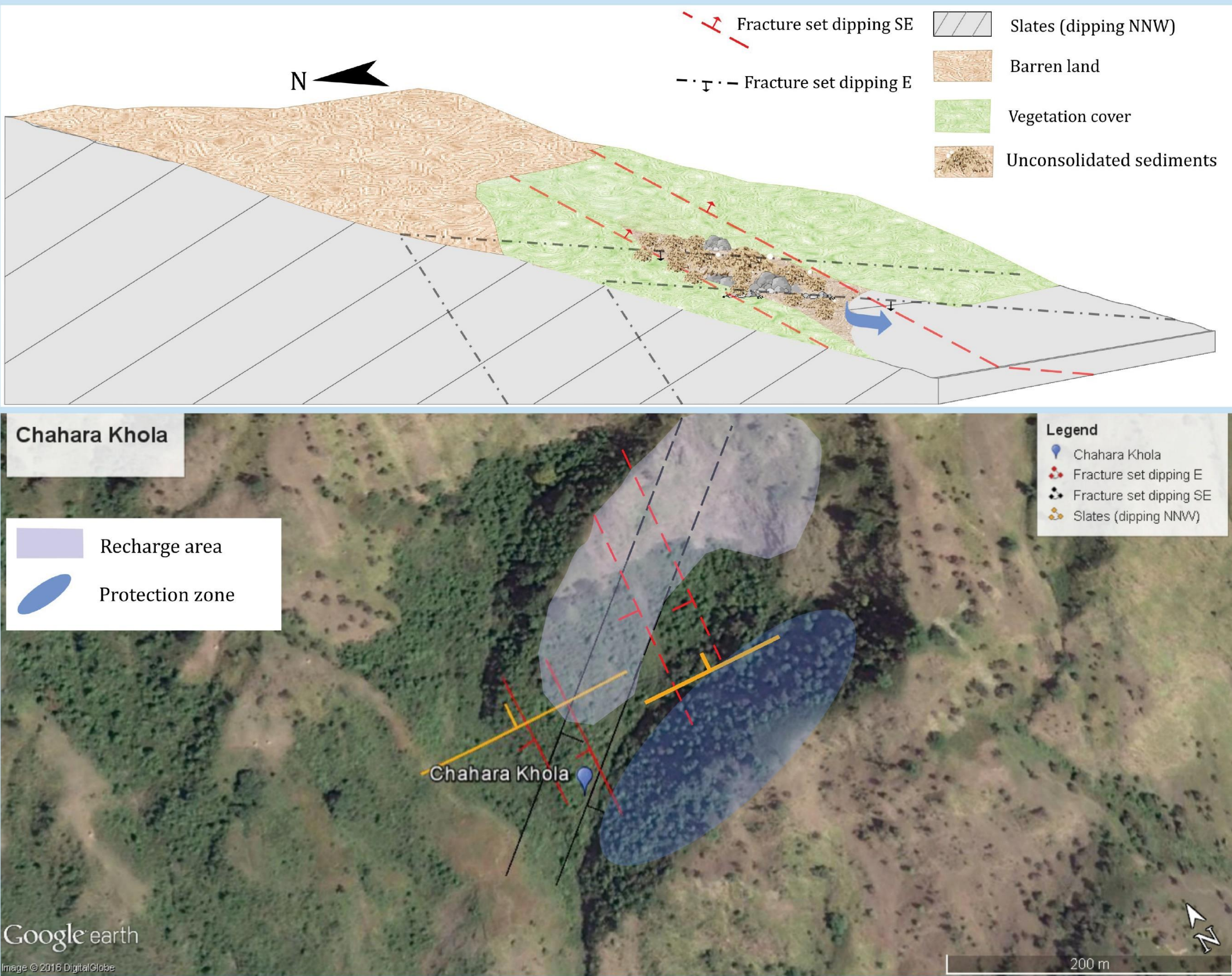


Score reference: 5 is very good and 1 is very poor.

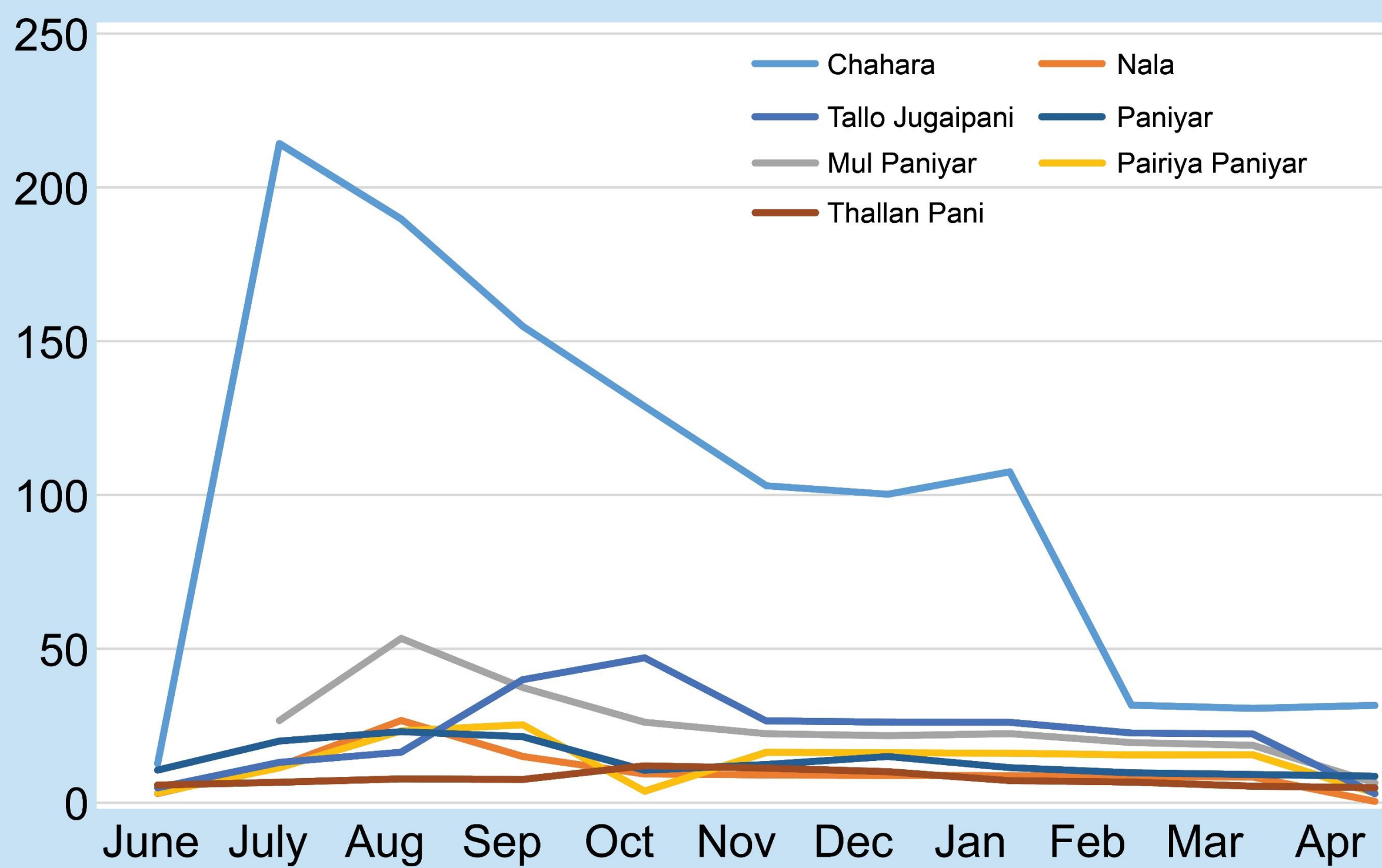
Piped water distribution system vs. water collection at the source



Conceptual layout and overlay of recharge area in Khar VDC, Nepal



Spring discharge of monitored springs in Khar, Nepal (Jun 2015 – Apr 2016)

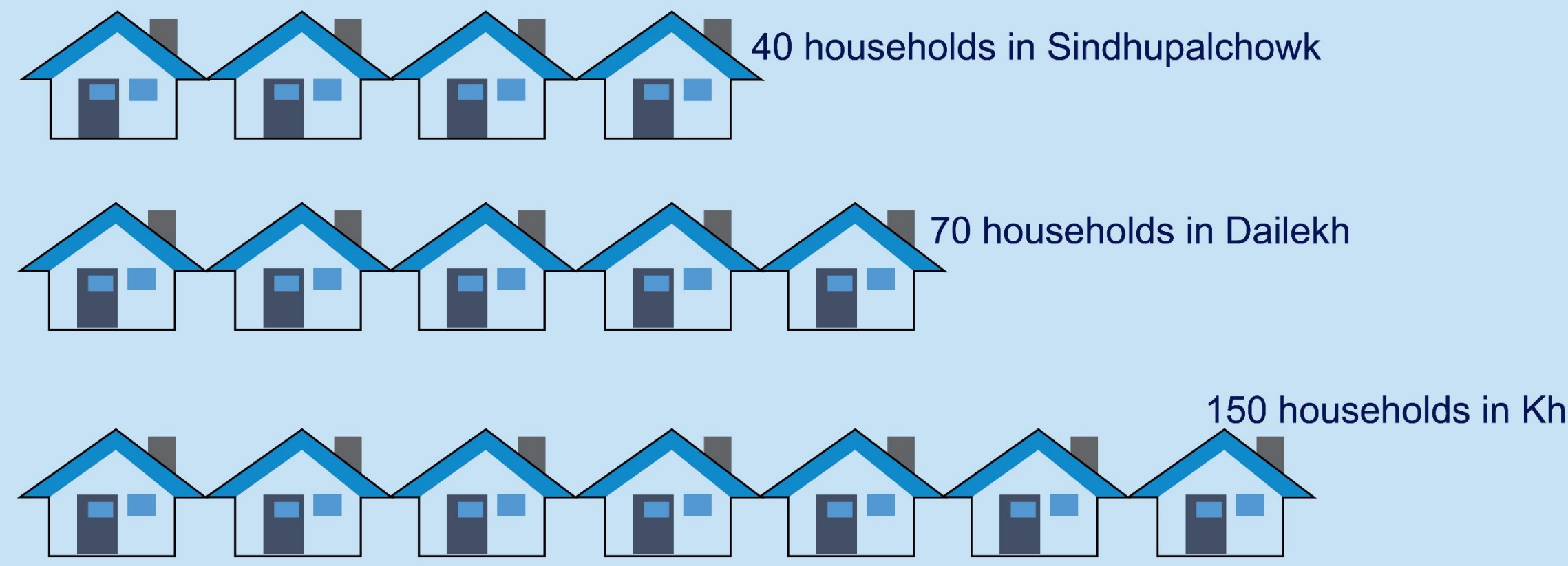


Spring Name	Location		
	Latitude	Longitude	Elevation
Chahara	29.48.36.1	80.38.20.6	2241
Nala	29.47.48.4	80.38.33.7	1998
Mul Paniyar	29.47.41.6	80.38.47.0	1972
Pariya Paniyar	29.47.45.2	80.38.45.3	1922
Tallo Jugai pani	29.47.40.0	80.39.08.1	1689
Paniyar	29.47.15.5	80.36.34.8	1955
Thallan pani	29.47.33.2	80.38.00.0	1932

Who fetches water?



How many households depend on a spring?



Social rules and norms

- No formal institutions
- Informal rules and norms
- Social marginalization (women and Dalits)
- Social conflicts

What is spring water used for?

