

About Us

Established in 2006, CEDAR is a not-for-profit organization working at the interface of research and practice. It undertakes collaborative, participatory, and multi-disciplinary research projects that integrate community knowledge from the Himalaya with scientific evidence. Through evidence-based policy advocacy, CEDAR engages stakeholders and decision-makers to promote sustainable and equitable management of natural resources.



Vision

CEDAR envisions itself as the bridge between research and practice to facilitate socially just and equitable natural resource management in the Himalaya.



Mission

Our mission is to foster awareness and understanding of the Himalayan ecosystem through trans-disciplinary knowledge generation and dissemination.

Details of our Citizen Scientists: Working for a Healthy Village

Village/sites	Citizen Scientist	Contact Details
Baltari	Manisha Chand; Kheemanand Bhatt	9411770103
Kanri	Pooja Chand; Jagdish Chand ; Lokendra Chand	8923432463
Chharchum	Pooja Devi; Yashoda Bhatt ; Hansa Devi	9756170406
Dhungatoli	Manju Devi ; Ganga Devi; Chanda Devi; Anita Rawat; Rani Rawat	9639123554
kalika	Karishma Devi ; Hema Devi; Deepika Devi; Kamla Devi; Kalawati Devi	9528840851
Sailanigoth	Jyoti; Kajal Adhikari	NA
Phagpur	Reshma Devi ; Babita Devi	8218524338

Picture Courtesy: Dr. Renu Suyal; Mr. Shivam Mishra and
Map: Ms. Tanya Balani

For more details, Please Contact

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SCIENCE FOR ALL Engaging Communities, Empowering Action

Citizen-led water quality testing drives collective action for sustainability



TROSA Phase-2: Rivers, Rights and Resilience

TROSA Phase-2: Rivers, Rights and Resilience (T2:3R), funded by SIDA and in India by IUCN, works to support climate-resilient livelihoods for vulnerable natural-resource-dependent communities in the Ganges, Brahmaputra and Meghna (GBM) basins. In India, the work focuses on the Kali/Sharda River in the Ganga basin. The program aims to improve management of transboundary river ecosystems, scale up efforts to empower and increase the participation of women, youth and Indigenous People in water governance, and strengthen institutions for cooperation on governance of shared water resources

Kali/Mahakali-Sharda River- overview

The Mahakali/Kali-Sharda basin, spanning 19,667.9 km² across India and Nepal, showcases a diverse landscape ranging from fertile plains to rugged mountains. The land cover in 2023 is distributed as follows:

- Forest: 7,746.83 km² (39.39%) – the largest share of the basin, providing rich biodiversity and ecosystem services.
- Agricultural Land: 4,562.63 km² (23.20%) – cultivated areas supporting local livelihoods.
- Grassland: 1,746.80 km² (8.88%) – open lands contributing to grazing and natural habitats.
- Scrubland: 2,052.03 km² (10.43%) – areas with shrubs and scattered vegetation.
- Settlement Areas: 484.49 km² (2.46%) – towns, villages, and infrastructure across the basin.
- Snow & Glacier: 1,097.03 km² (5.58%) – high-altitude regions covered with snow and ice.
- Waterbodies: 311.42 km² (1.58%) – rivers, lakes, and reservoirs.
- Barren/Rocky Terrain: 1,672.08 km² (8.47%) – rocky and uncultivable lands.



A steep river valley along the Kali River in the upper Mahakali Basin, Pithoragarh district. The landscape reflects the fragile terrain and challenging ecological conditions of the region. — view from the route to Narayan Ashram, Pithoragarh district

Biodiversity of the Kali-Sharda river

The Kali River in Uttarakhand sustains diverse flora and fauna, with its riverine ecosystem providing critical habitat for several fish species. The Golden Mahseer (*Tor putitora*, Endangered, IUCN), Asla (*Schizothorax richardsonii*, Vulnerable, IUCN), and Goonch (*Bagarius yarrelli*, Vulnerable, IUCN) are key species in the basin. This biodiversity, vital for ecology and local livelihoods, is increasingly threatened by river barriers and destructive practices such as dynamite fishing



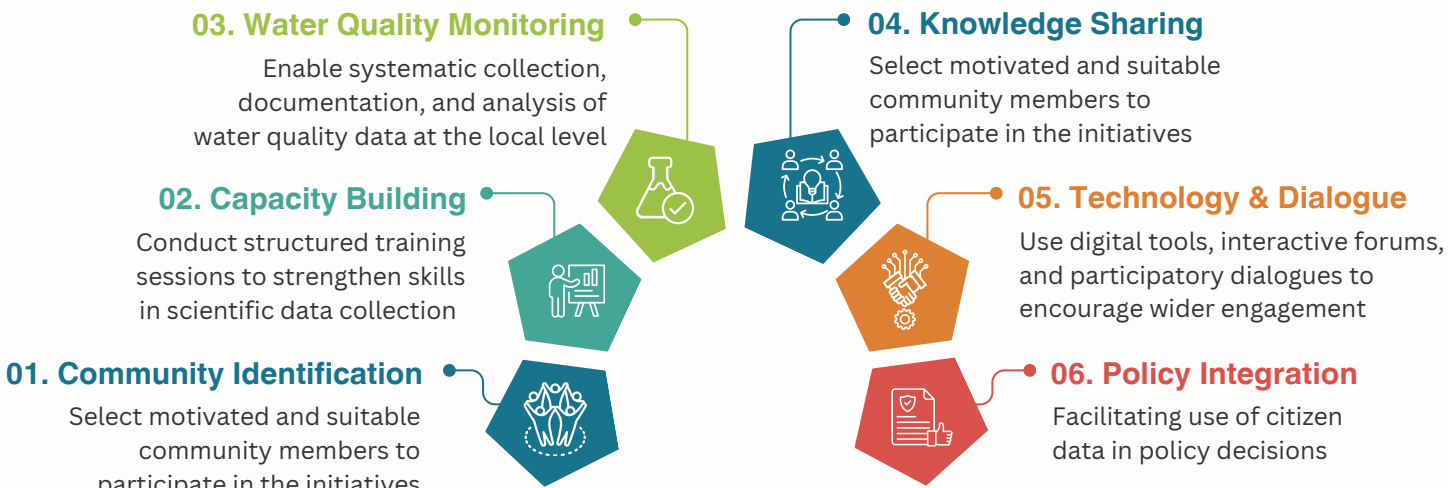
Local expert from Camp The Himalaya at Pancheshwar displaying Golden Mahseer catch. Photo credit: Shyam Gurung.

Recreation and Cultural Significance of the Kali River

The Kali River near Jauljibi is famous for white-water rafting, with 120 km of thrilling rapids from Jauljibi to Tanakpur. Scenic sandbars and beaches offer ideal spots for camping. The annual Jauljibi Mela, dating back to 1871, attracts traders from Tibet, Nepal, and India and serves as a lively platform for community engagement.

About the Citizen Science Initiative

Citizen Science refers to the active participation of community members in collecting and sometimes analyzing scientific data, often in collaboration with researchers. For example, community volunteers may monitor water quality in nearby springs or examine soil samples from their surroundings. By involving non-professional contributors, citizen science creates opportunities for communities to play a direct role in generating environmental knowledge. This approach is grounded in the idea that informed citizens can become strong advocates for change. When communities are aware, engaged, and take ownership, they help build momentum for improved policies and practices in managing riverine ecosystems.



Citizen Science Based Approach



Glimpses of Community Engagement in Water Quality Testing



Selection of Water Committee through Community Meeting



Training of CEDAR and GDS Staff by PSI



Citizen Scientists Conducting Water Testing



Training of Communities by PSI Experts



Citizen Scientists Participating in an International Youth Conference



Distribution of Water Testing Kits



Cross-Border Joint Learning Session of Citizen Scientists from India and Nepal



Citizen Led Water Quality Monitoring (2024-25)

Strengthening Capacities of Riverine Communities

Community-based seasonal monitoring across 07 villages in Upper Kali-Sharda basin

**Villages Covered**
Baltari, Kanri, Chharchum, Dhungatoli, Kalika, Sailanigoth, Phagpur

**प्रशिक्षित समुदाय सदस्यों के नेतृत्व में**
(Youth and women using Comprehensive Water Quality Kit (CWQT)

Summary of water quality parameters



Parameter	Observed Range (Citizen monitored)	BIS Desirable Limit	Permissible Limit	Remarks / Status
Temperature (°C)	10–35	<30	—	Within range; seasonal variation
TDS (ppm)	64–320	<500	2000	Within desirable limit
pH	6–8	6.5–8.5	No relaxation	Acceptable
Dissolved Oxygen (mg/L)	6–16	>5	—	Good oxygen levels
Alkalinity (mg/L)	20–640	200	600	Slightly above limit at few sites
Hardness (mg/L)	80–272	200	600	Moderate hardness
Chloride (mg/L)	12–48	250	1000	Within limit
Fluoride (mg/L)	0.5–2	1	1.5	Slightly high at some sites
Iron (mg/L)	0.1–3	0.3	1	Exceeds in few samples
Nitrate (mg/L)	1–45	45	No relaxation	Within limit
Phosphate (mg/L)	0.1–0.5	—	—	Low, natural levels
Fecal Coliform	Present in most samples	Absent	—	Indicates microbial contamination risk

Effect of fluoride contamination on human health

Fluoride in groundwater mixes with our drinking water and crops — it finally enters our bodies through food and water.

Health Effects

- Dental & skeletal fluorosis
- Tooth decay and caries
- Bone & joint pain



- Muscle weakness
- Kidney damage
- Skin issues (melanosis, keratosis)
- Cancer risk
- Blood pressure changes

Technologies to control fluoride in drinking water

- Precipitation:** Add safe chemicals to remove fluoride.
- Coagulation:** Mix and settle fluoride particles.
- Adsorption:** Use materials (like charcoal or clay) to trap fluoride.
- Plant materials:** barks of *Moringa olifera* and *Emblica officinalis*, the leaves of *Cyanodon dactylon* found to be good defluoridating agents

Effect of Iron contamination on human health

Iron in groundwater changes when exposed to air — it forms rust-like particles that make water yellow and cloudy.

Health Effects

- Leaves rust stains on clothes, utensils
- Makes water yellowish or brackish in color
- Gives bitter or metallic taste to drinking water
- Excess iron may cause stomach discomfort or digestive problems



Technique to remove Iron from Water

- Aeration:** Mix air with water to change dissolved iron into rust that can be removed.
- Filtration:** Pass water through filters to trap and remove rust particles.
- Water Softener:** Use special materials to take out dissolved iron from water.

Effect of Fecal coliform on human health

- Found in human and animal waste — shows the water is contaminated
- Can cause diarrhea, stomach pain, vomiting, and fever
- May spread serious diseases like typhoid, cholera, and dysentery
- Especially dangerous for children, elderly, and weak individuals



Technologies to control Fecal coliform in drinking water

- Boil water for at least 10–15 minutes before drinking
- Use chlorine tablets or other safe disinfectants
- Use solar disinfection (keep water in clear bottles under sunlight)
- Build and use proper toilets to stop waste from mixing with water
- Avoid open defecation near water sources
- Clean and cover storage tanks regularly

