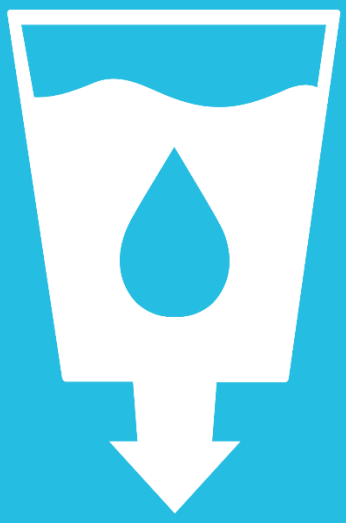
Swami Rama Himalayan University

NAAC A+

Report on

Sustainable Development Goal 6



CLEAN WATER AND SANITATION

Swami Rama Himalayan University (SRHU) is actively contributing to the achievement of Sustainable Development Goal 6 (SDG 6) through a range of innovative, educational, and community-based initiatives. Recognizing the global challenges associated with water scarcity, pollution, inadequate infrastructure, and governance issues, SRHU is committed to addressing these problems through sustainable practices, research, and awareness.

Institutional Water Infrastructure & Conservation

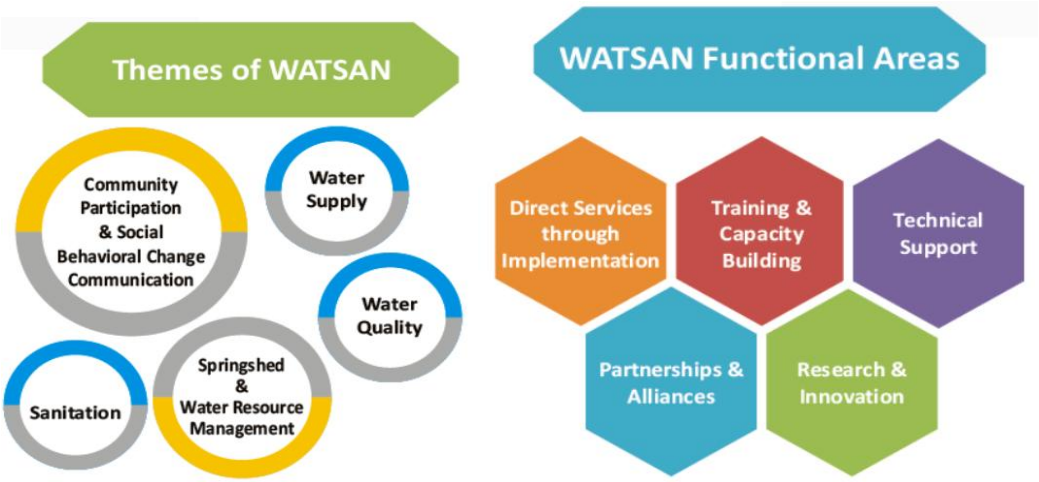
SRHU has operated a dedicated **Water & Sanitation (WATSAN) Department** since 1998 (over 26 years) steadfast in advancing sustainable water, sanitation, and hygiene (WASH) interventions to improve public health outcomes. These efforts have positively impacted over 200 villages across Uttarakhand, empowering communities to take ownership of WASH initiatives.

WATSAN department at Swami Rama Himalayan University

Key projects implemented under SRHU's RDI include:

- A dedicated Water & Sanitation Resource Centre, supported by IRC, Netherlands
- Participation in the Swajal Sector Reform Program (SWAp)
- Implementation of the Himmothan Pariyojana, in collaboration with Tata-Titan and the Hans Foundation
- Execution of Nirmal Bharat Abhiyan / Total Sanitation Campaign

- Contributions to the Urban Sector Development Investment Program



Major themes and functional areas covered by WATSAN

SRHU, through its flagship institution—Himalayan Institute Hospital Trust (HIHT)—has earned national recognition. The Ministry of Jal Shakti, Government of India, has empaneled HIHT to undertake Corporate Social Responsibility (CSR) projects, placing it at the **4th rank nationally** and as the **only organization from Uttarakhand** on the list. Additionally, HIHT has been designated as a **National Key Resource Center (NKRC)** under the **Swachh Bharat Mission (Gramin)**, underscoring SRHU's leadership in strengthening rural WASH systems in alignment with national priorities.

Accomplishments of WATSAN under clean water and sanitation

Activities under taken by WATSAN during 2024-2025 catering to the SDG 6: Clean water and Sanitation

1. **Capacity Building for Har Ghar Jal (Jal Jeevan Mission):**

   A series of Change Management trainings were conducted for public health engineers and mid-level government officials under the Har Ghar Jal initiative. These were held at Hotel Jasmin in Haldwani (01–02 July 2024) with 44 participants, at Uttarakhand Institute of Rural Development (UIRD), Rudrapur (05–06 July 2024) with 45 participants, at SRHU campus (15–16 July 2024) with 35 participants, and at Hemwati Nandan Bahuguna, Srinagar, Pauri (29–30 July 2024) with 40 participants. These programs, supported by the State Water & Sanitation Mission, Government of Uttarakhand in collaboration with SRHU, focused on strengthening the capacity of officials to implement the Jal Jeevan Mission. *(SDG 6.a, 6.b)*

2. **Community Engagement on RDI Foundation Day:**

   On 20–21 September 2024, SRHU celebrated RDI Foundation Day across its campus and in villages including Pasta, Tashila, Moldhar, and Jaswawala. The event engaged approximately 200 students and villagers through community-led water and sanitation awareness activities. *(SDG 6.b)*

3. **Swachhta Pakhwada – Campus-Wide Sanitation Campaign:**

   From 23 September to 1 October 2024, SRHU organized Swachhta Pakhwada, a campus-wide campaign promoting sanitation and hygiene practices, reaching 328 students and faculty members. *(SDG 6.2)*

4. **Social and Environmental Audit of Sewage Infrastructure:**

   A significant environmental assessment initiative was conducted from 01 January to 15 June 2025, involving the social and environmental audit of seven Sewage Treatment Plants (STPs) and two Interception and Diversion sites in Dehradun, Haridwar, Tehri Garhwal, and Nainital. This audit was supported by Namami Gange and the State Mission for Clean Ganga (SMCG), Government of Uttarakhand in partnership with SRHU. *(SDG 6.3)*

5. **GESI-Responsive Springshed Management in the Hindu Kush Himalaya:**

   From 29 January to 1 February 2025, SRHU hosted a training on Gender Equality and Social Inclusion (GESI)-responsive Springshed Management in the Hindu Kush Himalaya, attended by 63 participants from 11 Indian states as well as Nepal and Bhutan. This program was conducted in collaboration with ICIMOD and GBPNIHE. *(SDG 6.5)*


6. **World Water Day – Rural and Campus Outreach:**

   On 22–23 March 2025, in observance of World Water Day, SRHU organized awareness campaigns and activities in the SRHU campus and villages such as Kokaliyal, Tachla, Gudiyawala, and Thano, engaging 529 students and villagers. *(SDG 6.b)*

7. **Affordable Climate-Resilient Water Supply Infrastructure Project:**

   A long-term project titled “Affordable Climate-resilient Water Supply Infrastructure Prototype for Indian Himalayan Region” was initiated on 29 March 2025 in five districts: Pauri, Rudraprayag, Chamoli, Tehri, and Uttarkashi. The project is supported by the National Mission on Himalayan Studies (NMHS), Ministry of Environment, Forest & Climate Change (MoEFCC), Government of India, in collaboration with SRHU. The project aims to ensure access to safe and affordable drinking water in climate-sensitive regions. *(SDG 6.1, 6.4)*

8. **Co-Learning and Exposure Visit on Springshed Management:**

   A co-learning and exposure visit on Springshed Management for Water Security was conducted on 22–23 April 2025 at SRHU Campus and Dehradun, involving 32 participants, including mayors from Nepal and Uttarakhand. Supported by ICIMOD, this initiative shared best practices in integrated water resource management. *(SDG 6.5)*

9. **Participation in State-Level Water Governance:**

   On 26 May 2025, SRHU participated in the Executive Committee meeting of the State Water Sanitation Mission (SWSM), held in Dehradun. This participation contributes to capacity-building and policy engagement in water governance. *(SDG 6.a)*

10. **Water Conservation Awareness in Industry:**

On 4 June 2025, an awareness session on water conservation and waste management was conducted at Wipro Enterprise Ltd, SIDCUL, Haridwar, engaging 24 staff members. This session, supported by Wipro in collaboration with SRHU, addressed responsible water usage and workplace sanitation. *(SDG 6.3, 6.6)*

Rainwater Harvesting and Groundwater Recharge

Rainwater harvesting is implemented extensively across the campus with a blend of traditional engineering and modern filtration systems. A series of recharge pits and filter beds have been constructed across academic and residential zones. The harvested rainwater is stored in underground tanks, used for flushing, cleaning, and groundwater recharge, significantly reducing the need for extracted groundwater.

- Total rainwater harvesting capacity: Approximately 40 crore liters
- Underground tank capacity: 1.5 lakh liters
- Daily reuse from tank: 3,000 liters for 111 toilets and 138 taps
- Total rooftop area utilized: 9,000 sq. meters
- Annual groundwater recharge from harvested water: 1.57 crore liters
- Rainwater used for flushing and cleaning: 9.45 lakh liters/year

Key recharge pit specifications:

- Guest House Area: 3 pits with filter beds (6.42×2×1.5 m) and recharge depth of 6 m
- New OPD Zone: Multiple pits of 3 m diameter × 12 m depth
- Medical College (SBI Bank): Filtration system with recharge pit of 3 m diameter × 3.35 m depth.

Rainwater harvesting pit at SRHU near New Block

Rainwater harvesting pit near MBBS girls hostel

Underground water tank at SRHU

Recharge Pit near University Office

Wastewater Treatment & Reuse

The University has established a comprehensive and environmentally responsible wastewater management framework to ensure the safe treatment, recycling, and reuse of both domestic sewage and industrial effluents. These efforts contribute significantly to water conservation, public health, and environmental sustainability on campus.

Sewage Treatment Plant (STP)

Capacity: 1 MLD (10,00,000 litres/day)

Technology: Moving Bed Biofilm Reactor (MBBR) with extended aeration and tertiary filtration

Construction Cost: ₹1.25 crore

Daily Average Treatment: 7,00,000 litres

Water Reuse: 9,43,153 litres recycled annually for:

- Green belt irrigation (1,60,800 sqm)
- Construction activities
- Vehicle washing

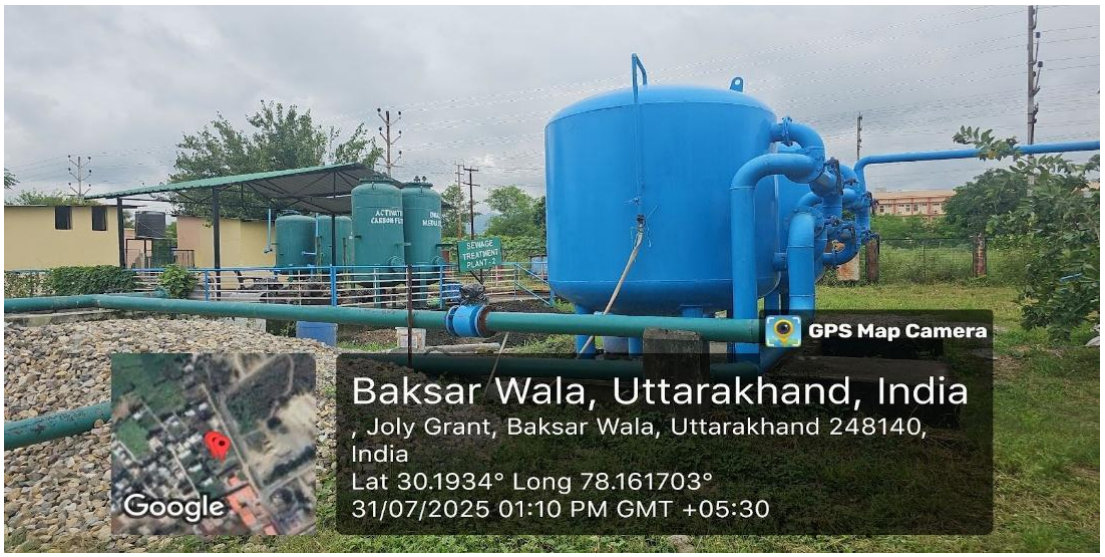
Water flow meter monitoring system from water inlet and outlet

Recycling of water from STP aligns with Sustainable Development Goals

Manure Use: Sludge from the STP is processed and reused as organic manure in campus landscaping.

Monitoring: Treated water is tested biannually at NABL-accredited labs. Recent lab results confirm that output is within permissible norms (e.g., pH: 7.15, BOD: 9 mg/L, COD: 39.7 mg/L, Fecal Coliform <80MPN/100ml).

Compliance: Fully adheres to state pollution control board regulations.



Sewage Treatment Plant at the University

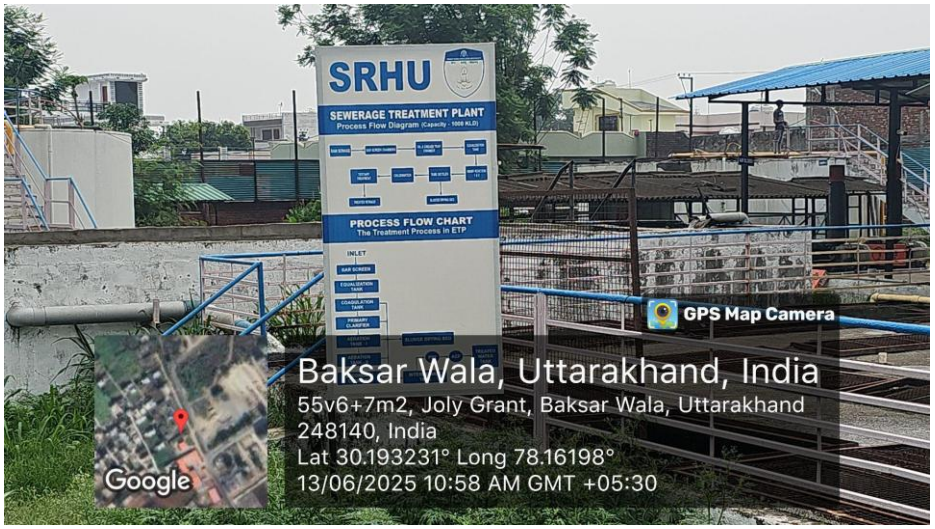
Sewage Treatment Plant at the University

Effluent Treatment Plant (ETP)

- **Capacity**: 90,000 litres/day
- **Purpose**: Designed for treating clinical and laboratory effluents from hospital and research units
- **Process Highlights**:
    - Equalization, coagulation, neutralization, aeration, clarification
    - Tertiary treatment via sand and activated carbon filters

- Continuous aeration and regular sludge handling

- **Sludge Disposal**: In partnership with **M/S Bharat Oil & Waste Management Ltd**, approved by UEPPCB
- **Safety & Compliance**: Daily operational parameters monitored, including pH (7–8), chlorine levels (1–2 mg/L), equipment checks, and filter backwashing every 4–8 hours.
- **Treated Water Use**: Reused internally for non-potable purposes



Effluent Treatment Plant at SRHU for treatment of clinical and laboratory effluent

Effluent Treatment Plant at SRHU for treatment of clinical and laboratory effluent

DELHI ANALYTICAL RESEARCH LABORATORY
Plot No. 2, (A-2) Timber Block, Jhilmil Industrial Area, Delhi-110095
E-mail : darltesting@gmail.com, www.darltesting.in
Ph.: 011-43545890, 09717324010, 9971520106, 8595224665.
(A GOVERNMENT APPROVED & ISO 9001 : 2015, ISO 45001:2018 Certified Testing Laboratory
TC-5163
TEST REPORT
Format No. DARL/QF/50

ULR No.: TC516325000009746F

Report Issue to: Swami Rama Himalayan University Swami Rama Nagar Doiwala Dehradun Uttarakhand - 248140.		Report No.	820250626WT019
		Sample Receipt Date	26/06/2025
		Test Started On	26/06/2025
		Date of Completion	30/06/2025
		Issue Date	30/06/2025
Name of Sample	STP Inlet water (1 MLD)		
Brand Name	N.S.	Date of Sampling	26/06/2025
Sample Quantity	1 Ltr	Batch/Lot No.	N.S.
Sample Collected by	Our lab Representative Mr. Rajan	Manufacturing Date	Not Specified
Sampling Method	N.S.	Expiry Date	Not Specified
Sample Description	STP Inlet water (1 MLD)		

TEST RESULTS

Group Name : Water Discipline : Chemical and Biological

S.No.	Test Parameter	Unit	Result	Test Method
1	pH	--	6.69	IS : 3025(P-11):2022 Clause no. 9
2	Total suspended solid(TSS)	mg/L	185.0	IS : 3025(P-17):2022 Clause no. 6.1
3	Biochemical oxygen demand (BOD) at 270C for 3 days	mg/L	134.8	IS : 3025(P-44):2023 Clause no.9
4	Chemical oxygen demand (COD)	mg/L	595.2	IS : 3025(P-58):2023 Clause no. 9
5	Oil and grease	mg/L	Less than 4	IS:3025(P-39):2021 Clause no 5.5
6	Microbiological Parameter	-	-	
7	Faecal coliform	MPN/100ml	<2	IS:1622:1981 Clause no. 3.3.3

Remarks : Party asked for above test only.

End of Report

Review by
Authorized Signatory
Manmohan pandey
Authorized Signatory (Chemical)
Mr. Manmohan Pandey

Page No. 1/1

Note: 1. The results are related to the test items only. 2. Sample will be destroyed after one month from the date of issue of test report. 3. This report is not be reproduced wholly or in part and cannot as an evidence in the court of law and should not be used in any advertisement media without written consent. 4. Laboratory is not responsible for customer provided details. 5. When report is without NABL Symbol & URL, it implies that these products & tests are not covered under NABL accredited scope.

Routine Testing report of effluent discharged from ETP

Operational Excellence & Environmental Stewardship

Both STP and ETP systems are maintained through detailed SOPs ensuring uninterrupted functioning, proper sludge handling, and minimal environmental discharge. Air blowers, dosing pumps, and filtration systems are run as per rigorous schedules by trained operators under the supervision of the Engineering & Maintenance (E&M) team. Preventive maintenance and strict quality checks ensure high efficiency and compliance.

Water- Saving Sanitation Features

In addition to robust wastewater treatment and rainwater harvesting systems, **Swami Rama Himalayan University (SRHU)** has implemented a series of innovative, low-cost, and high-impact interventions to reduce freshwater consumption across its academic, residential, and clinical zones.

Waterless Sanitation Solutions

- **Installation of over 150 waterless urinals** across campus has significantly reduced the need for flushing, saving approximately **1.5 lakh litres per urinal annually**, resulting in a **total annual saving of 2.25 crore litres** of water.

Waterless urinals present at different locations across the University

Reuse of Condensed AC Water

- **Condensate water from air conditioning units** is systematically collected and repurposed, contributing to **1.2 lakh liters of water saved annually**—an innovative reuse strategy supporting sustainable water use.

Condensed water from AC Units is used across the campus to repurpose and recycle water

Recycling of RO Reject Water

- RO (Reverse Osmosis) reject water, which is often discarded, is now being utilized effectively for **toilet flushing and laundry**, leading to annual savings of approximately **32.85 lakh litres**.

Sensor-Based Scrub Stations

- SRHU has deployed **sensor-activated scrub stations** in its Operation Theatres (OTs), which minimize water wastage during hand scrubbing. This smart technology saves approximately **5 lakh litres of water per year**.

Sensor activated scrub station aiding in water conservation

Community Outreach and Training

Beyond its campus operations, SRHU actively contributes to regional water sustainability by supporting community water access and building institutional capacities. The university has facilitated the construction of water conservation tanks in remote villages and provides training to stakeholders across India under national water management programs.

- Villages supported with clean water infrastructure: 550+
- Conservation tanks constructed: 600+ units (7,000-liter capacity each)
- Stakeholders trained through national programs: 7,787
- Functional areas covered: aquifer recharge, greywater management, spring restoration
- Hands-on environmental education integrated into undergraduate curricula through STP visits

States/UTs Outreached

1. Andaman & Nicobar
2. Andhra Pradesh
3. Arunachal Pradesh
4. Assam
5. Bihar
6. DNH & DD
7. Goa
8. Gujarat
9. Himachal Pradesh
10. Jammu & Kashmir
11. Jharkhand
12. Karnataka
13. Kerala
14. Ladakh
15. Lakshadweep
16. Madhya Pradesh
17. Maharashtra
18. Manipur
19. Meghalaya
20. Mizoram
21. Nagaland
22. Odisha
23. Puducherry
24. Punjab
25. Rajasthan
26. Sikkim
27. Tamil Nadu
28. Tripura
29. Uttar Pradesh
30. Uttarakhand
31. West Bengal

States and Union territories covered by WATSAN, SRHU supporting SDG 6

Snippets of various activities under WATSAN translating into clean water and sanitation

Environmental and Social Audit under the Namami Gange Programme

Swami Rama Himalayan University (SRHU) has been engaged as a key evaluator in the Government of India's Namami Gange Programme, an initiative launched in 2014 to address the growing pollution in the Ganga River. As a river of immense ecological, cultural, and economic significance, the Ganga has faced critical threats due to unregulated urban expansion, industrial discharge, and inefficient waste infrastructure.

In response, the establishment of Sewage Treatment Plants (STPs) and Interception & Diversion (I&D) systems has become central to pollution abatement efforts.

SRHU has been entrusted by the State Mission for Clean Ganga (SMCG), Government of Uttarakhand, to conduct comprehensive Environmental and Social Audits of STPs and I&D units in nine locations across the districts of Haridwar, Tehri, Dehradun, and Nainital. These audits are intended to assess the environmental performance and community-level impact of Ganga rejuvenation infrastructure and ensure that interventions are aligned with sustainability and compliance frameworks.

Districts Covered: Haridwar, Tehri, Dehradun, and Nainital

STP under Namami Gange Initiative

Sensitization of masses on important of clean water under Namami Gange

STP monitoring and Audit under Namami Gange

Research, Innovation, and Policy Integration

SRHU promotes research-driven solutions for water reuse and conservation. Research projects, patents, and peer-reviewed publications reflect the university's academic commitment to developing low-cost, scalable technologies. Water management policies guide the campus community in source segregation, compliant disposal, and safe reuse of wastewater.

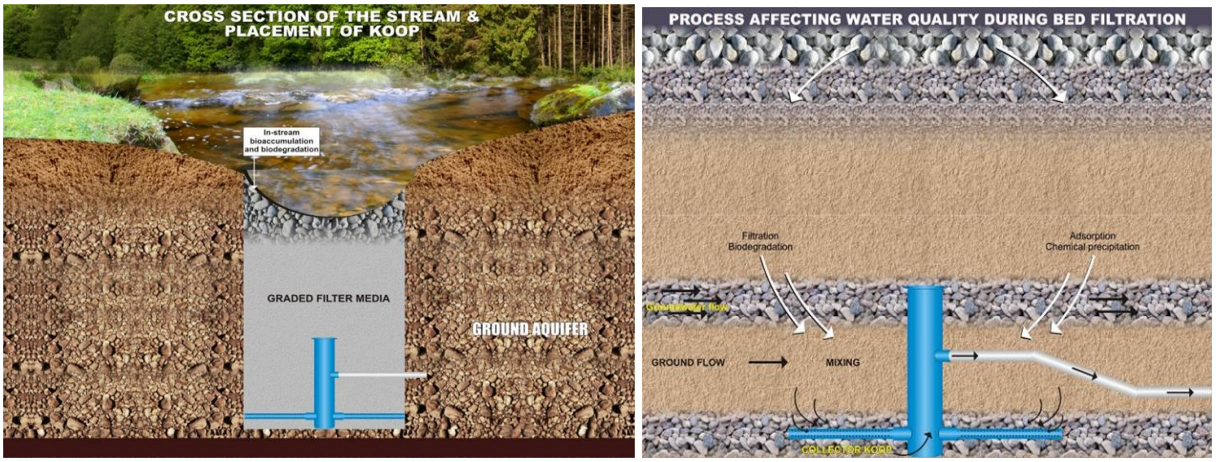
Number of patents in water technology: 3 (including rooftop harvester and direct injection system)

As part of its commitment to sustainable development and water security, Swami Rama Himalayan University (SRHU) has initiated a research project titled "Affordable Climate-resilient Water Supply Infrastructure for the Indian Himalayan Region." This initiative aims to address the acute challenges of water scarcity, inaccessibility, and climate vulnerability faced by indigenous mountain communities. The project focuses on designing and developing a low-cost, climate-resilient, and prefabricated source tapping and filtration system, piloted in a selected mountain village with the intent to scale up across similarly vulnerable geographies.

Key Outcomes

- **Reliable Potable Water Access**: The pilot will ensure year-round availability of clean and safe drinking water, particularly in remote and high-altitude areas where conventional water systems are often unviable.
- **Health and Economic Benefits**: Reduced incidence of waterborne diseases will contribute to **lower healthcare costs** and improved community well-being.
- **Environmental Sustainability**: By employing context-appropriate, low-impact solutions, the system minimizes ecological disturbances in **environmentally sensitive Himalayan terrain**.
- **Community Empowerment**: The project includes training modules to equip local communities with the **knowledge and skills to operate and maintain** the system, fostering ownership and long-term sustainability.

This research-based intervention not only supports the national mission of "Har Ghar Jal" but also strengthens India's progress toward achieving SDG 6 targets by ensuring equitable access to safe and affordable drinking water for vulnerable populations.



Design Drawing for low-cost, climate-resilient, and prefabricated source tapping and filtration system developed by WATSAN

Water being collected post installation of low cost underground water filtration

The University provides research funds to promote the research for conduction of research. To name a few intramural projects funded by the University that aligns with SDG 6 are:

S. No.	Name of the project	Duration of the project	Name(s) of the teacher(s) working in the project receiving seed money
1.	Upgrading plant microbe-based approach to enhance phytoremediation method in contaminated water body	1 year	Dr Vivek Kumar
2.	Water quality assessment in a selected Urban Slum of Doiwala Block in district Dehradun	1 year	Dr. Abhay Srivastava

SRHU has addressed critical challenges such as water quality monitoring, wastewater management, bioremediation, groundwater safety, and the development of affordable water technologies. The following Scopus-indexed publications exemplify the University's evidence-based approach to improving access to clean water, mitigating waterborne health risks, and fostering sustainable environmental stewardship across vulnerable ecosystems, particularly in the Indian Himalayan Region.

SN	PUBLICATION TITLE
1	Mapping of radionuclides for radiological impact assessment in cultivated soil of Punjab, India
2	Spatial distribution analysis of soil radioactivity using gamma-ray spectroscopy and radiological inferences
3	Hospital-associated effluents: the masked environmental threat that needs urgent attention and action
4	Study of radiation exposure to radon in groundwater using scintillation-based RnDuo technique: A statistical analysis for risk assessment
5	Environmental restoration of polyaromatic hydrocarbon-contaminated soil through sustainable rhizoremediation: insights into bioeconomy and high-throughput systematic analysis
6	Assessment of soil gas radon migration and transport through the estimation of radon diffusion length and diffusion coefficient in the soil matrix
7	Measurement of natural radionuclides and health risk assessment in soil samples of the Main Central Thrust region in Garhwal Himalaya, India
8	Spatial analysis and soft computational modeling for hazard assessment of potential toxic elements in potable groundwater
9	Impact of Artificial Intelligence (AI) in Bioremediation of Dairy Effluent by Microalgae and the Potential Application of the Produced Lipid Byproducts
10	Appropriate Hand Drying - The Missed Step of Hand Hygiene: A Qualitative Evaluation of Hand Drying Practices among Indian Health Care Workers
11	Human exposure to uranium through drinking water and its detrimental impact on the human body organs

12	Primary Pelvic Hydatid Cyst in Adolescent Female
13	Biochar production methods and their transformative potential for environmental remediation
14	Optimizing microbial strain selection for pyrethroid biodegradation in contaminated environments through a TOPSIS-based decision-making system
15	United nations sustainable development goals in the context of hydrological extremes
16	Exploring the potential of novel Bacillus sp. G6: Isolation, characterization, and optimization of biosurfactant production from oil-contaminated soil
17	Demineralized Water Consumption: Unravelling Current Trends and Health Effects
18	Investigating chemical pre-treatment methods: Valorization of wheat straw to enhance polyhydroxyalkanoate (PHA) production with novel isolate Bacillus paranthracis RSKS-3
19	Editorial: Potential of the plant rhizomicrobiome for bioremediation of contaminants in agroecosystems
20	Rhizomicrobiome as a potential source of microbial inoculants for use in in vitro biotization mediated acclimatization of micropropagated plants
21	Impact of Microorganism-Based Bioremediation on the Fauna and Flora of Different Matrices
22	Wireless System for Monitoring of Water Tank Using Emerging Technologies
23	LED fluorimetric analysis of uranium in potable groundwater and associated health concerns
24	Valorization of wastewater through bioremediation approach
25	Microbiological dimensions and functions in constructed wetlands: A review