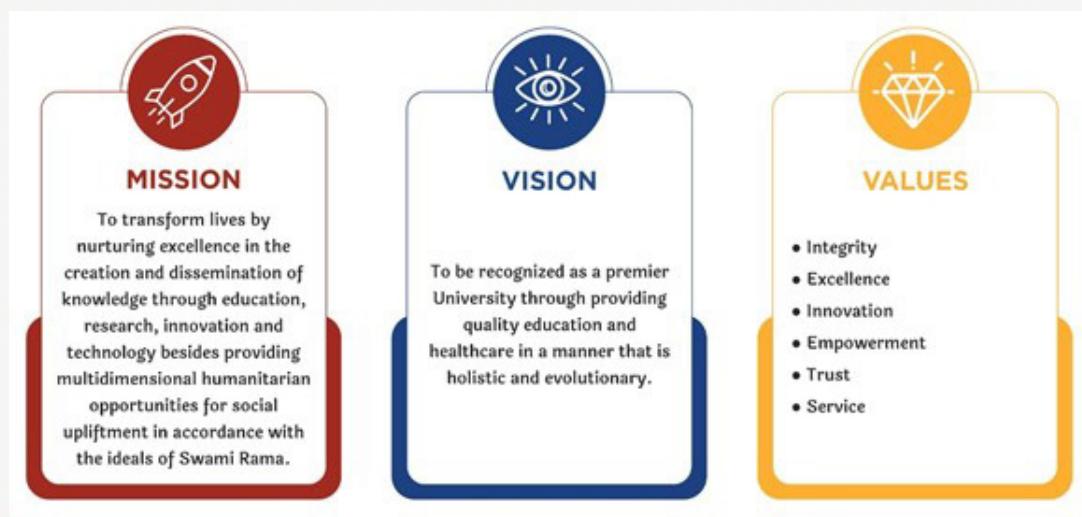


# BEST PRACTICE

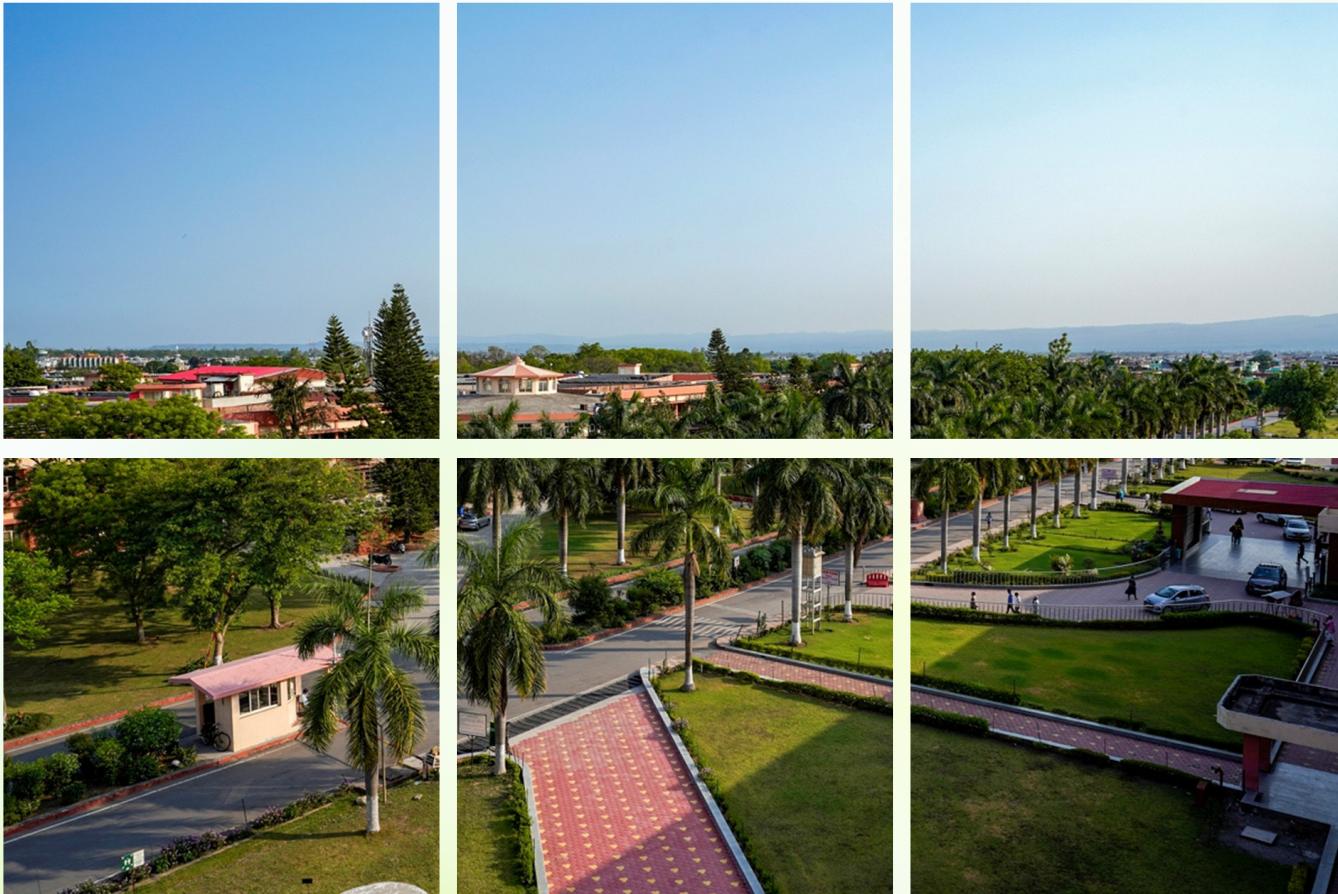


# ABOUT THE UNIVERSITY

SRHU is a NAAC A+ accredited university established under the UGC Act and promoted by the Himalayan Institute Hospital Trust. Sustainability governance at SRHU is embedded within institutional planning, operational decision-making, and outreach mandates. The University integrates sustainability principles across teaching, research, campus management, and community development, supported by statutory compliance with environmental, water, energy, and healthcare regulations. Multiple national and international recognitions, including CII Platinum and Gold Awards for Green Practices, reinforce SRHU's sustained commitment to responsible institutional development.



# ENVIRONMENTAL SUSTAINABILITY: BEST PRACTICES WITHIN CAMPUS



# INTEGRATED WATER STEWARDSHIP

Water conservation and sustainable water management represent a flagship sustainability practice at SRHU. Given the region's dependence on groundwater, the University has implemented CGWA-compliant water monitoring systems, including telemetry-enabled tube wells and piezometers to track extraction and groundwater levels in real time. Groundwater quality is periodically tested through NABL-accredited laboratories to ensure compliance with BIS drinking water standards.

Two piezometers with telemetry are installed for monitoring ground water level as per CGWA guidelines

- 2022-23 -69.79 mt
- 2023-24 -68.05 mt
- 2024-25 -68.45 mt

A defining best practice is SRHU's 365-day Rooftop Rainwater Harvesting (RWH) Model, designed to ensure year-round utilization of harvested rainwater. A 150 KL underground storage tank with advanced filtration supports daily non-potable consumption of approximately 3,000 liters, primarily for toilets and washrooms in academic and healthcare buildings. This system supplies water to over 250 sanitation points while simultaneously diverting excess rainwater for groundwater recharge. Annually, the system enables the reuse of nearly 9.45 lakh liters of water and contributes approximately 1.57 crore liters toward aquifer replenishment.

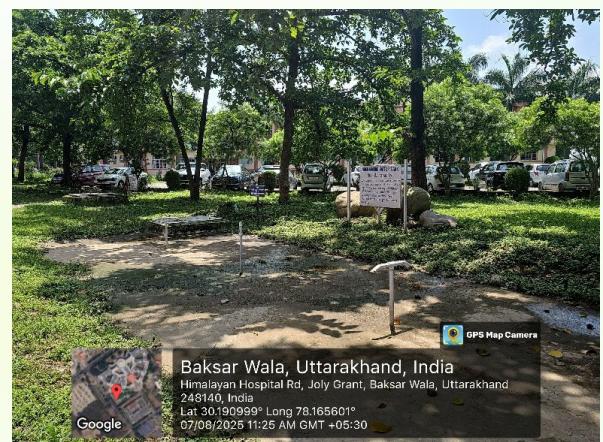
The SRHU receive an annual rainfall of 2073.3 mm.

([www.dehradun.nic.in](http://www.dehradun.nic.in))

The rainwater poured over different surface of the SRHU is as follows:-

- Roof top –  $73381.12 \times 2.0733 \times 0.85 = 1,29,319.9$  cum
- Road / paved area –  $107711 \times 2.0733 \times 0.75 = 1,67,487.9$  cum
- Open area –  $83425 \times 2.0733 \times 0.2 = 34,593$  cum
- Green belt –  $160800 \times 2.0733 \times 0.15 = 50,007.9$  cum

**Total volume available annually for rainwater harvesting (2024-2025) is 3,81,408.7 cum**



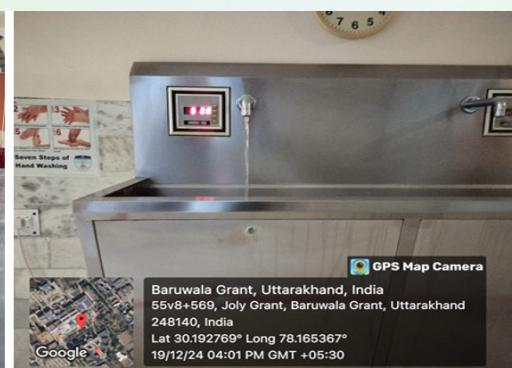
Year (April - March)	Annual Water consumption		Serving Population
	Quantity (m <sup>3</sup> )	Source of Water	
2022 – 23	375669	Tube well & municipal supply	Residential – 1835, Hospital Beds - 1200, OPD – 1100, Staff - 2150, Day Scholar- 2900 (Total - 9185)
2023 – 24	390500 (3.9%+)		Residential – 2075, Hospital Beds - 1200, OPD – 1350, Staff - 2200, Day Scholar- 2900 (Total - 9725, 5.87%)
2024 – 25	491788 (25%+)		Residential – 3250, Hospital Beds - 1250, OPD – 2250, Staff - 2845, Day Scholar- 4100 (Total - 13695, 28%)

Further strengthening circular water use, SRHU operates a 1 MLD Sewage Treatment Plant (STP) and a 90 KLD Effluent Treatment Plant (ETP). Treated wastewater is reused for irrigation of a 1,60,800 sqm green belt, construction activities, and vehicle washing, significantly reducing freshwater demand. Sludge generated through STP operations is repurposed as manure for campus landscaping



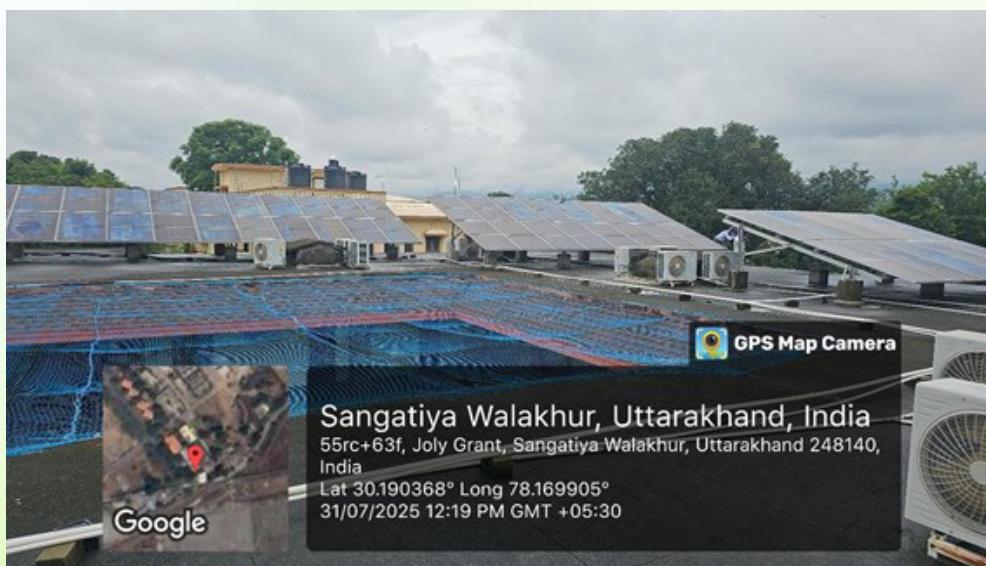
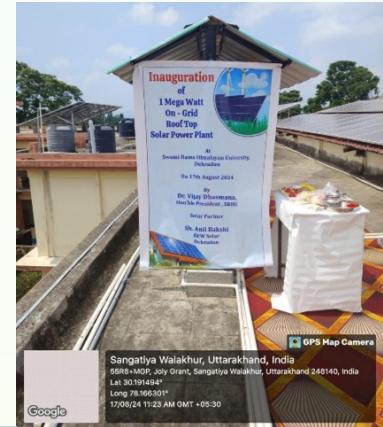
<b>Year (April-March)</b>	<b>Quantity generated (m<sup>3</sup>)</b>	<b>Quantity recycled (m<sup>3</sup>)</b>		<b>Quantity discharged (m<sup>3</sup>)</b>	
		<b>(m<sup>3</sup>)</b>	<b>%</b>	<b>(m<sup>3</sup>)</b>	<b>%</b>
<b>2022 – 23</b>	262968	262968	100	262968	<b>100</b>
<b>2023 – 24</b>	273350	273350	100	273350	<b>100</b>
<b>2024 – 25</b>	<b>344251</b>	<b>344251</b>	<b>100</b>	<b>344251</b>	<b>100</b>

Complementary water-saving innovations include the installation of 250 waterless urinals, saving approximately 3.75 crore liters of water annually; reuse of RO reject water in toilets and laundry; recovery of HVAC condensate; sensor-based scrub stations in operation theatres; and the placement of sand bottles in cisterns. These combined measures position SRHU as a model campus for water-efficient infrastructure in water-stressed regions.



# ENERGY EFFICIENCY AND RENEWABLE ENERGY INTEGRATION

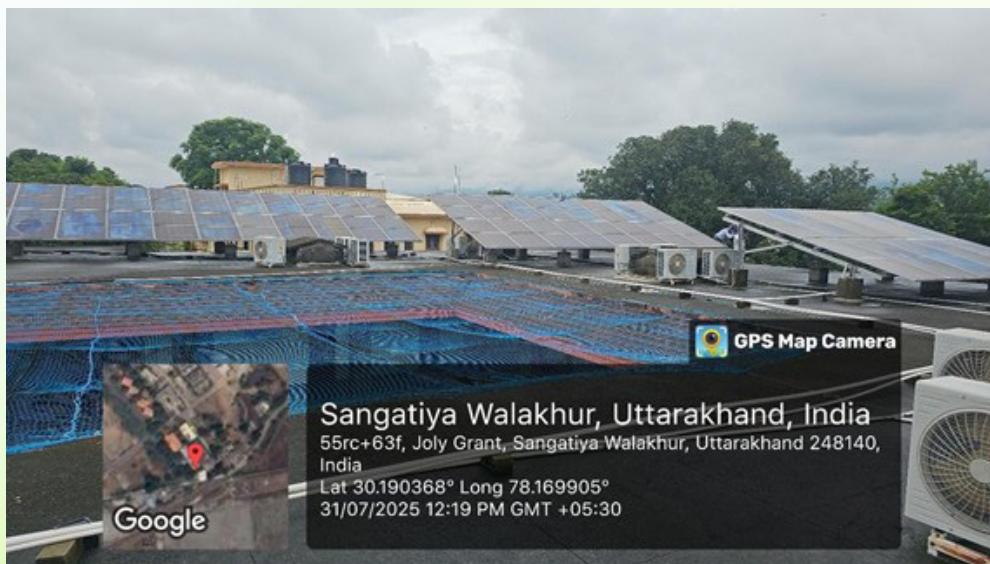
SRHU has made strategic investments in renewable energy and energy efficiency to reduce carbon emissions and operational costs. A 2.5 MW grid-connected rooftop solar power plant forms the backbone of renewable integration, generating over 71.6 lakh kWh in the past three years and yielding financial savings of approximately ₹2.51 crore. Renewable energy contributes up to 17.4% of the University's total electricity demand, with surplus energy exported to the grid.



Year (April - March)	Annual Energy consumption	
	Grid + Solar	
	KWH (Million)	Rs (Million)
2022-23	12.86	74.75
2023-24	14.25 (10.8%+)	85.05
2024-25	16.98 (19%+)	90.93

The total power generated through solar power plant in last 3 years – 71,60,055 kwh and savings of Rs. 2.51 Cr

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The total power generated through solar power plant in last 3 years – 71,60,055 kwh and savings of Rs. 2.51 Cr

- 2022-2023 – 20,93,841 kwh & Rs. 63,23,399/-
- 2023-2024 – 21,04,000 kwh & Rs. 78,90,000/-
- 2024-2025 – 29,62,214 Kwh & Rs. 1,09,28,081/-

Contribution from Renewal Energy on total power demand

- 2022-2023 – 16.28 %
- 2023-2024 – 14.76 %
- 2024-2025 – 17.43%

Electrical unit exported to grid

- 2022 – 2023 – 1,21,260 kwh
- 2023 – 2024 – 1,14,796 kwh
- 2024 – 2025 – 1,38,312 Kwh



The University has also installed a 50,000 LPD solar water heating system, supplying round-the-clock hot water to hospital wards and hostels. Over three years, this system has offset approximately 22.5 lakh kWh of electricity consumption, delivering substantial energy and cost savings while supporting critical healthcare operations.

Annual saving on heating of water is equivalent to 7,50,000 kwh of electricity

The hot water is supplied to Hospital & Cancer Research Institutes wards for patient care, cleaning purpose and Hostels round the clock.

- Total saving over last 3 years – 22,50,000 Kwh & Rs. 1,28,25,000/-
- 2022-23 - Rs. 41,40,000/- (tariff@5.52)
- 2023-24 – Rs. 46,87,500/- (tariff@6.25)
- 2024-25- Rs. 54,75,000/- (tariff@7.30)
- Total thermal energy saving over last 3 years 8100 GJ
- A subsidy of Rs. 24.78 lakh over 3 years provided to SRHU by UPCL



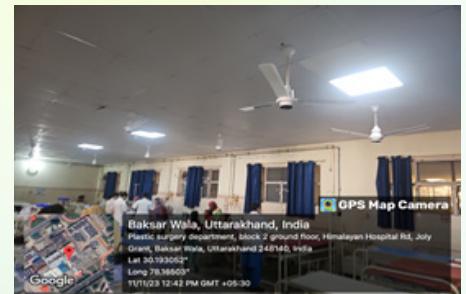
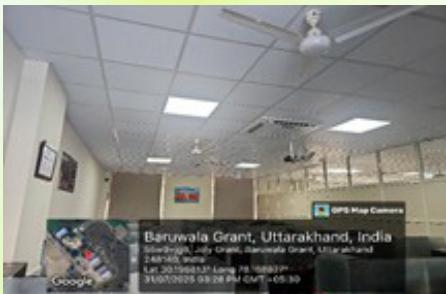
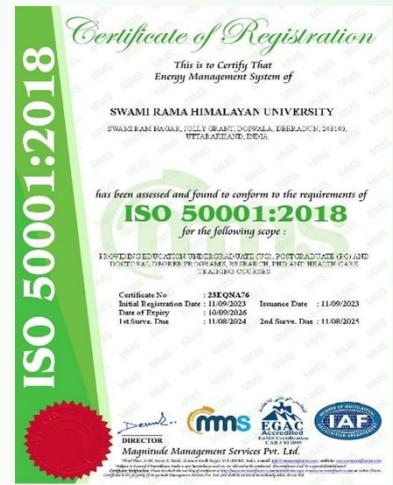
The University has strengthened its commitment to sustainable energy practices by setting up an in-house biogas plant on campus. Located behind the university guest house, the biogas plant has a daily capacity of 4 cubic meters (m<sup>3</sup>) and operates using cow dung from the campus dairy and vegetable waste from the guest house kitchen as feedstock. The biogas generated is efficiently utilized for cooking in the guest house kitchen, offering an eco-friendly alternative to conventional fuels. This initiative has led to an annual saving of 685.44 kg of LPG, which is equivalent to approximately 36 commercial LPG cylinders.

SRHU has been awarded the ISO 50001:2018 certification for its Energy Management System (EnMS), reinforcing its structured and data-driven approach to energy efficiency. This international standard provides a proven framework for organizations to develop and implement policies for more efficient energy use, continually improve energy performance, and reduce environmental impact.

Energy efficiency initiatives extend across campus infrastructure, including replacement of conventional fans with BLDC energy-efficient models, deployment of BEE star-rated HVAC systems, heat recovery ventilation, motion sensor lighting, reflective roofing materials, and energy-efficient computing systems. SRHU's Energy Performance Index (EPI) of 69.35 kWh/m<sup>2</sup>/year is significantly lower than the Indian higher education average, reflecting effective energy management across diverse facilities.

### Key highlights:

- Replacement of 1390 nos conventional ceiling fan of 70 watt by energy efficient 32 watt BLDC fans (energy saving of 50%)
- 2022-23: 550 fans – 1,00,320 kwh saved
- 2023-24: 620 fans – 1,13,088 kwh saved
- 2024-25: 220 fans - 40,128 kwh saved
- Overall 253536 kwh saved considering 8 months & 20 hours of operation
- 1270 new Desktops of 120 watt Installed at University Colleges replacing old computers of 260 watt
- Saving of 177.8 Kwh units of electricity per day (53340 Kwh annually)
- 144 points are being controlled through motion sensors at Hostels toilets



Collectively, renewable integration and efficiency measures help avoid an estimated 3,000 tonnes of CO<sub>2</sub> emissions annually.

# WASTE MANAGEMENT, BIODIVERSITY AND SUSTAINABLE MOBILITY



SRHU adopts a comprehensive waste management strategy encompassing plastic, paper, biomedical, and electronic waste. A campus Plastic Bank, established in collaboration with CSIR-Indian Institute of Petroleum, has enabled the collection and conversion of over 5.6 tonnes of single-use plastic into diesel. A wastepaper recycling unit processes office paper into reusable stationery, while a dedicated e-waste facility ensures environmentally responsible disposal.

Biomedical waste from healthcare facilities is managed in strict compliance with CPCB norms, covering segregation, treatment, transport, and disposal. These practices safeguard environmental and public health while meeting regulatory requirements.

- **Waste Generation:** Produced from healthcare activities (hospitals, clinics, labs), including infectious, pathological, sharp, chemical, and pharmaceutical waste.
- **Segregation:** Sorted at source into color-coded bins: yellow (infectious), red (contaminated plastics), blue (sharps), white (puncturing sharps), black (general waste).
- **Transfer:** Collected from generation points using dedicated trolleys or carts to avoid spillage and cross-contamination.
- **Storage:** Stored in designated, secure, well-ventilated areas with restricted access, labeled containers, and limited storage time (usually 24-48 hours).
- **Treatment:** Treated via incineration (yellow waste), autoclaving/microwaving (red waste), chemical disinfection, or shredding (sharps) to neutralize hazards.
- **Transport:** Transported in leak-proof, labeled vehicles by authorized waste management agencies to treatment or disposal facilities.
- **Disposal:** Treated waste disposed of in secured landfills or recycled (non-infectious plastics); ash from incineration managed as per regulations

The University campus includes a well-maintained green belt with approximately 6,000 trees and significant floral and faunal diversity, including documented bird, butterfly, reptile, and amphibian species. Sustainable mobility is promoted through electric shuttle vehicles, app-based bicycles, and a 5.3 km pedestrian-friendly pathway network, reducing vehicular emissions and enhancing campus liveability.



# **SUSTAINABILITY BEYOND CAMPUS: REGIONAL AND SOCIAL IMPACT**



# COMMUNITY WATER, SANITATION, AND CLIMATE RESILIENCE

SRHU's sustainability impact extends far beyond campus boundaries through structured community engagement led by its Research Centre for Climate Resilience and sustainability and Rural Development Institute (RDI).



## 550+ Villages transformed in water enlightened villages

- 342+ Water supply schemes implemented
- 600+ Rain water Harvesting Tanks constructed
- 14000+ Toilets constructed with eco- friendly approach
- 25+ Villages Solid & Liquid Waste Management
- 150+ Hectare Springshed area treated



## Trainings & Capacity Buildings

- 7000+ Functionaries of Line depts including Engineers under JJM
- 25000+ Community Persons including PRIs, Swachhagrahis, ASHAs trained
- 303+ Village Water Sanitation Committees (UWSCs) formed & trained



## Research & Innovation

- 2 Patents
- 10+ Researches
- 30+ Development projects



## 20+ Partnerships including Government, National & International Development agencies

The University has implemented water, sanitation, and environmental programs across more than 2,000 villages, benefiting approximately 12 lakh people across 31 Indian states and Union Territories, as well as Hindu Kush Himalayan (HKH) countries.

Key interventions include the construction of over 600 rooftop rainwater harvesting systems, springshed management initiatives in 97 villages, and solar-powered water supply schemes in remote and mountainous regions. These low-maintenance, community-managed systems enhance water security while reducing dependence on fossil fuels.





Sanitation initiatives have facilitated the construction of more than 14,000 household toilets and community sanitation facilities, supported by hygiene awareness campaigns in over 300 villages. These efforts contribute directly to improved public health outcomes and align with national missions such as Jal Jeevan Mission and Swachh Bharat Mission.



# RESEARCH, INNOVATION, AND POLICY ENGAGEMENT

SRHU has translated applied research into scalable solutions through patented technologies and government-supported projects. Innovations include patented methods for direct injection of rainwater into aquifers via defunct handpumps and the 365-day rooftop rainwater harvesting model. These technologies have informed large-scale government investments, including funding sanctioned under the Jal Shakti Abhiyan.

Title of Study & Research	Description
Direct Injection of Rainwater through Handpump for recharging of aquifers in Mountainous Areas (Patented)	Innovative technology of aquifer recharging developed and patented. <b>36 Cr. Sanctioned to GoUK by GoI under Jal Shakti Abhiyan 2023</b>
Innovative 365 Days Model of Rooftop Rain Water Harvesting for non-potable uses (Patented)	Rooftop rain water being used in toilets of various buildings for all round the year and <b>remaining</b> water used for recharging of ground water
Innovative Technologies for tapping of Spring & Stream in Mountainous Area	Developed Disaster prone water supply technologies - Uttaranchal Koop for stream and Steel Intake for Spring
Benefit Cost Analysis through WATSAN for Tata Trusts	Study of sustainable health & hygiene benefits
Health Benefit Study of World Bank funded Swajal Project	Impact assessment through imp. of water & sanitation project.
Impact Assessment Study	Impact assessment (social, technical, financial, environmental) on community through implementation of Swajal project
Project Planning, Implementation Plan	Pre-feasibility, Planning & Implementation guideline of water and sanitation project.
Appraisal of Detail Technical Reports	Appraisal of Detail Technical Reports of water and sanitation project.
Information Needs Assessment	Identifying information needs of various stakeholders under WATSAN sector.
Institutional Mapping Exercise and Publishing Blue Pages	Blue book of the water & sanitation institutes

The University actively supports climate-resilient water infrastructure research under the National Mission on Himalayan Studies, focusing on affordable, prefabricated systems for vulnerable mountain communities. SRHU also conducts social and environmental audits of sewage treatment plants under the Namami Gange programme, contributing evidence-based recommendations for improved water quality, governance, and operational sustainability.



# CAPACITY BUILDING AND GLOBAL PARTNERSHIPS

Capacity building forms a core pillar of Swami Rama Himalayan University's sustainability strategy, enabling long-term institutional strengthening, community empowerment, and policy-level impact. SRHU plays a nationally recognized role in strengthening water, sanitation, and environmental governance through structured training, technical facilitation, and knowledge dissemination.

The University is empanelled as a Key Resource Centre (KRC) under the National Jal Jeevan Mission (NJJM), Government of India, since 9 April 2021. In this capacity, SRHU provides technical expertise, training, and handholding support for planning, implementation, monitoring, and sustainability of rural drinking water supply systems. As a KRC, the University supports mid-level and grassroots stakeholders, including engineers, planners, local governance institutions, and community representatives, thereby contributing directly to the Mission's objective of ensuring functional household tap connections and long-term water security.

In addition to its role under the Jal Jeevan Mission, SRHU has served as a Key Resource Centre for the Swachh Bharat Mission (Gramin) and as a sector partner for multiple national water and sanitation initiatives. These responsibilities include capacity building of government officials, development of technical guidelines, evaluation of program outcomes, and facilitation of behavior change communication for hygiene and sanitation practices. The University's work emphasizes gender equality and social inclusion (GESI), ensuring that sustainability interventions are equitable and responsive to the needs of women, vulnerable populations, and marginalized communities.

At the international level, SRHU actively engages in transboundary capacity building and knowledge exchange, particularly within the Hindu Kush Himalayan (HKH) region. The University has conducted regional training programs on GESI-responsive springshed management and nature-based solutions in collaboration with organizations such as ICIMOD, supporting practitioners and policymakers from multiple countries. These initiatives promote climate-resilient water management practices in fragile mountain ecosystems.

SRHU's capacity-building efforts are strengthened through robust national and international partnerships. Collaborations with institutions such as IIT Roorkee, ICIMOD, WHO, University of Wisconsin (USA), and Laurea University (Finland) enable interdisciplinary research, faculty exchange, and joint training programs. These partnerships enhance the University's ability to translate scientific knowledge into practical, scalable solutions while aligning local actions with global sustainability frameworks.





