



SDG 11

Sustainable Cities and Communities

Sustainable Development Goal 11 (SDG 11) focuses on making cities and human settlements inclusive, safe, resilient, and sustainable. As urbanization continues to accelerate, over half of the world's population now resides in cities, placing immense pressure on infrastructure, housing, and basic services. SDG 11 aims to address these challenges by promoting affordable housing, sustainable transport systems, access to green spaces, and strategies to mitigate the environmental impact of urban growth. It also emphasizes the importance of safeguarding cultural and natural heritage and enhancing urban resilience to climate-related and natural disasters.

Achieving this goal is critical to ensuring that urban environments are equitable and liveable for all, while also reducing the ecological footprint of cities. SDG 11 aligns seamlessly with the vision of Swami Rama Himalayan University (SRHU) to foster sustainable and inclusive development through education, research, and community outreach. The University is committed to promoting sustainable urban practices and resilient infrastructure within its campus and surrounding communities. By implementing green building designs, effective waste management systems, and renewable energy solutions, SRHU serves as a model for sustainable development. Additionally, the University integrates urban sustainability principles into its academic programs and research initiatives, equipping students and faculty to address the complex challenges of urbanization. Through community outreach projects, SRHU actively engages with local populations to improve housing conditions, enhance disaster preparedness, and promote equitable access to urban services, embodying its mission to contribute to holistic societal well-being.



Key Targets of SDG 11

- 1. **Safe and Affordable Housing:** Ensure access to adequate, safe, and affordable housing and basic services for all by upgrading slums and addressing housing inequality.
- 2. Sustainable Transportation Systems: Develop inclusive and efficient transport systems to improve accessibility and reduce environmental impact.
- 3. Urban Resilience and Disaster Management: Strengthen resilience to natural disasters and climate-related hazards through adaptive planning and resource management.
- 4. **Inclusive Urban Planning:** Promote participatory and integrated planning approaches to ensure that urban development considers social, economic, and environmental aspects.
- 5. **Sustainable Urbanization:** Foster sustainable urban growth by improving resource efficiency, reducing emissions, and incorporating renewable energy solutions.
- 6. **Protection of Cultural and Natural Heritage:** Safeguard and promote cultural and natural heritage sites to enhance community identity and sustainable tourism.
- 7. **Reduction of Environmental Impact:** Minimize urban pollution, improve waste management, and ensure sustainable resource use.
- 8. Access to Green and Public Spaces: Create inclusive, safe, and accessible green spaces to promote well-being and community engagement.

Challenges in Achieving SDG 11

- **Rapid Urbanization:** Growing urban populations often outpace infrastructure development, leading to overcrowding and inadequate basic services.
- Environmental Degradation: Urban areas are major contributors to pollution and greenhouse gas emissions.
- **Inequality in Urban Areas:** Marginalized communities often lack access to affordable housing, clean water, and sanitation.
- **Disaster Vulnerability:** Poor urban planning and climate change increase the risk of natural disasters in cities.
- **Inadequate Policy and Governance:** Weak governance and lack of integrated urban policies hinder sustainable urban development.





Role of SRHU in Supporting SDG 11

Swami Rama Himalayan University (SRHU) is dedicated to fostering sustainable cities and communities through its education, research, and outreach programs:

- 1. **Sustainable Campus Initiatives:** The University employs green infrastructure, energyefficient buildings, rainwater harvesting, and waste management systems to promote sustainability.
- 2. **Research and Innovation:** Faculty and students engage in multidisciplinary research on sustainable urban planning, renewable energy solutions, and waste recycling technologies.
- 3. **Community Outreach:** SRHU collaborates with local authorities and NGOs to implement projects focused on public health to combat environmental challenges, disaster resilience, and urban sustainability in nearby communities.
- 4. Education and Training: The University integrates sustainability principles into academic curricula, equipping students with the knowledge and skills to address urban challenges.
- 5. **Green Public Spaces:** The campus promotes biodiversity and well-being through ecofriendly landscaping and open areas accessible to the community.

Research Initiatives

Swami Rama Himalayan University (SRHU) actively engages in research initiatives that support the objectives of SDG 11 by focusing on sustainable cities and communities. The University undertakes interdisciplinary research to develop innovative solutions for urban challenges such as waste management, energy efficiency, climate resilience, and health initiatives. Community-focused research further emphasizes sustainable housing, waste recycling, and inclusive urban development, particularly for marginalized populations. By integrating research with community outreach, SRHU plays a vital role in creating knowledge-driven solutions to make cities and communities more sustainable and liveable. Collaborations

Research Projects

The University provides research funds to promote the research for conduction of research (Intramural-Projects-Completed-2022.pdf, Intramural-Projects-Completed-2023.pdf).







To name a few intramural projects funded by the university are:

S. N o.	Name of the project	Duration of the project	Name(s) of the teacher(s) working in the project receiving seed money	The amoun t of seed money provid ed (INR in lakhs)	Year of receivi ng the seed money
1.	GiriSuraj- An Innovative Solar flux based Home Phototherapy Unit for Management of Neonatal Jaundice in low middle income countries	06 Months	Dr Suraj Kumar Singh,Dr Girish Gupta	0.15	2022- 2023
2.	HimGiriNaaz - An innovative, neonatal transporter unit for short duration transport	06 Months	Dr Aisha Naaz,Dr Girish Gupta	0.15	2022- 2023
3.	Assessment of the effects osf air pollution on gene diversity and population structure of the medicinally/economically important Shorea robusta roadside population using SSR markers	24 Months	Dr. Akhilesh Kumar	5.330	2022- 2023
4.	GiriBLS- A Life savior Basic Life Support Ready Reference Pocket Purse sized Card	6 Months	Dr. Girish Gupta	0.15	2022- 2023
5.	GiriHari - Resuscitator T-piece resuscitator for use in healthcare services during neonatal short transportation in low middle income countries	6 Months	Dr. Girish Gupta, Dr. Harit Prasad	0.15	2022- 2023
6.	A study to assess resilience and anxiety among Health Care Workers (HCW'S) working in critical care areas during the COVID-19 pandemic	3 Months	Dr. Rajesh Kumar Sharma, Associate Professor, HCN, SRHU	0	2022- 2023
7.	A system & method for maintaining Conditions of Mental Health in the Working Environment with the help of Human Resource Management	12 Months	Dr. K Selvasundaram, Ms. Ekta Rao, Dr. Subrato Kumar Dey,Dr. M K Kathiravan, Dr. T. Milton, Iskandar Muda, Valentino	0	2022- 2023





			Joebert Barbosa, Dr. Geetha Manoharan, Sunitha Purushottam, Rakesh Ahlawat		
8.	Development of Low Cost Model for Efficient Treatment of Hospital Waste Water	12 Months	Dr. Geeta Bhandari	3.000	2022- 2023
9.	Development of monosyllabic word list for adults in Garhwali language	03 Months	Ms. Shubha Tak -Audiology	0	2022- 2023
10.	Effectiveness of home based toilet training on knowledge and practice of mothers	9 Months	Dr. Sanjenbam Emon Chanu, Dr.Vandana Chauhan, Dr. Rashmi Joshi	0.578	2022- 2023
11.	Estimation of voice disorders in a tertiary care teaching hospital in Uttarakhand- A retrospective study	02 Months	Ms. Shalini S Narayanan- Audiology	0	2022- 2023
12.	Exploring the clinico-demographic profile and in-hospital outcomes of COVID-19 patients of tertiary care hospital of Uttarakhand during the second wave-A retrospective analysis	04 Months	Dr. Jayanti Semwal	0.02	2022- 2023
13.	Factors Affecting Awareness of Mental Health among Adults of Selected Area	6 Months	Dr. Grace M. Singh, Rajkumari Sylvia, Dr. Rahul Singh	0.538	2022- 2023
14.	First Aid and Support Training Manual for Drivers and Conductors	09 Months	Dr. Rajeev Bijalwan, Dr. Rakesh Kakkar,Dr. Pradeep Aggarwal, Dr Anurag Bhargava, Dr. Anil Juyal, Dr. D. C Vidyarthi, Mr. Sunil Khanduri, Mr. Vikesh Semwal,	0.44	2022- 2023







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15.	Hand drying practices among health car e workers: A web based survey	03 Months	Dr. Rakesh Kumar	0	2022- 2023
16.	Molecular study of Carbapenem resistant clinical isolates of Acinetobacter baumannii in a tertiary care center	24 Months	Dr. Barnali Kakati	2.997	2022- 2023
17.	Smartphone addiction and its correlation with academic performance in High School Adolescents	06 Months	Dr. Rakesh Kumar	0	2022- 2023
18.	Social media use among university students and its impact on sleep, anxiety and depression	03 Months	Dr. Rakesh Kumar	0	2022- 2023
19.	Speech and language outcome in childrenusing non-linear amplication device through RBSK scheme in Uttarakhand-A retrospective study	02 Months	Ms. Shalini S Narayanan- Audiology	0	2022- 2023

Research Publications

Swami Rama Himalayan University (SRHU) is committed to advancing knowledge and contributing to Sustainable Development Goal 11 (SDG 11) through impactful research publications. Faculty and researchers across disciplines actively publish in peer-reviewed national and international journals, focusing on areas such as sustainable planning, renewable energy integration, waste management systems, and climate-resilient infrastructure. These publications provide evidence-based insights and solutions for addressing the challenges of urbanization while fostering sustainability and inclusivity in cities and communities. These publications not only enhance the academic reputation of SRHU but also contribute to policymaking, knowledge dissemination, and the promotion of sustainable practices, reinforcing the University's commitment to supporting SDG 11. (Scopus - Swami Rama Himalayan University)

To name a few top publications are as under:

Khare, A., Rajput, P.K., Pal, R., Aarti, A Comparative Analysis on Computational and Security Aspects in IoT Domain. Lecture Notes in Networks and Systems, 2023

Malik, P.K., Roges, R., Tiwari, P., ...Kumar, V., Gehlot, A.N. Smart Cities Monitoring using Internet of Things: Opportunities and Challenges. 2023 4th International Conference on Electronics and Sustainable Communication Systems, ICESC 2023 - Proceedings, 2023





SUSTAINABLE CITIES

Walia, R., Saini, D.K.J.B., Shah, S.K., ...Tiwari, M., Golla, K. Routing Protocols of Wireless Sensor Networks in Smart Cities. 2nd International Conference on Sustainable Computing and Data Communication Systems, ICSCDS 2023 - Proceedings, 2023

Mishra, A., Hsu, C.H., Arya, V., Chaurasia, P., Li, P. A Hybrid Approach for Protection Against Rumours in a IoT Enabled Smart City Environment. Lecture Notes in Networks and Systems, 2023

Gupta, A., Gupta, S., Memoria, M., ...Tyagi, S., Ansari, N. Artificial Intelligence and Smart Cities: A Bibliometric Analysis. 2022 International Conference on Machine Learning, Big Data, Cloud and Parallel Computing, COM-IT-CON 2022, 2022

Singh, G.D., Prateek, M., Kumar, S.L., ...Singh, D., Lee, H. Hybrid Genetic Firefly Algorithm-Based Routing Protocol for VANETs. IEEE Access, 2022

Extension and outreach activities

Swami Rama Himalayan University (SRHU) engages in extensive extension and outreach activities to support the objectives of Sustainable Development Goal 11 (SDG 11), which emphasizes sustainable cities and communities. These initiatives aim to address urban challenges such as housing and sanitation, waste management, transportation, and disaster resilience, while also promoting inclusivity and sustainability in rural-urban interactions. SRHU actively collaborates with local communities, municipal bodies, and non-governmental organizations to implement programs that improve living conditions, raise awareness about sustainability, and foster community participation in urban development processes.

Key activities include capacity-building workshops on disaster preparedness and climate resilience, community-driven waste management campaigns, and initiatives to enhance public awareness of eco-friendly practices such as rainwater harvesting and green building techniques.

Additionally, SRHU promotes inclusive development through programs focused on affordable housing and sanitation, accessible infrastructure, and skill development for marginalized populations. These extension and outreach efforts not only align with SRHU's vision of holistic education and sustainable development but also strengthen its commitment to creating resilient and sustainable communities in Uttarakhand and beyond.

Since 1998, the Rural Development Institute (RDI) of the Himalayan Institute Hospital Trust (HIHT) has been dedicated to its mission of promoting water, sanitation, and hygiene (WASH)





initiatives. These efforts aim to provide sustainable health and hygiene benefits by enhancing WATSAN services, thereby improving the quality of life for communities. To date, RDI has reached over 550 villages. The projects are designed to be demand-responsive, need-based, and community-driven, ensuring active involvement of gram panchayats, user committees, and community members who take charge of planning, designing, implementing, and managing their own schemes. Over the past year, the following WATSAN projects were undertaken:

1. Key Resource Centre (KRC)

Ministry of Jal Shakti, Government of India empanelled HIHT as Key (Knowledge) Resource Centre for capacity building and training of the officials, functionaries and stakeholders of Level -2 (Mid Management) and Level – 3 (Community) for Jal Jeevan Mission till 2024. KRC plays the role of training/capacity building of different stakeholders, dissemination of knowledge and information, development of high-quality content, documentation of best practices, etc. in the water supply sector.

 Capacity Building & Training of 11 Batches of Implementation Support Agencies (ISAs)

11 Batches of ISAs were trained by conducting two days capacity building and training program on Jal Jeevan Mission for each around 100 ISAs from June to October 2022 in residential mode under the aegis of State



Water Sanitation Mission (Drinking Water & Sanitation Deptt.) Uttarakhand wherein total 436 participants of theses ISAs were trained covering all the 13 districts of Uttarakhand.

Major objective of the training program was to inform and sensitize the participants towards the role and responsibilities of ISA along with to orient them about Jal Jeevan Mission Program in detail elaborating Program objective, its components, major strategies and approaches, importance and implication of participatory planning and community participation and ownership, financial provision and application of institutional framework and broadly and





practically to build their capacity on participatory planning, implementation and operation and maintenance (O&M) for Har Ghar Jal for their role as ISA to Mission.

3. Capacity Building & Residential Training Programs towards JJM

Jal Jeevan Mission (JJM) is envisioned by the Government of India to provide safe and adequate drinking water to all households in rural India through individual household tap connections by the year 2024. The mission is also focused on to implement source sustainability measures as mandatory elements that include recharge and reuse through grey water management, water conservation and rainwater harvesting among the others. Extensive information, education, stakeholder training and communication are the key components of the mission. Key Resource Centers are nationwide recognized by the Ministry of Drinking Water and Sanitation with a mandate to undertake capacity building trainings of various stakeholders.

The participants appreciated the initiatives of the Institute for organizing platform for а the participants to share and discuss a variety of innovative approaches and methods to address the challenges of behaviour changes at scale and diversity. Sharing, learning, adoption, and adaptation of these approaches is necessary to accelerate progress



towards a clean rural India by the end of 2024. The training was very interactive and full of learning to them which came forward during informal interactions and discussions with them.

Details of the training programs conducted are being summarized as below.

Capacity Building & Training of Four Batches of mid-level Management Public Health Engineering Departments (PHEDs) Officials (Level 2)





Four training programs were conducted on issues, challenges and solutions in spring-based water supply systems, change management (role as public health engineers) and activities for

SN	Title of Training	State	No. of	Profile of
			participants	Participant
1.	Issues, Challenges and Solutions	J& K, Himachal Pradesh, Manipur,	27	Mid-level Public
	in Spring based Water Supply	Uttarakhand		Health Engineers
2.	Systems	Himachal Pradesh, Assam, Sikkim,	25	
		Kerala, Uttarakhand		
3.	Change Management (Role as	Uttarakhand	56	
	Public Health Engineers) and			
	Activities for Har Ghar Jal'			
4.	Training on WASH Services	Jammu & Kashmir, Himachal	26	
	during Disaster and	Pradesh, Rajasthan and Uttarakhand		
	Emergencies'			
		Total	134	

Har Ghar Jal and WASH services during disaster and emergencies from Aug 2022 to January 2023 under the aegis of National Jal Jeevan Mission (Ministry of Jal Shakti).

The major objective of the program was to convey the attention of Public Health Engineers on the cross-cutting issues of rural water supply schemes and changing the mindset as per bottomup approach and integrating participatory measures in their working process and water resource management in the country. The trainees were also sensitized on efficient water resource management in disaster and emergency situations.

4. Training Programs in Jammu & Kashmir and Sikkim: KRC-HIHT conducted four days training program at Kupwara and Rajouri district of Jammu & Kashmir under the aegis of National Jal Jeevan Mission supported by Department of Drinking Water & Sanitation, Ministry of Jal Shakti, Govt. of India. The theme of the program was







to orient and to provide information to PRI's functionaries (viz. Sarpanch and ward members etc.) including members of the Village water Sanitation committee (VWSC) members of the

water surveillance and monitoring committee of the local villages including volunteers from water, sanitation and health sectors from the same. 69 participants from the nearby villages of Kupwara district and 96 participants from the adjacent villages of Rajouri district attended the Program.



In Sikkim, the first training of 2 days was conducted on WASH Services during Disaster and

Emergencies at Sikkim State of Corporative Union, (SICUN), Gangtok, Sikkim. 32 Mid-level engineers were sensitised on the cross-cutting issues of rural water supply schemes and water resource management in disaster and emergencies conditions and for all those areas which are prone to face



such scenario in the country. The

second training of 3 days focused on Issues, Challenges and Solutions in Spring based Water Supply Systems in which 38 mid-level Public Health Engineers participated.





 Nyay Panchayat level Trainings on JJM to PRIs & VWSCs/ ASHAs & AWWs in 3 districts of Uttarakhand

KRC-HIHT has been conducting one day Jal Jeevan Mission (JJM) trainings since December 2022 for around 6540 functionaries including members of the Village Water sanitation committee (VWSC) and representatives of the Panchayati raj Institutions at Nyay Panchayat level of 109 Nyay Panchayat of all three districts;



Dehradun, Haridwar and Rudraprayag of the State in collaboration with State Water and Sanitation Mission (Department of Drinking Water and Sanitation) Govt. of Uttarakhand.

Till date 26 batches have been conducted for all the three districts and 1518 participants have been trained and oriented towards the JJM program, its components and the need of realizing their important role and community participation.

6. Sanitation and Hygiene Program in Odisha

Since 2019, the Rural Development Institute (RDI) has been supporting Gurukul Navprabhat Vedic Vidyapeeth in Odisha with its sanitation initiatives. As part of this collaboration, several capacity-building activities were organized for the Gurukul staff. Initially, a group of four staff members participated in a 3-day training program at RDI, which covered key aspects of sanitation, hygiene, menstrual hygiene management (MHM), and rural development.

Following this, RDI teams visited Odisha to conduct various activities at the Gurukul and its outreach areas. These activities included sessions on community mobilization, water conservation, water quality management, sanitation, hygiene practices, environmental awareness, behaviour change, and personality development. To further support the program, resource materials such as Saafkins, informational booklets (Pani ki Kahani), and sports equipment were distributed. The program was successfully concluded in 2022, leaving a positive impact on the Gurukul and its surrounding communities.









7. Rural India Supporting Trust (RIST) Initiatives

Under RIST funding the water supply schemes in Pauri and Haridwar were completed through community- driven approach and their active mobilization. Stakeholders in village including Village Water Sanitation Committee (VWSC) were enabled to take care of operation and maintenance of the scheme.

Schemes at Pauri district

In village Talla Bhanas, water supply scheme from spring through gravity and solar pumping is completed and all private connections for 81 household and distribution work of water supply scheme is completed.

In village Tasila Malla, all work of private connections for



29 household and distribution is completed of Solar Pumping Water Supply Scheme. Water supply scheme from spring is being implemented.





In village Malethi malli and Talli, all of distribution work of pipeline and private connections for 51 household of water supply scheme from spring through gravity is completed.

In village Kota Talla, all of distribution work of pipeline and private connections of water supply scheme from spring through gravity is completed. This scheme is for 68 household.

In Toli village, Solar Pumping Water Supply Scheme from spring through gravity is completed including construction of 14 RWHTs. This scheme is for 34 household.

In Moli village, 6 RWHTs were facilitated for 34 households.

Schemes in village Jasvawala of Bahadarabad block of Haridwar district

Overhead Tank of 175 Kl capacity is completed

Around 500 private connection distributions are completed wherein functional taps were installed in individual household including school, Panchayat Ghar and other alike community utilities of the village.



Construction of Spring-shed management interventions

Various Spring-shed management interventions have been undertaken to augment and recharge water sources. These interventions include plantation/check dams/recharge pits/soil & water conservation structures, which have been constructed to protect the streams/springs and ensuring required flow in source. Village-wise status is as follows:







SN	Village	Work done	
1.	Toli	Pl-300, PP-200, GCD-18, CT-300	
2.	Moli	P1-200, PP-50, GCD-2, CT-100,	
3.	Kota Talla	PP-100, GCD-30, CT-300	
4.	Malethi Malli & Talli	PP-200, LBCD-122, CT-1000	
5.	Tashila Malla	PP-300, CT-500	
6.	Talla Banash	GCD-10	
Pl: Plantation, PP: Percolation Pit, GCD: Gabian Checkdam, CT:			
Contour Trench, LBCD: Loose boulder check dam, GP: Gully Plug,			
DRP: Deep recharge pit			

Implementation of Sanitation (Individual & Community) Facility

This activity aimed to cover all the rural families to make village Open Defecation Free, accordingly implementation towards individual and community toilets have been done to make village open defecation free. A duly completed household sanitary latrine comprised of a toilet unit including a super structure has been facilitated. Following work has been implemented in villages:

8. Special care for high-risk cases

This report highlights the efforts made to address high-risk pregnancies as part of a maternal and child health program. Special care was provided to 156 pregnant women identified as high risk during the reporting period, with a focus on early identification and comprehensive support. Key interventions included



Early Screening: ASHAs

Transport facility provided to pregnant women

(Accredited Social Health Activists) received special training to recognize signs and symptoms of high-risk pregnancies for timely intervention.



Medical Support: The women were provided with transportation, diagnostic tests, treatment, and nutrition supplements

Nutrition Kits: Pregnant women with hemoglobin levels below 7 gm were given nutrition kits to help improve their health.

Transport Facilities: For those facing financial barriers, transport to higher level health facilities was arranged.



Continuous Monitoring: ASHAs and field

supervisors maintained close monitoring throughout pregnancy and the postpartum period to ensure access to necessary services and support.

This approach emphasizes the importance of early detection and consistent support to improve maternal health outcomes in high-risk cases.

9. Village Health Sanitation and Nutrition Days (VHSNDs)

The Village Health Sanitation and Nutrition Days

(VHSNDs) play a crucial role in promoting health awareness and providing essential services to women and children, particularly from marginalized and vulnerable communities. Held once a month on Saturdays, these events aim to foster healthy behaviors and improve access to nutrition and primary healthcare. Key activities and outcomes include:

Health Awareness and Services: VHSNDs raise awareness about the health facilities available at the village and higher levels, encouraging villagers to adopt healthy practices.

• **Targeted Healthcare:** Special focus is placed on providing nutrition and primary healthcare services, particularly for women and children from vulnerable groups.

• Health Camps and Counseling: These events are strengthened by conducting health camps and offering counseling on nutrition, family planning, and other health issues







• **Community Mobilization:** ASHAs and field supervisors actively engage the community, encouraging participation in VHSNDs to learn about available services

• Nutrition Support: Additional nutrition interventions are implemented through the distribution of millet-based laddoos to pregnant women, ensuring they receive essential nutrients. These laddoos are prepared by a local Self-Help Group and consumed during VHSND sessions

• **Participation:** A total of 2,131 pregnant women participated in the VHSNDs, benefiting from the nutrition and healthcare services provided. These efforts contribute to



improving maternal and child health outcomes and promoting sustainable healthy behaviors at the community level **Breast Cancer Screening: Thermalytix an AI based technology**

The introduction of Thermalytix, an AI based breast cancer screening technology, has brought a new dimension to early detection and awareness efforts. Breast cancer remains a significant health challenge globally, and early detection is crucial for improving outcomes. Traditional screening methods like mammography have limitations, particularly in resource-constrained areas. However, the **Mythri Thermalytix** tool, developed by Niramai, offers a **cost-effective**, **automated**, **mobile**, **and non-invasive** alternative that could significantly improve breast cancer screening efforts **Key Features of Thermalytix:** • **Cost-effective and precise** breast cancer screening

• Automated, radiation-free, and non-touch detection, making it a more accessible and painless option for women

. Utilizes patented machine learning algorithms to detect breast cancer with accuracy.