स्वामी राम हिमालयन विश्वविद्यालय
Swami Rama Himalayan University

11 SUSTAINABLE CITIES AND COMMUNITIES

SDG 11

Sustainable Cities and Communities

Sustainable Development Goal 11 (SDG 11) seeks to create inclusive, safe, resilient, and sustainable cities and human settlements. With over half the global population now living in urban areas, the rapid pace of urbanization places significant strain on infrastructure, housing, and essential services. SDG 11 addresses these challenges by advocating for affordable housing, sustainable transportation systems, access to green spaces, and measures to reduce the environmental impact of urban expansion. It also underscores the need to protect cultural and natural heritage while enhancing urban resilience to climate-related and other natural disasters.

This goal aligns closely with the vision of Swami Rama Himalayan University (SRHU) to promote sustainable and inclusive development through education, research, and community engagement. The University is dedicated to advancing sustainable urban practices and resilient infrastructure both on its campus and within the surrounding communities. By adopting green building designs, renewable energy systems, and effective waste management solutions, SRHU exemplifies sustainable development in action. Furthermore, the University incorporates principles of urban sustainability into its academic curriculum and research programs, empowering students and faculty to address the multifaceted challenges of urbanization. Through its community outreach initiatives, SRHU actively works to improve housing, strengthen disaster preparedness, and ensure equitable access to urban resources, demonstrating its commitment to fostering holistic societal progress.

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, energy-efficient 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 eco-friendly landscaping and open areas accessible to the community.

Research Initiatives

Swami Rama Himalayan University (SRHU) is deeply committed to advancing the goals of SDG 11 through impactful research initiatives aimed at fostering sustainable cities and communities. The University conducts interdisciplinary research to address critical urban challenges, including waste management, energy efficiency, climate resilience, and public health. Emphasis is placed on community-centric research that promotes sustainable housing, waste recycling, and inclusive urban development, with a particular focus on marginalized populations. By seamlessly blending research with community engagement, SRHU contributes to knowledge-driven solutions that enhance the sustainability and liveability of cities and human settlements.

Research Projects

The University provides research funds to promote the research for conduction of research (Intramural-Projects-Ongoing-2023.pdf, Intramural-Project-2024-Sanctioned-4.pdf).

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

S. No.	Name of the project	Duration of the project	Name(s) of the teacher(s) working in the project receiving seed money	The amount of seed money provided (INR in lakhs)	Year of receiving the seed money
1.	Upgrading plant microbe-based approach to enhance phytoremediation method in contaminated water body	24 Months	Dr Vivek Kumar, HSBS	5.750	2024
2.	Elite germplasm selection based on elicited gymnemic acid and antioxidant status of Gurmar (Gymnema sylvestre) using micropropagation technique	24 Months	Dr Vikas Jadon, HSBS	9.000	2024
3.	Capacity Building for Agri-entrepreneurship Development for Socio-Economic Independence Leading to Entrepreneurial Empowerment in Uttarakhand Region (18 months duration)	18 Months	Dr. Geeta Rana, HSMS	1.350	2024
4.	Epidemiological study of Dementia in Uttarakhand: A comprehensive Approach	24 Months	Dr Ashwani Bhatt	9.550	2024
5.	Impact of Yoga Practices on Physiological, Biochemical and Psychological Parameters in Young Adults- A Pilot Study	12 Months	Dr Ankit Sharma	2.000	2024
6.	Metagenomic analysis of hospital wastewater for determination of drug resistance genes	12 Months	Dr Vivek Kumar;	3	2024
7.	Generating awareness for head and neck cancer prevention and treatment at a tertiary care hospital	04 Months	Dr. Jashan Reet, Dr. Juhi Kalra	0.15	Till December 2023

8.	Assessing post-vaccination symptoms in adults: a study on Covishield immunization in individuals above 18 years	06 Months	Akanksha Saini, Dr Nikku Yadav	0.15	Till December 2023
9.	A review on the methods used to produce biochar, stability and potential application in sustainability	04 Months	Vishal Rajput, Isha Saini, Simran Parmar, Vedansh Pundir, Sanjay Gupta	0.15	Till December 2023
10	A Study of The Bacteriological Profile of Chronic Osteomyelitis in A Tertiary Care Referral Centre: A Contemporary Study	03 Months	Arjun Prabhu Sharma, Chetan Peshin, Barnali Kakati	0.3	Till December 2023
11.	A Study on Classification of Rumour Detection System in Online Social Media Platforms	06 Months	Anupama Mishra	0.3	Till December 2023
12.	Aging and Yoga: Exploring the Benefits of Yoga in Promoting Healthy Aging	04 Months	Dr. Somlata Jha	0.3	Till December 2023
13	Assessment of Health Problems among Brick Kiln Factory Workers in a District of Uttar Pradesh -A Cross-Sectional Study	03 Months	Ms. Swati Sharma, Dr. Ruchi Juyal, Dr. Sudeep Bhattacharya, Dr. Deep Shikha	0.3	Till December 2023
14	Bio Social Risk Factors of Acute Stroke: A Case Control study from tertiary care Hospital of Uttarakhand	04 Months	Dr. Yogesh Saxena, Dr. Manish Mittal, Dr. Malini Shrivastava, Dr. Shailendra Raghuvanshi,	0.2	Till December 2023
15.	Demineralized Water Consumption: Unravelling Current Trends and Health Effects (Research article)	06 Months	Dr. Nupur Joshi, Dr. Nikku Yadav, Dr. Ashutosh Kumar Choudhary, Dr. Deep Shika, Ms.	0.3	Till December 2023

			Shweta Samant		
16.	Evaluation of polysaccharides, proteins, total phenolic content and antioxidant property of *Hypsizygus ulmarius* cultivated on varying substrate	06 Months	Rashmi Chauhan, Archna Dhasmana, Indra Rautela,	0.3	Till December 2023
17	Green Synthesis of Al_2O_3 Nanoparticles from Agro-Waste as a Sustainable approach	04 Months	Ayushi Santhanam, Archna Dhasmana, Abhilekh Sati, Geeta Bhandari, Sanjay Gupta	0.3	Till December 2023
18.	Mahameda (Polygonatum cirrhifolium (Wall) Royle): An Important Astavarga Plant from Indian system of medicines	04 Months	Aditi Rawat, Nidhi Singh, Puja Pal, Sakshi Chavan, Samiksha Admane, Unnati Sharma, Vikas Sharma, Geeta Bhandari, Archna Dhasmana, Vikash S Jadon	0.15	Till December 2023
19	Needle stick injury among healthcare workers in a tertiary care setting of Uttarakhand - A RECORD based comparative study between pre-covid and during covid times	06 Months	Dr. Singh Rajender, Dr. Mittal Garima, Dr. Srivastava Abhay, Mr. Kumar Yogesh, Mr. Sharma Balkrihsna	0.3	Till December 2023

20	Roof Top Rainwater Harvester	09 Months	Dr. H.P. Uniyal	0.3	Till December 2023
21					

Research Publications

Swami Rama Himalayan University (SRHU) is dedicated to advancing knowledge and supporting Sustainable Development Goal 11 (SDG 11) through impactful research publications. Faculty and researchers from various disciplines contribute to peer-reviewed national and international journals, addressing key topics such as sustainable urban planning, renewable energy integration, waste management, and climate-resilient infrastructure. These publications offer evidence-based solutions to urbanization challenges while promoting sustainability and inclusivity in cities and communities. By disseminating knowledge and influencing policymaking, these scholarly contributions not only enhance SRHU's academic reputation but also strengthen its commitment to fostering sustainable practices and supporting the objectives of SDG 11. (Scopus - Swami Rama Himalayan University)

To name a few top publications are as under:

Aswal, R.S., Prasad, M., Singh, J., ...Pandey, O.P., Egbueri, J.C. groundwater. Scientific Reports, 2024

Gupta, A.K., Boruah, T., Ghosh, P., ...Vijay, K., Rustagi, S. Green chemistry revolutionizing sustainability in the food industry: A comprehensive review and call to action. Sustainable Chemistry and Pharmacy, 2024

Bhatt, A., Joshi, P., Joshi, K.P., Bijalwan, A. Advanced technologies for realizing sustainable development goals: 5G, AI, big data, blockchain, and Industry 4.0 application. 2024

Trivedi, A., Trivedi, N. Integrating circular economy in smart cities: Challenges and pathways to sustainable urban development. Smart Cities and Circular Economy: The Future of Sustainable Urban Development, 2024

Rajput, V., Saini, I., Parmar, S., ...Naik, B.S.S.S., Rustagi, S. Biochar production methods and their transformative potential for environmental remediation. Discover Applied Sciences, 2024

Sharma, V., Srivastava, D., Kumar, L., Payal, M. A novel study on IoT and machine learning-based transportation. Machine Learning Techniques and Industry Applications, 2024

Conference Paper

Mishra, A. Review of Design Issues, Applications, and Architecture of Wireless Sensor Networks. Proceedings - 2024 International Conference on Healthcare Innovations, Software and Engineering Technologies, HISET 2024, 2024

Bhandari, G., Chaudhary, P., Gangola, S., ...Rafatullah, M., Chen, S. prospects. Journal of Water Process Engineering, 2023

Saini, D.K.J.B., Kamble, S.D., Shankar, R., ...Tripathi, D.P., De, A. Fractal video compression for IOT-based smart cities applications using motion vector estimation. Measurement: Sensors, 2023

Extension and outreach activities

Swami Rama Himalayan University (SRHU) undertakes extensive extension and outreach activities to advance the objectives of Sustainable Development Goal 11 (SDG 11), which focuses on fostering sustainable, inclusive, and resilient cities and communities. These initiatives address critical urban challenges such as housing, sanitation, waste management, transportation, and disaster resilience while promoting sustainable rural-urban linkages. SRHU collaborates closely with local communities, municipal bodies, and non-governmental organizations to implement programs aimed at improving living conditions, raising awareness about sustainability, and encouraging active community participation in urban development efforts.

Core activities include capacity-building workshops on disaster preparedness and climate resilience, community-led waste management initiatives, and awareness campaigns advocating eco-friendly practices like rainwater harvesting and sustainable building designs. SRHU also emphasizes inclusive development by facilitating programs that focus on affordable housing, accessible infrastructure, improved sanitation, and skill-building for marginalized groups. These initiatives not only reflect SRHU's vision of holistic education and sustainable progress but also reinforce its dedication to creating resilient, sustainable, and thriving communities across Uttarakhand and beyond.

1. Primary Health

General Health Camps

General Health Camps play a crucial role in promoting health and well-being within remote communities. These camps provide essential healthcare services, focusing on preventive care, health education, and the early detection of health issues. Key services offered include:

Growth Monitoring

Blood Pressure Measurement

Sugar Tests

Hemoglobin (Hb) Tests

Additionally, Iron Folic Acid (IFA) and calcium tablets were distributed to women in their antenatal and postnatal periods to support their nutritional needs.

Over the course of 16 camps, a total of 638 patients from different age groups and backgrounds received healthcare services, highlighting the significant impact these camps have on underserved communities.

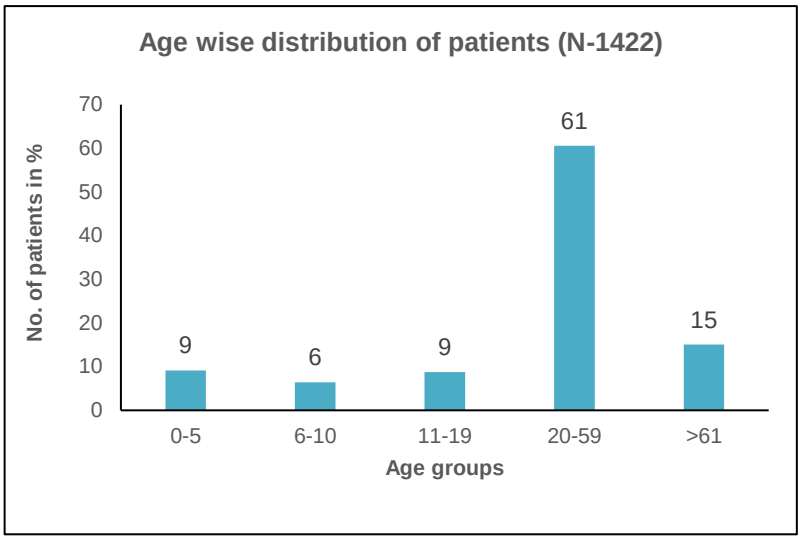
Telemedicine services

Telemedicine services have been instrumental in improving healthcare access in remote and mountainous areas. Through Tele vital, telemedicine services are provided in the Toli area of Jaiharikhal block (Pauri district) and Nagthat in Kalsi block (Dehradun district). These services cater to a population of approximately 70,000 people, ensuring that individuals in these regions receive timely medical consultations despite geographical challenges.

Himalayan Sanjeevani Clinic, Nagthat, Dehradun

At the telemedicine center, a total of 1,422 patients were served, with 1,247 connected to specialists at Himalayan Institute of Medical Sciences, SRHU for secondary consultations. Among the patients, 715 were female and 707 were male, with the majority (61%) in the 20-

59 age group, while the lowest (6%) were in the 6-10 age group. Services offered included blood pressure measurement, sugar tests, Hb tests, and ECGs.



The breakdown of conditions reported shows:

19.1% fever cases

16.7% musculoskeletal issues

13.9% common health problems

13.5% respiratory issues

12.8% gastrointestinal (GIT) issues

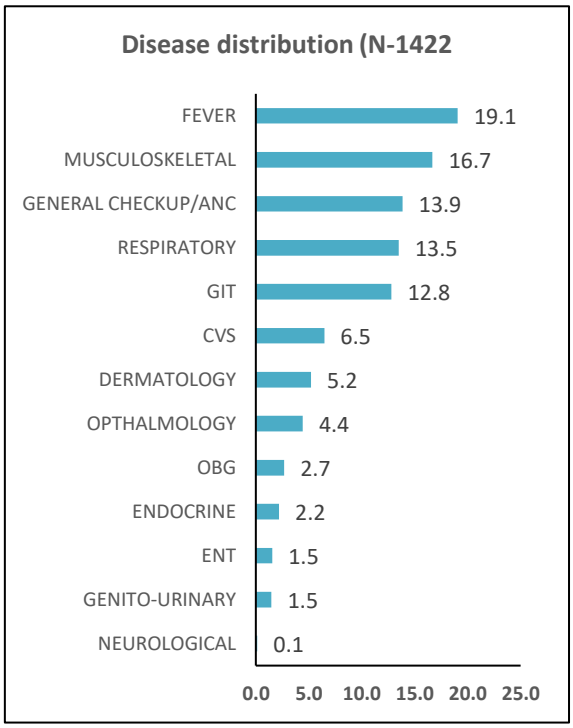
6.5% cardiovascular issues

5.2% skin issues

4.4% ophthalmology issues

2.7% obstetrics and gynaecology (OBG) problems

0.1% neurological problems.



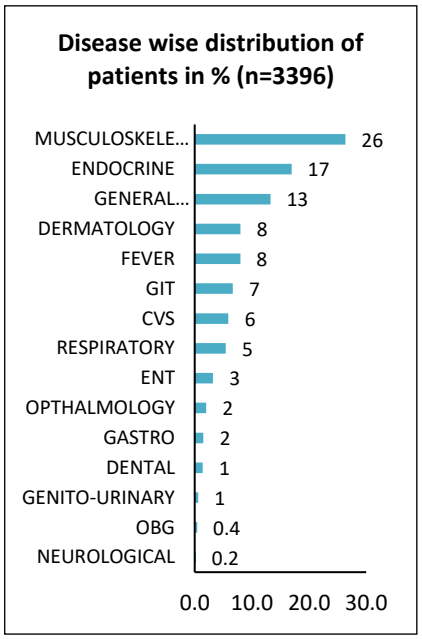
2. Himalayan Sanjeevani Clinic, Toli, Pauri Garhwal

In the reporting year, 3,396 patients visited the Himalayan Sanjeevani Clinic, with over 75% receiving specialist services via telemedicine. The clinic served slightly more female patients (1,878 females vs. 1,699 males), with most patients falling in the 15-75 age group.

At the Toli Telemedicine Center, the reported health issues included:

- Musculoskeletal problems (26%)

- Endocrine issues (17%)
- General health concerns (13%)
- Skin problems (8%)
- Fever cases (8%)
- GIT issues (7%)
- Cardiovascular problems (6%)
- Respiratory issues (5%)
- ENT issues (3%)
- Gastro and eye-related problems (2% each)



Patients benefited from early detection, second opinions, and initial treatment, with older patients receiving specialized care at home.

3. Nutrition enablement as part of TB Elimination program

Tuberculosis (TB), caused by Mycobacterium tuberculosis, predominantly impacts the lungs and can weaken the immune system. Although proper nutrition alone does not cure TB, it plays a pivotal role in boosting the immune system and enhancing the effectiveness of TB treatment. Ensuring adequate nutrition helps the body fight infection and recover more efficiently.

In collaboration with the Department of Pulmonary Medicine of Himalayan Hospital and the Community Medicine department of HIMS, RDI has been actively contributing to the TB elimination program since June 2023. This initiative supports 1,000 TB patients in the

Dehradun and Haridwar districts by providing basic food kits and conducting regular health screening camps.

To date, 600 TB patients have been provided with food kits and health screening services, with distributions occurring every Saturday in Doiwala and Baharadrabad blocks. A higher prevalence of TB has been observed among women compared to men. The program also offers support to TB champions, further enhancing efforts toward TB elimination.

Celebration of Nutrition Week (1-7 September)

National Nutrition Week (NNW), observed annually from September 1 to 7 in India, highlights the importance of nutrition and healthy eating habits. The theme for this year, "Making Healthy Diets Affordable for All," focuses on ensuring that nutritious food is accessible to everyone. One cost-effective solution to combat malnutrition is the inclusion of millets in daily diets due to their rich nutritional value and numerous health benefits.

To promote this, the Rural Development Institute (RDI) carried out public education campaigns in select villages of Haridwar and Dehradun districts. These initiatives reached approximately 950 pregnant and lactating women, as well as over 5,000 community members, through workshops and community meetings. Additionally, millet laddoos made by local self-help groups were introduced and well-received by pregnant and lactating women, demonstrating how traditional foods can be both nutritious and affordable.

Holistic Health

Promoting healthy lifestyles and preventive health is a key focus at the Rural Development Institute (RDI). In line with this goal, RDI conducts a monthly yoga program from the 20th to the 22nd, reflecting its ongoing commitment to rural communities. This residential program is offered free of charge and includes visits to the Sadhana Mandir and Sadhaka Grama ashrams in Rishikesh. This year, 58 participants, including community members, teachers, and new RDI staff, took part in the program.

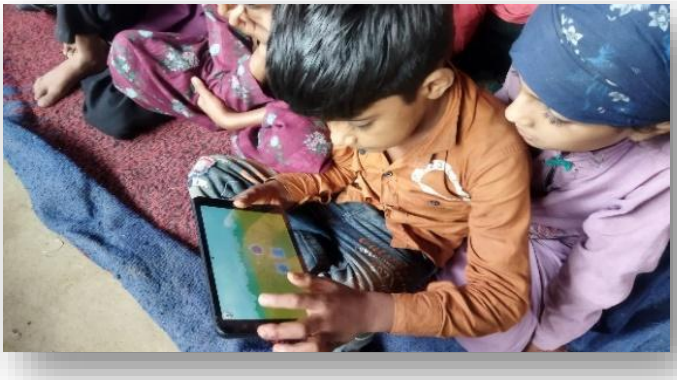
Additionally, RDI organized weekly workshops on holistic health specifically tailored for women. These one-day workshops aimed to introduce participants to the principles of holistic health, focusing on key practices such as breath awareness, makarasana (a relaxation pose), proper sitting posture, nadishodhana (alternate nostril breathing), and various relaxation techniques. A total of 29 women participated in these informative and empowering sessions, gaining valuable insights into maintaining overall well-being.

4. Enabling Fundamental Literacy: Aakhar

The Aakhar program was initiated in 2021 to mitigate the educational setbacks caused by the COVID-19 pandemic, particularly focusing on children from lower socio-economic backgrounds who were left out of online education. In its first phase, five centers were set up across the Dehradun and Pauri Garhwal districts, and this year, three additional centers were established—two in Dehradun and one in the Tehri district.

These centers have collectively enrolled over 200 children, providing essential educational materials such as books, notebooks, and stationery. Daily two-hour classes follow a structured syllabus, supported by library sets that offer extended learning opportunities.

In the Gujjar Basti at Athoorwala, the local community came together to build a school for the children, underscoring the community's commitment to education.



This year, a significant focus was placed on tracking the individual progress of each child in reading, comprehension, and writing skills. To support this, the Chimple App was introduced through tablets. Chimple is an educational tool designed for young children, offering interactive games and lessons in English, Math, Hindi, and Digital Skills. Through engaging activities, children learned to recognize numbers, practice basic math, and improve literacy through exercises on phonics, nouns, verbs, and sentence formation. The app was well-received by the children, who enjoyed using it and showed quick learning improvements.

Beyond academics, the Aakhar program also provided a well-rounded experience with art therapy sessions, teacher cross-visits, fruit distribution, and teacher training activities, all contributing to a supportive and enriching learning environment.

At the Laltappar center, which caters to the children of migrant workers, electricity issues were reported, disrupting the children's education. To address this, 26 solar lanterns were provided, greatly enhancing the study

conditions. The children were delighted with the solar lights, allowing them to continue their learning without interruptions.

5. RELIEF & REHABILITATION

This year, with the support of DMT/AHYMSIN, over 500 individuals with disabilities, encompassing visual, speech, hearing, intellectual, multiple, psychosocial, and physical impairments, received comprehensive support. The assistance provided included medical care, distribution of assistive devices, counseling, seed money for entrepreneurship, and aid in securing disability certificates, pensions, and Unique Disability ID (UDID) cards. These initiatives were aimed at enhancing their physical, emotional, social, and intellectual well-being.

A multidisciplinary approach, involving psychologists, educators, speech therapists, and other professionals, was employed in a learning disability clinic, providing tailored support to more than 190 children. The Department of Empowerment of Persons with Disabilities, Government of India, introduced the UDID Card, simplifying the process for individuals with disabilities to maintain a single document for identification and disability verification. Assistance was provided to 40 individuals with disabilities for registration and obtaining these cards.

Further efforts included facilitating the registration of 100 individuals with disabilities with the National Career Service Centre (NCSC), resulting in the successful registration of 57 of them for various job opportunities. Career fairs led to walk-in interviews, with 20 individuals successfully clearing them and 8 securing positions in reputable companies like Amazon and Bajaj Finance.

Screening was conducted for three individuals with disabilities to assess the need for corrective surgeries. Additionally, wheelchairs and tricycles were provided to 11 persons, and 97 individuals were assisted in obtaining disability certificates. Scholarships were awarded to 9 special children to support their educational needs.

Income generation initiatives for differently abled individuals included providing training and sewing machines, support for starting grocery shops, and assistance to Self Help Groups (SHGs). An awareness campaign was organized on the occasion of Autism and World Health Day, where 70 ASHAs and Anganwadi workers were educated by doctors about the symptoms, prevention, and treatment of Autism. A painting competition was also held for children with Autism.

Milestones Moments

Dhanpati

"How it can be my fault if I was born humped, and how anybody can decide that I cannot deal with the responsibilities as an angan Badi worker. I am a graduate and dealing with all other household chores and related work. Give me a chance first then decide. I will regard any decision by the interviewer body I am graduate and dealing with all other household chores and related work".

Dhanpati, a disabled woman from Khadari village in Dehradun, faced significant discrimination due to her orthopaedic disability. Although she is a graduate, she encountered negativity and bias during job interviews and social events, often being judged based on her appearance rather than her qualifications or capabilities. However, Dhanpati refused to let these prejudices define her.

Determined to prove her worth, she challenged the discriminatory attitudes and asserted her ability to take on responsibilities as an Anganwadi worker. Despite initial resistance and doubt from others, her persistence paid off, and she was eventually selected for the role. Today, Dhanpati successfully serves her community as an Anganwadi worker, making a positive impact on those around her while also contributing to her family's income.

Dhanpati's story is a powerful example of how overcoming societal attitudes towards disability is crucial for inclusive development. It underscores the importance of recognizing and valuing the abilities of individuals with disabilities, rather than focusing on their limitations.

Paridhi

I'm Reena. My younger daughter, Paridhi, has hearing and speech issues discovered at 18 months. She was restless and caused trouble at home. We couldn't afford her treatment initially. We faced difficulties with schools due to her behaviour. We tried different schools and therapies but faced setbacks due to family emergencies. Eventually, the Rural Development Institute stepped in, connecting us with medical help and educational support. Paridhi showed improvement and gained admission to a mainstream school with their assistance. Now, she's thriving academically and socially, and our family is grateful for the transformation.

Lokesh

My name is Lokesh Kumar, I am a resident of Bongla Bahadarabad. I am a disabled person. My life was going through a lot of difficulties. Due to my disability, I could not even support my family. I am a farmer and used to drive a tractor in the fields. In January 2021, I had an accident, and I got injured. I got a head injury in the accident and became disabled. I got myself treated a lot, but it was of no use. I spent all the money I had on my treatment. Now I did not even have money to eat. But God did not leave me and introduced me to the people of RDI. I got the support of a cow to get employment from which I bought a cow and today I can sell at least 20 litters of milk and raise my children. I sell 20 litters of milk every day and my income are ₹ 800 per day. (24000 per month)

Har Dayal Singh

I'm Har Dayal Singh, aged 50, from Salempur. Despite an accident that left me unable to walk for 2 years, I persevered. Financial struggles mounted, but with the help of Gramya Vikas Sansthan, I obtained a handicapped certificate and started receiving a pension. With further

assistance, I established a successful grocery shop, ensuring a stable income for my family. Grateful for the support and newfound hope, I thank Gramya Vikas Sansthan for transforming our lives.

6. Covid fund support

Support from the COVID fund, sourced through individual donations, is being extended to those still facing challenges due to the pandemic. This assistance is provided in various forms, including scholarships, essential provisions such as food and water, covering electricity expenses, medical treatment, and other necessities. These efforts aim to help individuals and families recover and regain stability after the hardships caused by the pandemic.

7. Disaster & Relief Support

In response to the devastating impact of relentless rainfall on the villages of Anneki, Teera Tanda, Harnol, and Ahmadpur in the Bahadrabad block of Haridwar district, disaster and relief support was provided to the most affected families. This one-time support included the distribution of tarpaulins, folding beds, and food kits to help them cope with the immediate aftermath of the disaster. Furthermore, health camps were organized in these villages to address the urgent medical needs of the residents, ensuring that they received the necessary care during this challenging time.

The organization's commitment to enhancing water, sanitation, and hygiene (WASH) services in rural areas is notable. By implementing various WASH programs, it has successfully impacted over 550 villages, promoting sustainable health and hygiene benefits for these communities.

The Key Resource Centre (KRC) under the Jal Jeevan Mission focuses on capacity building and training for government officials, functionaries, and stakeholders involved in water and sanitation management. The program specifically targets Level 2 (Mid Management) and Level 3 (Community) participants. These training sessions are designed to enhance the skills and knowledge of individuals at these levels, improving their effectiveness in implementing and managing water and sanitation projects.

Capacity Building through 15 Batches of Three Days Residential Training Programs

As part of the capacity-building efforts, 15 batches of Public Health Engineers (PHEs) participated in three-day residential training programs across India. These programs covered five major themes and aimed to enhance the skills and knowledge of mid-level government officials. A total of 698 officials, including Executive Engineers, Assistant Engineers, and Junior Engineers from the Water Supply departments of various states, received training. Additionally, officials from the Panchayati Raj Department, Irrigation Department, and Rural Development Department in some states also took part in these programs

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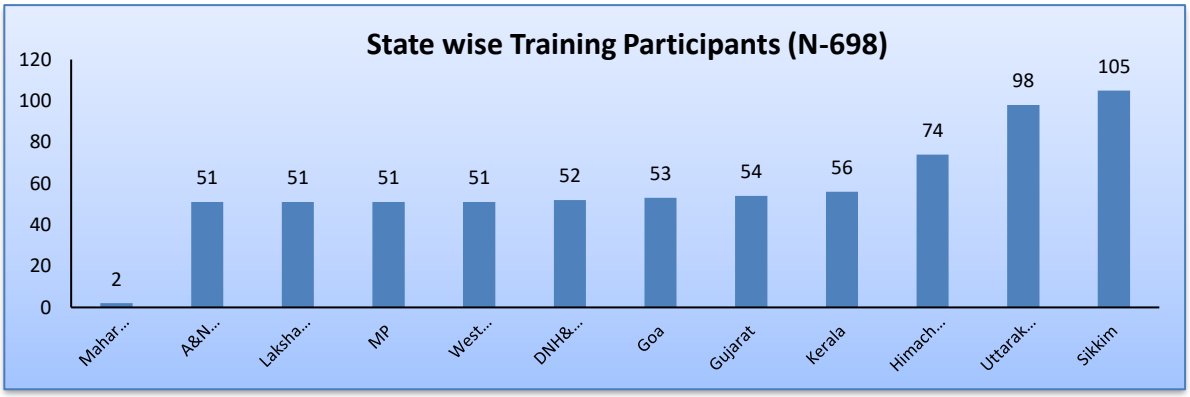

Training on Direct Injection of treated Rainwater in Aquifer Recharge, Revival of Springs & Spring shed Management

The Key Resource Centre (KRC) under HIHT organized three training programs focusing on the direct injection of treated rainwater for aquifer recharge, the revival of springs, and spring shed management. These programs were held in West Bengal, Uttarakhand, and Himachal Pradesh, with a total of 122 mid-level engineers participating.

The main objective of these training sessions was to raise awareness among Public Health Engineers about the integrated issues of rural water supply schemes and water resource management. The training emphasized innovative methodologies for:

- Direct injection of treated rainwater into aquifers
- Revival of natural springs
- Management of spring sheds

The programs aimed to build participants' capacities in these areas, equipping them with skills and knowledge to implement spring-based water supply systems. These systems are designed to be safe, reliable, and effective for communities living in mountainous regions, ensuring sustainable water resources and improved water management.

Training on Operation and Maintenance of Water Supply Systems, Utility Approach & Tariff Collection Mechanism

Three training programs were conducted on the **Operation and Maintenance (O&M) of Water Supply Systems**, focusing on utility approaches and tariff collection mechanisms. These programs took place in Sikkim, Andaman & Nicobar Islands, and Lakshadweep Islands, with a total of 152 mid-level engineers participating.

The primary objective was to address cross-cutting issues related to rural water supply schemes and water resource management, specifically focusing on:

- The operation and maintenance of water supply systems
- Utility approaches to water management
- Tariff collection mechanisms

Participants were educated on O&M practices in accordance with the 73rd Amendment Act and reforms in rural drinking water supply. The training also covered disinfection systems for potable water supply, enhancing participants' understanding and skills in managing safe and effective water supply systems.

Training on Revival of Traditional Water Bodies for Source Sustainability

Three training programs were held on the **Revival of Traditional Water Bodies for Source Sustainability**, targeting mid-level engineers from Kerala, Maharashtra, Himachal Pradesh, Uttarakhand, and Gujarat. A total of 118 engineers participated in these sessions.

The main objectives of the training were to highlight the cross-cutting issues related to rural water supply schemes and water resource management and focus on the revival of traditional water bodies for ensuring the sustainability of water sources.

Participants were sensitized on:

- The various types of traditional water bodies in different regions of India
- Conservation practices for these water bodies, including community-based methods
- Systematic approaches to water conservation historically used in India

The training also covered the processes involved in the recharge of watersheds, traditional water bodies and structures used for recharging and reviving these water bodies. These programs aimed to enhance participants' knowledge and capabilities in managing and conserving traditional water bodies, contributing to long-term water source sustainability.

Training on Grey Water management: Reduce, Reuse, Recycle and Recharge for enhancing water use efficiency (Circular economy and net-zero concept), Nature based Solutions and Technologies for Grey Water Management

Three training programs were conducted on Grey Water Management, focusing on the principles of reducing, reusing, recycling, and recharging grey water to enhance water use efficiency. The trainings were conducted in Dadar & Nagar Haveli and Daman & Diu, Kerala, and Goa, with a participation of total of 157 mid-level engineers.

The training covered:

- **Basics and Issues of Grey Water Management:** Understanding the fundamentals and the challenges associated with grey water management within the context of the Jal Jeevan Mission.
- **Need for Grey Water Treatment:** Criteria for treatment, use of technologies, pollutant levels, and the impact of using undertreated water.
- **Planning and Designing Treatment Technologies:** Methods for designing and planning grey water treatment systems and identifying suitable locations for these systems at the village or cluster level.

- **Community-Level Management:** Strategies for managing grey water at the community level.
- **Net Zero Energy Concept & Circular Economy:** Incorporating principles of circular economy and achieving net-zero energy in grey water management practices.
- **Reuse of Grey Water:** Techniques and benefits of reusing grey water.

- **Functionality Assessment:** Conducting assessments to ensure the effectiveness and functionality of grey water management schemes.

The training aimed to equip participants with the knowledge and skills necessary for effective grey water management, promoting sustainable water use and contributing to water resource efficiency.

Training on WASH Services during Disaster and Emergencies and Ensuring Climate Resilience System

Training programs on **WASH Services during Disasters and Emergencies** and ensuring **Climate Resilience Systems** were conducted in Madhya Pradesh, Uttarakhand, and Sikkim, with a total of 149 mid-level engineers participating.

The primary objectives of these training sessions were to:

- **Plan and Prepare:** Develop strategies for managing WASH services during disasters and emergencies.
- **Mitigation Measures:** Implement measures to mitigate the impact of such events on water, sanitation, and hygiene services.
- **Ensure Climate Resilience:** Enhance the resilience of WASH systems to climate change and environmental challenges.

The programs aimed to improve participants' capabilities in planning and implementing effective WASH services in crisis situations, ensuring that systems are robust and adaptable to changing climate conditions.

Summary of L2 Trainings of at a Glance

	Direct injection of treated rainwater in aquifer recharge, revival of springs & Spring shed Management	Operation and Maintenance of water supply systems, Utility approach & tariff collection mechanism	Revival of Traditional Water Bodies for Source Sustainability	Grey water management : Reduce, Reuse, Recycle and Recharge for enhancing water use efficiency	WASH Services during Disaster and Emergencies and Ensuring Climate Resilience System	Total
A & N Island		51				**51**
Dadra Nagar Haveli & Daman Diu				52		**52**
Gujarat			54			**54**
Goa				53		**53**
Himachal Pradesh	37		37			**74**
Kerala			4	52		**56**
Lakshadweep		51				**51**
Madhya Pradesh					51	**51**
Maharashtra			2			**2**
Sikkim		50			55	**105**

Uttarakhand	34		21		43	**98**
West Bengal	51					**51**
Total	**122**	**152**	**118**	**157**	**149**	**698**

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

Within the state of Uttarakhand, trainings for 109 Nyay Panchayat in Dehradun, Haridwar and Rudraprayag districts were conducted. 5492 functionaries including members of the Village Water Sanitation Committee (VWSC) and representatives of the Panchayati raj Institutions participated.

In Uttarakhand, training sessions on the Jal Jeevan Mission (JJM) were conducted at the Nyay Panchayat level across three districts: Dehradun, Haridwar, and Rudraprayag. A total of 109 Nyay Panchayats were involved in these sessions.

The training focused on:

- Village Water Sanitation Committees
- Panchayati Raj Institutions
- ASHAs
- AWWs

A total of 5,492 functionaries participated, including members of VWSCs and representatives from PRIs. The training aimed to enhance the knowledge and skills of these key stakeholders in implementing and managing water and sanitation services at the grassroots level, supporting the overall objectives of the Jal Jeevan Mission.