Swami Rama Himalayan University

NAAC A+

Report on

Sustainable Development Goal 7

AFFORDABLE AND CLEAN ENERGY

Sustainable Development Goal 7: Affordable and Clean Energy

Sustainable Development Goal 7 aims to ensure access to affordable, reliable, sustainable, and modern energy for all. Clean energy is a cornerstone of sustainable growth, directly influencing economic stability, climate action, and social well-being. In the context of higher education, universities play a vital role not only in adopting renewable energy solutions but also in shaping future generations to value and practice sustainability. By integrating energy efficiency, innovation, and renewable technologies into campus life, institutions contribute to reducing greenhouse gas emissions and promoting environmental stewardship. Aligning with this vision, Swami Rama Himalayan University (SRHU) is committed to advancing the transition toward clean and sustainable energy through research, responsible energy management, and large-scale solar power initiatives that reflect its dedication to a greener and more resilient future.

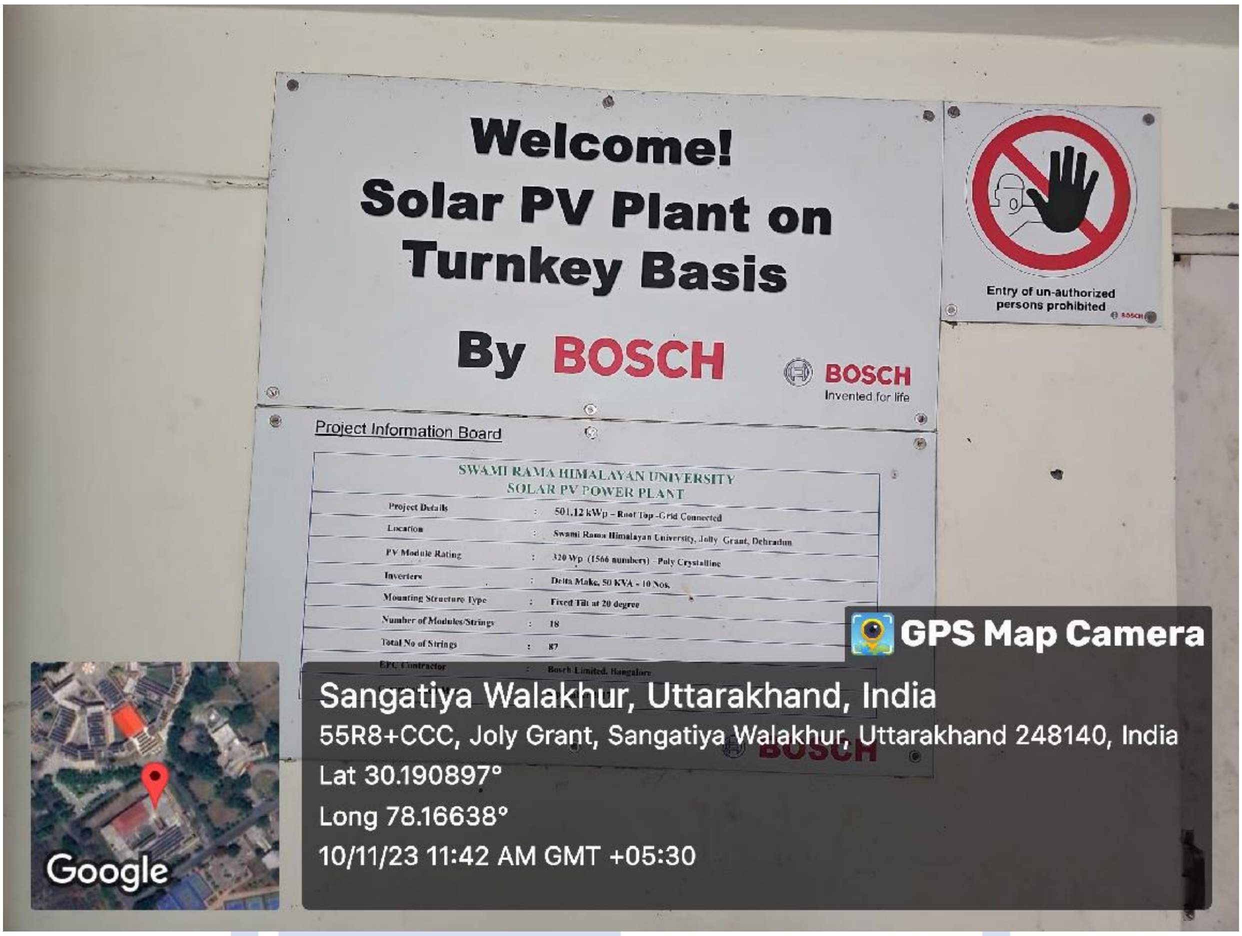
Empowering a Brighter Tomorrow: SRHU's Commitment to Clean and Sustainable Energy (SDG 7: Affordable and Clean Energy)

Swami Rama Himalayan University is firmly committed to advancing SDG 7- Affordable and Clean Energy, by integrating renewable energy solutions into its campus infrastructure and daily operations. The University recognizes that access to clean, reliable, and sustainable energy is central to achieving long-term environmental and economic resilience.

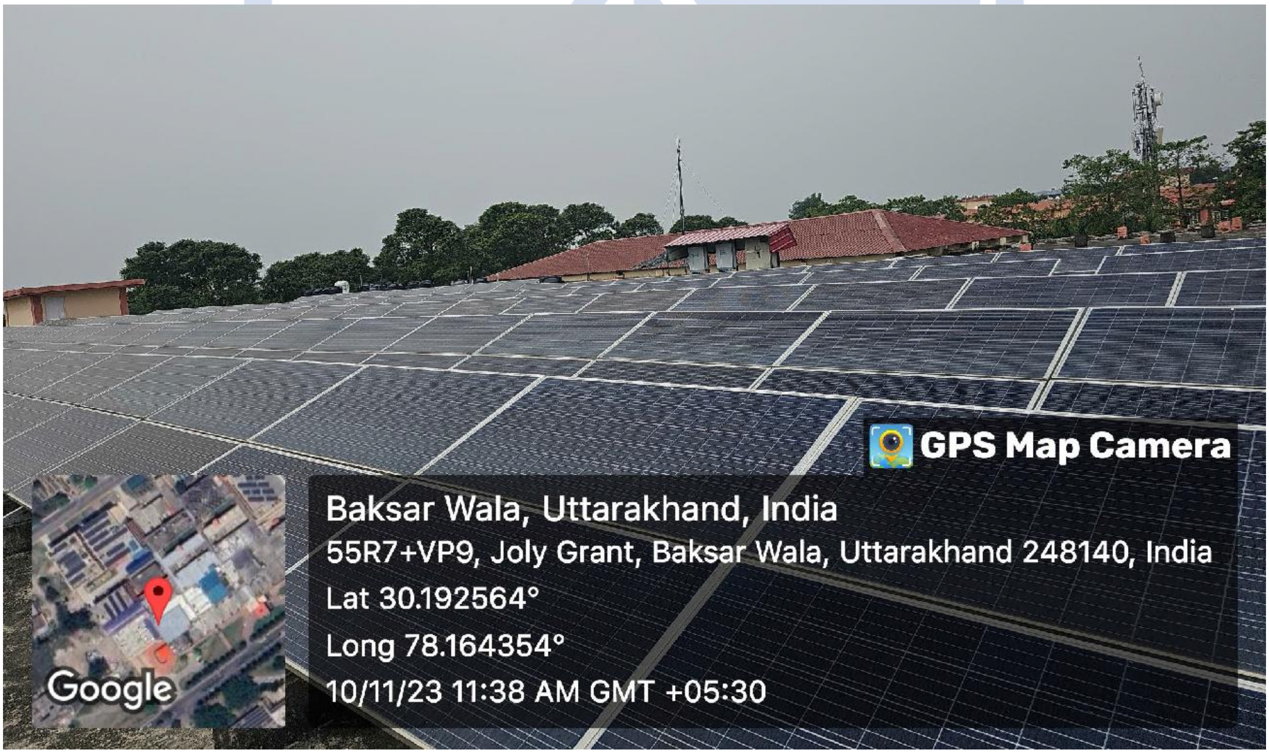
In 2017, SRHU took a major step towards energy sustainability by installing two rooftop solar power plants with a combined capacity of 1500 KW on its campus. This initiative significantly reduced the University's dependence on conventional power sources and helped cut down its carbon emissions. The Power Purchase Agreement (PPA) with Renew Solar Power Ltd. enabled SRHU to procure electricity at a subsidized rate, reinforcing its commitment to both affordability and environmental responsibility.

Building on this success, the University has finalized an agreement with M/S Bakshi Engineering Works, Dehradun, to establish an additional 1000 KW rooftop solar power system, expanding its clean energy footprint. Together, these measures demonstrate SRHU's proactive approach toward transitioning to renewable energy, reducing its carbon footprint, and serving as a living model of sustainable campus management.

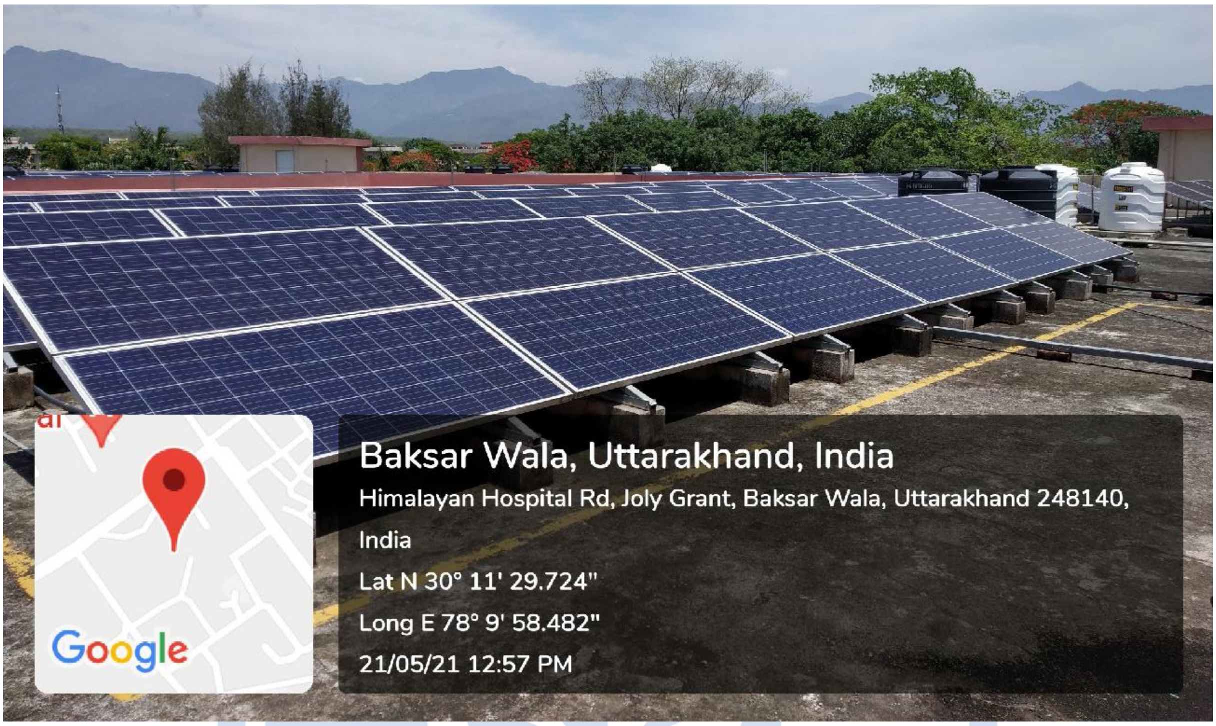
By embracing solar energy at scale, SRHU is not only contributing to national renewable energy goals but also instilling awareness among its students and staff about the importance of sustainable energy practices, making clean energy a shared institutional value rather than just an operational choice.



Solar PV plant at the roof of Himalayan College of Nursing, SRHU

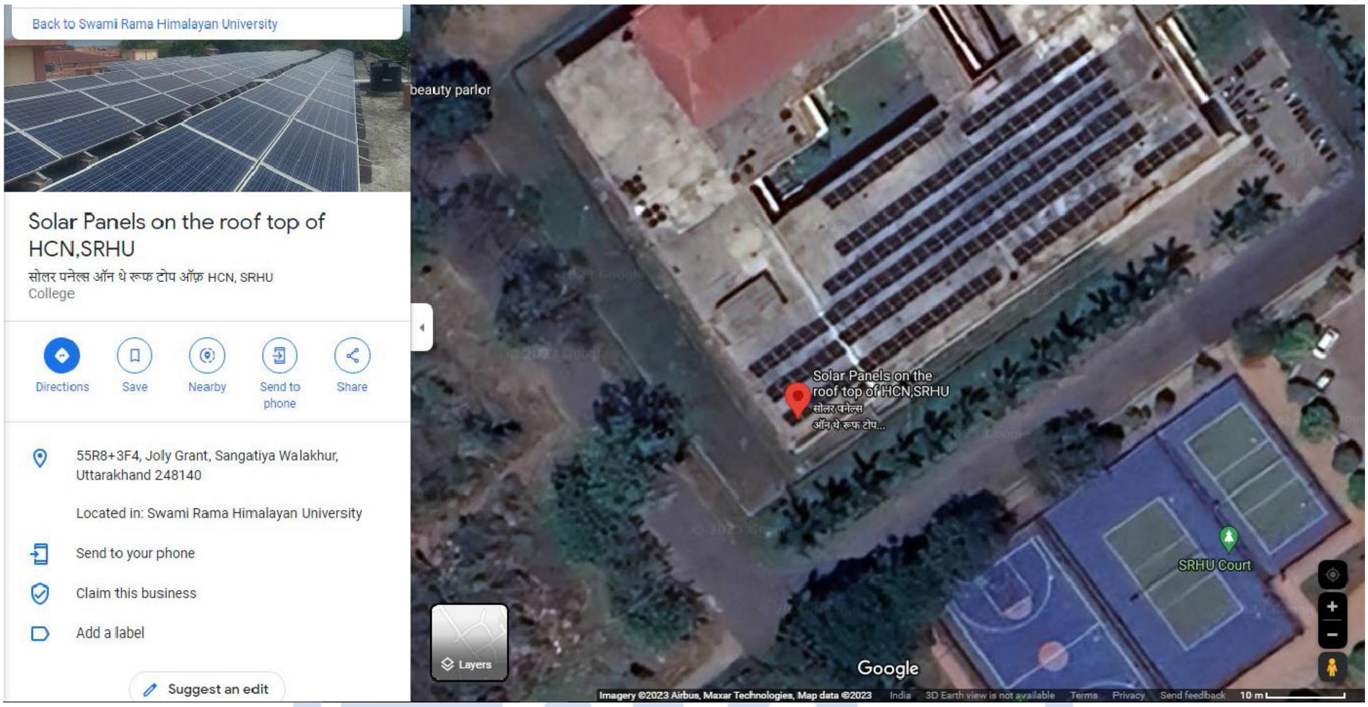


Solar panels on the roof of the Himalayan College of Nursing, SRHU



Solar panels on the roof of the Himalayan Institute of Medical Sciences, SRHU

Solar panels on the roof of the Himalayan School of Management Studies, SRHU



Google map image of the Solar Plant (Rooftop of Himalayan College of Nursing, SRHU)

Google map image of the solar plant (Rooftop of Himalayan Institute of Medical Sciences, SRHU)

7.1 Research on Clean Energy

7.1.1 Affordable and Clean Energy: CiteScore

Swami Rama Himalayan University demonstrates significant scholarly engagement in research promoting affordable and clean energy solutions. Publications addressing renewable energy, biofuels, energy efficiency, and sustainable technologies are featured in high-impact journals with CiteScores ranging from 1.4 to 34.2. Notably, Trends in Food Science and Technology (CiteScore 34.2), Environmental Pollution (16), and Energy and Built Environment (17.3) stand out for their strong research visibility. The median CiteScore across relevant publications is 7.0, underscoring SRHU's contribution to impactful, quality research in sustainable and clean energy domains.

Metric	Value
Total publications corresponding to SDG 7: Affordable and Clean Energy	30
Publications with CiteScore > 5	16
Proportion above 5.0	53%
Average CiteScore (overall)	≈ 6.5 – 7.0
Highest CiteScore recorded	**34.2** (*Trends in Food Science and Technology*, 2025)

7.1.2 Affordable and Clean Energy: FWCI

SRHU's research outputs related to SDG 7 have demonstrated noteworthy global citation performance. The Field-Weighted Citation Impact (FWCI) values for relevant publications range from **0.1 to 17.55**, reflecting both niche innovation and globally competitive impact. High-impact examples include Agriculture Waste Management and Bioresource: The Circular Economy Perspective (FWCI 17.55) and Environmental Pollution (FWCI 7.14). The average FWCI across clean energy–related outputs is 2.9, indicating that SRHU's publications are cited nearly three times more frequently than the world average in comparable fields.

Metric	Value
Total publications corresponding to SDG 7: Affordable and Clean Energy	30
Publications with FWCI > 1	18
Proportion above 1.0	60%
Average FWCI (overall)	≈ 2.5 – 3.0
Highest FWCI recorded	**17.55** (*Agriculture Waste Management and Bioresource: The Circular Economy Perspective*, 2023)

7.1.3 Affordable and Clean Energy: Publications

SRHU researchers have produced over 30 Scopus-indexed publications directly or indirectly advancing the goals of affordable and clean energy. Research themes include biofuel production from waste materials, energy-efficient technologies, AI applications in renewable energy systems, and microbial fuel cells for wastewater treatment. Faculty from disciplines such as Biotechnology, Environmental Science, and Engineering have contributed collaboratively to these outputs. Collectively, these publications underscore SRHU's commitment to fostering a low-carbon, technology-driven energy future aligned with UN SDG 7: Affordable and Clean Energy.

S.N.	Paper Title	Authors	Journal / Book Name	Year	Cite Score	FWCI	DOI
1	Biodiesel (biofuel) production from fish waste: A sustainable approach to biodiesel production	Rajput, V.; Topwal, A.; Sharma, C.; Vijay, K.; Kumar, V.R.	Sustainable Chemistry One World	2025	2.1		10.1016/j.scowo.2025.100124
2	Sal (Shorea robusta) seed oil: A sustainable alternative for cocoa butter and edible oil	Thapa, D.; Naik, B.; Vijay, K.; Gupta, A.K.; Kumar, V.	Future Foods	2025	10		10.1016/j.fufo.2025.100655
3	Secure Hybrid Data Transmission Protocol for WSN with Key Management and Message Authentication	Sharmila, A.; Rishiwal, V.; Kumar, P.; Yadav, M.; Yadav, P.	SN Computer Science	2025	5.8		10.1007/s42979-025-03946-x
4	A state-of-the-Art review on edible electronics: Next-generation technologies for biocompatible and ingestible devices	Kataria, P.; Gupta, R.K.; Gupta, A.K.; Tavassoli, M.; Kaur, S.	Trends in Food Science and Technology	2025	34.2	0.5	10.1016/j.tifs.2025.104880
5	The Human Side of Sustainability: Behavioural Economics in Climate Action and Neutrality	Trivedi, A.; Juyal, S.A.; Kandpal, V.	Climate Change Management	2025	1.4	5.91	10.1007/978-3-031-83250-5_15
6	Anodizing process for enhancing corrosion resistance of aluminium anodes in 1m NaOH alkaline solution	Ahuja, D.; Srivastava, S.; Varshney, P.K.; Srivastava, S.	Rasayan Journal of Chemistry	2025	1.8		10.31788/RJC.2025.1819076
7	Advancements in energy storage applications: harnessing the potential of fish industry waste	Rajput, V.; Naik, B.; Vijay, K.; Bhatt, S.C.; Rustagi, S.	Discover Materials	2024	3.6	0.15	10.1007/s43939-024-00161-y
8	Green chemistry revolutionizing sustainability in the food industry: A comprehensive review and call to action	Gupta, A.K.; Boruah, T.; Ghosh, P.; Vijay, K.; Rustagi, S.	Sustainable Chemistry and Pharmacy	2024	8.8	0.81	10.1016/j.scp.2024.101774
9	Design expert based optimization of the pyrolysis process for the production of cattle dung bio-oil and properties characterization	Kaur, L.; Singh, J.L.; Ashok, A.; Vijay, K.	Scientific Reports	2024	6.7	1.45	10.1038/s41598-024-57843-z
10	Advanced technologies for realizing sustainable development goals: 5G, AI, big data, blockchain, and Industry 4.0 application	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		0.57	10.2174/9789815256680124010 1
11	Numerical analysis of the return flow solar air heater (RF-SAH) with assimilation of V-type artificial roughness	Raturi, P.; Deolal, H.; Kimothi, S.K.	Energy and Built Environment	2024	17.3	1.34	10.1016/j.enbenv.2022.09.002
12	Impact of Artificial Intelligence (AI) in Bioremediation of Dairy Effluent by Microalgae and the Potential Application of the Produced Lipid Byproducts	Dhillon, N.; Kumar, V.R.; Bhandari, G.; Gupta, S.	Internet of Medicine for Smart Healthcare	2024			10.1002/9781394272266.ch11
13	Valorization of wastewater through bioremediation approach	Aswal, R.S.; Prasad, M.; Kumar, A.	Biotechnologies for Wastewater Treatment and	2024		1.26	10.1016/B978-0-443-27376-6.00010-4

			Resource Recovery Current Trends and Future Scope				
14	Node MCU and Lily Pad based Relay Protection System For Laboratory Micro-Grid	Malik, S.; Jain, S.; Tiwari, P.; Yamsani, N.; Al-Farouni, M.H.	2024 International Conference on Smart Devices ICSD 2024	2024			10.1109/ICSD60021.2024.10751602
15	An overview of renewable energy sources: technologies, applications and role of artificial intelligence	Singh, V.; Prasad, M.; Aswal, R.S.; Sharma, T.; Patel, N.K.	Computer Vision and Machine Intelligence for Renewable Energy Systems	2024		2.49	10.1016/B978-0-443-28947-7.00001-X
16	Agricultural Innovations using IOT - A Comprehensive Review	Singh, J.N.; Mall, S.; Arthi, T.S.; Srivastava, D.; Hussein, L.	Proceedings IEEE 2024 1st International Conference on Advances in Computing Communication and Networking (ICAC2N 2024)	2024		1.09	10.1109/ICAC2N63387.2024.10895646
17	Agro-industrial waste: a cost-effective and eco-friendly substrate to produce amylase	Naik, B.; Vijay, K.; Rizwanuddin, S.; Kumar, V.; Gupta, S.	Food Production Processing and Nutrition	2023	7	2.56	10.1186/s43014-023-00143-2
18	Energy from Waste: Poterioochromonas malhamensis Used for Managing Dairy Effluent and Producing Valuable Microalgal Lipid	Dhillon, N.; Gupta, S.; Kumar, V.R.; Bhandari, G.; Arya, S.	Journal of Pure and Applied Microbiology	2023	1.6	0.28	10.22207/JPAM.17.2.48
19	Microgrid digital twins: concepts and their controlling through multi-agent systems	Negi, G.S.; Mishra, A.; Gupta, M.K.; Saini, D.K.J.B.; Joshi, K.P.	International Journal of High Performance Systems Architecture	2023	2.1	0.1	10.1504/IJHPSA.2023.139898
20	Chameleon-ACO Hybrid: Optimizing Power-Efficient Clustering and Routing in Wireless Networks	Das, D.S.; Saini, D.K.J.B.; Joshi, K.P.; Joshi, P.; Yedage, S.L.	Proceedings 2023 3rd International Conference on Ubiquitous Computing and Intelligent Information Systems (ICUIS 2023)	2023		0.74	10.1109/ICUIS60567.2023.00013
21	Hydrothermal Liquefaction of Waste Agricultural Biomass for Biofuel and Biochar	Rajput, V.; Dhatwalia, V.K.; Vlaskin, M.S.; Nanda, M.; Verma, M.	Agriculture Waste Management and Bioresource The Circular Economy Perspective	2023		17.55	10.1002/9781119808428.ch11
22	A Perspective Review on Microbial Fuel Cells in Treatment and Product Recovery from Wastewater	Malik, S.M.; Kishore, S.; Dhasmana, A.; Minkina, T.M.; Rajput, V.D.	Water Switzerland	2023	6	4.59	10.3390/w15020316
23	Exploring Microbial-Based Green Nanobiotechnology for Wastewater Remediation: A Sustainable Strategy	Malik, S.M.; Dhasmana, A.; Preetam, S.; Singh, R.K.; Rajput, V.D.	Nanomaterials	2022	9.2	1.28	10.3390/nano12234187

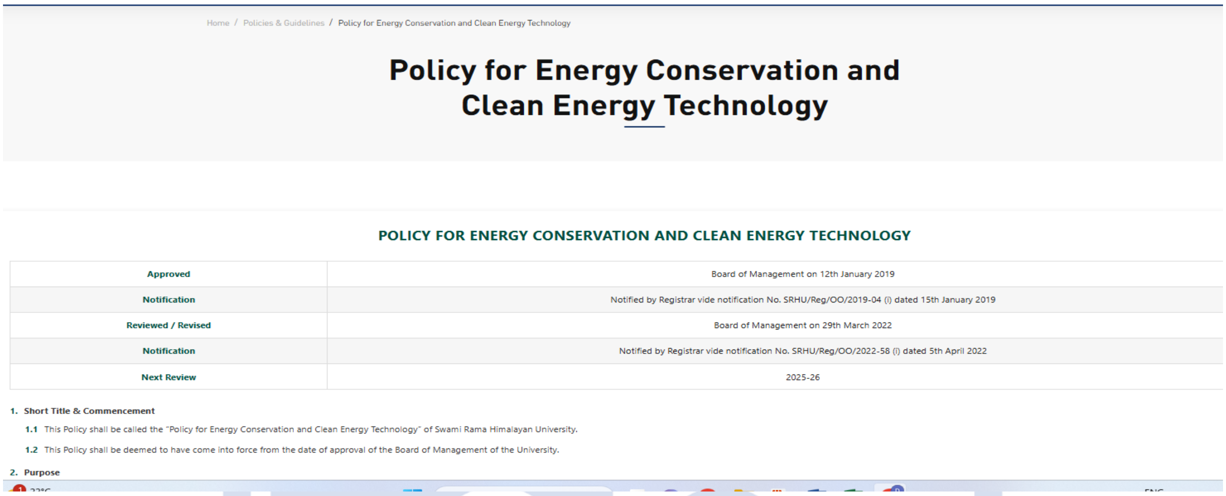
24	Algae in wastewater treatment, mechanism, and application of biomass for production of value-added product	Bhatt, P.; Bhandari, G.; Turco, R.F.; Bhatt, K.; Simsek, H.	Environmental Pollution	2022	16	7.14	10.1016/j.envpol.2022.119688
25	Analytical and post analytical phase of an ISO 15189:2012 Certified cytopathology laboratory-a five year institutional experience	Chandra, S.; Kusum, A.; Gaur, D.S.; Chandra, H.	Journal of Cytology	2022	1.4	0.29	10.4103/JOC.JOC_90_20
26	Microbial fuel cell united with other existing technologies for enhanced power generation and efficient wastewater treatment	Patwardhan, S.B.; Savla, N.; Pandit, S.; Kumar, V.R.; Prasad, R.	Applied Sciences Switzerland	2021	5.5	0.89	10.3390/app112210777
27	Energy efficient and secured housing	Pant, Y.; Rawat, A.	Internet of Things and Businesses in A Disruptive Economy	2020			https://www.scopus.com/pages/publications/85109223826?origin=organizationpage
28	Constructed Wetland: A Green Technology for Wastewater Treatment	Choudhary, A.K.; Kumar, P.	Environmental Microbiology and Biotechnology Volume 1: Biovalorization of Solid Wastes and Wastewater Treatment	2020			10.1007/978-981-15-6021-7_15
29	Microbial potential and biofuel production	Teotia, P.; Kumar, M.K.; Kumar, V.R.	Sustainable Green Technologies for Environmental Management	2019			10.1007/978-981-13-2772-8_12
30	Study of the Pre-Analytical Phase of an ISO 15189: 2012-Certified Cytopathology Laboratory: A 5-Year Institutional Experience	Chandra, S.; Chandra, H.; Kusum, A.; Gaur, D.S.	Acta Cytologica	2019	3.2	0.26	10.1159/000494567
31	Phycoremediation of Pollutants for Ecosystem Restitution	Verma, N.; Sharma, S.V.; Dhasmana, A.; Kumar, V.	Microorganisms for Sustainability	2019	3.1	0.19	10.1007/978-981-32-9664-0_3
32	Burden of occupational and environmental hazards of cancer	Gupta, M.; Dhasmana, A.	Environmental Science and Engineering	2019	0.5		10.1007/978-3-319-96511-6_4
33	Estimation of quality of raw milk (Open & branded) by milk adulteration testing kit	Kandpal, S.D.; Srivastava, A.K.; Negi, K.S.	Indian Journal of Community Health	2012	0.4	0.63	https://www.scopus.com/pages/publications/84867882030?origin=organizationpage

Link: https://srhu.edu.in/wp-content/uploads/2025/11/SDG-Publications.pdf

7.2 University Measures Towards Affordable and Clean Energy

7.2.1 Energy-Efficient Renovation and Building

Swami Rama Himalayan University ensures that all new constructions and major renovations strictly follow national and international green building standards as outlined in its **Policy for Energy Conservation** (Click here). The policy mandates adherence to IGBC and LEED principles, integration of solar and renewable systems, and pre-renovation energy audits to identify efficiency opportunities. By embedding energy-conscious design and renovation practices into institutional policy, SRHU demonstrates its commitment to minimizing environmental impact and promoting sustainable campus infrastructure.



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Policy for Energy Conservation and Clean Energy Technology

POLICY FOR ENERGY CONSERVATION AND CLEAN ENERGY TECHNOLOGY

Approved	Board of Management on 12th January 2019
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2019-04 (i) dated 15th January 2019
Reviewed / Revised	Board of Management on 29th March 2022
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2022-58 (i) dated 5th April 2022
Next Review	2025-26

1. Short Title & Commencement
   1.1 This Policy shall be called the "Policy for Energy Conservation and Clean Energy Technology" of Swami Rama Himalayan University.
   1.2 This Policy shall be deemed to have come into force from the date of approval of the Board of Management of the University.
2. Purpose

Excerpt of policy from SRHU official website

Evidence: https://srhu.edu.in/policies-guidelines/policy-for-energy-conservation-and-clean-energy-technology/

7.2.2 Upgrade Buildings to Higher Energy Efficiency

Upgrade Plan: Improving Building Energy Efficiency at SRHU

Swami Rama Himalayan University (SRHU), Dehradun, has adopted a comprehensive, phased plan to enhance energy efficiency across its academic, residential, and healthcare facilities, aligning with its commitment to SDG 7 (Clean and Affordable Energy). Situated in the foothills of the Himalayas, the University's strategy is tailored to the region's mixed climate, warm summers, cool winters, and heavy monsoons, and combines both passive architectural measures and active technological upgrades to reduce overall energy consumption.

SRHU's upgrade plan is anchored on three guiding principles:

1. **Envelope-first approach:** Optimising the building fabric- roofs, walls, windows- to reduce heating and cooling loads.
2. **Passive before active:** Applying climate-responsive design (orientation, shading, insulation, daylighting) before introducing efficient active systems like modern HVAC, LED lighting, and automated controls.
3. **Measure and manage:** Using periodic energy audits and building energy management systems (BEMS) to identify, monitor, and sustain energy savings.

Under this framework, the University has already initiated several improvements. LED retrofits have been completed across major teaching blocks, laboratories, and hostels, cutting lighting energy use by nearly 50 per cent. Roofs of priority buildings have been upgraded with reflective and insulated materials to reduce thermal gain, while all new construction follows SRHU's **Energy Conservation Policy**, which mandates compliance with national energy-efficiency standards.

Old air-conditioning systems are being gradually replaced with **BEE star-rated, high-COP** models, and maintenance protocols now include regular monitoring to sustain efficiency.

In parallel, SRHU continues to expand its renewable energy infrastructure. Two rooftop solar power plants with a total capacity of **1,500 kW** are operational on campus, and an additional **1,000 kW** solar system is under installation through a power purchase agreement with **M/s Bakshi Engineering Works**. Together, these systems are projected to meet nearly 16% of the University's electricity needs, significantly reducing dependence on grid power and lowering the institutional carbon footprint.

Planned upgrades follow a phased approach:

- **Immediate actions (0–6 months):** Complete campus-wide LED retrofits and launch energy awareness campaigns for staff and students.
- **Short-term (6–18 months):** Retrofit hostels and laboratories with roof insulation, shading devices, and efficient glazing.
- **Medium-term (18–36 months):** Replace legacy HVAC systems with smart, variable-speed units and extend solar coverage to additional rooftops.
- **Long-term (3–5 years):** Integrate energy-efficient design in all new builds, explore micro-grid planning, and implement a full BEMS for real-time monitoring.

Through these ongoing measures, SRHU demonstrates its commitment to low-carbon campus development and responsible energy stewardship in the Himalayan region. The University's initiatives not only reduce operational costs and emissions but also serve as a model for sustainable institutional infrastructure in similar geoclimatic contexts.

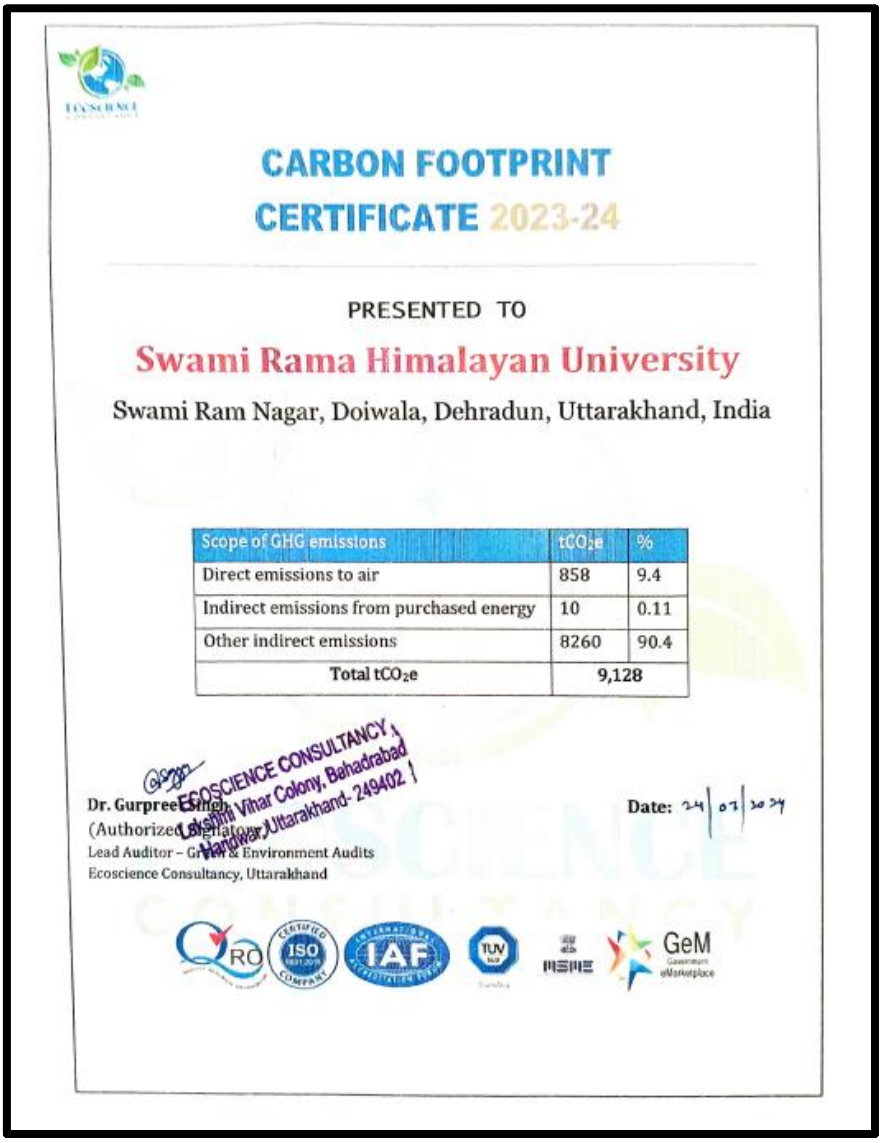
7.2.3 Carbon Reduction and Emission Reduction Process

Swami Rama Himalayan University implements a comprehensive and verified process for carbon management and emission reduction, guided by its Policy for Energy Conservation and Green Campus Initiatives aligning with SDG 7: Affordable and Clean Energy. The University conducts regular Green Audits and Carbon Footprint Assessments through accredited third-party agencies.

For 2023–24, SRHU's certified carbon footprint was 9,128 tCO_2e (as verified by Ecoscience Consultancy, Uttarakhand), with 858 tCO_2e from direct emissions and 8,260 tCO_2e from indirect sources. To reduce these emissions, SRHU has installed 1,500 kW of rooftop solar capacity and initiated a further 1,000 kW expansion, meeting roughly 40 percent of its electricity demand and cutting about 1,455 tonnes of CO_2 annually.

Additional measures include:

- **LED retrofitting** across teaching and residential areas;
- **Composting of 47,305 kg of food waste (2023–24)**, converting it into organic manure;
- **1 MLD Sewage Treatment Plant** reusing treated water for green belt irrigation; and
- **Strict campus mobility policy** promoting battery-powered vehicles and limiting automobile entry.



CARBON FOOTPRINT CERTIFICATE 2023-24

PRESENTED TO

Swami Rama Himalayan University

Swami Ram Nagar, Doiwala, Dehradun, Uttarakhand, India

Scope of GHG emissions	tCO_2e	%
Direct emissions to air	858	9.4
Indirect emissions from purchased energy	10	0.11
Other indirect emissions	8260	90.4
Total tCO_2e	9,128	

ECOSCIENCE CONSULTANCY, Lakshmi Vihar Colony, Bahadrabad Haridwar, Uttarakhand- 249402

Dr. Gurpreet Singh
(Authorized Signatory)
Lead Auditor – Green & Environment Audits
Ecoscience Consultancy, Uttarakhand

Date: 24/07/2024

Carbon footprint certificate provided to the University

7.2.4 Plan to Reduce Energy Consumption

Swami Rama Himalayan University has outlined a structured and comprehensive strategy to systematically reduce its overall campus energy consumption while strengthening environmental stewardship. The plan builds on SRHU's approved **Policy for Energy Conservation** and aligns with the university's broader commitment to sustainable operations and the SDG 7: Affordable and Clean Energy.

Objectives

The University aims to:

- Reduce total campus energy consumption by 30–40 % over five years.
- Transition steadily toward renewable and cleaner sources of energy.
- Promote an energy-conscious culture among students, faculty, and staff.
- Establish SRHU as a model energy-efficient campus in the northern Himalayan region.

Current Situation

A preliminary assessment has identified that the major sources of energy use at SRHU include:

- Lighting in academic blocks, hostels, and hospital facilities;
- HVAC and ventilation systems in laboratories, libraries, and medical buildings;
- Water-pumping, IT infrastructure, and laboratory equipment; and
- Campus transport and service vehicles.

These areas form the primary targets for the university's efficiency interventions and monitoring activities.

Strategic Action Plan

Energy Audit and Monitoring:

SRHU plans to conduct a comprehensive campus-wide energy audit to assess current consumption patterns, identify inefficiencies, and set clear priorities for improvement. The University will install smart energy meters and a Building Energy Management System (BEMS) to enable real-time tracking of energy use across key facilities. In addition, an interactive energy dashboard will be developed to visualize consumption trends, highlight savings achieved, and support data-driven decision-making for continued efficiency enhancement.

ISO 50001:2018

Certificate of Registration

This is to Certify That
Energy Management System of

SWAMI RAMA HIMALAYAN UNIVERSITY

SWAMI RAM NAGAR, JOLLY GRANT, DOIWALA, DEHRADUN, 248140, UTTARAKHAND, INDIA

has been assessed and found to conform to the requirements of

ISO 50001:2018

for the following scope :

PROVIDING EDUCATION UNDERGRADUATE (UG), POSTGRADUATE (PG) AND DOCTORAL DEGREE PROGRAMS, RESEARCH, PHD AND HEALTH CARE TRAINING COURSES

Certificate No	: **23EQNA76**		
Initial Registration Date	: 11/09/2023	Issuance Date	: 11/09/2023
Date of Expiry	: 10/09/2026		
1st Surve. Due	: 11/08/2024	2nd Surve. Due	: 11/08/2025

DIRECTOR

mms

EGAC Accredited
EnMS Certification
CAB # 011805

IAF

Magnitude Management Services Pvt. Ltd.

Energy Audit Certificate

Infrastructure Upgradation:

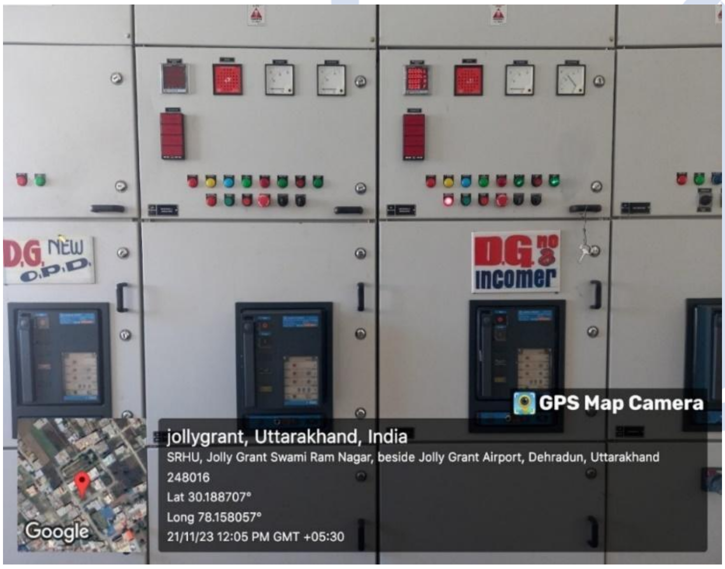
1. **Lighting Systems** – Replacement of all fluorescent and CFL lighting with energy-efficient LED fixtures, coupled with occupancy sensors and daylight-based dimming controls in low-traffic areas.

LED lights at security post, near Medical College and the university premises

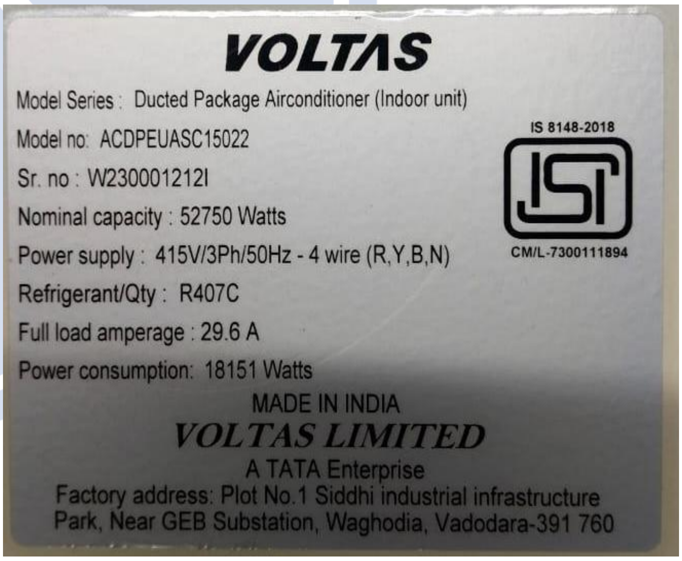
LED lights at ICU and OT complex at Himalayan Hospital, SRHU

2. **HVAC and Ventilation Systems** – Gradual substitution of outdated units with inverter-based, high-efficiency models, automated temperature scheduling, and regular maintenance for optimum performance.

Current HVAC system installed in the university



HVAC and Power Control Panel



Voltas Ducted Air Conditioning Unit : Energy-efficient HVAC system with R407C refrigerant

3. **Building Envelope Enhancements** – Roof insulation and reflective coatings to lower thermal loads, double-glazed windows on sun-exposed façades, and green roofs or vertical gardens for passive cooling and improved aesthetics.

Renewable Energy Integration

1. Solar Power

SRHU continues to expand its rooftop solar photovoltaic (PV) installations beyond the existing 1,500 kW, with an additional 1,000 kW project already under implementation through a power-purchase agreement.

Solar panels and wheeling to the grid at the rooftop of Himalayan College of Nursing

Solar water-heating systems in hostels and hospital facilities further reduce electrical demand

2. Energy-Efficient Operations and Maintenance

SRHU follows a proactive approach to ensure all electrical and HVAC systems operate at peak efficiency through regular, scheduled maintenance. Operational hours for lighting, air-conditioning, and laboratory equipment are optimized to minimize unnecessary energy use, while outdated appliances and computers are systematically replaced with BEE 4-star or 5-star rated models. The University also emphasizes energy-efficient procurement practices, ensuring that all future purchases aligning with SDG 7: Affordable and Clean Energy.

3. Behavioral and Awareness Initiatives

Recognizing that awareness drives long-term change, SRHU conducts regular "Energy Conservation Awareness Campaigns" to engage students, faculty, and staff in responsible energy behavior. Energy-saving messages and posters are displayed across campus to reinforce daily habits. Additionally, training workshops, competitions, and seminars promote hands-on learning about sustainable energy practices. To encourage continuous participation, an Energy Conservation Club—led by students from Environmental Science and Engineering: actively monitors energy-saving initiatives and spreads awareness throughout the campus community promoting SDG 7: Affordable and Clean Energy

4. Water and Waste Synergy

Rainwater-harvesting systems, low-flow fixtures, water-efficient landscaping, and waste-segregation with on-site composting further contribute to indirect energy savings by reducing pumping, transport, and disposal-related loads.

Rain Water Harvesting pit

Rain Water Harvesting pit

Rain Water Harvesting Tank (capacity 150 KL)

5. Implementation Timeline

Phase	Duration
Phase I (0–6 months)	Campus-wide energy audit, LED retrofits, awareness campaign launch
Phase II (6–18 months)	HVAC upgrades, smart meters, solar street lighting
Phase III (18–36 months)	Expansion of solar PV and insulation works
Phase IV (3–5 years)	Deep retrofits, renewable integration, smart-campus network

6. Monitoring and Expected Outcomes

Energy data will be tracked regularly through smart metering, with quarterly reviews of key performance indicators (kWh/m², CO_2 reduction, and cost savings). Annual energy performance reports will document progress, while an Energy Efficiency Week will be observed to share outcomes and strengthen community engagement.

SRHU expects to achieve a 30–40 % reduction in electricity consumption, significant cost savings, and an estimated 500–700 tonnes of CO_2 reduction per year. These measurable actions reinforce the University's role as a responsible, energy-efficient campus contributing to India's National Action Plan on Climate Change (NAPCC) and global climate goals aligning with SDG 7: Affordable and Clean Energy.

7.2.5 Energy Wastage Identification

Objective

Swami Rama Himalayan University (SRHU) follows a systematic approach to identify, assess, and minimize energy wastage across its campus. The main objectives of this initiative are:

- To pinpoint areas and systems where energy inefficiencies are the highest.
- To establish reliable benchmarks for ongoing and future energy-saving measures.
- To quantify potential reductions in both energy consumption and costs.
- To nurture a culture of energy awareness and shared responsibility among students, staff, and faculty.

Methodology

Energy wastage identification at SRHU is carried out through detailed audit-based and observational assessments. These include:

- **Preliminary Energy Audit:** Reviewing monthly electricity consumption data, meter readings, and load profiles of academic blocks, hostels, and hospital units.

- **On-Site Assessments:** Inspecting lighting, HVAC systems, water pumps, and laboratory equipment to locate energy loss points.
- **Stakeholder Interaction:** Engaging with facility management teams and departmental representatives to understand consumption patterns.
- **Technical Analysis:** Measuring load factors, equipment efficiency, and standby energy usage to identify hidden losses.

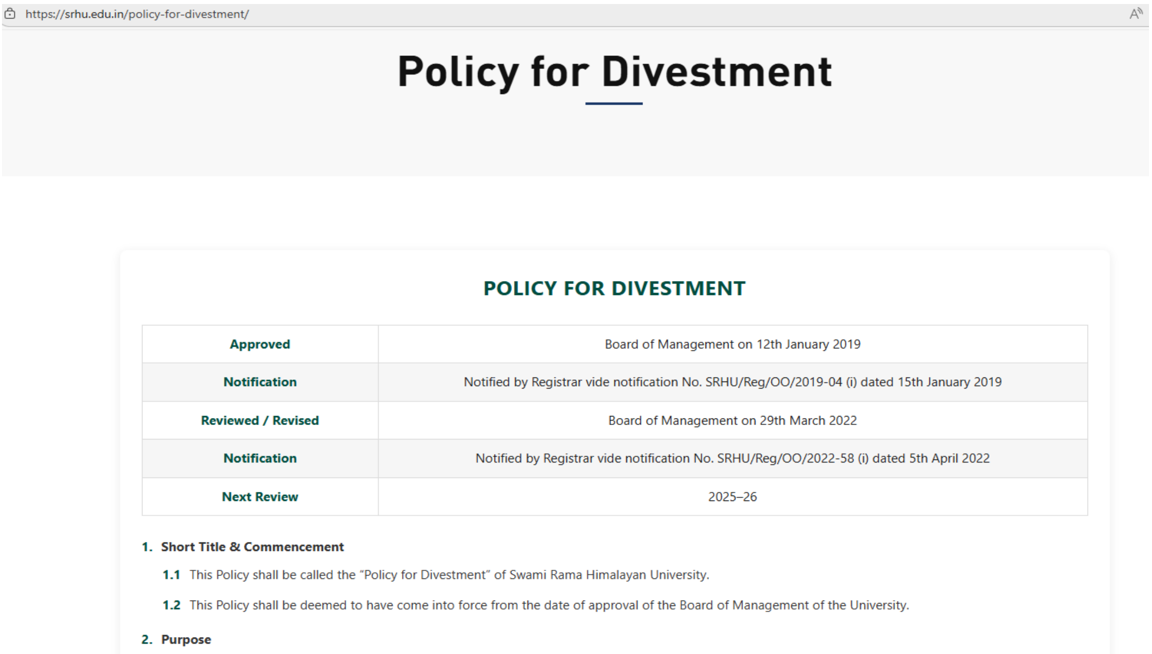
Key Areas of Energy Waste and Corrective Measures

1. **Lighting Systems**
    - Inefficient fixtures and lights left on unnecessarily were observed as common issues.
    - Replaced all traditional lighting with LED systems.
    - Installed motion and daylight sensors in corridors and open areas.
    - Introduced timer-based circuits for outdoor lighting to reduce overnight wastage.
2. **HVAC Systems**
    - Overuse of outdated air-conditioning units and poor maintenance resulted in energy losses.
    - Implemented scheduled HVAC servicing and preventive maintenance.
    - Fixed temperature limits between 24–26°C for optimal efficiency.
    - Installed automatic thermostats and inverter-based systems across critical zones.
3. **Building Envelope and Insulation**
    - Applied roof insulation and reflective coatings to minimize heat gain.
    - Retrofitted windows with double-glazed panels and shading devices to enhance thermal comfort.
4. **Equipment and Plug Loads**
    - Introduced automatic power-down policies and smart power strips.
    - Encouraged the use of BEE 4-star and 5-star rated appliances.
    - Conducted awareness campaigns urging users to switch off idle devices.
5. **Water Pumping and Motor Systems**
    - Installed automatic water level sensors and variable frequency drives (VFDs).
    - Streamlined pumping schedules and addressed leaks promptly to avoid energy loss.
6. **Hospital and Laboratory Facilities**
    - Regulated operating schedules for sterilizers, autoclaves, and chillers.
    - Introduced regular leak detection for compressed air and vacuum systems.
7. **Transportation and Campus Mobility**
    - Promoted walking, bicycles, and electric vehicles for intra-campus travel.
    - Set up EV charging stations to encourage clean mobility.
8. **Behavioral and Operational Factors**
    - Conducted campus-wide awareness programs and training sessions on energy-saving practices.

- Established an Energy Management Cell for monitoring consumption and promoting best practices.

7.2.6 Divestment policy

Swami Rama Himalayan University has a Divestment Policy in place to ensure that institutional investments align with its sustainability and ethical values. The policy mandates divestment from carbon-intensive sectors such as coal and oil, and prohibits funding of industries that negatively impact environmental or social well-being. It emphasizes redirecting investments toward renewable energy, green technologies, and sustainable enterprises, thereby reinforcing SRHU's commitment to responsible financial governance and the principles of SDG 7: Affordable and Clean Energy.



https://srhu.edu.in/policy-for-divestment/

Policy for Divestment

POLICY FOR DIVESTMENT

Approved	Board of Management on 12th January 2019
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2019-04 (i) dated 15th January 2019
Reviewed / Revised	Board of Management on 29th March 2022
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2022-58 (i) dated 5th April 2022
Next Review	2025–26

1. Short Title & Commencement
   1.1 This Policy shall be called the "Policy for Divestment" of Swami Rama Himalayan University.
   1.2 This Policy shall be deemed to have come into force from the date of approval of the Board of Management of the University.
2. Purpose

Link for policy **https://srhu.edu.in/policy-for-divestment/**

7.3 Energy Use Density

The University monitors and evaluates its total energy performance through the Energy Use Density (EUD) metric, representing electricity consumed per square meter of built-up area annually. For the academic year 2023–24, SRHU recorded a total energy consumption of 14.25 million kWh across its 244,820 m² built-up area. This results in an Energy Performance Index (EPI) of 58.2 kWh/m²/year, substantially lower than the national average for higher education campuses in India, which typically ranges between 120–160 kWh/m²/year.

Energy performance Index (EPI)	Values
Annual energy consumption during year 2023-24	= 1,42,50,000 kWh
Campus Built up area	= 2,44,820 sqm
EPI	=1,42,50,000 kWh /2,44,820 sqm
	= 58.2 kWh/sqm/year

The low EPI reflects SRHU's continuous efforts toward energy efficiency through LED retrofitting, optimized HVAC systems, solar power integration, and robust energy monitoring practices. Spanning 196 acres, the university's infrastructure demonstrates a strong balance between operational functionality and sustainability-positioning SRHU as one of the leading higher education institutions in energy-efficient campus management.

7.4 Energy and the Community

7.4.1 Local Community Outreach for Energy Efficiency

SRHU regularly engages with surrounding communities through campaigns and programmes focused on energy efficiency and renewable energy awareness. The University's "Green Campus" initiative has included tree-planting drives, e-waste recycling drives and solar-energy awareness events which help local residents and students alike understand the importance of cleaner energy practices. SRHU was recognized with the Confederation of Indian Industry (CII) Gold Award in 2023 for its eco-friendly practices, including energy conservation and reduction of fuel consumption via electric vehicles on campus which promotes the goals of SDG 7: Affordable and Clean Energy.


CII
Confederation of Indian Industry

Certificate

Presented to

Swami Rama Himalayan University, Dehradun
for Winning the Gold Award
at
2nd Edition of CII Northern Region Green Practices Award for Industries
05 - 06 October 2023, Gurugram

Prashant A N
Regional Director – CII Northern Region

7.4.2 Promote A Public Pledge Toward 100% Renewable Energy

Swami Rama Himalayan University actively advocates for clean and renewable energy adoption within and beyond its campus through awareness programs, community outreach, and institutional commitments. The University has made a public pledge to progressively transition toward 100% renewable energy, aligning its long-term sustainability roadmap with India's National Solar Mission and affordable and Clean Energy (SDG 7).

Through initiatives such as the installation of 1.5 MW rooftop solar power plants and plans to expand by an additional 1 MW, SRHU demonstrates its intent to minimize dependence on non-renewable sources. These actions are complemented by seminars, student campaigns, and collaborations that encourage nearby institutions, local bodies, and communities to adopt renewable energy practices.

SRHU Mobilizes the Community for Cleanliness and 100% Renewable Energy Pledge

This public pledge reinforces SRHU's leadership in driving Uttarakhand's transition toward a low-carbon future and creating a culture of sustainability that extends beyond the campus boundaries.

7.4.3 Energy Efficiency Services for Industry

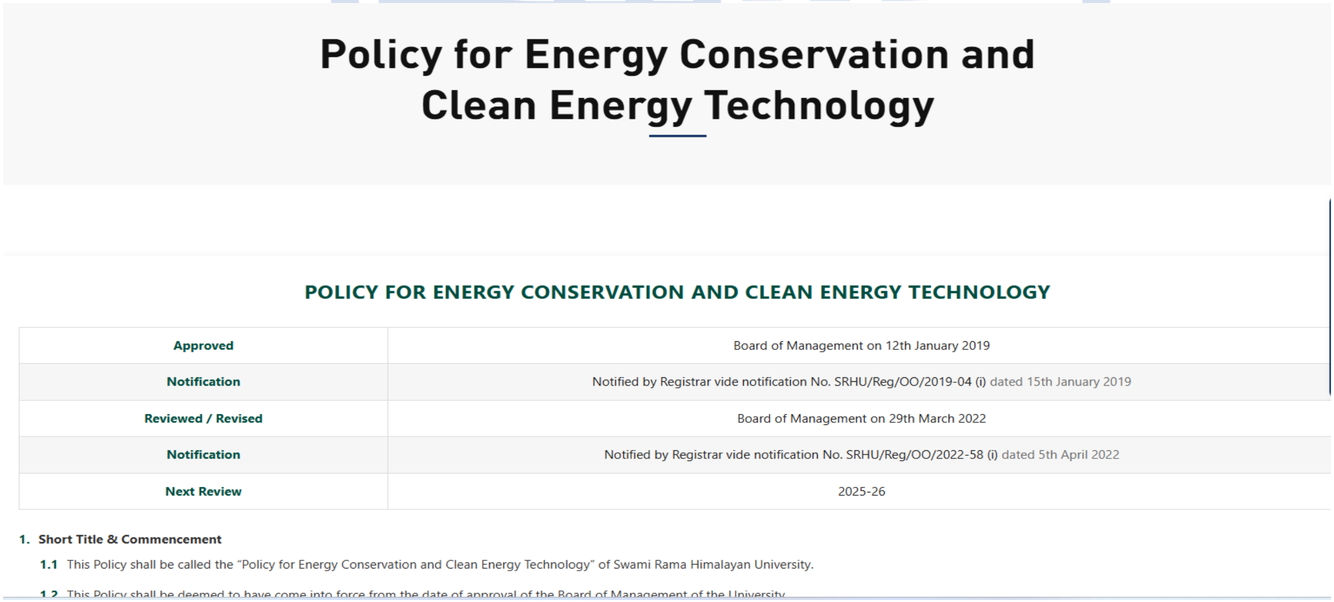
At present, Swami Rama Himalayan University does not directly provide specialized services to local industries focused on energy efficiency assessments, workshops, or renewable energy consultations. While the University has implemented numerous campus-wide sustainability measures, including solar power generation and green infrastructure, these initiatives are currently internal to the University and not extended as services to external industrial partners. However, SRHU plans to explore collaborations in the future through its engineering and environmental science departments to support industry-oriented capacity building and knowledge sharing in sustainable energy practices aligning with SDG 7: Affordable and Clean Energy.

7.4.4 Policy Development for Clean Energy Technology

Swami Rama Himalayan University (SRHU), through its Rural Development Institute (RDI), actively engages with local communities to promote clean energy awareness and facilitate the adoption of solar power in rural households and institutions. While SRHU does not yet directly participate in government policy formulation, its field-level initiatives—such as supporting solar energy use and advocating for energy-efficient infrastructure—generate valuable evidence and insights that can inform future clean energy policy development. The University aims to formalize these practices into a policy framework and strengthen collaborations with government and academic partners to advance sustainable and energy-efficient technologies strengthening SDG 7: Affordable and Clean Energy.

Solar power system installation in Rural Uttarakhand

Distribution of solar lamps to rural households



Policy for Energy Conservation and Clean Energy Technology

POLICY FOR ENERGY CONSERVATION AND CLEAN ENERGY TECHNOLOGY

Approved	Board of Management on 12th January 2019
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2019-04 (i) dated 15th January 2019
Reviewed / Revised	Board of Management on 29th March 2022
Notification	Notified by Registrar vide notification No. SRHU/Reg/OO/2022-58 (i) dated 5th April 2022
Next Review	2025-26

1. Short Title & Commencement
   1.1 This Policy shall be called the "Policy for Energy Conservation and Clean Energy Technology" of Swami Rama Himalayan University.
   1.2 This Policy shall be deemed to have come into force from the date of approval of the Board of Management of the University

Evidence: [Policy for Energy Conservation and Clean Energy Technology - SRHU]

7.4.5 Assistance to Low-Carbon Innovation

Swami Rama Himalayan University currently does not have a dedicated program exclusively supporting low-carbon start-ups. However, through the Himalayan Centre for Innovation and Entrepreneurship (HCIE), the university actively nurtures innovation and entrepreneurial ventures across various disciplines. In the future, SRHU aims to leverage HCIE's incubation ecosystem to encourage and support start-ups focusing on renewable energy, waste reduction, and low-carbon technologies. Proposals in these domains will be given priority consideration, reinforcing the University's commitment to advancing sustainable and climate-conscious innovation, a step towards SDG 7: Affordable and Clean Energy.

7.5 Low-Carbon Energy Use

In alignment with Sustainable Development Goal (SDG) 7 – Affordable and Clean Energy which focuses on increasing the share of low-carbon and renewable energy sources in total energy consumption. The University through its concerted efforts aims to enhance the use of renewable and low-carbon energy to minimize the institution's carbon footprint and promote environmental sustainability.

7.5.1 Low-Carbon Energy Use

SRHU employs multiple low-carbon energy systems, including **solar energy** and a **biogas plant** for sustainable energy generation:

- **Solar Energy:** The University's solar installations collectively contribute **7,715.41 GJ** of clean energy annually, significantly reducing dependence on conventional grid electricity.
- **Biogas Energy:** A **4 cubic meter per day capacity biogas plant** has been installed, yielding an **annual energy saving equivalent to 31.51 GJ of LPG**, primarily used for cooking applications within the campus.

The University's total annual energy use comprises both internally generated renewable energy and electricity purchased from external sources:

Energy Source	Energy (GJ)
Solar Energy (Renewable)	7,715.41
Biogas (Renewable)	31.51
Electricity from UPCL (Grid)	46,517.62
Total Energy Used	**54,233.03**

The total energy derived from low-carbon sources (solar and biogas) amounts to **7,746.92 GJ**, representing approximately **14.29%** of SRHU's total annual energy consumption. This proportion signifies a strong institutional commitment toward decarbonisation and energy transition within the campus infrastructure further strengthening the goals of SDG 7: Affordable and Clean Energy.