स्वामी राम हिमालयन विश्वविद्यालय
Swami Rama Himalayan University

14 LIFE BELOW WATER

SDG 14

Life Below Water

Sustainable Development Goal 14 (SDG 14) emphasizes the conservation and sustainable use of oceans, seas, and marine resources to support life below water. This goal addresses critical issues such as marine pollution, overfishing, biodiversity loss, and the impacts of climate change on aquatic ecosystems. As oceans play a pivotal role in regulating the planet's climate, providing food, and supporting livelihoods, protecting marine ecosystems is essential for ensuring global sustainability and resilience. Achieving SDG 14 requires coordinated efforts to promote marine conservation, reduce pollution, and enhance the sustainable management of aquatic resources for current and future generations.

Swami Rama Himalayan University (SRHU) aligns with the principles of SDG 14 by integrating sustainability and environmental stewardship into its academic, research, and outreach initiatives. Guided by its vision to foster holistic development and societal well-being, the University emphasizes the interconnectedness of aquatic health and human sustainability. SRHU's interdisciplinary approach to education and research encourages innovative solutions to address water conservation, pollution mitigation, and biodiversity protection. Furthermore, through its community-focused outreach programs, SRHU works to raise awareness about the importance of safeguarding aquatic ecosystems, empowering local communities to adopt sustainable practices that protect water bodies and promote ecological harmony.

Challenges

1. **Marine Pollution**: Increasing levels of plastic waste, untreated wastewater, and harmful chemicals degrade marine ecosystems.
2. **Overfishing**: Unsustainable fishing practices lead to the depletion of fish stocks, threatening food security and livelihoods.
3. **Ocean Acidification**: Rising carbon dioxide absorption is altering ocean chemistry, affecting marine biodiversity and ecosystems like coral reefs.
4. **Climate Change**: Warming waters and rising sea levels disrupt marine ecosystems and coastal habitats.
5. **Habitat Destruction**: Coastal development, illegal fishing, and unsustainable aquaculture contribute to habitat loss.
6. **Policy and Awareness Gaps**: Weak enforcement of marine protection laws and low public awareness hinder effective conservation.
7. **Limited Collaboration**: Insufficient international partnerships restrict coordinated efforts to address global marine issues.

Strategies

1. **Marine Protected Areas (MPAs)**: Establish MPAs to safeguard biodiversity and allow ecosystems to recover.
2. **Pollution Reduction**: Implement measures to reduce plastic use, improve waste management, and adopt circular economy models.
3. **Sustainable Fishing Practices**: Strengthen regulations on fishing, promote sustainable aquaculture, and restore fish populations.
4. **Climate Adaptation**: Focus on coastal restoration, blue carbon initiatives, and other mitigation strategies for climate impacts on oceans.

5. **Education and Awareness**: Conduct campaigns to promote responsible behaviors among industries, communities, and governments.
6. **International Collaboration**: Foster partnerships for data sharing, research, and capacity building to tackle global marine issues collectively.
7. **Technology Use**: Encourage innovations like remote sensing and AI for monitoring marine ecosystems and pollution levels.

Alignment with SRHU's Vision

1. **Multidisciplinary Research**: Conduct research on water conservation, pollution mitigation, and sustainable management of aquatic ecosystems.
2. **Community Engagement**: Collaborate with local communities to promote eco-friendly practices like water conservation and pollution control.
3. **Educational Focus**: Integrate environmental conservation principles into academic programs to prepare students for global challenges.
4. **Sustainability Initiatives**: Promote campus-wide practices like efficient water use and pollution management to lead by example.
5. **Capacity Building**: Organize training programs for students, researchers, and community members on sustainable marine and freshwater management.
6. **Global Partnerships**: Establish collaborations with international institutions to enhance knowledge-sharing and adopt best practices in marine conservation.

Research Initiatives

Swami Rama Himalayan University (SRHU) is dedicated to advancing Sustainable Development Goal 14 (SDG 14), which focuses on conserving and sustainably using oceans, seas, and marine resources. The University undertakes multidisciplinary research initiatives to address key challenges affecting marine and freshwater ecosystems, fostering innovative solutions for sustainable practices.

Marine Pollution Research: Studies focus on the sources, impact, and mitigation strategies for marine pollution, including microplastics and chemical contaminants. Researchers at SRHU develop eco-friendly solutions, such as biodegradable materials, to reduce waste entering aquatic ecosystems.

Sustainable Aquaculture: Research initiatives emphasize developing sustainable aquaculture practices to ensure food security while minimizing the environmental impact. This includes designing low-impact fish farming systems and exploring the use of organic feeds.

Water Conservation and Quality: SRHU is actively engaged in studying water quality in freshwater and coastal ecosystems. Projects focus on monitoring and improving water resource management practices, promoting sustainable use, and ensuring access to clean water for communities.

Biodiversity Preservation: Research programs aim to document and preserve aquatic biodiversity, focusing on endangered and economically significant species. Efforts also include restoring damaged habitats, such as mangroves and coral reefs, through innovative techniques.

Community-Centric Studies: SRHU integrates community involvement into its research, studying the socio-economic impacts of declining marine health and exploring alternative livelihoods for fishing-dependent communities.

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. 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.	Apparatus For Real-Time Videotaping and Still Image Capturing	12 Months	Dr. Vishal Rajput, Dr. Sanjay Gupta, Dr. Chandra Shekhar Nautiyal	0.3	2022-2023

	for Fish Behavioural Patterns				
2.	Development of Low-Cost Model for Efficient Treatment of Hospital Wastewater	12 Months	Dr. Geeta Bhandari	3.000	2022-2023
3.	Established of behavioural bio-indicators in freshwater stream fish against the specific neurotoxin	24 Months	Dr Vishal Rajput	4.000	2022-2023

The University actively secures extramural funding from national agencies to support research and initiatives aligned with Sustainable Development Goal 14 (SDG 14). These funds facilitate the development and implementation of projects aimed at improving water accessibility, quality, and sustainability.

S.No.	Title of the Project	Sanctioned order no.	Sanctioned date	Total Amount Sanctioned (In Lakh)	Amount Received (In Lakh) during the year	AU
1	Bioprocess Development for the Biological Removal of Iron from Subsurface Drinking Water	UBC/R&Dproject/2022/194	5.3.2022	16.36	6,86,710.00	Himalayan Institute of Medical Sciences
3	Bio-Prospecting of Microalgae for Biomass Production and Treatment of Hospital Wastewater	UCB/HLD/22/55	05-06-2022	9.75	8,69,161.00	Himalayan Institute of Medical Sciences

Research publications:

Swami Rama Himalayan University (SRHU) contributes significantly to Sustainable Development Goal 14 (SDG 14) through research publications that address critical challenges in conserving aquatic ecosystems and promoting the sustainable use of marine resources. Researchers at SRHU publish in esteemed national and international journals, focusing on topics such as marine pollution, microplastic contamination, aquatic biodiversity, and sustainable fisheries. These studies explore the impacts of climate change on marine ecosystems, strategies for habitat restoration, and water quality management. Additionally, publications emphasize community-centred approaches and policy recommendations to protect marine life and enhance coastal resilience. By advancing knowledge and disseminating actionable insights, SRHU reinforces its commitment to fostering sustainable marine ecosystems and aligning with global sustainability goals. (Scopus - Swami Rama Himalayan University).

Rajput, V., Dhatwalia, V.K., Jaiswal, K.K., ...Kurbatova, A.I., Vlaskin, M.S. contaminants. Algal Biotechnology, 2023

Patel, N., Dhasmana, A., Kumari, S., ...Nayanam, S., Malik, S. Nanofiltration Applications for Potable Water, Treatment, and Reuse. Advanced and Innovative Approaches of Environmental Biotechnology in Industrial Wastewater Treatment, 2023

Key Initiatives taken under SDG 14 by RDI

Since year 1998, Rural Development Institute (RDI) of Himalayan Institute Hospital Trust (HIHT) has been working on its vision to enable water, sanitation and hygiene activities with the objective to deliver sustainable health and hygiene benefits through improvement in WATSAN services; thereby improving quality of life covering more than 550 villages till date. Projects are designed on approach of demand-responsive, need based and community-driven.

It ensures active participation of gram panchayats, user committees, community, which plan/design/implement/manage their own schemes. During the year, following Watsan projects were undertaken:

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.