SDG 14: Life Below Water

(Report 2023-24)

14.1 Research on Life Below Water

K.R. Mangalam University demonstrates a focused commitment to SDG 14 – Life Below Water, contributing to research that addresses marine ecosystem health, aquatic biodiversity, and sustainable management of water resources. Between 2014 and 2024, the university produced 1,042 Scopus-indexed publications, of which 2 publications are aligned with SDG 14. These publications collectively received 343 paper views, achieved a citation index of 9.5, and recorded a Field Citation Average (FCA) of 2.7, reflecting the relevance and scholarly impact of the university's contributions in marine and freshwater ecosystem research.

14.1.1 Life Below Water – Cite Score

In 2024, the Cumulative Cite Score of 8 highlights the visibility and quality of the university's SDG 14-related research. The publications focus on critical areas including aquatic biodiversity conservation, water quality monitoring, and the effects of pollutants on freshwater ecosystems.

This demonstrates the university's commitment to advancing scientific understanding of life below water and informing sustainable management practices for aquatic resources.

14.1.2: Life Below Water – FWCI

The average Field-Weighted Citation Impact (FWCI) of 2.37 indicates that the SDG 14 publications from K.R. Mangalam University are cited more than twice as often as the global average for similar research. This metric reflects the growing influence of the university's research within the international academic community, emphasizing its contributions to knowledge generation in marine and freshwater ecology.

14.1.3: Life Below Water – Publications

The 2 SDG 14-aligned publications underscore the university's emerging engagement in research on sustainable aquatic ecosystems. Through these studies, K.R. Mangalam University contributes to protecting aquatic life, mitigating pollution, and promoting sustainable water management practices. These efforts align with the objectives of UN Sustainable Development

Goal 14 and demonstrate the university's commitment to supporting global initiatives for preserving life below water.

14.2 Supporting Aquatic Ecosystems Through Education

Community outreach programs on the conservation and sustainable use of freshwater ecosystems are organized by K.R. Mangalam University. Local farmers and community members are trained with the help of workshops and field demonstrations about effective water irrigation, rainwater harvesting, and how to conserve water. University faculty and students partner with rural communities to educate about the importance of protecting water quality, preventing pollution and fairly allocating freshwater resources. These education programs build local capacity in sustainable water use, contribute to long term environment and livelihood sustainability.

14.2.1 Fresh Water Ecosystem (Community Outreach)

K.R. Mangalam University actively working for conservation and restoration of freshwater ecosystems through trans-disciplinary education, research & cross-cutting community engagement. The University also presents special courses and modules on Water Resource Management, Ground Water Development, and Sustainable Agriculture with a focus on the conservation of rivers, lakes & ground water.

The details of the courses are given as under.

S. No.	Course Code	Course Title	School	Web Link
1	ETCE417A	Ground Water Development	School of Engineering and Technology	Syllabus
2	SAAG114A	Soil And Water Conservation Engineering	School of Agricultural Sciences	Syllabus
3	SEC007	Groundwater Modeling	School of Basic & Applied Sciences	Syllabus

14.2.2 Sustainable Fisheries (Community Outreach)

K.R. Mangalam University also provides community outreach related to sustainable fisheries, Aquaculture and aquatic tourism. The programs are aimed at raising awareness among local fishermen, farmers and youth to responsible fishing behavior, the preservation of aquatic biodiversity and sustainable aquaculture practices. The training of trainees focused on the necessity to interfere in breeding cycles and reducing pollution as well as measures such as integrating fish farming. Awareness programmes also point to the possibilities provided by sustainable water-based tourism as a non-livelihood option. The efforts are being taken on sustainable management of fisheries through education

The students of K.R. Mangalam University undertook a one-month project on saltwater prawn farming at a farmer's unit in Rewari, Lakhnor to explore sustainable aquaculture practices in inland saline areas. The project aimed to demonstrate the economic and ecological viability of cultivating prawns in controlled saline water conditions. Students studied water quality parameters, feed management, and growth performance of prawns under semi-intensive systems. They also assessed environmental impacts such as salinity management and effluent reuse, ensuring minimal ecological disturbance. The project enhanced students understanding of integrated aquaculture techniques, biosecurity measures, and market linkages for prawn

production. Through field exposure and interaction with local farmers, students developed practical knowledge of sustainable coastal aquaculture models adapted for inland regions.

One Month Student's Project on Prawn Farming

Students observing prawn culture techniques during field visit to the aquaculture pond at Rewari

Report on Fish Farming

14.2.3 Overfishing (Community Outreach)

K.R. Mangalam University organizes community outreach programmes to raise awareness about overfishing, illegal and unregulated fishing, and destructive fishing practices. Through workshops, posters, and interactive sessions, local communities and fishermen are educated on sustainable fishing, marine conservation, and the importance of protecting aquatic biodiversity.

Awareness Campaign

The students from K.R. Mangalam University organized an awareness campaign to inland fishing communities for studying and understanding about destruction caused due to overfishing on the aquatic ecosystem. Throughout the campaign, students met fishermen, local officials and fishery officers to understand their fishing practices nowadays, seasonality behaviors and trends of resources depletion. They saw the threats of fish stocks dwindling, biodiversity loss, and decrease in income for fishing families. There was a series of awareness programs based on the significance of RPs by highlighting the values of fishing bans in spawning seasons, using eco-friendly gears and harvesting responsibly without catching juveniles to help regenerate the populations. Posters and leaflets were handed out reminding people about the environmental and financial impact of catching shrimps.

Students also consider alternative livelihoods options including aquaculture, fish-farming and coastal eco-tourism - anything that means they are not dependent upon wild capture fisheries. The experience deepened their appreciation of policy perspectives, conservation value, and education processes in community resource management. This experiential learning opportunity increased student involvement in marine conservation activism and created a culture of sustainability, integrating academic studies with environmental stewardship.

K R Mangalam University students are conducting a field campaign to raise awareness on the ecological and economic impacts of overfishing.

Overfishing Campaign Report

14.3 Supporting Aquatic Ecosystems Through Action

K.R. Mangalam University promotes the cause of nature and water bodies with hands-on initiatives like field visits, awareness campaigns, and community participation. Events and activities take place involving students and staff to raise awareness about the conservation of water, prevention of pollution, and recovery of aquatic biodiversity in lakes and rivers. The University organizes awareness camps, clean-up activities, and training on sustainable fishing practices and waste management to minimize water body degradation. Collaborative efforts such as these enable K.R. Mangalam University to promote responsible stewardship of the environment, enhance community involvement and ultimately help ensure that aquatic resources are both protected and responsibly managed for generations to come.

14.3.1 Conservation and Sustainable Utilisation of the Ocean (Events)

K.R. Mangalam University organizes events and awareness programs supporting the development and sustainable management of oceans, marine resources, lakes, rivers etc. Activities range from seminars, expert talks, poster presentations to the student led clean-up campaigns on aquatic biodiversity protection and pollution reduction. It promotes eco-friendly practices like waste proliferation, responsible fishing, and water conservation through the program. Working with local officials and NGOs expands outreach and facilitates community involvement. With these programs, the University fosters environmental responsibility in students and society, making a very significant contribution to the fulfilment of sustainable development.

Hands-on learning experience at Sultanpur National Park — observing migratory bird species and understanding wetland ecosystems

Art for awareness: posters highlighting the importance of reducing plastic waste and protecting aquatic ecosystems.

K R Mangalam University community members planting saplings to enhance campus greenery and support biodiversity restoration

K R Mangalam University faculty and students interacting with local farmers during Kisan Mela 2023, promoting awareness on sustainable agriculture and water-efficient farming practices.

Students and NSS volunteers participating in the Vriksha Ropan drive to enhance campus greenery and promote environmental awareness

K R Mangalam University volunteers engaging local residents in activities focused on waste segregation, plastic reduction, and sustainable sanitation practices.

Students visit to observing diversified fauna and flora of the species of plants and animals

Exploring Nature's richness & medicinal plant potential to broaden understanding of able healthcare practices

Student's understanding the complete process of sewage treatment

Student understanding organic farming including soil health management, crop rotation and organic certification process

The details of the events are given below:

S. No.	Event Name	Date of Event	Web Link
1	Student Project on Saltwater prawn farming at Rewari, lakhnor farmers unit in-collaboration with Growel Formulation Pvt Ltd	07/09/2023	Project Report
2	Establishment of a small functional model at K R Mangalam University on Litopenaeus Vannammi (prawn culture) in-collaboration with Growel Formulation Pvt Ltd	08/10/2023	Project Report
3	Regulatory Barriers to the Acceptance of Bio-pesticides among Farmers for Sustainable Agriculture in Gurgaon and Nuh Districts	28/05/2024	Case Study Report
4	Awareness Campaign Report on the Health Impact of Wastewater Utilization	08/04/2024	Awareness Campaign Report

5	Field Visit Report on Sultanpur Lake at Sultanpur Lake Gurugram	14/09/2023	Field Visit Report
6	Poster Making Competition on World Environment Day	05/09/2023	Poster Making Competition Report
7	Sewage Treatment Visit	01/03/2024	Visit to STP Report
8	Plantation Drive Under the Theme "Green Earth Clean Earth"	29/06/2024	Van Mahotsav Report
9	Vriksha Ropan with NSS	29/09/2023	Vriksha Ropan Report
10	Kisan Mela	29/11/2023	Mela Report
11	Field Visit for the Collection and Survey of the Wild Flora Diversity in Cultivated and Non-cultivated Lands of the Nearby Aren of Sohna	7/03/2024	Field Visit Report

14.3.2 Food from Aquatic Ecosystems (Policy)

As part of its vision to harmonize sustainability with education, research and community development, K R Mangalam University continually synchronizes institutional policies with the United Nations Sustainability Development Goals. Acknowledging the interlinkage between terrestrial activities, freshwater ecosystems and marine health, the University has developed a stand-alone Policy on Food from Aquatic Ecosystems. These guidelines define K R Mangalam University strategic approach to teaching, research, and community engagement related to responsible aquaculture development, conservation of aquatic biodiversity, and sustainable food production.

Policy on Life Below Water

14.3.3 Maintain Ecosystems and Their Biodiversity (Direct Work)

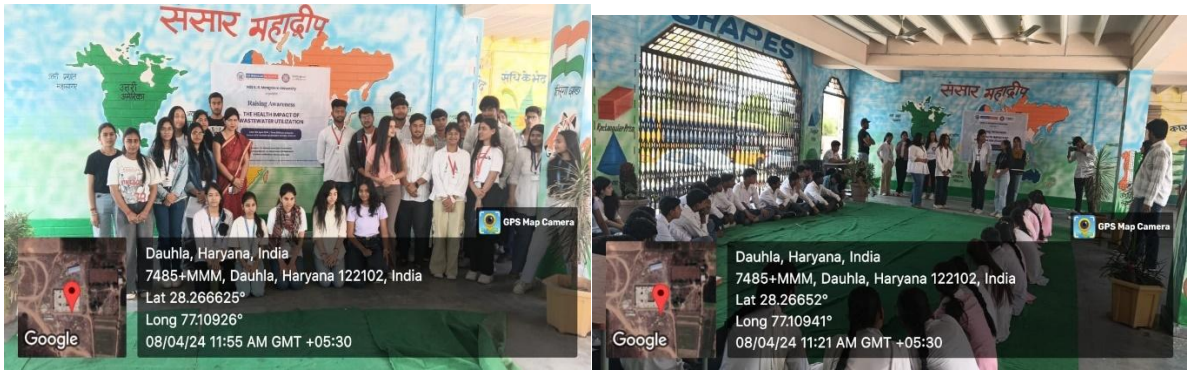
K.R. Mangalam University undertakes research and the field of Investigative Exercises on protecting and promoting ecosystems with their biodiversity, including aqua and terrestrial

domains under stressed conditions. Our faculty and students work with local communities, industry partners, environmental agencies and other stakeholders to restore impacted habitats, preserve native wildlife and plants, and encourage environmentally responsible for land and water use. Among the University's projects are biodiversity mapping, water quality monitoring, and habitat restoration campaigns benefiting local lakes and rivers. A study on pollution control, waste management, and species conservation results in long-term ecological balance. It is thus in joining hands that K.R. Mangalam University displays taking care of native biodiversity and enhancing ecosystems for a sustainable future.

Case Study-Rice Crop Residue, awareness campaign on sustainable environmental

Student exposure to understand Prawn Farming in-collaboration with Growel Pvt Ltd.

Case Study- Regulatory Barriers to the Acceptance of Bio-pesticides among Farmers for Sustainable Agriculture



Awareness Campaign on Health Impact of Wastewater Utilization

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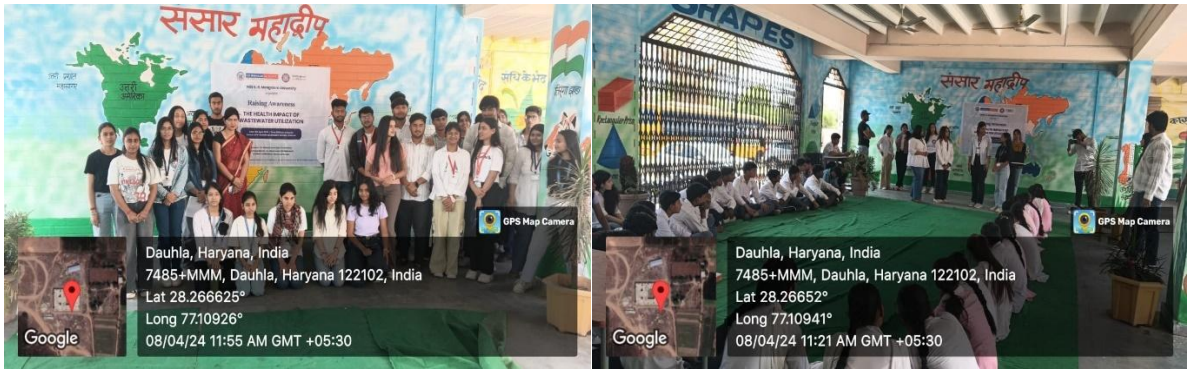
14.3.4 Technologies Towards Aquatic Ecosystem Damage Prevention (Direct Work)

K R Mangalam University is involved in joint initiatives for the development and usage of technology for preventing damage to aquatic systems. Professors and students collaborate with local industry and environmental organizations to develop environmentally friendly wastewater treatment systems, bioremediation practices and pollution control technologies that minimize the amount of industrial discharge flowing into local waters. Research on nano-water-purification, microbiological degradation of pollutants, and sediment management is directed towards reducing the stress on ecosystems. The University also advocates and education the public on sustainable aquaculture and the use of renewable resources to reduce marine and freshwater pollution. As a part of innovation, field trials and industry tie-ups, K.R. Mangalam University is both effective in contributing to sustainable water quality, aquatic bio diversity and ecosystem resilience.



Awareness Campaign on Health Impact of Wastewater Utilization

Awareness campaign about the importance of wastewater management and its role in achieving environmental sustainability

STP Report

14.4 Water Sensitive Waste Disposal

The K.R Mangalam University foundation is based on water sensitive waste disposal techniques which involve contributing to the improvement of eco-friendly items, reusing water and pollution control. Through its waste management practices, the University intends that all solid, liquid and laboratory waste be managed so as to minimize contamination of water resources and promote responsible disposal. There are filtration beds and sedimentation tanks for the treatment of wastewater (from laboratories & hostel etc.) before discharge to adhere to environmental safety standards. If both biodegradable and non-biodegradable wastes are separated at the source, leachate formation will be less and also contaminated of groundwater. Workshops and education are provided to inform students and staff on responsible waste disposal, recycle, reuse. In particular, the regulation seeks to curb single-use plastics and regulate chemical runoff as well continue advocating for environmentally friendly cleaning practices. The University partners with local government and environment agencies to use scientific methods of garbage disposal and safe drainage system. K.R. Mangalam University, subsequently, not only takes care of the green and sustainable campus but contributes to protect country& aquatic eco-systems.

14.4.1 Water Discharge Guidelines and Standards

K.R. Mangalam University has a policy of disposal that protects the environment as per enacted rules and regulations related to it that ensures environment protection & compliance with all such rules, however this will not be in conformity with public interest. Untreated water from all the laboratory, hostels and campus are treated with approved filter and sedimentation process before discharge. They serve to prevent contamination of adjoining water bodies, support water recycling and demonstrate the University's responsible attitude towards the sustainable management of water.

Policy on Life Below Water

14.4.2 Action Plan to Reducing Plastic Waste

The institution is committed to minimizing the use of plastic across all operations to reduce environmental impact and promote sustainability. Single-use plastics will be gradually phased out and replaced with reusable, recyclable, or biodegradable alternatives.

Policy on Life Below Water

Plastic Ban signboards at K R Mangalam University spreading awareness on reducing single-use plastics and promoting sustainability

Plastic Ban signboards at K R Mangalam University spreading awareness on reducing single-use plastics and promoting sustainability.

K.R. Mangalam University (K R Mangalam University) has implemented a comprehensive Disposable Item Minimisation Policy to significantly curtail the use of single-use and disposable materials throughout all levels of campus operations. This policy establishes a structured framework aimed at eliminating single-use plastics, reducing paper and packaging waste, and encouraging the use of reusable and biodegradable alternatives while promoting a circular economy approach. Through focused initiatives such as the installation of composting units, the execution of recycling programs, and the advocacy of digital alternatives to paper-based processes, the university has successfully achieved a significant reduction in the consumption of plastic bottles, disposable cups, and paper. Additionally, the policy highlights the importance of community engagement and awareness, ensuring that faculty, staff, and students are actively involved in sustainable consumption practices. By incorporating waste minimization principles into its procurement and operational systems, K.R. Mangalam University showcases its steadfast commitment to environmental sustainability, resource efficiency, and responsible campus management making tangible progress toward fulfilling SDG 12 and promoting a greener, more sustainable future.

Policy on Life Below Water

Source-level waste segregation at K R* Mangalam University *promoting efficient recycling and sustainable waste management

Say No to Plastic' boards across K R Mangalam University promoting awareness on eliminating plastic use and fostering a green campus culture.

14.4.3 Reducing Marine Pollution

K.R. Mangalam University is dedicated to the fight against marine pollution through education, research and outreach. The University's Waste Management & Water Efficiency Policy supports waste minimisation, appropriate disposal and water conservation to minimise toxic runoff from reaching natural waters. (Awareness Flames) The perils of plastic waste, chemical effluent and nutrient pollution on ocean biodiversity are being widely promoted. Research Contents charge of developing biodegradable materials, wastewater treatment system and eco-friendly technology to minimize aquatic contamination. Students are also engaged through clean-up activities objectives, water quality testing field trips and outreach programs that encourage good behavior on vessels.

Policy on Life Below Water

14.5 Maintaining A Local Ecosystem

K.R. Mangalam University appreciates the bounty Earth has to offer and is committed towards protecting and conserving its surrounding habitats through awareness programmes, research initiatives and community engagement activities. The Campus and Surrounding Areas serve as living laboratories to preserve biodiversity, protect soils and water resources, manage

landscapes in sustainable ways. Additionally, tree plantation campaigns and wetland restoration activities along with biodiversity surveys are undertaken to safeguard local vegetation and wildlife. And students and faculty team up to work on projects such as water quality, pollution control and habitat restoration projects aimed at keeping the system in equilibrium. The University encourages composting of organic waste, rainwater harvesting and environment friendly irrigation systems for soil health protection and groundwater recharge. Local communities are raised awareness through outreach programmes for environmental conservation, and sustainable resource management. Partnerships with environmental groups and local government also help in supporting K R Mangalam University work of rehabilitating degraded sites and promoting ecosystem resilience

14.5.1 Minimizing Alteration of Aquatic Ecosystems (Plan)

K.R. Mangalam University has made a broad policy to restrict any modification of aquatic ecosystem with the help of conservation, research, and sustainability. The plan is aimed at combating pollution, managing the use of water and preventing degradation of aquatic habitats. Frequent water quality testing, eco-restoration of neighboring wetlands, and an information campaign all contribute to little human footprint. The university also argues the virtues of sustainable irrigation, recycling wastewater and protecting biodiversity among students and faculty.

Policy on Life Below Water

14.5.2 Monitoring the Health of Aquatic Ecosystems

K.R. Mangalam University plays proactive role in the vigilance of health of aquatic ecosystems, which is precisely being done through field investigations and community intervention programmes. Periodic monitoring is done to study parameters indicating water quality including pH, TDS etc. Together, students and teachers work on projects that assess the richness of biodiversity in local ecosystems; investigate sources of pollution such as water run-off from busy roadways; and analyze their neighborhood's resilience to human impacts. These endeavors lead to the rehabilitation, conservation and sustainable use of aquatic resources.

K R Mangalam University Sustainable Environmental and Green Campus Policy

14.5.3 Programs Towards Good Aquatic Stewardship Practices

K.R. Mangalam University encourages responsible water stewardship in a variety of forms of study, research and outreach. The University conducts workshops, awareness programmes, and field visits to educate the students as well as local community on sustainable water management, pollution containment and conservation of aquatic diversity. Studies include wastewater treatment, rainwater harvesting and sustainable aquaculture for the wide-scale acceptance of environmentally acceptable technologies. Student involvement in clean-water campaigns and lake restoration projects, conducting water-quality monitoring that instills a sense of responsibility on the surrounding environment. Government and non-government participation in these intervention programs amplifies their effect, thereby making them sustainable over time. Through these comprehensive initiatives, K R Mangalam University is committed to developing students as being responsible citizens studying in the college who will work for protecting and regenerating aquatic habitats.

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14.5.4 Collaboration for Shared Aquatic Ecosystems

14.5.4 Cooperation on Common Alimentary Systems in the Aquatic Ecosystem

K.R. Mangalam University is also promoting cooperation for the conservation and sustainable management of common aquatic resources in partnership with government institutions, research organizations, local people etc. Collaborative efforts work on water conservation, pollution reduction, biodiversity preservation and sustainable fisheries in local lakes, ponds and rivers. Common initiatives include monitoring water quality, the protection of habitats and campaigns to encourage responsible exploitation. The academic-research and community-involved processes also contribute to the comprehensive ecosystem management by university.

List of Industry Partners:

S. No.	Name of Industry Partner	Date of MOUs
1	Growel Formulation Pvt Ltd	2023
2	IIL Pvt. Ltd	2023

14.5.4 Watershed management strategy

Mangalam University has a watershed management plan which is tailor-made by species richness of each aqua-centre,soil factors and so on. The plan gives prominence to soil erosion control, water conservation and sustainable land use as a means of protecting the hydrological integrity of catchments. Faculty and students research species diversity, hydrological regimes and nutrient flows to inform sound watershed management plans. Considering to increase in ground water and prevention of sedimentation, measures like rainwater harvesting, vegetative buffer strips and recharge pits are being adopted. Community involvement and education programs provide local involvement in the protection of homo- aquatic environments.

Policy on Life Below water