



**TEERTHANKER
MAHAVEER UNIVERSITY**
Moradabad

Accredited with NAAC **A** Grade

12-B Status from UGC



SUSTAINABLE DEVELOPMENT GOALS

Report on
SDG-14

14 LIFE
BELOW WATER





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**SUSTAINABLE
DEVELOPMENT
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SDG-14



Teerthanker Mahaveer University (TMU) is committed to the conservation of aquatic environments through impactful research and community initiatives. The University actively undertakes studies on water pollution, assessing the effects of pollutants on rivers, lakes, and other local water bodies, with the aim of enhancing water quality and safeguarding aquatic ecosystems.

In addition to research, TMU raises awareness about the adverse impacts of water pollution and advocates for sustainable water management practices. The University also encourages student participation in educational projects and hands-on initiatives focused on water conservation, thereby fostering a culture of responsibility toward natural resources.

Through these continuous efforts, TMU contributes to the protection of aquatic ecosystems and aligns with Sustainable Development Goal 14 (Life Below Water), promoting the sustainable use and preservation of water resources for future generations.





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Publications on Various SDGs (2024)

S. NO	Sustainable Development Goals	No of Publications
1.	No poverty	5
2.	Zero hunger	33
3.	Good health and well-being	332
4.	Quality Education	239
5.	Gender equality	43
6.	Clean water and sanitation	19
7.	Affordable and clean energy	45
8.	Decent work and economic growth	75
9.	Industry, innovation, and infrastructure	366
10.	Reduced inequalities	6
11.	Sustainable cities and economies	33
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Teerthanker Mahaveer University (TMU)

SDG 14: Life Below Water

Introduction

Oceans and freshwater systems form the lifeblood of our planet, supporting biodiversity, regulating climate, and sustaining livelihoods. SDG 14 – *Life Below Water* – emphasizes the protection and sustainable use of oceans, seas, and marine resources. It recognizes that healthy aquatic ecosystems are essential for human survival, economic stability, and environmental resilience. With 40% of the world’s population living within 100 kilometers of a coast, the ocean’s health directly impacts global well-being. Marine resources provide food, medicine, energy, and transportation that sustain billions of lives. However, unsustainable exploitation, pollution, and climate change threaten aquatic life and the delicate ecological balance.

TMU, as a socially responsible university, integrates marine and water ecosystem awareness within its academic, research, and outreach activities. Through environmental education and sustainability initiatives, TMU advocates responsible water resource management. The university’s community programs highlight conservation ethics, pollution control, and biodiversity protection. TMU also encourages research on sustainable aquaculture, waste management, and water quality preservation. Awareness drives and interdisciplinary collaborations strengthen the campus’s role in aquatic ecosystem protection. By promoting the principles of sustainability, TMU ensures that students understand the interconnection between land, water, and life.

The institution’s green campus initiatives minimize water waste and prevent contamination of local watersheds. Partnerships with local authorities and NGOs enhance water conservation and restoration efforts. TMU’s eco-conscious policies align with India’s national commitment to the UN Sustainable Development Goals. These initiatives aim to safeguard aquatic biodiversity for future generations. Through academic innovation, environmental stewardship, and community engagement, TMU contributes meaningfully to SDG 14. The university continues to inspire responsible citizenship rooted in ecological awareness. Its efforts embody the vision of protecting *Life Below Water* as a shared global responsibility.

Metric 14.2.1 – Fresh-water Ecosystems (Community Outreach)

Teerthanker Mahaveer University (TMU), through its interdisciplinary approach and community-focused outreach, has implemented multiple initiatives aimed at enhancing awareness,





conservation, and sustainable use of freshwater ecosystems. The university recognizes that safeguarding freshwater resources is integral not only to ecosystem preservation but also to ensuring sustainable livelihoods for surrounding communities.

Initiatives and Activities:

TMU conducts a series of educational and outreach programmes under its Environmental Studies Department and NSS Unit, focusing on:

- **Water conservation practices** and sustainable irrigation awareness for local farmers in the Moradabad district.
- **Training workshops** on rainwater harvesting, groundwater recharge, and wastewater reuse, conducted by the Faculty of Engineering and College of Agricultural Sciences.
- **Community campaigns** under the theme “Save Water, Secure Life,” held annually in collaboration with the Municipal Corporation of Moradabad, educating residents on efficient household water management.
- **Student engagement drives** for cleaning and monitoring nearby freshwater bodies such as Ram Ganga river tributaries, emphasizing pollution reduction and biodiversity conservation.



Students Proudly Participating in the Namami Gange Initiative to Restore and Protect our Sacred River.





- **Academic integration** through environmental courses, research projects, and extension lectures addressing freshwater ecosystem health and sustainable irrigation systems.

Outcomes:

- In 2024, over 1,200 community members and 800 students participated in freshwater conservation programs.
- Awareness drives in nearby villages such as Bajpur, Khushhalpur, and Majhola have led to improved understanding of water quality management and responsible agricultural water use.

Impact:

Through these continuous educational and community outreach efforts, TMU contributes significantly toward SDG 14 – Life Below Water by promoting sustainable freshwater resource management, empowering local communities with conservation knowledge, and reinforcing its role as a regional leader in environmental sustainability education.

Metric 14.2.2 – Sustainable Fisheries (Community Outreach)

Although Teerthanker Mahaveer University (TMU) is not located in a coastal or marine zone, the university actively contributes to the promotion of sustainable aquaculture and freshwater fisheries management through community outreach, research integration, and capacity-building initiatives. TMU recognizes the importance of fisheries and aquaculture in ensuring food security, livelihood generation, and ecological balance, aligning with the national mission on sustainable fisheries development.

Initiatives and Activities:

TMU's College of Agricultural Sciences, in collaboration with the Department of Environmental Studies and NSS Cell, has undertaken several initiatives to promote awareness and education related to sustainable aquaculture and inland fisheries management:





- Conducted awareness programmes for fish farmers in the nearby rural belts of Moradabad, Rampur, and Amroha, emphasizing the importance of eco-friendly aquaculture practices, controlled feeding systems, and water quality management.
- Organized training sessions on integrated fish farming combining aquaculture with agriculture and livestock, reducing waste and increasing farm income sustainably.
- Carried out extension lectures on fisheries resource conservation and pollution control in local ponds and community-managed water bodies.
- Introduced student-led research projects on aquaponics systems and biofiltration methods under the Faculty of Agricultural Sciences to promote sustainable production and ecosystem resilience.
- Celebrated World Fisheries Day 2024 with community workshops and exhibitions showcasing sustainable fishery models, supported by local experts and small-scale aquaculture entrepreneurs.

Outcome:

- Over 600 fish farmers and students from nearby districts participated in training and awareness programmes during 2024.

Impact:

Through these outreach and capacity-building initiatives, TMU extends its commitment to SDG 14 – Life Below Water by fostering responsible aquaculture practices, promoting freshwater biodiversity protection, and empowering rural communities with sustainable livelihood options. The programs have enhanced the local understanding of environmentally sound fishery management while linking academic learning with practical application.





Students Empowering Farmers with new, Eco-friendly Aquaculture Practices

Metric 14.2.3 – Overfishing (Community Outreach)

Teerthanker Mahaveer University (TMU) demonstrates its commitment to ocean and aquatic life preservation through various educational outreach initiatives that align with the goals of reducing overfishing and promoting sustainable aquatic practices. Recognizing the ecological imbalance caused by illegal, unreported, and unregulated (IUU) fishing, TMU conducts awareness and community engagement programs emphasizing responsible consumption and conservation of aquatic biodiversity.

Through the Faculty of Agricultural Sciences and Environmental Sciences, students and faculty engage with local communities and nearby water-dependent regions to promote understanding of sustainable fishery practices, ecosystem balance, and the socio-economic impacts of overfishing. Awareness drives, expert talks, and eco-awareness campaigns are organized on days like *World Fisheries Day* and *World Environment Day* to encourage sustainable livelihood options.





These initiatives reflect TMU's proactive role in sensitizing the public towards responsible aquatic resource utilization and marine ecosystem preservation.



Students Visiting Community Set-ups

Metric 14.3.1 – Conservation and Sustainable Utilisation of the Oceans (Events)

Teerthanker Mahaveer University (TMU) actively promotes the conservation and sustainable utilisation of oceans, rivers, and marine resources through a series of educational and awareness-driven events. In 2024, the University organized multiple programmes, seminars, and awareness drives under the themes of “*Water for Life,*” “*Sustainable Aquatic Ecosystems,*” and “*Blue Planet Conservation.*”

The Faculty of Engineering, Environmental Sciences, and Agricultural Sciences jointly conducted workshops on sustainable water resource management, marine biodiversity protection, and pollution control in aquatic environments. Student-led clubs, such as the *Eco Club* and *Nature*





Conservation Forum, participated in river-cleaning initiatives, poster competitions, and plantation drives around campus water bodies to reinforce environmental stewardship.

TMU's events serve as platforms to educate and inspire students and local communities to adopt responsible practices, contributing to the global mission of preserving aquatic ecosystems and ensuring the sustainable use of marine resources for future generations.

Metric 14.3.2 – Food from Aquatic Ecosystems (Policies)

Teerthanker Mahaveer University (TMU) upholds a strong commitment to sustainability and environmental responsibility in all aspects of campus operations, including food procurement. By 2024, TMU has adopted a Sustainable Food Procurement Policy that ensures all food sourced from aquatic ecosystems—such as fish and other seafood products—is obtained through sustainable and ethical means.

The University's policy framework mandates that suppliers and vendors comply with national food safety standards and sustainability certifications. The focus is placed on promoting the use of locally sourced, seasonal, and responsibly harvested aquatic produce to minimize ecological impact and support community-based fisheries.

Additionally, TMU's dining facilities and canteens are guided by awareness campaigns that discourage the use of overexploited species and promote alternative protein sources. This policy aligns with the University's broader sustainability agenda, reinforcing its commitment to protecting aquatic biodiversity and ensuring responsible consumption practices across campus.

Metric 14.3.3 – Maintain Ecosystems and Their Biodiversity (Direct Work)

Teerthanker Mahaveer University (TMU) undertakes direct research and collaborative engagement initiatives aimed at maintaining and enhancing ecosystems and their biodiversity, including those under ecological stress. Through interdisciplinary projects, industry partnerships, and targeted environmental interventions, TMU focuses on protecting both aquatic and terrestrial ecosystems surrounding the Moradabad region. These actions are embedded within the





University's broader sustainability strategy, aligning institutional academic expertise with tangible conservation outcomes.

Initiatives and Activities:

TMU has engaged in the following research-based and direct ecosystem maintenance initiatives:

Biodiversity Conservation Research: The Faculty of Science and College of Agricultural Sciences conduct ongoing studies on water quality parameters, aquatic flora and fauna diversity in local freshwater bodies, and the impact of pollution on micro-ecosystems. This includes sampling and monitoring of nearby Ram Ganga river tributaries, aimed at understanding biodiversity trends and developing conservation measures.

Collaboration with Environmental Agencies: TMU collaborates with the Uttar Pradesh Pollution Control Board (UPPCB) and local municipal bodies to monitor ecosystem health, contributing data and analysis to support pollution mitigation strategies and biodiversity preservation in threatened aquatic zones.

Rainwater Harvesting and Ecosystem Recharge Projects: As part of the campus sustainability plan, TMU maintains a large rainwater harvesting and recharge lake with an approximate capacity of 1 crore litres. This project supports groundwater replenishment, improves surrounding wetland ecosystems, and provides habitats for native aquatic species and birds.

Tree Plantation and Habitat Restoration Drives: NSS Units and Environmental Cell organize extensive plantation drives on and off campus, emphasizing the restoration of riparian buffer zones and creating green belts to stabilize soil and support diverse flora and fauna.

Workshops and Technical Seminars: TMU hosts seminars on Ganga rejuvenation, ecosystem restoration, and sustainable development, involving researchers, students, and industry representatives. These events serve as platforms to develop and disseminate innovative conservation solutions.





Student-Led Monitoring Initiatives: Student research groups engage in periodic biodiversity surveys and habitat monitoring, contributing to long-term ecological datasets for local ecosystems, including wetland patches and freshwater channels.



Plantation Drive at the Community

Outcomes:

- Over 600 students and 150 faculty members participated in ecosystem maintenance activities, including habitat restoration and monitoring drives.
- Tree plantation and buffer restoration efforts contributed to a notable increase in green cover along identified water channels near Bajpur and Khushhalpur villages.
- TMU research teams shared ecosystem monitoring reports with local authorities to support targeted pollution control measures.





Impact:

Through direct research, habitat restoration, and multi-stakeholder engagement, TMU has strengthened local ecosystems' resilience and biodiversity. These efforts not only enhance environmental quality around the campus but also contribute meaningfully to SDG 14 – Life Below Water, particularly in conserving freshwater and adjoining ecosystems under threat. TMU's proactive involvement positions it as a key regional academic partner in biodiversity conservation and ecological restoration initiatives.

Metric 14.3.4 – Technologies Towards Aquatic Ecosystem Damage Prevention (Direct Work)

Teerthanker Mahaveer University (TMU) actively engages in research and industry collaboration to develop and implement technologies that minimize or prevent damage to aquatic ecosystems. The University recognizes the critical role of innovation in protecting freshwater biodiversity and ensuring sustainable aquatic resource management.

Initiatives and Activities:

- The College of Agricultural Sciences and Faculty of Engineering conduct applied research on eco-friendly aquaculture systems that reduce chemical runoff and sedimentation in water bodies.
- TMU collaborates with local aquaculture and water-management industries to implement low-impact feeding practices, waste recycling techniques, and biofiltration systems.
- Student-led innovation projects focus on sustainable pond management, water quality monitoring technologies, and aquaponics integration.
- Workshops and demonstration sessions educate local communities and industry partners on technologies that prevent ecosystem degradation while enhancing production efficiency.

Impact:

Through these direct research and engagement activities, TMU advances SDG 14 by promoting technologies that prevent aquatic ecosystem damage, support sustainable livelihoods, and integrate academic learning with practical environmental stewardship.





Student Led Projects on Sustainability Pond Management

Metric 14.4.1 – Water Discharge Guidelines and Standards

Teerthanker Mahaveer University (TMU) demonstrates a strong commitment to sustainable water management and environmental stewardship through the implementation of robust water quality standards and discharge guidelines. Recognizing the critical role of freshwater systems in supporting ecosystems, human health, and agricultural productivity, TMU ensures that all wastewater generated on campus is treated and managed to prevent contamination and preserve biodiversity. These initiatives align with national environmental regulations and international best practices, positioning TMU as a model for sustainable campus water management.





Initiatives and Activities:

- Wastewater Treatment Plants (WWTPs): TMU operates multiple state-of-the-art WWTPs that treat sewage from hostels, laboratories, cafeterias, and administrative buildings. Treated water meets standards suitable for safe discharge into local drainage systems and reuse for gardening and irrigation.
- Water Quality Monitoring: The University conducts routine testing for pH, dissolved oxygen, biochemical oxygen demand (BOD), chemical oxygen demand (COD), turbidity, and microbial contamination. Results are documented in quarterly water quality reports, ensuring compliance with legal standards.
- Standard Operating Procedures (SOPs): SOPs guide all departments—including laboratories, food services, and hostels—on safe handling and disposal of effluents, chemical wastes, and organic matter.
- Training and Awareness: Students, staff, and contractors receive regular training on water conservation, responsible wastewater management, and the environmental impact of untreated water discharge. Awareness campaigns, workshops, and eco-clubs reinforce best practices across campus.
- Research Integration: Faculty and students engage in applied research on eco-friendly water treatment technologies, bio-filtration systems, and constructed wetlands to enhance water quality and promote biodiversity protection.
- Community and Regulatory Collaboration: TMU works with local environmental authorities, NGOs, and nearby communities to ensure that water discharge practices support regional aquatic ecosystems, minimize pollution, and promote sustainable water use.

Impact:

- Maintains high-quality freshwater ecosystems on and around campus, supporting wildlife, aquatic life, and human health.
- Reduces environmental risks associated with untreated sewage and industrial effluents.
- Serves as a best-practice model for higher education institutions seeking to balance campus operations with ecological sustainability.





- Encourages students to become environmentally responsible citizens, integrating conservation principles into academic, professional, and community contexts.



Sewage Treatment Plant

Metric 14.4.2 – Action Plan to Reduce Plastic Waste

Teerthanker Mahaveer University (TMU) is committed to protecting aquatic ecosystems and promoting environmental sustainability through proactive plastic waste reduction strategies. Recognizing the detrimental impact of plastic pollution on freshwater bodies, rivers, and ultimately marine life, the University has established a comprehensive Plastic Waste Reduction Action Plan. This initiative integrates policy, education, research, and operational measures to minimize plastic usage, promote sustainable alternatives, and ensure responsible waste management.

Initiatives and Activities:

- **Campus-Wide Plastic-Free Policy:** Implemented in 2024, the policy restricts single-use plastics across all campus operations, including cafeterias, hostels, administrative offices, laboratories, and student activity zones. Essential alternatives are promoted through the use of reusable bottles, steel and glass utensils, and biodegradable packaging.





- **Awareness and Capacity-Building:** The Eco Club, NSS units, and student-led sustainability forums organize workshops, seminars, and campaigns highlighting the environmental hazards of plastic pollution, the connection between local freshwater systems and global marine health, and practical ways to reduce plastic use in daily life.
- **Plastic Collection and Recycling Programmes:** Dedicated plastic collection points across campus ensure proper segregation and disposal. TMU collaborates with local recycling enterprises to process collected plastics responsibly, converting them into reusable materials or energy where feasible.
- **Research and Innovation:** Faculty and students are actively engaged in research on biodegradable materials, eco-friendly packaging, and sustainable alternatives to plastics. Projects include the development of plant-based cutlery, paper and jute-based packaging, and experimental programs to reduce microplastic contamination in water systems.
- **Integration with Curriculum:** Environmental studies, engineering, and agricultural programs include modules on plastic pollution, waste management, and sustainable material alternatives, equipping students with knowledge and practical skills for implementing eco-friendly practices.
- **Monitoring and Reporting:** TMU conducts regular plastic waste audits to assess reduction progress, evaluate the effectiveness of interventions, and refine strategies. Performance metrics are publicly reported to encourage transparency and accountability.

Impact:

- Significant reduction in single-use plastic consumption across the campus.
- Enhanced awareness and behavioral change among students, faculty, and staff regarding sustainable plastic practices.
- Contribution to cleaner water bodies and reduced plastic runoff into local rivers and freshwater ecosystems.
- Fosters a culture of responsible consumption, environmental stewardship, and community engagement, aligning with global SDG 14 objectives.





Metric 14.4.3 – Reducing Marine Pollution (Policy)

Teerthanker Mahaveer University (TMU) recognizes the critical importance of preventing and reducing marine pollution, particularly pollution originating from land-based sources such as untreated wastewater, plastic waste, chemical runoff, and industrial effluents. In alignment with SDG 14, TMU has implemented a comprehensive Marine Pollution Prevention Policy to mitigate environmental impacts and safeguard aquatic ecosystems.

Initiatives and Activities:

- Sustainable management of all waste and effluents generated on campus is ensured, so that no untreated or harmful substances enter local rivers, streams, or other freshwater systems that eventually flow into marine environments. Wastewater Management: Campus laboratories, hostels, and food service areas follow strict SOPs for effluent treatment, and all wastewater undergoes treatment in state-of-the-art wastewater treatment plants before discharge.
- Plastic and Solid Waste Reduction: The University's Plastic-Free Campus initiatives complement marine pollution prevention by eliminating single-use plastics and promoting biodegradable alternatives.
- Chemical and Hazardous Waste Handling: Proper protocols are in place for safe storage, disposal, and recycling of chemicals and laboratory wastes, preventing land-based contamination of water bodies.
- Community and Student Engagement: Awareness campaigns, workshops, and training sessions educate students and staff on marine pollution sources, land-based impacts, and responsible practices.
- Research Integration: TMU encourages research projects on pollution mitigation technologies, water treatment innovations, and sustainable land-use practices, linking policy with actionable scientific solutions.

Impact:

- Mitigation of pollution risks to freshwater ecosystems and downstream marine environments.





- Enhanced environmental awareness among students, staff, and the surrounding community.
- Strengthened university compliance with national and international environmental standards.
- Demonstrates TMU's leadership in sustainable operations, environmental stewardship, and contribution to global marine conservation efforts.

Metric 14.5.1 – Minimizing Alteration of Aquatic Ecosystems (Plan)

Teerthanker Mahaveer University (TMU) has instituted a structured Environmental and Water Resource Management Plan that focuses on minimizing physical, chemical, and biological alterations to aquatic ecosystems. The plan is aligned with national environmental guidelines and integrates campus-level infrastructure development, water management strategies, and ecosystem protection measures. TMU recognizes that preventing degradation at the source is essential to sustaining ecosystem functions, maintaining water quality, and preserving biodiversity in surrounding freshwater bodies.

Initiatives and Activities (Plan Components):

TMU's plan to minimize alterations to aquatic ecosystems includes the following core components:

- **Sewage and Wastewater Treatment:**
 - TMU operates a Sewage Treatment Plant (STP) on campus to treat wastewater before reuse or safe discharge, thereby reducing the risk of chemical contamination and eutrophication in surrounding water bodies.
 - Regular maintenance and water quality testing are integral parts of the plan, ensuring compliance with state pollution control standards.
- **Rainwater Harvesting and Groundwater Recharge Systems:**
 - A comprehensive rainwater harvesting structure with a capacity of approximately 1 crore litres helps manage stormwater runoff, reduce erosion, and support groundwater recharge.
 - The system prevents the physical alteration of natural drainage patterns and mitigates flood risks during the monsoon season.
- **Solid Waste Management and Plastic Reduction:**
 - TMU has instituted campus-wide solid waste segregation, regular waste collection, and plastic use minimization campaigns. This helps prevent plastic waste from entering nearby streams and tributaries, thereby reducing chemical and biological alterations to aquatic habitats.





- **Green Infrastructure and Buffer Zones:**

- Landscaping and plantation drives are strategically implemented to stabilize soil, reduce surface runoff, and create vegetative buffer zones along drainage lines. These measures naturally filter sediments and pollutants before they reach water bodies.
- Riparian buffer restoration projects near Bajpur and Khushhalpur are included in the university's community outreach plans.

- **Pollution Monitoring and Reporting:**

- TMU collaborates with Uttar Pradesh Pollution Control Board (UPPCB) to monitor nearby freshwater sources, track physical and chemical parameters, and support remedial actions when needed.
- Periodic monitoring ensures early detection of alterations and supports data-driven environmental management.

- **Policy Integration and Awareness:**

- The university's Environmental Cell has formulated campus-level Environmental Protection Guidelines, integrating water and ecosystem protection in all infrastructural planning and community activities.
- Awareness programmes on minimizing chemical and biological impacts, such as fertilizer runoff and plastic pollution, are conducted regularly for students, staff, and nearby communities.

Outcomes:

- By 2024, TMU has fully implemented its environmental management plan, resulting in improved water quality within the campus and in adjacent water channels.
- Treated wastewater reuse has reduced freshwater withdrawal for horticulture by approximately **30%**, decreasing stress on local water ecosystems.
- Campus plastic usage saw a measurable decline due to awareness campaigns and waste segregation practices.

Impact:

The comprehensive environmental management plan demonstrates TMU's proactive commitment to minimizing anthropogenic alterations to aquatic ecosystems. By addressing physical, chemical, and biological factors through infrastructure, policy, monitoring, and education, the university plays a key role in safeguarding local freshwater ecosystems. These efforts contribute directly to SDG 14 – Life Below Water, reinforcing sustainable water management and ecosystem conservation practices.





Metric 14.5.2 – Monitoring the Health of Aquatic Ecosystems

Teerthanker Mahaveer University (TMU) actively monitors the health of aquatic ecosystems through a combination of scientific research, institutional infrastructure, and collaborative environmental programs. The university recognizes that regular monitoring of physical, chemical, and biological parameters is essential to maintain ecosystem integrity, detect emerging threats, and support data-driven conservation planning. TMU integrates environmental monitoring into both academic activities and operational practices, ensuring that surrounding water bodies and campus-managed water systems remain healthy and sustainable.

Initiatives and Activities:

TMU's aquatic ecosystem monitoring initiatives in 2024 include:

- **Water Quality Testing and Analysis:**
 - The Faculty of Science and Environmental Cell conduct periodic water quality testing of Ram Ganga river tributaries and campus water systems. Parameters monitored include pH, dissolved oxygen, turbidity, temperature, biological oxygen demand (BOD), and presence of contaminants such as nitrates and microplastics.
 - Monitoring is carried out in accordance with standard protocols, and data are shared with local agencies for coordinated action.
- **Biodiversity Surveys:**
 - Student research groups and faculty teams conduct biodiversity assessments focusing on aquatic flora and fauna, including macroinvertebrates, aquatic plants, and avifauna dependent on wetland habitats. These surveys provide insight into ecosystem resilience and habitat quality.
- **Rainwater Harvesting System Monitoring:**
 - TMU maintains detailed records of rainwater harvesting and recharge lake health, including water levels, sedimentation rates, and seasonal changes. This helps track the effectiveness of water conservation structures and their role in supporting biodiversity.
- **Collaboration with Government Bodies:**
 - TMU collaborates with the Uttar Pradesh Pollution Control Board (UPPCB) and the Municipal Corporation of Moradabad for external testing, validation, and alignment of monitoring activities with broader regional environmental objectives.
- **Student-Led Citizen Science Initiatives:**





- Through the NSS and Eco Clubs, students participate in community water monitoring drives, collecting samples and observing visible indicators of ecosystem health, such as algal growth, waste accumulation, and water clarity.
- **Digital Data Management and Reporting:**
 - The Environmental Cell compiles periodic monitoring reports, which are shared with relevant stakeholders and used internally for strategic environmental planning and awareness campaigns.

Outcomes:

- In 2024, TMU conducted quarterly monitoring of three major aquatic sites, generating datasets on water quality and biodiversity trends.
- Monitoring results showed improved dissolved oxygen levels and reduced plastic waste compared to the previous year, particularly in tributaries near Bajpur and Khushhalpur villages.
- Biodiversity surveys recorded increased sightings of native aquatic plants and bird species, indicating positive ecosystem responses to ongoing conservation measures.
- Student involvement in monitoring activities significantly expanded, with over 500 students trained in basic ecosystem assessment methods.

Impact:

By institutionalizing systematic monitoring practices, TMU ensures early detection of ecological degradation and supports evidence-based interventions. The integration of academic research, community engagement, and policy collaboration has strengthened TMU's role as a regional knowledge hub for aquatic ecosystem health. These efforts contribute directly to SDG 14 – Life Below Water, particularly in maintaining ecosystem quality and supporting sustainable freshwater resource management.

Metric 14.5.3 – Programmes Towards Good Aquatic Stewardship Practices

Teerthanker Mahaveer University (TMU) actively develops and supports programmes and incentives that promote responsible aquatic stewardship practices among students, faculty, and the surrounding communities. Recognizing the interconnectedness of water conservation, ecosystem health, and community well-being, TMU embeds stewardship values through education, hands-on programmes, policy initiatives, and collaborations with local authorities. These programmes are designed to build long-term commitment to protecting aquatic ecosystems through sustainable behaviors and collective action.





Initiatives and Activities:

TMU's key programmes promoting aquatic stewardship in 2024 include:

- **“Save Water, Secure Life” Community Campaign:**
 - Conducted annually in collaboration with the Municipal Corporation of Moradabad, this campaign educates residents on sustainable water use, pollution prevention, and responsible waste disposal to protect local streams and river tributaries.
 - Awareness activities include street plays, distribution of educational materials, community meetings, and demonstration projects in nearby villages such as Bajpur, Khushhalpur, and Majhola.
- **NSS-Led Water Stewardship Drives:**
 - The NSS Units lead regular community clean-up and monitoring drives at Ram Ganga river tributaries and other local freshwater bodies. These activities combine awareness creation with practical engagement in waste removal, plantation along riparian zones, and citizen monitoring.
- **Eco Club and Student Engagement Programmes:**
 - TMU's Eco Club runs student-led campaigns on plastic reduction, proper waste segregation, **and** sustainable campus water usage. Incentives such as recognition certificates, awards, and project funding encourage active participation and innovation in stewardship initiatives.
- **Workshops and Training on Sustainable Practices:**
 - The College of Agricultural Sciences and Faculty of Engineering organize workshops for farmers and students on efficient irrigation, wastewater reuse, and rainwater harvesting, encouraging practices that protect aquatic ecosystems from agricultural runoff and overuse.
- **Green Campus Initiatives Supporting Aquatic Health:**
 - TMU maintains zero-discharge wastewater systems, rainwater harvesting structures, and green belts that serve as practical demonstrations of sustainable water management. These infrastructure projects also act as learning sites for stewardship activities.
- **Collaborations with Environmental Agencies:**
 - TMU partners with the Uttar Pradesh Pollution Control Board (UPPCB) and local NGOs to conduct joint programmes on pollution reduction, water quality awareness, and ecosystem restoration, thereby expanding the reach and impact of stewardship practices.





Outcomes:

- In 2024, TMU reached **over 1,800** community members and 1,000 students through various aquatic stewardship programmes.
- More than 70 awareness events, clean-up drives, and training workshops were organized.
- Plastic waste generation on campus was measurably reduced, and nearby community members adopted improved household water conservation practices.
- Farmer participation in sustainable irrigation workshops increased by 20% compared to the previous year, indicating growing stewardship awareness in agricultural communities.

Impact:

Through sustained programming, targeted outreach, and student-community collaboration, TMU has cultivated a culture of active aquatic stewardship. By combining infrastructure, education, and incentives, these programmes encourage responsible behavior that safeguards water quality, prevents ecosystem degradation, and contributes to broader regional sustainability. TMU's initiatives directly support SDG 14 – Life Below Water, positioning the university as a driver of community-led stewardship in the Moradabad region.

Metric 14.5.4 – Collaboration for Shared Aquatic Ecosystems

Teerthanker Mahaveer University (TMU) actively collaborates with local communities, municipal bodies, environmental agencies, and NGOs to maintain and enhance the health of shared aquatic ecosystems. Recognizing that sustainable water management requires collective responsibility, TMU integrates academic expertise with community participation to protect local water bodies, particularly the Ram Ganga river tributaries and surrounding freshwater channels. These collaborations aim to ensure long-term ecological sustainability and shared stewardship of vital water resources.

Initiatives and Activities:

TMU's key collaborations with local communities and agencies in 2024 include:

- **Joint Monitoring and Clean-up Drives:**
 - TMU's NSS Units and Environmental Cell partnered with local panchayats, village communities, and the Municipal Corporation of Moradabad to conduct periodic clean-up drives and monitoring activities at nearby freshwater bodies.
 - These collaborative efforts focused on waste removal, identifying pollution hotspots, and promoting community responsibility for water resource protection.





- **Community Engagement for Riparian Restoration:**
 - TMU worked with residents of Bajpur, Khushhalpur, and Majhola villages to restore riparian buffer zones by planting native trees and grasses along drainage lines and tributaries. These community-based restoration activities help stabilize soil, filter runoff, and create habitats for aquatic and semi-aquatic species.
- **Awareness Campaigns and Capacity Building:**
 - Joint campaigns on water conservation, pollution prevention, and sustainable irrigation practices were organized in collaboration with village leaders and community-based organizations.
 - Local farmers were trained by TMU's College of Agricultural Sciences on efficient water use techniques, reducing agricultural runoff into shared water bodies.
- **Partnerships with Government Bodies:**
 - TMU collaborates with the Uttar Pradesh Pollution Control Board (UPPCB) to align campus and community monitoring data with state-level environmental planning.
 - Through this collaboration, community-collected data are shared with regulatory authorities for targeted interventions in affected water bodies.
- **Student-Community Knowledge Exchange Platforms:**
 - TMU facilitates regular community meetings, extension lectures, and field demonstrations, where students and faculty share research findings on water quality and biodiversity, while local communities provide ground-level insights into environmental challenges and practices.

Outcomes:

- In 2024, TMU collaborated with five local communities across the Moradabad district to carry out ecosystem maintenance activities, including over 20 joint clean-up and restoration events.
- Community participation led to a reduction in plastic and solid waste accumulation along selected Ram Ganga tributaries compared to 2023.
- Restoration of riparian zones improved vegetative cover, contributing to better filtration of runoff and reduced siltation in shared water systems.
- Collaborative capacity-building initiatives reached over 800 villagers and farmers, enhancing community ownership of aquatic ecosystem stewardship.





Impact:

By building strong partnerships with local communities and government agencies, TMU has fostered a shared stewardship model for aquatic ecosystem maintenance. These collaborations ensure that conservation measures extend beyond the campus boundaries, creating long-lasting ecological benefits and community empowerment. TMU's joint initiatives make a tangible contribution to SDG 14 – Life Below Water, particularly through cooperative efforts to maintain and restore shared freshwater systems.

Metric 14.5.5 – Watershed Management Strategy

Teerthanker Mahaveer University (TMU) has developed and implemented a comprehensive watershed management strategy tailored to the location-specific diversity of aquatic species in and around the Moradabad region. The strategy integrates scientific research, sustainable infrastructure, and community participation to protect and restore watershed health, with a focus on preserving aquatic biodiversity and ensuring long-term water sustainability. TMU's approach aligns with regional hydrological characteristics, particularly those associated with Ram Ganga river tributaries, and addresses both ecological and human needs within the watershed.

Initiatives and Activities:

Key components of TMU's watershed management strategy include:

- **Site-Specific Watershed Planning:**
 - TMU's Environmental Cell, in collaboration with the Faculty of Science and College of Agricultural Sciences, conducted baseline ecological assessments of nearby freshwater bodies and drainage lines to identify aquatic species diversity, water flow patterns, and pollution sources.
 - Based on these assessments, watershed zones were mapped and prioritized for targeted interventions such as afforestation, erosion control, and water quality monitoring.
- **Rainwater Harvesting and Groundwater Recharge:**
 - TMU has implemented a large-scale rainwater harvesting system with a capacity of approximately 1 crore litres, functioning as a central component of the watershed strategy.
 - The system supports groundwater recharge, helps maintain natural hydrological flows, and indirectly benefits local aquatic species by sustaining connected freshwater ecosystems during dry seasons.





- **Riparian Zone Restoration and Vegetative Buffering:**
 - Strategic plantation drives along drainage lines and tributaries were carried out to restore riparian buffers. Native tree and shrub species were selected to stabilize soil, reduce sedimentation, filter runoff, and provide habitat for aquatic and semi-aquatic organisms.
 - These restoration measures were implemented in areas around Bajpur, Khushhalpur, and Majhola, identified as critical watershed zones.
- **Water Quality and Biodiversity Monitoring:**
 - Regular monitoring of physical, chemical, and biological indicators (e.g., pH, BOD, turbidity, aquatic flora and fauna diversity) is conducted to track watershed health.
 - Data collected informs adaptive management decisions and helps identify areas needing intervention.
- **Community Integration and Capacity Building:**
 - TMU engages local communities and farmers through workshops and extension activities on sustainable irrigation, pollution control, and water conservation.
 - The strategy emphasizes shared responsibility for maintaining watershed integrity, integrating traditional knowledge with scientific planning.
- **Policy Alignment and Institutionalization:**
 - TMU's watershed management strategy is embedded within its Environmental Management Plan, ensuring that infrastructural development, campus operations, and outreach activities are harmonized with watershed protection goals.

Outcomes:

- By 2024, TMU successfully implemented location-specific watershed interventions across three key zones, improving water retention and reducing siltation in connected channels.
- Riparian restoration resulted in improved vegetative cover and habitat conditions for native aquatic species, as documented through biodiversity surveys.
- Water quality monitoring showed improved dissolved oxygen levels and reduced chemical contamination in select tributaries compared to 2023.
- More than 500 community members and farmers were trained on watershed-friendly practices, promoting long-term sustainability through community ownership.

Impact:

TMU's watershed management strategy demonstrates a scientifically informed and community-integrated approach to sustaining aquatic ecosystems. By considering local biodiversity, hydrology, and human





interaction, the university has created a model that strengthens ecosystem resilience, enhances water security, and supports aquatic species diversity. These efforts directly contribute to SDG 14 – Life Below Water, particularly through proactive and location-specific watershed stewardship.

Conclusion:

Teerthanker Mahaveer University (TMU) is deeply committed to advancing the objectives of SDG 14 – Life Below Water, recognizing the vital role of healthy aquatic ecosystems in sustainable development. The University promotes environmental stewardship through education, research, and community outreach focused on conserving marine and freshwater resources. TMU actively encourages research on water pollution control, sustainable fisheries, and the restoration of aquatic habitats. Within the campus, measures such as waste segregation, reduction of plastic use, and eco-friendly waste disposal are implemented to minimize water contamination. Students and faculty engage in awareness drives, seminars, and water conservation campaigns to inspire responsible behavior toward aquatic ecosystems. The University also collaborates with local authorities and organizations to strengthen community-based initiatives for clean water and ecosystem protection. Through these sustained efforts, TMU not only aligns with the global vision of SDG 14 but also fosters environmentally conscious citizens dedicated to conserving and sustainably using life below water.





TEERTHANKER MAHAVEER UNIVERSITY

Moradabad

Accredited with NAAC **A** Grade

12-B Status from UGC

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