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OFFICE ORDER

**Subject: Aquatic and Marine Ecosystem Conservation Policy, K.R. Mangalam University.
(Edition 2023)**

It is hereby notified that the Aquatic and Marine Ecosystem Conservation Policy (Edition 2023) has been approved by the Board of Management of K.R. Mangalam University in its 52nd Meeting held on 25 February 2023, vide Agenda Item No. 52.13.

The said Policy shall come into force with immediate effect and will be implemented across all Schools, Departments, and Administrative Units of the University to ensure sustainable management, monitoring, and conservation of aquatic and marine ecosystems.

This is issued with the approval of the competent authority.

Registrar
K.R. Mangalam University
Sohna Road, Gurugram (Haryana)

Registrar

K.R. Mangalam University

Copy to:

- Hon'ble Vice Chancellor – for kind information
- Dean Academic Affairs
- Dean-Research
- Dean Students Welfare
- Director-IQAC
- All Deans / Directors / Heads of Schools
- Human Resources Department
- All Faculty and Staff members.
- University Website
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K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION



K.R. MANGALAM UNIVERSITY

Aquatic and Marine Ecosystem Conservation Policy

(Edition 2023)

K.R. Mangalam University



K.R. MANGALAM UNIVERSITY

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Aquatic and Marine Ecosystem Conservation Policy (Edition 2023)

1. Title

K.R. Mangalam University Policy for Monitoring, Conservation, and Sustainable Management of Aquatic and Marine Ecosystems

2. Preamble

K.R. Mangalam University (KRMU), Gurugram, recognizes that healthy aquatic and marine ecosystems are fundamental to environmental balance, biodiversity, and community well-being. In alignment with the Sustainable Development Goals (SDG 6, 13, 14, 15), the National Water Policy (2012), and CPCB/SPCB environmental norms, the University adopts this integrated policy to safeguard aquatic ecosystems within and beyond its campus.

This policy consolidates earlier environmental commitments — Monitoring the Health of Aquatic Ecosystems, Minimizing Alteration of Aquatic Systems, Reducing Marine Pollution, Food from Aquatic Ecosystems, and Invasive Alien Species Control — into a single, actionable framework.

3. Purpose (Expanded)

The purpose of this integrated policy is to create a coordinated framework that positions K.R. Mangalam University (KRMU) as a leader in sustainable water stewardship and aquatic ecosystem protection.

The specific purposes include:

1. Institutional Integration:

To bring together all earlier fragmented environmental measures—monitoring, pollution control, food sourcing, and biodiversity management—into a unified, enforceable document under the University’s sustainability governance structure.

2. Data-Driven Governance:

To ensure that decisions on infrastructure, waste management, research, and curriculum are informed by reliable scientific data on water quality, aquatic biodiversity, and climate impact.

3. Compliance and Benchmarking:



To align KRMU's operations with CPCB/SPCB norms, National Water Policy (2012), MoEFCC guidelines, and UN Sustainable Development Goals (SDG 6, 13, 14 & 15).

4. Education and Capacity Building:

To promote environmental literacy among students, staff, and the local community through experiential learning, research, and citizen-science programmes.

5. Community Engagement:

To encourage partnerships with local governments, NGOs, and industries for collective action on watershed restoration, pollution reduction, and ecosystem awareness.

4. Scope (Expanded)

This policy applies comprehensively to all physical, academic, and outreach dimensions of K.R. Mangalam University.

1. Campus Water Bodies:

- All natural ponds, artificial lakes, recharge structures, and rainwater-harvesting systems within the University boundaries.
- Nearby aquatic environments influenced by University operations (within a 2 km radius).

2. Operational Units:

- Laboratories, workshops, hostels, cafeterias, and construction sites that use, discharge, or treat water.
- Estate & Maintenance Department for infrastructure-related water management.

3. Academic & Research Activities:

- Field studies, projects, and experiments related to aquatic organisms, hydrology, or water chemistry.
- Doctoral / post-graduate research guided under the Schools of Agricultural Sciences, Basic & Applied Sciences, and Environmental Studies.

4. Collaborations and Outreach:

- MoUs, community projects, and extension activities with external agencies affecting aquatic ecosystems.
- NGO-supported clean-water campaigns and biodiversity conservation drives.



5. Food and Catering Services:

- All food procurement, preparation, and disposal practices involving aquatic or marine products.

6. Policy Review Applicability:

- Annual audits, IQAC reviews, and sustainability reporting cycles.

5. Policy Objectives (Expanded)

The policy is guided by seven interlinked objectives that translate KRMU's sustainability vision into actionable outcomes:

1. **Scientific Monitoring:** Develop a continuous, evidence-based system for monitoring the physical, chemical, and biological parameters of all campus-associated water bodies.
2. **Pollution Prevention and Control:** Ensure zero untreated discharges and manage solid, liquid, and plastic waste to prevent contamination of surface and groundwater.
3. **Ecosystem Restoration:** Rehabilitate degraded ponds and recharge structures using eco-engineering methods-de-silting, aeration, and native plant re-introduction.
4. **Sustainable Utilization of Resources:** Promote efficient water use, recycling, and responsible consumption of aquatic food products, ensuring minimal ecological footprint.
5. **Biodiversity Conservation:** Protect aquatic flora and fauna through habitat preservation, prevention of invasive species, and creation of biodiversity corridors.
6. **Education & Research Leadership:** Integrate sustainability concepts into curricula, promote interdisciplinary research, and publish impactful work on aquatic ecosystem management.
7. **Community & Policy Outreach:** Establish KRMU as a hub for knowledge exchange, citizen participation, and collaboration with policy-making institutions for aquatic conservation.

6. Operational Framework (Expanded)

6.1 Monitoring and Assessment

1. **Baseline Establishment:** Conduct a comprehensive baseline survey of all water bodies-mapping catchment areas, water-quality status, and biodiversity indicators.
2. **Parameters and Tools:**
 - Physical parameters: Temperature, turbidity, TSS, sedimentation.



- Chemical parameters: pH, DO, BOD, COD, nitrates, phosphates, heavy metals.
 - Biological parameters: Phytoplankton diversity, macro-invertebrates, fish population, aquatic vegetation health.
 - Use of GIS, drone imaging, and IoT-based sensors for real-time data collection.
3. Frequency:
- Monthly water-quality monitoring.
 - Quarterly biodiversity assessments.
 - Annual comprehensive “Aquatic Ecosystem Health Index” report.
4. Stakeholder Participation: Environmental Science and Agricultural students will serve as field assistants and data analysts under faculty supervision.
5. Data Transparency: All data will be stored in the University’s Sustainability Information System and made accessible for teaching and research.

6.2 Pollution Prevention and Water Management

1. Effluent Management:
- All wastewater from laboratories, hostels, and canteens shall pass through the Sewage Treatment Plant (STP).
 - STP output must meet CPCB standards before reuse for irrigation or discharge.
2. Storm Water and Run-Off Control:
- Installation of sedimentation traps, grease filters, and bio-filters in storm-water channels.
 - Regular cleaning of drains to prevent clogging and backflow.
3. Rainwater Harvesting:
- Expansion of recharge pits and roof-top harvesting systems.
 - Periodic maintenance and desilting to ensure efficiency.
4. Chemical and Fertilizer Control:
- Restrict use of hazardous chemicals in landscaping and laboratories.
 - Adopt organic alternatives and precision-fertigation systems.
5. Awareness and Accountability:
- Conduct biannual campus campaigns on water conservation.



- Introduce “Green Office Certification” for departments achieving water-reduction targets.

6.3 Restoration and Sustainable Infrastructure

1. Ecosystem Restoration Projects:
 - De-silting, aeration, and native-species planting in ponds.
 - Use of bio-engineering techniques like coir matting for erosion control.
2. Water-Sensitive Urban Design (WSUD):
 - Integrate catchment management in all future constructions.
 - Promote green roofs, bioswales, rain gardens, and permeable pavements.
3. Energy and Water Nexus:
 - Utilize solar energy for water pumping and treatment systems.
 - Link treated-water reuse to irrigation of botanical gardens and sports fields.
4. Maintenance Protocols:
 - Estate Department to prepare a preventive maintenance schedule covering ponds, STP, and rainwater systems.

6.4 Research, Innovation and Education

1. Curricular Integration:
 - Introduce elective courses on Aquatic Ecology, Marine Pollution Control, and Hydrological Modeling.
 - Embed field projects and internships within the curriculum.
2. Interdisciplinary Research:
 - Encourage joint projects between Environmental Science, Biotechnology, and Civil Engineering Departments.
 - Focus on topics such as wastewater reuse, bio-remediation, and aquatic biodiversity indices.
3. Innovation Hubs:
 - Establish the Centre for Aquatic Ecosystem Studies (CAES) as a cross-school research and outreach unit.



- Promote patents, prototypes, and data-driven policy papers.
- 4. Capacity Building & Outreach:
 - Organize annual national workshops on Sustainable Water Futures.
 - Partner with governmental and international agencies for knowledge exchange.

6.5 Sustainable Food from Aquatic Ecosystems

1. Procurement Standards:
 - Vendors must provide sustainability or traceability certification (MSC, ASC, FSSAI eco-label).
 - Avoid procurement of over-exploited or endangered species.
2. Menu Diversification:
 - Introduce balanced diets with plant-based or aquaculture-friendly protein alternatives.
 - Encourage canteens to display sourcing transparency notices.
3. Waste Management:
 - Collect and compost fish and aquatic food waste; prohibit disposal into drains.
 - Kitchen effluents to pass through grease traps before STP treatment.
4. Education and Awareness:
 - Conduct annual “Responsible Seafood Week.”
 - Integrate discussions on sustainable aquaculture into Food Science and Environmental Studies curricula.

6.6 Reducing Marine and Freshwater Pollution

1. Single-Use Plastic Ban:
 - Prohibit plastic bottles, straws, and cutlery on campus.
 - Replace with biodegradable or metal alternatives.
2. Waste Segregation and Recycling:
 - Provide color-coded bins for wet, dry, and recyclable waste.
 - Partner with certified recyclers for collection and reporting.
3. Effluent Audit:
 - Quarterly audits of STP performance, grease traps, and runoff channels.
 - Maintain effluent-quality records for external inspection.



4. Community Engagement:

- “Blue Planet Drive” clean-water campaigns led by NSS and Eco Club.
- Collaborative lake-cleanup events with local panchayats and NGOs.

5. Performance Metrics:

- Annual reduction of at least 25 % in plastic consumption and 100 % compliance with effluent-standards targets.

6.7 Invasive Alien Species (IAS) Management

1. Identification and Documentation:

- Conduct biodiversity audits to detect alien and invasive species.
- Maintain a Campus Biodiversity Register with photographic and GIS records.

2. Control and Eradication:

- Mechanically remove IAS such as *Parthenium hysterophorus*, *Prosopis juliflora*, *Lantana camara*, and *Eichhornia crassipes*.
- Employ biological and ecological methods rather than chemical herbicides.

3. Native Biodiversity Promotion:

- Establish demonstration gardens featuring indigenous aquatic plants.
- Encourage tree plantation drives with native species.

4. Research and Awareness:

- Integrate modules on IAS ecology in Biology and Environmental Science courses.
- Organize “Know Your Species” campus drives to sensitize students.

5. Inter-Institutional Coordination:

- Collaborate with MoEFCC, Forest Department, and other universities for regional IAS management programmes.

6. Reporting and Compliance:

- CBC to submit annual IAS status reports to the Registrar and Vice-Chancellor.
- Corrective measures and restoration outcomes to be published in the Sustainability Annual Report.



7. Action Plan

The implementation of this Policy shall be operationalized through an annual institutional action plan that integrates academic, administrative, and community functions. Each activity is measurable through Key Performance Indicators (KPIs) and tracked via the University Sustainability Dashboard.

Focus Area	Key Actions	Responsible Unit(s)	Timeline / Frequency	Performance Indicator / Output
7.1 Monitoring Network	• Establish fixed sampling stations across campus ponds, storm-water channels, and recharge pits. • Install smart water-quality sensors (IoT-enabled) for real-time monitoring. • Develop GIS-based “Campus Water Atlas.” • Routine inspection of STP and effluent pipelines.	Sustainability Office & School of Agricultural Sciences	Within 3 months of policy notification	Continuous monitoring operational; dashboard published online
7.2 Pollution Control	• Third-party testing of treated water. • Annual maintenance of oil-trap systems and kitchen drains. • Ensure zero untreated discharge.	Estate Department & Environmental Technicians	Monthly internal + Biannual external audit	100 % compliance certificates
7.3 Biodiversity Survey	• Quarterly biological surveys of flora, fauna, plankton, and fish diversity. • Integration of student field courses with biodiversity data collection.	Dept. of Environmental Studies & CBC	Quarterly	No. of species recorded / Change in diversity index



	• Publication of “Campus Biodiversity Register.” • Annual de-silting and aeration of ponds. • Plantation of native aquatic vegetation (Typha, Lotus, Hydrilla). • Installation of floating wetlands for nutrient absorption. • Ban on single-use plastics.	Estate Dept., NSS Unit & Student Clubs	Pre-Monsoon Season	Increase in water holding capacity and clarity
7.4 Restoration Drive				
	• Department-wise waste audits and segregation training. • Installation of plastic compactors and composters. • Annual identification and eco-friendly removal of invasive species (e.g., Parthenium, Lantana, Eichhornia). • Native tree plantation and ecological restoration drives. • Embed modules on aquatic health, marine pollution, and sustainable fisheries in UG/PG curricula. • Introduce elective “Aquatic Ecosystem Studies.”	Sustainability Office & Procurement Cell	Biannual	≥ 90 % segregation at source; plastic use reduced by 50 %
7.5 Waste & Plastic Audit				
	• Embed modules on aquatic health, marine pollution, and sustainable fisheries in UG/PG curricula. • Introduce elective “Aquatic Ecosystem Studies.”	CBC & School of Basic Sciences	Annual (March–April)	Reduction in IAS cover area ≥ 30 % per year
7.6 IAS Removal				
		Academic Council & BoS of relevant schools	Ongoing (revision cycle)	No. of courses revised / students enrolled
7.7 Curriculum Integration				



7.8 Reporting	• Publish the Annual Aquatic Ecosystem Health Report and Green Audit Summary.	Sustainability Office & IQAC	Annual	Reports uploaded and shared with SPCB and public domain
	• Disseminate findings during World Water Day and Environment Week.			

8. Governance and Implementation

8.1 Institutional Structure

Implementation shall be governed by a three-tier structure:

1. Policy Steering Committee (PSC): Chaired by the Vice-Chancellor; includes the Registrar, Dean (Agricultural Sciences), Director (Sustainability Office), and two external environmental experts.
Functions: Strategic oversight, approval of action plans, annual review.
2. Operational Task Force (OTF): Convened by the Director (Sustainability Office) with members from Estate, NSS, and school representatives.
Functions: Execution of day-to-day activities, data collection, event organization, and inter-department coordination.
3. Monitoring and Evaluation Cell (MEC): Anchored within IQAC; responsible for KPI assessment, documentation, and presentation in Academic Council meetings.

8.2 Roles and Responsibilities

- Centre for Sustainable Development Goals (CSDG): Policy coordination, funding proposals, liaison with external agencies.
- Sustainability Office: Awareness campaigns, data analytics, report generation.
- Estate & Maintenance Dept.: Implementation of infrastructural and engineering measures.
- Academic Departments: Research, field projects, curriculum delivery.
- Student Organizations / NSS: Volunteer mobilization and outreach.
- Campus Biodiversity Committee: Biodiversity auditing and invasive-species control.

8.3 Documentation



Each activity must maintain supporting evidence—attendance sheets, photographs, test reports, and MoUs—to facilitate annual NAAC/IQAC audits.

9. Monitoring, Audit, and Reporting

1. Internal Monitoring:

- Monthly field reports from departments consolidated by the Sustainability Office.
- Visual documentation through drone or satellite imagery for seasonal comparison.

2. Environmental Audits:

- Quarterly internal audits to assess compliance with CPCB norms.
- Annual third-party audit covering water, waste, biodiversity, and carbon indicators.

3. Performance Dashboard:

- Digital platform displaying real-time data on water quality, STP performance, and biodiversity metrics.
- Accessible to students, staff, and stakeholders.

4. Annual Sustainability Report:

- To include quantitative progress (e.g., % reduction in pollutant load, species diversity index).
- Submitted to Vice-Chancellor and shared with SPCB or collaborating agencies.

5. Corrective Actions:

- Non-conformance findings addressed within 30 days.
- Corrective measures logged with responsible officer and verification date.

10. Review and Compliance

- Annual Review Cycle: Conducted every April by PSC and Sustainability Office to evaluate targets and incorporate new regulatory updates.
- Mid-Term Revision: Permitted if significant environmental or legal changes occur.
- Compliance Mechanism:
 - Each department must file a Self-Compliance Report quarterly.
 - The Registrar consolidates the same for submission to IQAC.
- Corrective & Preventive Action (CAPA):
 - Training sessions for non-compliant units.
 - Financial or administrative actions in persistent cases.



- Alignment Frameworks:
 - CPCB/SPCB Water Quality Standards 2024.
 - National Water Policy (2012).
 - ISO 14001:2015 Environmental Management System.
 - UN SDG 6 (Clean Water & Sanitation) and SDG 14 (Life Below Water).

11. Expected Outcomes

1. Environmental Impact

- Improvement of water-quality parameters by $\geq 30\%$ within three years.
- Reduction in solid and plastic waste entering storm drains to near-zero.
- Rejuvenation of at least two campus water bodies annually.

2. Academic & Research Outcomes

- Minimum 10 student-faculty research publications per year on aquatic health or sustainability.
- Establishment of Aquatic Ecosystem Model Lab for real-time simulation and innovation.

3. Community Engagement

- Conduct of ≥ 6 community awareness or clean-water drives annually.
- Engagement of 500 + students per year in citizen-science and NSS projects.

4. Institutional Recognition

- Certification as Green Campus – Water Positive Category by 2030.
- Enhanced ranking performance in THE Impact Rankings and NIRF Innovation metrics.

12. Policy Approval and Issue

This Aquatic and Marine Ecosystem Conservation Policy (2023 Edition) was approved by the Board of Management of K.R. Mangalam University in its 52nd meeting vide agenda item no. 52.13 dated 25.02.2023.