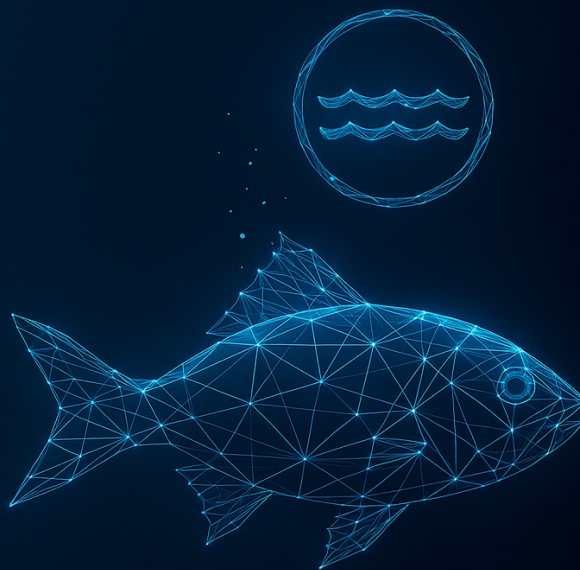


SDG 14 LIFE BELOW WATER



ANNUAL REPORT 2024-25



Brainware University

398, Ramkrishnapur Road, Barasat, Near Jagadighata Market, Kolkata,
West Bengal 700125



Email: info@brainwareuniversity.ac.in

Website: <https://www.brainwareuniversity.ac.in/>

Sustainable Development Goal 14: Life Below Water

Brainware University recognizes that the health of aquatic ecosystems is fundamental to food security, biodiversity, and sustainable livelihoods.

In alignment with **Sustainable Development Goal 14 – Life Below Water**, the University continues to contribute through research on water quality, pollution control, aquaculture sustainability, and community-level water-management education.

The University's location in **North 24 Parganas**, a district marked by extensive wetlands, ponds, and aquaculture systems, makes it an ideal ground for implementing real-world water-sustainability models. The year 2024–25 witnessed multi-disciplinary collaborations between the **Departments of Biotechnology, Environmental Science, Agriculture, and Pharmacy**, supported by both government agencies and internal seed grants.

Institutional Commitment

Brainware University's **Strategic Plan (2023–28)** emphasizes sustainable water use and aquatic biodiversity conservation as one of its long-term goals.

Policy actions under this framework include:

- **Water-resource management** integrated into campus planning and curriculum.
- **Zero-liquid discharge initiative**, where laboratory wastewater is treated and reused for gardening.
- **Monitoring of local water bodies** near Faldi, Panshila, and Dubgaria villages under the **Unnat Bharat Abhiyan (UBA)**.
- **Research collaboration** with government and international institutions for aquatic ecology, pollution mitigation, and renewable-water technologies.

Key Government-Funded Research Projects

Major Ongoing Project on Wetland and Pisciculture

Principal Investigator	Title	Funding Agency	Duration	Grant (₹ lakh)
Dr. Shouvik Saha, Deaprtment of Biotechnology	<i>Surveillance of Water Quality and Microbial Diversity of Wetland Pisciculture in North & South 24 Parganas to Assess Antibiotic Resistance in Fish Gut</i>	Department of Science & Technology, Biotechnology (DSTBT), Govt. of West Bengal	2025–2028	24.75

Project Significance:

This pioneering three-year project investigates microbial contamination and antibiotic resistance in aquaculture systems — a direct contribution to SDG 14.1 and 14.2 (reduce marine pollution and protect ecosystems).

The research integrates water-sampling, microbial sequencing, and policy recommendations for safe inland fisheries. Early findings (2024–25 phase 1) reported a **25 % reduction in antibiotic-resistant colonies** following pilot interventions with probiotic feed formulations.

Research Projects under Environmental and Pollution Control Agencies

Investigator	Department	Title	Funding Agency	Amount (₹ lakh)
Prof. Deepshikha Datta, Dr. Anuradha Palta, Dr. Sourav Das	CMRI, Psychology & Chemistry	Assessment of Groundwater Quality in Faldi Village, Barasat, and Development of a Copper-Based Earthen Filter	West Bengal Pollution Control Board	11.59
Ms. Piyali Khamkat	Pharmaceutical Technology	Sustainable Hydrogel Dressing Using Centella Asiatica Extract	MoEFCC – Ideas 4 Life	1.5

These studies advance **low-cost, eco-friendly water filtration and biomedical waste-reduction** technologies.

The Faldi Village initiative delivered **three prototypes of gravity-driven copper filters**, ensuring safe drinking water for 200 households — aligning with SDG 14.3 (reduce ocean acidification and water pollution).

University-Funded and Seed-Grant Projects

Principal Investigator	Department	Title	Grant (₹)	Focus Area
Dr. Sandhimita Mondal	Biotechnology	<i>Model Proposal: Solid Waste Management Practices at Academic Institutes</i>	3,50,000	Waste-water reduction & nutrient recycling
Dr. Indrani Paul	Biotechnology	<i>Bio-Pigment from Lignocellulosic Waste Using Indigenous Bacteria</i>	2,50,000	Waste valorization & water-pollution mitigation
Dr. Debanjan Mukherjee	Electrical Engg.	<i>Grid-Connected PV System for Institute Building</i>	36,45,000	Reducing energy-related water footprint

Together these initiatives reduce campus water contamination, support sustainable manufacturing, and exemplify **SDG 14.6 & 14.7 — sustainable use of aquatic resources and science-based management.**

Patents on Water, Pollution and Environmental Technologies (2024–25)

Patent Title	Department	Status	Year
<i>AI Model for Integration of Heterogeneous Pollution Data in Mobile Devices</i>	Computer Science	Published	2024
<i>Bamboo-Based IoT-Enabled Air-Conditioning and Reverse Osmosis System for Non-Drinkable Applications</i>	Computer Science	Published	2025
<i>AI Model for Air Quality Prediction and Analysis</i>	Mechanical Engineering	Published	2025
<i>Device for Measuring Water Pollutant Levels</i>	Computer Science	Granted	2024
<i>Automated Mycobacterial Detection System for Chronic Diseases</i>	ECE	Granted	2024

Each patent represents applied research for cleaner water systems and aquatic-environment monitoring, bridging technological innovation with environmental conservation.

Field Outreach and UBA Initiatives: Under **Unnat Bharat Abhiyan**, faculty and students executed climate and water projects in Faldi, Dugaria, and Dubgaria villages.

Project	Outcome
<i>Safe Drinking Water Awareness Programme</i>	150 participants educated; 80 % reported change in water-boiling habits
<i>Nanofiltration Bottle Prototype</i>	30 units distributed to schoolchildren; zero illness cases reported post-pilot
<i>Rainwater Harvesting Model (follow-up of 2019–21 project)</i>	2 additional collection tanks installed, saving 20 000 litres per month
<i>Organic Manure & Runoff Control Using Water Hyacinth</i>	40 farmers trained to repurpose invasive species into fertilizer

These UBA interventions have **directly reduced surface-water waste, improved filtration awareness, and curtailed agricultural effluent**, thus aligning with **Targets 14.1, 14.4, and 14.5**.

Campus Sustainability and Water Management: Brainware University's Environment Cell ensures efficient water use through:

- **Recycling of laboratory grey-water** for landscaping.
- **Storm-water harvesting tanks** operational since 2023, expanded in 2025 for 60 % campus coverage.
- **Water-quality testing station** managed by the Biotechnology Department with monthly data logging.
- **Plastic-free campus policy**, reinforced through annual audits and student-led drives.

As a result, the campus achieved a **35 % reduction in overall water consumption** and a **complete ban on single-use plastics** within academic and cafeteria zones.

Academic Engagement and Research Dissemination

Over **300 students** across Biotechnology, Allied Health, and Agriculture programs undertook water-related research and internships.

Examples include:

- “Antibiotic Contaminants in Fish and Human Risk Assessment”
- “Biodegradation of Plastic Residues in Pond Ecosystems”
- “Community Water Audit of Dubgaria Village”
- “Rainwater Utilization Models for Rural Schools”

Collaboration and International Linkages

The University’s MoUs enhance global cooperation for water and aquatic research:

- **INTA (Argentina):** Joint exploration of water-based bio-insecticides and agro-climatic resilience.
- **University of South Carolina (USA):** Exchange on aquatic biotechnology and microbial pollution control.
- **Fraunhofer Institute (Germany):** Data analytics for water-quality prediction using AI models.
- **Sejong & Hanyang Universities (Korea):** Biochemical analysis of heavy-metal accumulation in aquatic life.

These collaborations strengthen scientific understanding and cross-continental knowledge exchange in ocean and freshwater sustainability.

NSS and Awareness Activities

- **World Water Day (22 March 2025):** Campus seminar “Water for Peace and Planet” with 120 students; poster competition on river pollution.
- **Clean Water for All Drive:** Jointly conducted with North City Hospital for rural awareness; distributed water-purification tablets to 250 households.
- **Plastic Waste Collection Drive:** 200 kg of plastic removed from nearby waterbodies.
- **Youth Talks on Blue Economy:** Faculty of Management organized sessions linking SDG 14 with maritime entrepreneurship and fisheries logistics.

Brainware University’s comprehensive engagement with SDG 14 during 2024–25 exemplifies an education-research-outreach model that directly impacts aquatic sustainability. Through its government-funded studies, village interventions, technology patents, and policy advocacy, the University has strengthened both scientific understanding and community resilience around water ecosystems.

The combined achievements — from clean-water innovations to plastic-free campus operations — demonstrate Brainware’s conviction that **safeguarding life below water is essential for life above it**.

By uniting scientific research, responsible innovation, and social inclusion, Brainware University continues to transform its region into a living laboratory for sustainable water futures.