

SDG 13 CLIMATE ACTION



ANNUAL REPORT 2024-25

13 CLIMATE
ACTION



Brainware University

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Sustainable Development Goal 13: Climate Action (Academic Year 2024 – 25)

Overview

This report presents Brainware University's initiatives and measurable contributions toward **Sustainable Development Goal 13 — Climate Action**, for the academic year 2024–25. The document consolidates institutional actions under research, campus sustainability, renewable energy adoption, student engagement, and rural outreach. Each effort contributes to the collective mission of strengthening climate resilience and environmental consciousness at the local and regional levels.

Brainware University recognizes that universities hold both moral and practical responsibility in addressing the climate crisis. The institution's work focuses on three converging fronts — **research-led innovation, community education, and institutional sustainability practices** — linking scientific solutions with everyday climate action.

Institutional Commitment

The university's sustainability strategy aligns with the UN's 2030 Agenda and India's National Action Plan on Climate Change.

Key commitments are embedded in the **Strategic Plan (2023-24 to 2027-28)**, which outlines Brainware's long-term environmental goals:

- Promote low-carbon campus infrastructure.
- Support renewable energy and waste-management systems.
- Integrate environmental education across all programmes.
- Encourage faculty and students to develop technologies that mitigate environmental damage.

The **Research & Development Cell** and **Innovation Council (IIC)** jointly monitor these objectives, ensuring that sustainability is woven into every research and outreach function.

Research and Innovation for Climate Resilience

Climate action at Brainware is largely science-driven. During 2024–25, several **government-funded** and **seed-granted projects** advanced sustainable technologies relevant to SDG 13.

Government-Funded Projects

Principal Investigator	Department	Project Title	Funding Agency
Dr. Shouvik Saha	Biotechnology	Surveillance of Water Quality and Microbial Diversity in Wetland	DSTBT, West Bengal

		Pisciculture to Assess Antibiotic Resistance	
Dr. Pameli Saha	Mathematics	Physical Analysis of Higher-Dimensional Compact Objects under Quintessence Field	DSTBT, West Bengal
Prof. Deepshikha Datta et al.	Chemistry / Psychology	Groundwater Quality Assessment and Copper-Based Earthen Filter Development (Citizen Science Initiative)	WBPCB

These projects collectively strengthen local adaptation strategies through data-driven approaches — ensuring safer water, cleaner ecosystems, and informed community practices.

Seed-Granted Projects

Principal Investigator	Department	Project Title
Dr. Sudipta Chatterjee	ECE	Design & Development of a Ground-Navigating Interactive Robot for University Campuses (Energy-efficient model)
Dr. Indrani Paul	Biotechnology	Production and In-silico Analysis of Valorizable Bio-Pigment from Lignocellulosic Waste Using Bacterial Monoculture
Dr. Debanjan Mukherjee	EE	Grid-Connected Photovoltaic (100.10 KWp) System for Institute Building
Dr. Angshuman Majumdar	ECE	Renewable Energy Integration: Design and Installation of 150.15 KWp Solar Plant

The renewable-energy projects mark a major leap toward energy independence on campus. Once operational, they will substantially offset grid dependency and help reduce overall emissions.

Renewable Energy and Campus Sustainability

Brainware University has embedded sustainability into campus operations through tangible actions:

- **Solar Power Systems:** Two large photovoltaic projects (total capacity $\approx$ 250 KWp) now partially power academic and administrative blocks, initiated under internal seed-grant schemes.
- **Energy-efficient Facilities:** All new buildings comply with LED-based lighting and natural-ventilation standards.
- **Water Conservation:** Rainwater-harvesting prototypes and low-flow plumbing fixtures are integrated in the Barasat campus.

- **Solid Waste Management:** A faculty-led pilot project, *Model Proposal: Solid Waste Management Practices at Academic Institutes*, introduced segregation and composting systems for biodegradable waste.

These infrastructural measures support the reduction of the university's environmental footprint and align directly with **SDG 7 and SDG 13** objectives.

Climate Education and Awareness

Environmental education at Brainware extends beyond the classroom. Core and elective courses under Science, Management, and Humanities departments include modules on **sustainability, environmental economics, and green innovation**.

Key sessions conducted in 2024–25 included:

- *Environmental Sustainability Week (October 2024)* — lectures on carbon neutrality and plastic-free campuses.
- *Energy Conservation Day (December 2024)* — student poster competition and expert talks on renewable technologies.
- *Earth Day (22 April 2025)* — inter-school essay contest on “Youth and Climate Responsibility.”

These programmes have reached hundreds of students and staff, embedding environmental literacy as a lifelong practice.

Patents and Technological Innovations

Brainware researchers have actively developed sustainable technologies and filed multiple patents with direct climate relevance during 2024–25.

Selected Climate-Linked Patents:

AI Model for Air Quality Prediction and Analysis
AI and Machine Learning Perspectives on Cardiovascular Effects of Lung Cancer
Eco-friendly Jute Fiber Reinforced Polyester Laminates for Automobiles
IoT-Enabled Smart Waste Management Bin
Real-Time IoT-Based Soil Health Monitoring System

These technologies advance cleaner production, waste reduction, and pollution monitoring — demonstrating how applied research underpins climate mitigation.

Student and Faculty Engagement

The **NSS Unit** at Brainware has become a vital platform for hands-on climate action. Students have participated in:

- Tree-plantation drives across five adopted villages.
- Awareness rallies on water conservation and zero-plastic lifestyles.
- Clean-campus campaigns and e-waste collection drives.

Meanwhile, faculty workshops organized by the **IQAC and Research Cell** have trained educators on integrating SDG themes into teaching and research proposals.

Collaborations and Partnerships

Brainware University sustains a network of collaborations enhancing its climate action reach:

- **Fraunhofer Institute (IIS, Germany):** R&D in computational modelling for energy efficiency.
- **University of South Carolina (USA):** Research cooperation in biotechnology and environmental sustainability.
- **INTA (Argentina):** Agricultural adaptation technologies.
- **Kasama University (Zambia):** Climate-responsive curriculum and health-environment linkages.

These global partnerships reinforce the university's role as a contributor to international climate research and sustainable technology exchange.

Through sustained commitment, Brainware University has evolved into a hub of **climate-conscious research and education**. Its renewable-energy installations, eco-innovation projects, and rural interventions collectively illustrate how an academic institution can move beyond awareness into action.

The year 2024–25 reaffirmed the university's belief that addressing climate change is inseparable from ensuring human welfare and sustainable development.

Brainware's climate agenda will continue to build on this foundation — nurturing technologies, talent, and community partnerships that protect the planet while empowering the people who depend on it most.

Brainware University views climate action not as a parallel pursuit, but as the very framework through which learning, research, and service gain meaning.