



# **BRAINWARE UNIVERSITY**

**Annual SDG-11 Report  
2023-24**

**SDG 11: Sustainable Cities and Communities**  
*Building Smarter, Greener, More Inclusive  
Habitats*

# SDG 11: Sustainable Cities and Communities – *Building Smarter, Greener, More Inclusive Habitats*

## About SDG 11

SDG 11 seeks to make cities and human settlements inclusive, safe, resilient, and sustainable. The target extends beyond urban planning—it is about creating communities that combine infrastructure, environmental responsibility, and social well-being.

At Brainware University, sustainability is treated as a systems problem, not a decorative add-on. The campus operates as a *living laboratory* where civil, environmental, and management disciplines jointly explore how energy, design, and community participation can reshape the way India builds and lives.

## Campus Sustainability Framework

Brainware’s 2023–24 operations embraced an integrated “*Green Campus & Smart Infrastructure*” policy approved by the University Quality Cell. The framework includes resource efficiency, mobility, green construction, and community participation.

Focus Area	Initiatives (2023–24)	Outcome / Impact
Energy Efficiency	Transition to LED lighting and solar panels	Reduction in annual electricity use
Water Conservation	Installation of dual-flow taps; rainwater-harvesting pits	1.6 million litres annually reused
Waste Management	Tie-up with e-waste and biomedical waste segregation organizations	To produce processed recyclable waste
Biodiversity & Greening	Tree-plantation drives and rooftop gardening by NSS volunteers	300 trees planted; 0.9 acre green coverage added
Accessibility	All new construction (2023–24) compliant with universal-design norms	100 % accessible facilities

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### Research, Innovation & R&D for Sustainable Infrastructure

Brainware’s faculty and students pursued sustainability research that ties directly to SDG 11 targets. Key patents, book chapters, and projects focus on smart, green, and resilient systems.

Title / Innovation	Inventor / Author(s)	Type / Source	Relevance to SDG 11
<i>AI-Optimized Portable Solar &amp; Renewable Energy EV Charger</i>	Suvojit Mukhopadhyay et al.	Patent 202331075382 A	Clean energy & sustainable transport
<i>Sustainable Indoor Air Quality Improvement Using Aqua Algae Filtration Systems</i>	Dr Priyanka Sen Guha et al.	Patent 202431005359 A	Green building air purification
<i>Mitigating NOx Emissions in Cloud Data Centers</i>	Dr Debabrata Sardar et al.	Patent 202431005366 A	Low-carbon digital infrastructure
<i>Design &amp; Development of Manually Operated Spring-Tooth Weeder</i>	Mr Sanjay Mochary et al.	Patent 202331075376 A	Sustainable agri-mechanization
<i>AI-Based Plagiarism-Detecting OCR Pen for Handwritten Text</i>	Subrata Sinha	Design Reg. 400417-001	Innovation in responsible technology
<i>Urban Flood Risk Modelling Using IoT Sensors</i>	Dept. of Civil Engineering (student project)	Internal project	Smart city disaster resilience

**Total R&D outputs linked to SDG 11 (2023–24):** 19 patents + 6 designs + 8 student projects.

### Industry & Institutional Partnerships

The University’s MoUs connect academic learning with the infrastructure and environmental sectors, ensuring that sustainability translates into employability and research.

Partner Organisation	Date	Objective	Associated Department
B.S. Geotech Pvt Ltd.	Sept 25 2025	Skill training, workshops, research on geotechnical stability	Civil Engineering

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Test Metal Corporation	Aug 26 2025	Research in material testing and structural analysis	Mechanical Engineering
Eco Fast Agri Solution	Aug 19 2025	Training and R&D in sustainable agri-technology	Agriculture
MSME Tool Room (Kolkata)	Jan 3 2025	Industrial training, skill development, and placement	Civil & Mechanical Engineering
IIT Kharagpur Virtual Labs	Jul 7 2025	Nodal centre for simulation and virtual-lab training	Civil / ECE
Cynosure Renewable Energy Pvt Ltd.	Jun 11 2022 (continuing)	R&D and training in renewable-energy systems	ECE
Airports Authority of India	Apr 18 2024	Internship on green-airport management	Management

These collaborations strengthen applied learning and urban-infrastructure innovation, directly contributing to Targets 11.3 (urban planning), 11.6 (reduce environmental impact), and 11.b (implement sustainable policies).

### Community Engagement & Outreach

#### NSS & Student-Led Urban Campaigns

- “Clean Campus, Green City” drive (Oct 2023): 500 students joined local municipal workers in waste-segregation at Barasat Market.
- “Build Smart 2024” Hackathon: inter-departmental contest to design cost-efficient housing for low-income communities; top 3 models later displayed in campus.

#### Smart Village and Agri-Innovation

Through MoUs with *Krishibandhu Crop Science Pvt Ltd.* and *Matribhumi Agriculture India Pvt Ltd.*, students engaged in farm-to-market infrastructure design, supporting sustainable agri-urban linkage models for SDG 11 & 12 integration.

### Awareness & Capacity Building

Date	Event / Theme	Organisers	Outcome
Aug 2023	<i>Waste to Wealth – Recycling in Campus</i>	Dept. of Biotechnology + Redivivus Recyclers Pvt Ltd.	Segregation system demo for 100 students
Nov 2023	<i>Sustainable Urban Futures Workshop</i>	School of Management + Civil Engg.	Policy brief drafted for local municipality
Feb 2024	<i>Green Design Hackathon</i>	Innovation Cell + IIC	12 prototypes for energy-efficient housing
Mar 2024	<i>World Water Day Seminar</i>	Dept. of Civil Engg.	Awareness among 250 students and staff

Brainware University is redefining what a sustainable campus in an emerging-economy context can be—technologically advanced, socially aware, and ecologically conscious.

Through its expanding industry partnerships, cross-disciplinary R&D, and student engagement, the University links classroom knowledge to community transformation.

Sustainability here is not a slogan—it is built, measured, and lived every day.

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