



BRAINWARE UNIVERSITY

**Annual SDG-9 Report
2023-24**

SDG 9: Industry, Innovation and Infrastructure

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About the Goal

Sustainable Development Goal 9 focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation.

The goal underlines that progress in infrastructure and industrial capacity drives employment, income, and human development. In today's knowledge economy, innovation—both technological and social—is the foundation of competitiveness and sustainable growth.

For a university, SDG 9 represents a call to translate research into usable technology, to partner with industry for mutual advancement, and to create environments where innovation thrives. At Brainware University, innovation is seen not as an event but as a habit — a continuous process of learning, experimenting, designing, and improving.

Brainware University's Approach to SDG 9

Brainware University's work under SDG 9 revolves around three interconnected pillars:

1. Innovation Ecosystem – nurturing ideas from classroom to patent and prototype through the *Innovation Cell* and research clusters.
2. Industry and Infrastructure Partnerships – linking academic expertise with industrial applications through structured MoUs.
3. Research and Development Outputs – translating scholarship into tangible outcomes such as patents, designs, and technologies aligned with the national and global innovation agenda.

Strengthening Industry–Academia Collaboration

In 2023–24, the University signed over 80 active MoUs with industries, healthcare networks, and research organizations to integrate skill training, product development, and placement opportunities.

Key partnerships include:

- Intel Technology India Pvt Ltd. – Establishment of the *Intel Unnati Lab* for embedded systems and AI-based research.
- IBM India Pvt Ltd. – Integration of IBM Software specializations within UG/PG programmes and certification courses.

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- Infosys Springboard – Launch of digital learning classrooms, virtual assessments, and technical content for programming skills.
- MSME Tool Room, Govt of India – Hands-on exposure for Mechanical, Civil, Electrical, and ECE students in industrial fabrication and tool design.
- Centre of Excellence for AI and Digital Transformation – Joint research and placement programmes connecting academia with live AI projects.
- EC-Council Academia and Dataspace Academy – Advanced training in cybersecurity, digital forensics, and ethical hacking.
- Redivivus Recyclers Pvt Ltd. – Waste management and recycling initiative integrated into Biotechnology research labs.

Through these alliances, students now participate in real-world internships, joint projects, and value-added courses directly co-designed by industry partners.

International Collaboration and Research Mobility

Brainware University's global research network expanded significantly during 2024–25 through a series of landmark MoUs with leading international institutions:

- Fraunhofer Institute for Integrated Circuits (IIS), Germany – Joint R&D in computational sciences and applied signal processing.
- University of South Carolina, USA – Collaborative research and training programmes in Biotechnology and Life Sciences.
- Instituto Nacional de Tecnologia Agropecuaria (INTA), Argentina – Faculty and student exchanges, joint use of research facilities, and co-authored projects in agricultural biotechnology.
- Hanyang University and Sejong University, Republic of Korea – Shared instrumentation and joint academic programmes in biosciences and materials research.
- Kasama University College of Health Science and Technology, Zambia – Curriculum design, online learning initiatives, and research exchange.
- Livingstone College, USA – Faculty exchange and joint conferences under Management and International Business.

These collaborations align with SDG 9.5 (Enhance scientific research) and SDG 9.b (Support domestic technology development). They have created global exposure for students and fostered transnational innovation projects across agriculture, biotechnology, AI, and healthcare.

Innovation and Intellectual Property

The University's research and patenting culture matured during 2023–24, with several *granted* and *published* IPs reflecting applied innovation and societal value.

Granted Designs and Trademarks (2023–24)

- AI-Based Laboratory Vacuum Evaporator for Pharmaceutical Use – UK Patent No. 6326093
- Biomedical Device for Visualizing Haematopoiesis as a Stochastic Process – UK Design No. 6291829
- Portable Biomedical Refrigerator for Animal Tissue Samples – India Design No. 395102-001
- Multichambered Device for Phytochemical Analysis – India Design No. 404460-001
- Computer-Based Hyperspectral Imaging Camera for Diseased Plants – UK Design No. 6342084
- AI-Based Plagiarism-Detecting OCR Pen for Handwritten Text – India Design No. 400417-001
- Automated Inventory Management Device using RFID – UK Design No. 6318434
- Saliva-Based Portable Device for HIV and Hepatitis Detection – India Design No. 416690-001
- Trademark Registered: *FIATLEXICA* (India No. 5759173)

Published Process Patents (Highlights)

- AI-Optimized Portable Solar and Renewable Energy EV Charger (CSS)
- Smart Soil Moisture Sensor for Smart Agriculture (CSE)
- IoT-Enabled Energy Collection System for Autonomous Networks (CSS)
- AI-Enabled Smart Blood Test Analyzer (CSS)
- Secure IoT Healthcare System with Deep Learning Access Control (ECE)
- Deep Learning Model for Tea Plant Disease Detection (CSS)
- Smart Education with AR/VR Applications (CSS)

Together, these represent BWU's expanding footprint in green energy, smart health, precision agriculture, and digital infrastructure.

Infrastructure and Digital Capability

Brainware University's technology ecosystem grew stronger with a series of high-impact initiatives:

- Establishment of CMRI supporting multidisciplinary research.
- Designation as Nodal Centre for Virtual Labs (IIT Kharagpur) – enabling remote experiments for Agriculture and ECE students.
- Expansion of IBM and Infosys digital platforms for blended learning and virtual classrooms.
- Integration of Intel Unnati Lab for embedded system simulation and hardware-based innovation.

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- State-level collaborations with MSME Tool Room for advanced fabrication and Redevises Recyclers for green-waste management.

Each initiative enhances access to cutting-edge infrastructure and demonstrates the University's role as a knowledge and innovation hub in eastern India.

Events and Outreach Activities (2023–24)

Event	School / Partner	Focus Area
<i>AI for Industrial Sustainability Workshop</i>	School of Computational Sciences	Use of AI and IoT for smart manufacturing
<i>Innovation and Start-up Conclave 2023</i>	BWU Innovation Cell	Student entrepreneurship showcase
<i>Research & Innovation Expo</i>	IQAC & Innovation Cell	Patent and prototype exhibition
<i>Industry Connect Summit</i>	MSME Tool Room & AI Centre	Industry–academia collaboration for SDG 9 alignment
<i>Global Innovation Dialogue</i>	KIIT-TBI & International Office	Intellectual property and technology transfer

Brainware University's journey under SDG 9 is anchored in the conviction that innovation must serve humanity. By connecting laboratories to industries, students to entrepreneurs, and classrooms to global partners, the University demonstrates how academic research can become the backbone of sustainable infrastructure and equitable growth.

From the corridors of the Innovation Cell to the international laboratories of Fraunhofer IIS and Hanyang University, Brainware University continues to push the frontiers of industry, innovation, and infrastructure — ensuring that knowledge created within its walls translates into technologies that improve lives across communities.

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