INSTITUTE OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

UNIVERSITY OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

Sustainability Development Report (2023-24)

SDG 7: Affordable and Clean Energy

Executive Summary

The Institute of Engineering and Management (IEM), Kolkata, made significant progress toward SDG 7: Affordable and Clean Energy during the 2023-24 academic year. The campus installed rooftop solar panels with a total capacity exceeding 40 kW, covering 11% of the institute's electricity consumption. Entire campus lighting was converted to energy-efficient LEDs, resulting in substantial energy savings. Real-time digital energy monitoring and smart HVAC controls optimized consumption and maintenance. Awareness programs engaged over 500 students through seminars and internships focused on clean energy. Future plans aim to increase renewable energy usage to 50%, pilot microgrids, expand electric vehicle infrastructure, and deepen the integration of sustainable energy topics within the curriculum and research initiatives, reflecting IEM’s dedication to environmental stewardship and sustainable campus operations.

Contents

Overview and Context

The Institute of Engineering and Management (IEM), Kolkata, strengthened its commitment to SDG 7: Affordable and Clean Energy in 2023-24 by deploying sustainable energy systems campus-wide. Key efforts included rooftop solar installations contributing 11% of campus electricity, full LED lighting conversion, and smart energy monitoring. Capacity building through coursework, seminars, and research internships fostered an energy-conscious community. Future plans aim to reach 50% renewable energy share, pilot micro grids, expand electric vehicle infrastructure, and integrate SDG 7 into curriculum and research, positioning IEM as a leader in sustainable campus energy management.

Core Mandate

Commit to a rapid and responsible shift from fossil-fuel-based to renewable energy sources, enhance energy literacy at every level of the institution, drive down per capita energy consumption, and champion the broader cause of sustainable development locally and globally.

Annual Strategic Priorities: 2024–25

- Scale up the installation of rooftop solar photovoltaic (PV) systems and solar façades
- Complete the full conversion to energy-efficient LED lighting across campus
- Develop grid-tied and off-grid hybrid power systems with renewable integration
- Expand use of smart meters and IoT controls for dynamic demand management
- Embed energy-preservation principles into all core student training and staff development modules
- Facilitate joint faculty-student research and development on advanced green energy, batteries, and campus microgrids
- Pilot decarbonization initiatives with industry and government through active MoUs
- Publish annual reports detailing energy generation, usage, savings, and impact

Campus Energy Infrastructure and Operations

- Rooftop solar panels operational across all primary buildings and student hostels, significantly offsetting base electricity demand
- Real-time tracking of energy usage via digital metering systems at the building and departmental levels
- Full transition to LED lighting for classrooms, auditoriums, corridors, libraries, and external campus areas
- Automated HVAC controls and occupancy sensors to optimize heating and cooling based on use patterns

- Solar-charged high-lumen LED street and garden lights across all walkways and vehicle routes
- Diesel generators relegated strictly to critical backup, with procurement favoring low-emission models
- Dedicated maintenance protocols for all renewable energy and legacy electrical infrastructure

Policy, Governance, Safety & Maintenance

- Regular energy audits benchmarked against UGC, AICTE, and NAAC guidelines
- Campus Energy Conservation Policy, renewed for 2023–24, with defined efficiency and renewable targets
- All major installations equipped with up-to-date fire, surge, and safety protection
- Implementation of preventive maintenance protocols and rapid incident response systems

Capacity Building, Training & Engagement

- Sustainability events featuring expert seminars, conferences, student-led hackathons, and project showcases on clean energy topics
- Required energy awareness coursework for engineering, management, and science students
- Advanced training and certification courses for energy systems managers and technical staff
- Internships and research placements for students within the clean energy sector and with industrial partners
- Partnerships and MoUs facilitating joint innovation with utility companies, research labs, and environmental NGOs

Community Outreach and Knowledge Transfer

- Educational outreach to local schools and civic bodies through energy literacy programs
- Annual publication of sustainable energy initiatives for peer benchmarking

Data and Metrics

Metric / Category	**Value / Description**
Rooftop Solar Capacity	Over 40 kW, supplying 11% of campus electricity
Campus Lighting	100% converted to energy-efficient LED lighting
Real-time Energy Monitoring	Digital systems with smart HVAC controls implemented

Metric / Category	Value / Description
Student Engagement	500+ students participated in clean energy seminars and internships
Electric Vehicle Infrastructure	Expansion plans underway
Renewable Energy Usage Target 2024-25	Planned increase to 50% of total energy consumption
Curriculum Integration	Enhanced coursework and research projects on sustainable energy
Carbon Footprint Reduction	Positive impact due to energy efficiency and clean energy adoption

Challenges, Lessons, and Resilience

- High initial investment needed for new renewables managed via multi-year budgeting, external grants, and phased procurement
- Grid integration of solar frequently challenged by variable output, addressed via smart controls and backup optimization
- Ongoing need to foster a robust culture of behavioral change toward sustainable consumption

Future Directions

- Targeting 50% renewable energy share in total campus supply by 2027 through ongoing expansion and innovation
- Piloting micro grids with battery storage and real-time energy trading capabilities within campus precincts
- Scaling up electric vehicle charging infrastructure and sustainable fleet management
- Launching an annual public dashboard, stakeholder survey, and “Clean Energy Summit”
- Deepening the inclusion of SDG 7 content across all curricula, research, and extension efforts

Acknowledgments

The progress achieved in clean energy implementation is thanks to institution leadership, the operations and maintenance team, innovative faculty and students, as well as government, industry, and civil society collaborators.

Photo Gallery

Sensor based energy conservation system

Photo: LED Tube Lights in Labs

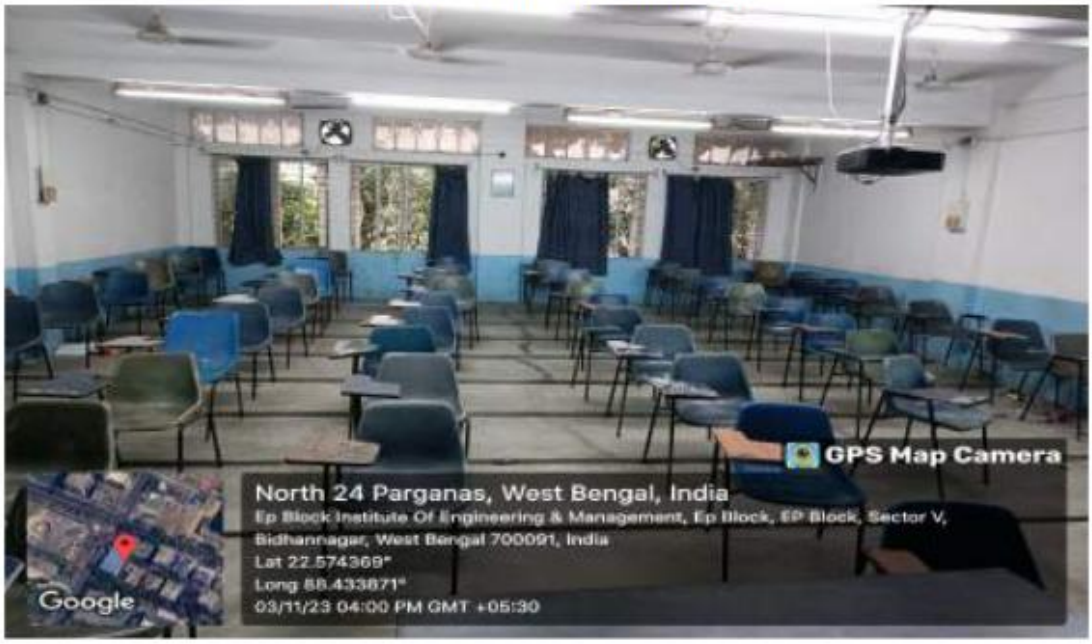

Photo: LED Tube Lights in Classrooms

Solar Panels on roof of campus buildings