Centurion University
Shaping Lives...
Empowering Communities...

SUSTAINABLE CITIES AND COMMUNITIES
Planning Development: New Build Standards

Overview

Centurion University of Technology and Management (CUTM), Odisha, promotes sustainable building design and resource efficiency in new construction across its six campuses in Bhubaneswar, Paralakhemundi, Rayagada, Balangir, Chhatrapur and Balasore. Through its institutional planning and infrastructure development practices, the University seeks to incorporate sustainability considerations into building design, construction and operation.

The University's sustainable building design approach includes provisions for natural lighting and ventilation, energy-efficient lighting and cooling systems, rooftop solar power generation and rainwater harvesting. These measures aim to reduce electricity consumption, improve indoor environmental conditions, promote renewable energy use and support the efficient management of water resources.

By incorporating these features into new building projects, CUTM seeks to minimise the environmental footprint of its infrastructure and create more resource-efficient campus environments.

.

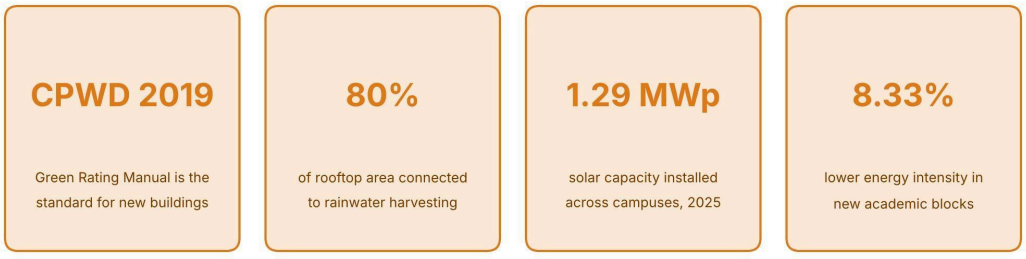


Figure 1. New build standards at a glance.

1. Building Standards in University Policy

- **Energy Policy:** “Design of new buildings should be as per CPWD Green Rating Manual, 2019” (the green building manual of India’s Central Public Works Department). Buildings must be designed to admit natural light; classrooms, laboratories, workshops and offices must be properly ventilated; energy-efficient HVAC systems are to be adopted; and rooms are to be kept at 25–27 °C to avoid excess energy use.
- **Clean Energy Policy 2024:** new constructions and renovations are to incorporate energy-efficient design, such as improved insulation and passive solar heating, and solar panels are to be installed on rooftops and other suitable locations.

- **Sustainability Policy 2024:** rainwater harvesting systems are to be integrated with the architecture of University buildings, and the energy implications of all major campus developments are to be considered. All contractors receive a copy of the CUTM Design Standards, which refer to the University's green policy, and are trained to meet its aims.
- **Climate Action Framework:** the Centurion University Climate Action Framework (CUCAF) includes Green Campus Infrastructure as one of its strategic pillars and sets targets of net-zero Scope 1 and Scope 2 emissions by 2035 and full carbon neutrality across Scopes 1, 2 and 3 by 2040; new buildings are planned to support these targets.

2. How the Standards Are Applied

The University's energy-efficiency plan states that all new construction follows green building norms and that existing buildings are periodically assessed to keep them efficient. The Environmental Audit 2024-25 of the Bhubaneswar campus, carried out by the Centre for Envotech and Management Consultancy, a consultancy accredited by the National Accreditation Board for Education and Training (NABET), found that "new constructions follow green building norms, with LED lighting, natural ventilation, and energy-efficient appliances". All buildings on the campus are fitted with LED lighting. In 2025, the University also completed an energy audit of all its campuses, valid for three years, covering academic buildings, laboratories, hostels and administrative buildings; its findings led to LED retrofits, energy-efficient appliances, solar integration and load management.

Data submitted by the University to the National Institutional Ranking Framework (NIRF) show that new building space has been added alongside rooftop solar power and rainwater harvesting. In 2024–25, the built-up area grew by 71,038 sq. ft (about 6,600 sq. m), and the rooftop area connected to rainwater harvesting grew to 575,454 sq. ft (about 53,460 sq. m), or 80 per cent of the total rooftop area, while installed renewable energy capacity rose to 1,132 kWp.

- **Rooftop solar:** rooftop solar photovoltaic systems with a total capacity of 500 kWp (DC) are installed on the CRC-1 and CRC-2 academic buildings, the Veterinary Building, the ITI and Diploma Building and the Auditorium. Including other rooftop systems and solar microgrids, the University's installed solar capacity reached 1.29 MWp in 2025, and low-carbon sources supplied 56.17 per cent of its energy use in 2025.
- **Rainwater harvesting:** the Bhubaneswar campus has a rainwater harvesting network serving about 50,000 sq. m of rooftop area, with gutters, filtration units and storage tanks; harvested water is used for irrigation, toilet flushing and groundwater recharge.

NIRF sustainability data	2022-23	2023-24	2024-25
Total built-up area (sq. ft)	2,676,531	2,689,952	2,760,990
Total rooftop area (sq. ft)	713,236	714,128	719,318
Rooftop area connected to rainwater harvesting (sq. ft)	559,890	564,161	575,454
Renewable energy installed (kWp)	933	1,029	1,132

Table 1. Built-up area, rainwater harvesting and renewable energy, NIRF 2026 data.

3. Green Design of New Buildings

The University's new academic and hostel buildings adopt green design standards:

- **Daylighting and natural ventilation:** buildings are designed to make the most of daylight and natural air flow.

- **Green roofing and micro-forestry:** green roofs have been installed and more than 1,500 saplings planted around the buildings.
- **Efficient equipment:** more than 10,500 LED light fittings were installed across the six campuses by the end of 2025, together with IE3 high-efficiency motors, brushless DC (BLDC) fans, inverter air conditioners and IoT smart energy meters.
- **Smart controls:** occupancy sensors, daylight sensors and automated switching are installed in classrooms and offices, and building management systems for HVAC, laboratories and growth chambers are being rolled out.
- **Green building research:** University researchers have developed a self-sustaining green building design that combines passive cooling, solar energy harvesting and rainwater harvesting; it was published as an Indian patent application (No. 202531004196) on 31 January 2025.

As a result, new buildings use less energy per square metre than the University's baseline buildings:

Building type	Energy intensity (kWh/sq. m/year)	Reduction against baseline
New academic blocks	110	8.33%
Laboratories	134	4.29%
Hostels	102	7.27%

Table 2. Energy intensity of new buildings, 2025.

4. Materials Made from Waste

Construction materials are produced on campus from waste. Fly ash bricks made by the University are widely used for campus infrastructure, and paver blocks made at the Civil Engineering Learning Lab (Paver Production Unit) from waste plastic are used extensively within the campus; the unit has also developed paver blocks from fly ash, scrap rubber and red mud.



Figure 2. Rooftop solar panels on campus buildings.



Figure 3. Bhubaneswar campus buildings set in green open space.

Summary

Questionnaire requirement	CUTM position (2025)
Build new buildings to sustainable standards	Yes. University policy requires new buildings to follow the CPWD Green Rating Manual 2019, with natural light and ventilation, energy-efficient HVAC, insulation and passive solar design, rooftop solar and rainwater harvesting built into the architecture. New constructions follow green building norms (Environmental Audit 2024-25); 80% of the rooftop area is connected to rainwater harvesting and 1.29 MWp of solar capacity is installed (2025); new academic blocks use 8.33% less energy than the baseline.