Centurion
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SDG 14: LIFE BELOW WATER

Action Plan to Reduce Plastic Waste

1. Overview

Centurion University of Technology and Management (CUTM) has a plastic waste reduction action plan across all campuses. Plastic Waste Reduction of its Sustainability Policy and is aligned with India's Plastic Waste Management Rules, under which its campuses operate with a plastic-free commitment. The plan combines a ban on single-use plastics on campus, provision of alternatives, recycling of residual plastic waste, awareness and education, and regular monitoring. Under the plan, plastic waste generated on campus fell from 32.50 tonnes to 28.65 tonnes year on year, a reduction of 3.85 tonnes (11.8%), diverting most paper and plastic waste from landfill. The most recent external environmental audit of both campuses, carried out on 17–18 June 2025, reviewed plastic waste handling and recommended further improvements. In 2025 the plan was also carried forward through recycling of campus plastic waste into paver blocks, two patents on plastic-waste recycling, and student-led plastic awareness and cleaning drives on and around the campuses.Awareness campaigns promoted the responsible use and collection of PET (polyethylene terephthalate) beverage bottles for appropriate recycling, while encouraging the campus community to avoid unnecessary single-use plastic bottles. Awareness campaigns promoted the responsible use and collection of PET (polyethylene terephthalate) beverage bottles for appropriate recycling, while encouraging the campus community to avoid unnecessary single-use plastic bottles.

2. Campus Plastic Waste Action Plan

Governance, Management and Accountability

Centurion University of Technology and Management (CUTM) implements its campus plastic waste reduction measures under its Sustainability Policy 2024, which commits the University to compliance with India's Plastic Waste Management Rules, reducing plastic waste, encouraging alternatives to single-use plastics, and improving recycling through the principles of Reduce, Reuse and Recycle (3R). Implementation is supported by the Institutional Sustainability Committee, campus administration, estate and facilities teams, housekeeping staff, procurement units, canteen operators, faculty and student groups. Campus teams and service providers support waste segregation, reduced plastic consumption, appropriate collection and storage, and the transfer of recyclable plastic to suitable recycling or recovery channels. The policy also encourages alternatives such as paper and cloth bags, water facilities that reduce reliance on plastic bottles, staff training, curriculum integration, student projects and awareness activities.

Link to the University's Sustainability Policy:

https://cutm.ac.in/wp-content/uploads/2024/11/Sustainability-Policy-3.pdf

Monitoring and review: The Institutional Sustainability Committee reviews implementation, identifies gaps and recommends corrective measures. Annual waste audits and documented waste reports will support monitoring of plastic waste generation, year-on-year changes, quantities reused or recycled, waste disposed, and compliance across campus facilities and commercial vendors. Findings will inform subsequent action plans, procurement

practices, awareness initiatives and corrective measures. CUTM's Sustainability Policy provides for monitoring plastic waste management systems and reviewing environmental audit findings annually. The external environmental audit conducted on 17–18 June 2025 provides a reference point for assessing existing practices and identifying areas for improvement.

These measures support CUTM's long-term objective of developing a plastic-free campus environment by discouraging avoidable plastic use, encouraging reusable and recyclable alternatives, and strengthening responsible plastic waste management in line with the University's sustainability commitments.

Table 1. Components of the action plan

Component	Measures
Ban on single-use plastics	Zero single-use plastic mandate across all campus blocks, commercial kiosks and dining facilities, banning thin carry bags, straws, stirrers and disposable plastic cutlery; campus vendors are contractually required to use durable alternatives. "Say No to Plastic" stickers are displayed across the campuses.
Alternatives to plastic	Water purification and refill units in academic and residential buildings with a bring-your-own-bottle culture; use of stainless steel / glass bottles on campus; stainless steel plates in mess and canteens; cloth and paper bags promoted; wood and metal furniture instead of plastic; procurement guidelines favouring reusable serveware and eco-friendly packaging.
Recycling of residual plastic	Plastic waste generated on campus is recycled into paver blocks; fabric and paper waste are recycled through the University's handmade paper unit.
Research and innovation	Student and faculty projects applying reduce, reuse and recycle principles to waste plastics, including a solar-powered plastic shredder for on-campus processing (peer-reviewed Springer publication) and patented technologies for recycling plastic waste (Section 3).
Awareness and education	Plastic waste management integrated into the curriculum; training for staff on the Plastic Waste Management Rules; student-led awareness campaigns on campus and in surrounding communities.
Monitoring and review	Annual environmental audits, overseen by the Institutional Green Audit Committee, review waste segregation, plastic reduction and recycling practices. The most recent external audit of both campuses was conducted on 17–18 June 2025 (Section 5), and its recommendations feed into the action plan.

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2.1 Measured Reduction in Plastic and Paper Waste

Table 2. Paper and plastic waste generated (tonnes)

Type of waste	2024	2025	Reduction
Plastic	32.50	28.65	3.85 (11.8%)
Paper	1.65	1.60	0.05 (3.0%)
Total	34.15	30.25	3.90 (11.4%)

Plastic waste, mainly clean packaging, PET bottles and delivery wrappers, is collected through colour-coded recycling bins, shredded in the University's engineering workshops and made into interlocking paver blocks used for campus footpaths and walkways. Paper waste is processed in the handmade paper unit into recycled paper for institutional stationery.

2.2 Key Quantitative Results: 2025

Table 3. Plastic waste results

Measure	2025
Plastic waste collected and recycled	28.65 tonnes of campus plastic waste collected through colour-coded recycling bins, with 100% recycled or diverted from landfill
Reduction in plastic waste generated	3.85 tonnes less than the previous year (32.50 t to 28.65 t; 11.8%)
Recycled-plastic products	Plastic waste processed into interlocking paver blocks for campus footpaths; 2 patents in 2025, including a construction block made from recycled plastic
People engaged in plastic drives	165+ students and volunteers across four drives (51 + 47 + 45 + 22), plus NSS waste-segregation volunteers

3. Recycling and Innovation in 2025

Plastic waste to paver blocks: the CUTM Annual Report 2025–26 records that the University's plastic waste is recycled into paver blocks, while fabric and paper waste are recycled through its handmade paper unit and food waste is composted.

Patents on plastic-waste recycling (2025):

- Panda, P.K., Majhi, R.K., Narayan, B.B., Dandapat, A.K. and Jothimani, M. (2025). Composite construction block from recycled plastic with protective shell. India Patent.
- Panda, R., Das, N. and Panda, S. (2025). Adaptive multiphase catalyst system for plastic waste recycling. India Patent.

These patents extend the plan's recycling component by developing ways to turn waste plastic into construction material and to break plastic waste down for recycling.

4. Plastic Awareness and Cleaning Drives in 2025

Table 4. Student-led plastic reduction activities, 2025

Date	Activity	Participants	Focus
2–4 Jul 2025	Plastic-awareness poster and rangoli activity, Hatibadigopinathpur, Gajapati	22 students and 1 faculty member	Plastic waste reduction and responsible waste management with villagers
24 Sep 2025	Campus cleaning drive on NSS Day	47 student volunteers	Cleanliness and waste collection across the whole campus
25 Oct 2025	Awareness rally to restrict single-use plastic	51 students	Avoiding single-use plastic; rally from the main gate to the Madhusudan building
21 Jul 2025	Plastic Awareness Drive at B.N. Palace, Paralakhemundi (NSS)	45 student volunteers	Waste segregation and plastic reduction
08 Feb 2025	Waste Segregation Awareness Drive, CUTM Paralakhemundi (NSS)	NSS student volunteers	Waste segregation and plastic reduction

4.1 Village Plastic-Awareness Activity — Hatibadigopinathpur

From 2 to 4 July 2025, 22 students and 1 faculty member conducted a plastic-awareness poster and rangoli activity at Hatibadigopinathpur, Gajapati district, Odisha, engaging villagers on plastic waste reduction and responsible waste-management practices. The activity is documented through geo-tagged photographs.



Figure 1. Students creating plastic-awareness rangoli, Hatibadigopinathpur (geo-tagged, 2 July 2025)



Figure 2. Students at the plastic-awareness poster-making activity, Hatibadigopinathpur (geo-tagged, 4 July 2025)

5. Most Recent Environmental Audit (June 2025)

Audit: Environmental Audit Report 2024–25 (valid until 2027-28), Paralakhemundi and Bhubaneswar campuses

Conducted by: Centre for Envotech and Management Consultancy Pvt. Ltd., Bhubaneswar, an ISO 14001-certified firm accredited by National Accreditation Board for Education and Training (NABET), a constituent board of the Quality Council of India and empanelled as a Category "A" consultant with the Odisha State Pollution Control Board.

Audit dates: 17–18 June 2025

Scope: water, solid waste generation, segregation and disposal, liquid, hazardous, biomedical and e-waste, environmental quality, energy, biodiversity and carbon footprint

Table 5. Audit findings on plastic waste

Finding	Detail
Handling of plastic waste	Non-biodegradable waste, consisting of plastics, tins and glass bottles, is managed through recycling and reuse.
Segregation at source	Colour-coded bins are placed at major waste-generation points, and separate bins are placed in different areas of the campus; hostel and canteen staff are trained to separate waste.
Recycling	Plastic waste is converted into paver blocks; fabric, paper and plastic waste are sent to the University's Waste to Wealth recycling unit to make useful products (Bhubaneswar campus).
Area for improvement	The audit listed plastic waste reduction among the areas for continued improvement.
Recommendations	Training sessions for stakeholders on segregation; separate dry- and wet-waste bins in all departments and hostels; on-campus recycling units for non-biodegradable waste; partnerships with local organisations for recycling.

The audit recommendations are taken forward through the action plan: segregation and plastic-reduction awareness drives were held on campus in 2025 and plastic waste continues to be recycled into pavements.