Centurion University
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Waste Tracking Report 2025

Measurement of the amount of waste generated and recycled across the University

2025 AT A GLANCE

792.04 TONNES Total waste generated	**756.96** TONNES Total waste recovered	**95.57%** OVERALL Waste recovery rate	**99.92%** BIODEGRADABLE Organic waste recovered
100% NON-BIODEGRADABLE Recycled or reused (excl. C&D)	**288,000** PAVER BLOCKS Made with recovered plastic	**2,190 m³** BIOGAS Cooking fuel for canteens	**13** SOURCES Tracked by source and category





Waste is weighed at source before processing: wood waste, orchard waste and campus collection points.

1. Executive Summary

Centurion University of Technology and Management (CUTM), Odisha, systematically measures the amount of waste generated and recycled across the University. This report presents the University's waste-tracking data for the calendar year 2025 and is submitted as evidence for indicator 12.3.1 of the Times Higher Education (THE) Impact Rankings 2027 (SDG 12: Responsible Consumption and Production).

During 2025 the University generated **792.04 tonnes** of waste, of which **756.96 tonnes (95.57%)** were recovered through composting, vermicomposting, bio-enzyme and biochar production, biogas generation, animal feed, recycling and reuse under the University's **Waste-to-Wealth programme**. Biodegradable waste was recovered at a rate of **99.92%**, and all non-biodegradable waste, excluding construction and demolition (C&D) waste, was recycled or reused. The key results are summarised in Table 1.

Table 1: Key performance indicators, 2025

Performance indicator	Result (2025)
Total waste generated	792.04 tonnes
Total waste recovered (reused or recycled)	756.96 tonnes
Overall waste-recovery rate	95.57%
Biodegradable waste recovered	99.92%
Non-biodegradable waste recovered (excluding C&D waste)	100.00%
Paver blocks produced at the campus unit	288,000 blocks
Biogas generated	2,190 m³

Organic waste is converted on campus into usable products, while recyclable materials are directed to campus production units or handed over to authorised recyclers. Biomedical waste, e-waste, and C&D waste are managed in accordance with the applicable national regulations.

Waste-to-Wealth: how the 2025 numbers fit together

Every waste stream is **segregated at source, weighed, and recorded by source and category** before it is processed.

Organic waste (92% of the total) is converted on campus into compost, vermicompost, bio-enzymes, biochar, biogas, black soldier fly larvae and animal feed.

Plastics, metal, glass, paper, cloth and e-waste are reused on campus, made into paver blocks and handmade paper, or handed to authorised recyclers.

Biomedical waste (5.90 t) is treated through authorised operators and **C&D waste** (28.60 t) is used as on-campus fill; neither is counted as recovered.

2. Waste Tracking Dashboard

The dashboard below brings together the University's headline waste-tracking results for 2025 and compares them with the values reported for 2024. Panel A compares the quantities generated and recovered in each year; Panel B shows the recovery rate of each waste category; Panel C traces the fate of every tonne generated in 2025; and Panel D identifies the five largest sources of waste.

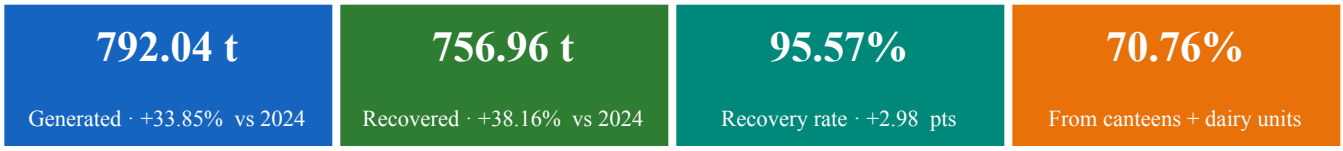


Figure 1: Waste tracking dashboard, 2025

Table 2: Year-on-year waste-tracking performance, 2024–2025

Performance indicator	2024 reported value	2025 reported value	Change
Total waste generated	591.74 t	792.04 t	+33.85%
Total waste recovered	547.90 t	756.96 t	+38.16%
Overall waste-recovery rate	92.59%	95.57%	+2.98 percentage points
Biodegradable-waste recovery rate	88%	99.92%	+11.92 percentage points
Non-biodegradable-waste recovery rate	90%	100.00% (excl. C&D)	+10.00 percentage points
Paver blocks produced	210,000 blocks	288,000 blocks	+37.14%
Biogas generated	750 m³	2,190 m³	+192.00%

The increase in total waste generated reflects wider source coverage in the 2025 inventory, which records thirteen source categories and reports C&D waste as a separate category. Year-on-year changes should therefore be read together with these differences in coverage and classification.

3. Waste Tracking System

3.1 Tracking and measurement procedure

The University tracks waste across thirteen source categories (Table 3), covering academic, research, administrative, residential, catering, landscaping, dairy, agricultural, workshop, healthcare, student-activity, library and construction activities. The procedure is as follows:

- **Segregation at source** into colour-coded bins: **green** for biodegradable, **blue** for non-biodegradable and **red** for biomedical waste.
- **Weighing:** collected waste is weighed on digital platform scales at collection points and processing units, and each quantity is recorded by source and waste category (see Annexure A).
- **Compilation and analysis:** the recorded quantities are compiled and analysed periodically to identify high-generation areas and seasonal variation in waste composition.
- **Audits:** regular audits check compliance with the University's segregation and waste-management protocols.

- **Output monitoring:** the output of the biogas plant, the bio-enzyme and biochar units and the paver-block unit is monitored and recorded.

3.2 Evidence register and traceability

Every figure in this report can be traced back to the original operational record from which it was compiled. To make this possible, the University maintains an **evidence register**: a single index that lists, for each waste stream and each reported total, the underlying documents that support it, such as weighing sheets, processing logs and recycler receipts. A reviewer can start from any figure in Tables 3 to 6 and follow the register to the dated source records. The register indexes the following record types:

- **Waste-generation registers:** waste quantities recorded by campus, source and waste category.
- **Weighing records:** scale readings and daily or periodic collection sheets supporting the recorded quantities.
- **Processing records:** waste transferred to composting, vermicomposting, biogas, biochar, handmade-paper and other recovery processes.
- **Authorised-recycler records:** receipts, collection acknowledgements or transfer documents for waste handed over to authorised recycling operators.
- **E-waste records:** inventory of discarded electrical and electronic equipment, handover documents and recycler receipts from the authorised e-waste recycler, as required under the E-Waste (Management) Rules, 2022.
- **Biomedical-waste records:** manifests, handover receipts and treatment or disposal documentation from authorised biomedical-waste operators.
- **Product-output records:** production logs for compost, vermicompost, biochar, bio-enzymes, biogas and paver blocks, stating units and reporting periods.
- **Reconciliation records:** periodic checks comparing waste generated, waste routed to recovery, finished-product output and waste sent for treatment or disposal.

Each record identifies the reporting period, the source or facility, the measurement unit and the person or office responsible for recording it. Where waste moves from a collection point to a processing unit, it is counted once, at the point of generation, so the same material is not double-counted as new waste. Where a quantity is estimated rather than weighed, the register records the estimation method. The annual totals are reconciled against the underlying records before submission.

3.3 Scope and reporting boundary

The inventory covers all principal waste streams generated by the University's academic, residential, catering, administrative, agricultural, research and other operations during 2025. Food and kitchen waste from canteens and hostels, cow dung from the dairy units, and garden and agricultural-farm waste are recorded as separate categories. All plastic waste is recorded, whether it is reused on campus, processed in the campus paver-block unit or handed over to the local municipal body for recycling. Metal and glass waste is likewise recorded both where it is reused on campus and where it is sent for recycling.

3.4 Waste classification

Category	What it includes	How it is managed
Biodegradable	Food and kitchen waste, cow dung, garden waste, agricultural residues, wood, paper, cloth and other compostable material	Recovered on campus through the Waste-to-Wealth units

Category	What it includes	How it is managed
Non-biodegradable	Plastics, metals, glass and electronic waste	Reused on campus, used in the paver-block unit or sent to authorised recyclers
Construction & demolition (C&D)	Debris from construction, renovation and demolition	Used as fill for on-campus land levelling; not counted as recovered
Biomedical	Sanitary waste and biomedical waste from laboratories and health units	Treated through authorised operators; not counted as recovered

3.5 Calculation method

The overall waste-recovery rate is the quantity of waste recovered through reuse or recycling divided by the total quantity of waste generated during the reporting period, multiplied by 100:

Waste-recovery rate (%) = (Waste recovered ÷ Waste generated) × 100

2025: (792.04 t ÷ 756.96 t) × 100 = **95.57%**

Biodegradable: (723.96 t7÷24.54 t) × 100 = **99.92%** · Non-biodegradable, excluding C&D: (33.00 t ÷ 33.00 t) × 100 = **100.00%**

Biomedical waste (5.90 t) and C&D waste (28.60 t) are kept in the denominator but excluded from the recovered total, so the rate is not overstated.

4. Waste Generation

4.1 Overall composition

The University generated 792.04 tonnes of waste in 2025. Biodegradable waste accounted for 91.48% (724.54 t), reflecting the substantial biodegradable waste generated across the University's canteen, hostel, dairy and agricultural operations. Non-biodegradable waste accounted for 4.17% (33.00 t), construction and demolition (C&D) waste for 3.61% (28.60 t), and biomedical waste for 0.74% (5.90 t), as shown in Figure 2.

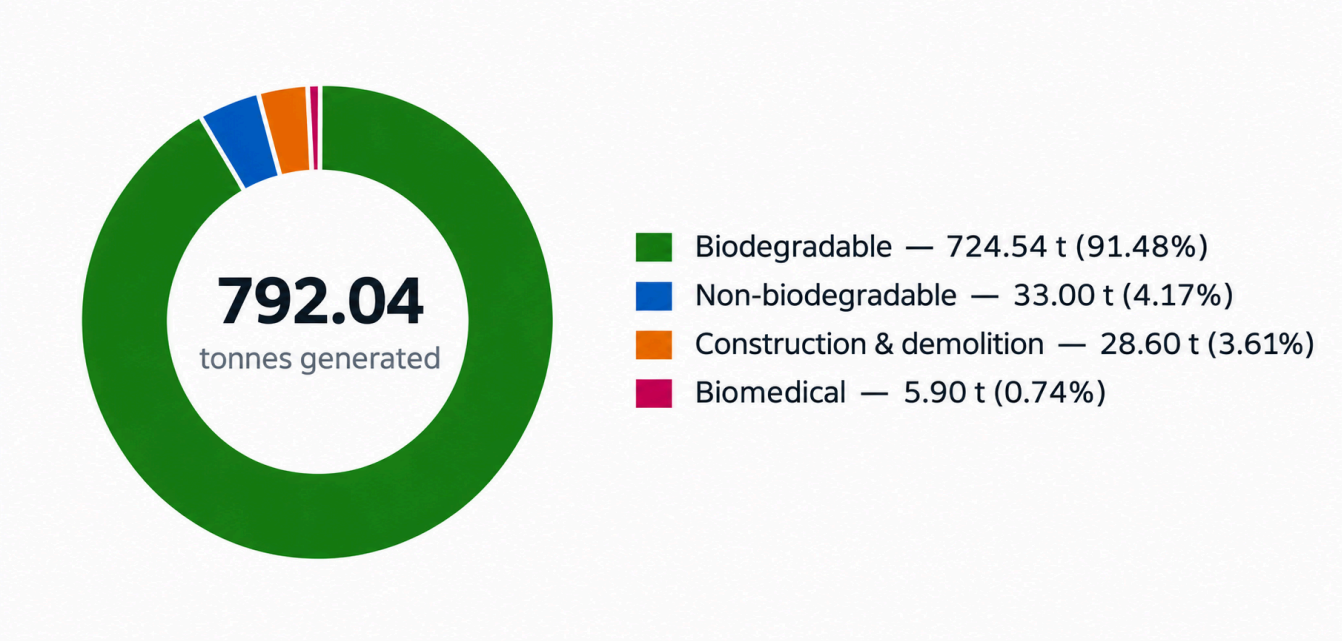


Figure 2: Waste generation by category, 2025

4.2 Waste generation by source

Table 3 sets out waste generation by source and category, as recorded through the University's waste-tracking system.

Table 3: Waste generation by source and category, 2025 (tonnes)

No.	Source	Biodegr.	Non-biodegr.	C&D	Biomedical	Total	Share
1	Academic blocks and classrooms	0.90	1.295	0.00	0.00	2.195	0.28%
2	Laboratories and research centres	2.50	0.920	0.00	0.75	4.170	0.53%
3	Administrative offices	0.70	1.350	0.00	0.00	2.050	0.26%
4	Hostels and residential facilities	78.98	2.100	0.00	4.90	85.980	10.86%
5	University canteens and food courts	272.57	13.050	0.00	0.00	285.62	36.06%
6	Gardens and landscaping	41.00	0.000	0.00	0.00	41.000	5.18%
7	Dairy and livestock units	274.69	0.150	0.00	0.00	274.840	34.70%
8	Agricultural farms and field units	40.00	0.050	0.00	0.00	40.050	5.06%
9	Workshops and production units	5.00	3.900	0.00	0.00	8.900	1.12%
10	Healthcare and medical units	0.00	0.050	0.00	0.25	0.300	0.04%
11	Student activity centres and events	7.90	10.110	0.00	0.00	18.010	2.27%
12	Library and documentation centres	0.30	0.025	0.00	0.00	0.325	0.04%
13	Construction and demolition activities	0.00	0.000	28.60	0.00	28.600	3.61%
	Total	**724.54**	**33.00**	**28.60**	**5.90**	**792.04**	**100.00%**

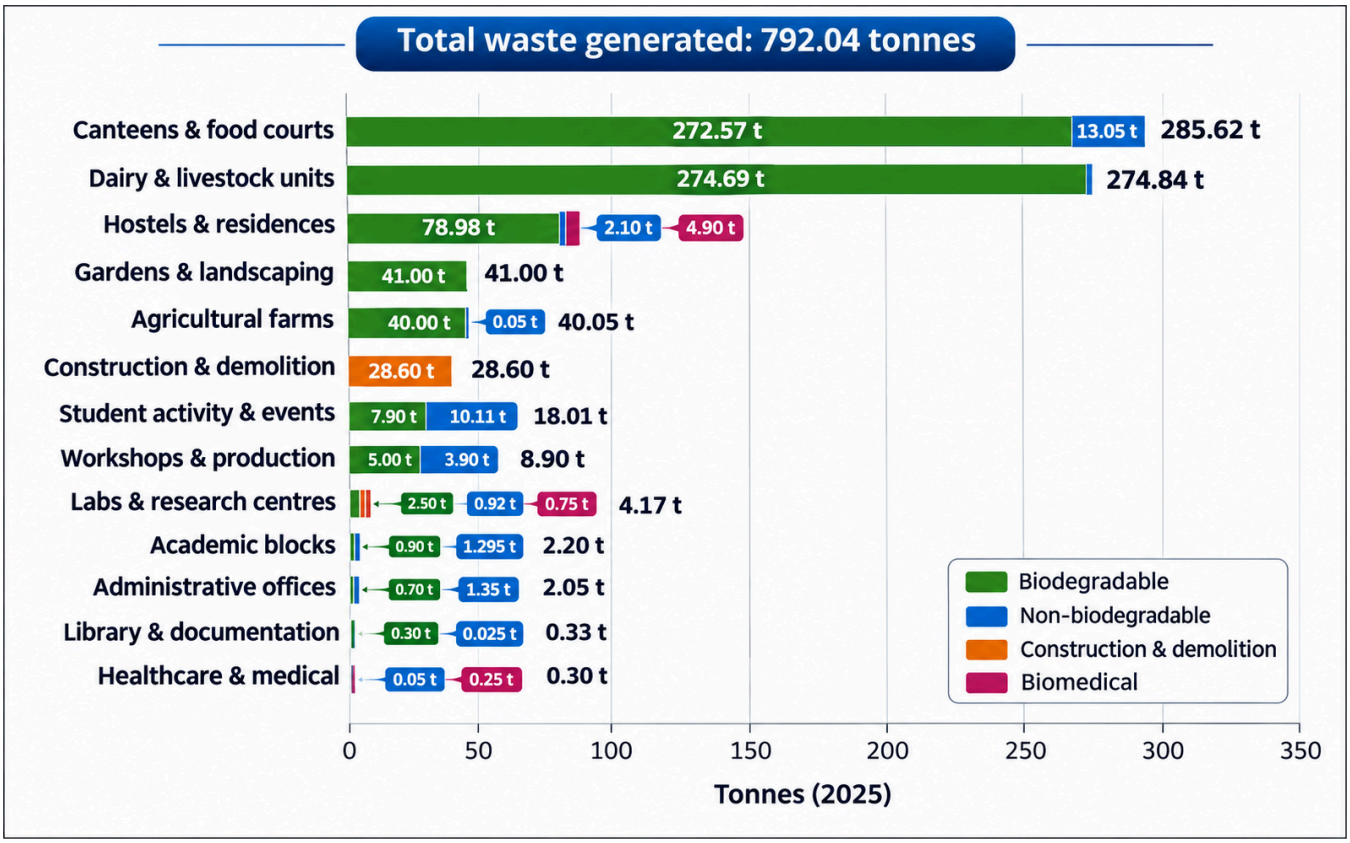


Figure 3: Waste generation by source and category, 2025 (tonnes)

Key insight

University canteens and food courts were the largest source of waste, generating 285.62 t (36.06%), followed by dairy and livestock units, which generated 274.84 t (34.70%), as highlighted in Table 3. Together, these two sources accounted for 70.76% of the University's total waste generation. Their biodegradable waste streams are managed through on-campus recovery practices, including composting, vermicomposting, biogas generation and animal feed.

5. Waste Recovery and Recycling

5.1 Recovery performance

A total of 756.96 tonnes of waste was recovered in 2025, giving an overall recovery rate of 95.57%. The Waste-to-Wealth facilities operate as an integrated system that converts each waste stream into a usable product or directs it to an authorised recycler. Recovery by waste category is summarised in Table 4.

Table 4: Waste recovery by category, 2025

Waste category	Generated (t)	Recovered (t)	Recovery rate
Biodegradable	724.54	723.96	99.92%
Non-biodegradable (excluding C&D)	33.00	33.00	100.00%
Construction and demolition (C&D)	28.60	0.00	0.00%
Biomedical	5.90	0.00	0.00%
Total	**792.04**	**756.96**	**95.57%**

Table 5 accounts for every tonne generated. Besides the recovered total, 28.60 t of C&D waste was used as fill for land levelling within the campus, 5.90 t of biomedical waste was sent for treatment, and 0.60 t of biodegradable waste was not routed to a recovery process.

Table 5: Fate of waste generated, 2025 (mass balance)

Destination	Quantity (t)	Share of total generated
Recovered through reuse, recycling and on-campus processing	756.96	95.57%
C&D waste used as on-campus land-levelling fill (not counted as recovered)	28.60	3.61%
Biomedical waste sent for treatment (incineration or authorised operators)	5.90	0.74%
Residual biodegradable waste not routed to a recovery process	0.60	0.07%
Total generated	**792.04**	**100.00%**

5.2 Recovery methods and quantities

Table 6 details the recovery route and quantity for each waste type. Paper and cardboard waste and cloth waste are reported separately; both are processed in the handmade-paper unit.

Table 6: Waste recovery by type and method, 2025

Waste type	Recovery method	Input routed to recovery (t)	Share of total recovered
Biodegradable waste			
Green waste	Vermicompost (125 t), compost (39.00 t) and biochar (4.50 t)	168.50	22.26%
Cow dung	Vermicompost (140.00 t), compost (79.94 t) and biogas generation (54.75 t)	274.69	37.94%
Kitchen food waste(Wet+Dry)	Compost (148.79 t), piggery feed (81.78 t) and black soldier fly larvae (40.00 t) Bio enzyme (2 t)	272.57	37.65%
Wood waste	Compost (3.80 t), biochar (2.10 t), student projects (0.30 t) and artistic items (0.10 t)	6.30	0.87%
Paper and cardboard	Handmade paper and stationery products	1.60	0.22%
Cloth waste	Rag pulp for handmade paper	0.30	0.04%
Subtotal: biodegradable		**723.96**	**95.57%**
Non-biodegradable waste			
Plastic waste	Municipal recycling (24.29 t), reuse on campus as planters and storage containers (3.06 t) and campus paver-block unit (1.30 t)	28.65	3.52%
E-waste	Handed over to an authorised e-waste recycler (Sri Ganesh Recycler, Bhubaneswar)	0.34	0.04%
Metal waste	Reused on campus (2.50 t) and sent for recycling (1.00 t)	3.50	0.43%
Glass waste	Reused in artistic creations and site filling (0.21 t) and sent to authorised recyclers (0.30 t)	0.51	0.06%

Waste type	Recovery method	Input routed to recovery (t)	Share of total recovered
Subtotal: non-biodegradable		**33.00**	**4.06%**
Total	**Integrated Waste-to-Wealth processing**	**756.96**	**100.00%**

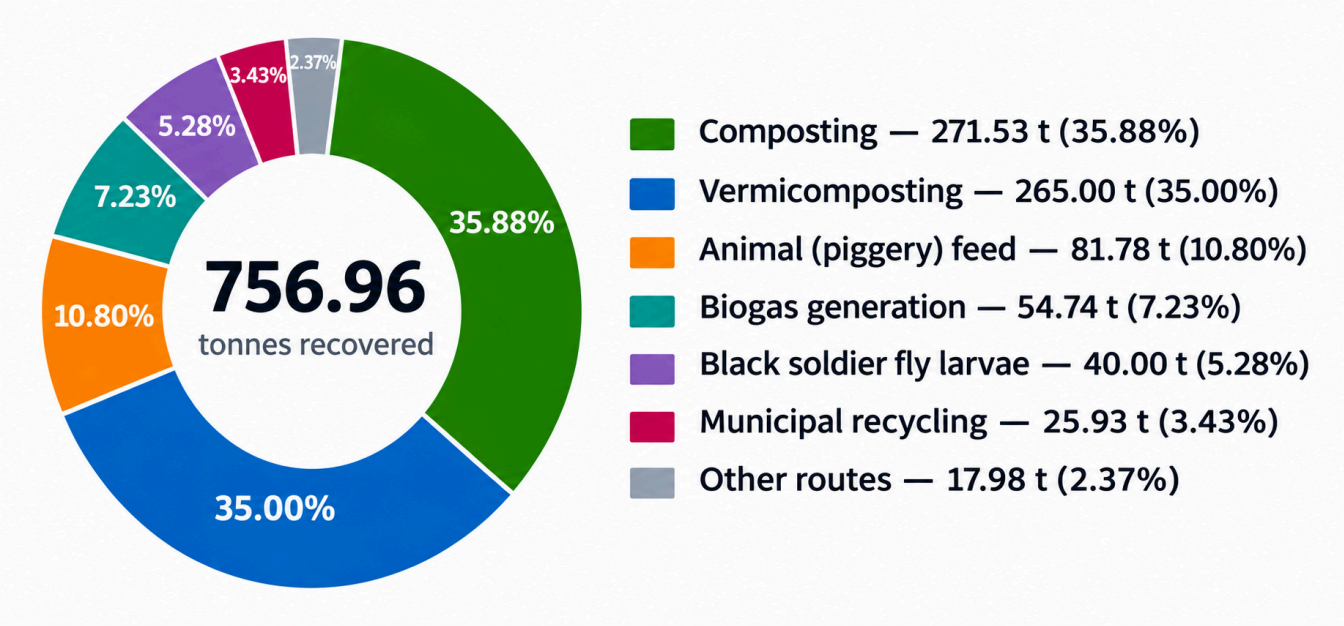


Figure 4: Waste recovered by processing method, 2025

The Waste-to-Wealth programme converted the recovered waste into organic, agricultural and construction products (Table 7). These products replace commercially purchased inputs on campus, reducing both costs and the environmental impact associated with their supply.

Table 7: Products derived from waste, 2025

Product	Annual quantity	Use
Vermicompost	168.50 t	Organic manure for campus farms and gardens
Compost from food waste	148.79 t	Organic manure for campus horticulture
Compost from cow dung and litter	46.58 t	Organic manure replacing chemical fertilisers
Black soldier fly larvae and frass	5.25 t larvae; 10.63 t frass	Protein feed for fish and poultry; frass used as organic manure
Biogas	2,190 m³	Cooking fuel for campus canteens
Biogas slurry	7.30 t	Organic manure for agricultural fields
Bio-enzymes	6,000 litres	Natural cleaning agent and crop bio-stimulant
Biochar	1.23 t	Soil amendment and carbon sequestration
Handmade paper and products	1.44 t	Stationery and craft items
Paver blocks (plastic waste with cement, sand and aggregates)	288,000 blocks	Paving of campus roads and walkways

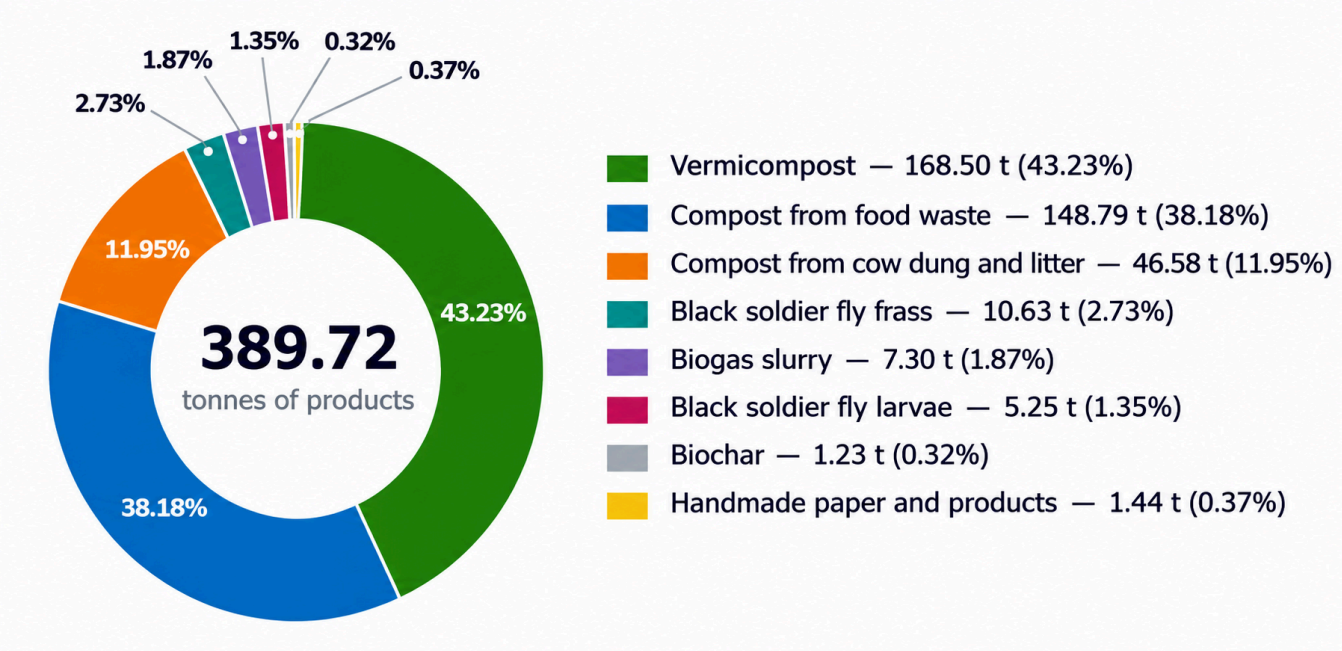


Figure 5: Products derived from waste by mass, 2025

CUTM's approach combines segregation, resource recovery, recycling and the productive reuse of materials through its Waste-to-Wealth programme. Alongside tracking waste recovered, the University works to prevent waste at source and to reduce the quantity that needs treatment or disposal.

7.1 Waste prevention and reduction

Prevention measures focus on reducing avoidable food waste, limiting paper consumption, promoting reusable materials, improving procurement practices and strengthening segregation at source. Activities include food-waste monitoring in canteens and hostels, digital documentation, reusable containers, responsible purchasing, and awareness programmes for students, faculty, staff and service providers. Quantified reductions are reported only where a baseline and a reliable measurement method exist.

7.2 Reuse and material recovery

Waste-to-Wealth activities include composting, vermicomposting, biochar and bio-enzyme production, biogas generation, use of selected organic materials as animal feed, handmade-paper production, direct reuse of materials and the use of plastic waste in the campus paver-block unit. For transparent accounting, the University records separately the quantity of waste entering each process and the quantity of finished product it yields; waste input, recovered material, product output and residual waste are never treated as interchangeable quantities.

7.3 Circular-resource accounting framework

For consistent annual monitoring, CUTM reports six distinct indicators. Table 8 defines each indicator and gives its 2025 value, verified against the quantities in Tables 4 to 7. The first five rows together account for all 792.04 t generated.

Table 8: Circular-resource accounting indicators, 2025

Indicator	Definition	2025 value
1. Waste prevented	Waste not generated because of a documented prevention measure, calculated against a baseline	measures described in Section 7.1
2. Waste reused	Generated waste put back into use on campus without reprocessing	6.17 t (plastic 3.06 t, metal 2.50 t, wood 0.40 t, glass 0.21 t)
3. Waste recycled or recovered	Waste processed into usable products or transferred through a documented recovery route	756.96 t
4. Waste sent for treatment	Waste requiring a treatment process, with the treatment route recorded	5.90 t biomedical waste
5. Waste not recovered	Waste used as fill or otherwise not routed to recovery	28.60 t C&D used as on-campus fill; 0.60 t residual biodegradable
6. Products from waste	Finished outputs, reported in appropriate units	389.72 t of solid products; 2,190 m³ biogas; 6,000 L bio-enzymes; 288,000 paver blocks

7.4 Continuous improvement

The annual waste inventory is used to identify high-generation sources, monitor recovery performance, evaluate prevention measures and set priorities for the following year. Annual comparisons use consistent definitions and reporting boundaries, and any change in measurement coverage or classification is documented. This moves the University from waste management alone towards a measurable circular-resource model, supported by transparent accounting, operational evidence and continuous improvement.

8. Waste Disposal and Regulatory Compliance

All waste streams are managed in accordance with the applicable Indian regulations, as summarised in Table 9. Biomedical waste is treated and disposed of under the Bio-Medical Waste Management Rules, 2016: sanitary waste from hostels and residential buildings is incinerated, and the remaining biomedical waste is handed over to authorised biomedical-waste treatment operators.

Table 9: Waste disposal protocols and regulatory compliance

Waste stream	Treatment or disposal method	Applicable regulation
Biodegradable waste	Processed at the Waste-to-Wealth facilities through composting, vermicomposting, biogas generation and black soldier fly units	Solid Waste Management Rules, 2016 (as amended)
Plastic waste	Handed over to the local municipal body for recycling, reused on campus or used in the campus paver-block unit	Plastic Waste Management Rules, 2016 (as amended up to 2024)
Metal and glass waste	Metal reused on campus or sent for recycling; glass reused in artistic creations and site filling or sent to authorised recyclers	Solid Waste Management Rules, 2016 (as amended)

Waste stream	Treatment or disposal method	Applicable regulation
Biomedical waste (5.90 t)	Sanitary waste incinerated; other biomedical waste segregated and handed over to authorised operators: Mediaid Marketing Services, IRC Village, Nayapalli, Bhubaneswar, and Saniclean Pvt. Ltd., Bhubaneswar	Bio-Medical Waste Management Rules, 2016 (as amended up to 2019)
E-waste (0.34 t)	Handed over to an authorised e-waste recycler, Sri Ganesh Recycler, Bhubaneswar	E-Waste (Management) Rules, 2022
C&D waste (28.60 t)	Used as fill for land levelling within the campus	Construction and Demolition Waste Management Rules, 2016

9. Conclusion

Summary of findings

CUTM measured the waste generated across all thirteen of its operational sources in 2025 and recovered **95.57% of the 792.04 tonnes** generated.

Biodegradable waste, which forms 92% of the total, was **almost entirely (99.92%) recovered on campus** and turned into compost, vermicompost, biogas, bio-enzymes, biochar, insect protein and animal feed.

All non-biodegradable waste other than C&D waste was recycled or reused, including 288,000 paver blocks made with recovered plastic.

Every reported quantity is supported by weighing records and an evidence register, and biomedical, e-waste and C&D streams are managed under the applicable national rules.

Annexure A: Photographic Record of Waste Measurement

The photographs below document the segregation, collection and weighing of waste streams on campus during 2025.



Photo 1: Weighing of grass clippings from campus landscaping



Photo 2: Weighing of cow dung collected from the dairy unit



Photo 3: Weighing of wood waste from the woodworking laboratory



Photo 4: Weighing of orchard waste



Photo 5: Weighing of spoiled mangoes used for bio-enzyme production

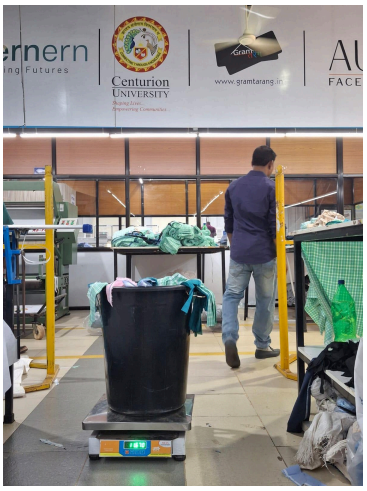


Photo 6: Weighing of cloth waste in the apparel unit



Photo 7: Construction and demolition waste on campus



Photo 8: Collection of waste from designated points on campus



Photo 9: Weighing of cardboard waste



Photo 10: Weighing of paper and cardboard waste



Photo 11: Collection of cardboard from different locations on campus



Photo 12: Metal turnings generated in the CNC laboratory



Photo 13: Loading of collected waste for transfer

