



# **Food Waste Measurement and Monitoring Standard Operating Procedure (SOP)**

BRAINWARE UNIVERSITY

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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

**Document Control**

|                            |                                                                                 |
|----------------------------|---------------------------------------------------------------------------------|
| <b>Document Title</b>      | <b>Food Waste Measurement and Monitoring Standard Operating Procedure (SOP)</b> |
| <b>Document Number</b>     | BWU/SOP/THE/SDG 2/01                                                            |
| <b>Version</b>             | 1.0                                                                             |
| <b>Approving Authority</b> | Vice-Chancellor                                                                 |
| <b>Approval Reference</b>  | NA                                                                              |
| <b>Date of Approval</b>    | 05 January 2025                                                                 |
| <b>Effective Date</b>      | 30 December 2025                                                                |

**Revision History**

| <b>Version</b> | <b>Date</b>     | <b>Description of change</b>    | <b>Approved by</b> |
|----------------|-----------------|---------------------------------|--------------------|
| 1.0            | 05 January 2025 | First issue of consolidated SOP | Vice-Chancellor    |



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### Table of Contents

|                                                                        |   |
|------------------------------------------------------------------------|---|
| 1. Objective.....                                                      | 1 |
| 2. Scope.....                                                          | 1 |
| 3. Food-Service Areas Covered .....                                    | 2 |
| 4. Definition and Classification of Food Waste.....                    | 2 |
| 4.1 Preparation Waste.....                                             | 2 |
| 4.2 Cooking/Production Waste .....                                     | 2 |
| 4.3 Unserved Surplus Food.....                                         | 3 |
| 4.4 Plate/Consumption Waste .....                                      | 3 |
| 4.5 Spoiled/Expired Food .....                                         | 3 |
| 4.6 Wet Food Waste.....                                                | 3 |
| 4.7 Dry Food Waste.....                                                | 3 |
| 4.8 University Practice for Recovery and Reuse of Wet Food Waste ..... | 3 |
| 5. Responsibility .....                                                | 4 |
| 6. Measurement Method .....                                            | 4 |
| 6.1 General Principle .....                                            | 4 |
| 6.2 Measurement Process.....                                           | 4 |
| 6.3 Weighing Procedure .....                                           | 5 |
| 7. Measurement Frequency.....                                          | 5 |
| 8. Food Waste Intensity.....                                           | 5 |
| 8.1 Food Waste per Meal .....                                          | 6 |
| 8.2 Annual Food Waste per Campus Population .....                      | 6 |
| 9. Data Recording and Storage .....                                    | 6 |
| 10. Verification .....                                                 | 6 |
| 11. Treatment of Outsourced Catering.....                              | 7 |
| 12. Annual Reporting.....                                              | 7 |
| 13. Monitoring and Corrective Action.....                              | 8 |
| 14. Food Waste Reduction Hierarchy.....                                | 9 |
| 15. Review of SOP .....                                                | 9 |



## BRAINWARE UNIVERSITY

398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

### 1. Objective

The objective of this SOP is to establish a systematic and transparent mechanism for the **measurement, recording, monitoring, verification and annual reporting of food waste generated at Brainware University.**

The SOP aims to:

- i. Quantify food waste generated from university food-service activities.
- ii. Establish a consistent method for measuring food waste across different food-service areas.
- iii. Monitor trends in food waste generation over time.
- iv. Identify opportunities for **food-waste prevention, reduction, reuse, recovery and responsible disposal.**
- v. Promote resource efficiency and sustainable food-management practices.
- vi. Generate reliable institutional data for sustainability reporting, including **UN Sustainable Development Goals (SDGs)** and THE Impact/Sustainability Ranking submissions.

### 2. Scope

This SOP applies to all food-service and food-consumption activities that are **owned, operated, managed or facilitated by Brainware University**, including activities operated through outsourced service providers.

The SOP covers food waste generated during:

- Food preparation;
- Food processing;
- Cooking;
- Serving;
- Consumption;
- Post-meal clearing;
- Storage and handling of food; and
- Disposal of unavoidable food waste.

The measurement framework may be applied to regular operations as well as university-organised events, conferences, workshops, seminars and other institutional activities where food is served.



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

### 3. Food-Service Areas Covered

The following food-service areas shall be covered, as applicable:

| Sl. No. | Food-Service Area                  | Food Waste to be Measured                            |
|---------|------------------------------------|------------------------------------------------------|
| 1       | University canteens                | Preparation and post-consumption food waste          |
| 2       | Cafeterias/food courts             | Preparation and plate waste                          |
| 3       | Student cafeterias/mess facilities | Kitchen and plate waste                              |
| 4       | Hostel messes/dining facilities    | Kitchen and post-consumption waste                   |
| 5       | Faculty/staff dining areas         | Food waste generated during food service             |
| 6       | University-operated kitchens       | Preparation and processing waste                     |
| 7       | University events and functions    | Food waste from preparation, serving and consumption |
| 8       | Other food-service facilities      | As identified by the University                      |

### 4. Definition and Classification of Food Waste

For this SOP, **food waste** means edible or inedible food material discarded during food preparation, serving, consumption, storage or handling.

Food waste shall preferably be classified into the following categories:

#### 4.1 Preparation Waste

Waste generated during:

- Cleaning;
- Peeling;
- Cutting;
- Trimming; and
- Food preparation.

#### 4.2 Cooking/Production Waste

Food discarded during cooking or food production due to:

- Overproduction;
- Burning;
- Spoilage;



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- Contamination; or
- Other operational reasons.

### 4.3 Unserved Surplus Food

Food that has been prepared but **not served to consumers**.

Where safe and legally permissible, such food may be considered for redistribution or donation in accordance with University-approved procedures.

### 4.4 Plate/Consumption Waste

Food left by students, faculty, staff or other consumers after meals.

### 4.5 Spoiled/Expired Food

Food discarded because it has exceeded its safe-use period or has become unsuitable for consumption.

### 4.6 Wet Food Waste

Wet food waste refers to moisture-rich, biodegradable food residues generated during food preparation, cooking, serving and consumption. It includes cooked food leftovers, plate/consumption waste, vegetable and fruit residues, food scraps, and other organic food material with relatively high moisture content. Such waste is generally perishable and requires timely collection, segregation and appropriate recovery or treatment.

### 4.7 Dry Food Waste

Dry food waste refers to relatively low-moisture food-related residues generated from food preparation, serving and consumption. It may include dry food residues, bread, biscuits and other relatively dry food materials, as well as suitable dry food-service materials. Dry food waste should be segregated from wet food waste and, where feasible, directed towards reuse, recycling, recovery or appropriate disposal according to its composition.

### 4.8 University Practice for Recovery and Reuse of Wet Food Waste

One of the most significant steps taken by Brainware University is the local recovery and reuse of suitable wet food waste. The wet food waste generated from the University's food-service activities is collected by local fisheries and pond owners, who use the collected organic food waste as fish food/feed in fisheries and ponds. This practice supports segregation at source,



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

reduces the quantity of biodegradable food waste requiring conventional disposal, and promotes resource recovery and local circular use of organic food residues.

The University shall continue to encourage appropriate collection and recovery of wet food waste, subject to hygiene, safety and suitability considerations. Records of food-waste measurement, collection and beneficial use/recovery may be maintained as supporting evidence for institutional sustainability reporting.

### 5. Responsibility

| Responsibility                       | Responsible Person/Unit                                       |
|--------------------------------------|---------------------------------------------------------------|
| Overall implementation of SOP        | Admin / IQAC / Sustainability Cell                            |
| Institutional monitoring             | Admin / IQAC / Sustainability Cell                            |
| Identification of food-service areas | Estate/Administration Office                                  |
| Daily/periodic measurement           | Food-service operator/Catering Supervisor                     |
| Measurement records                  | Canteen/Mess/Catering Supervisor                              |
| Verification of records              | Designated University Officer                                 |
| Consolidation of institutional data  | Admin / IQAC / Sustainability Cell                            |
| Review of trends                     | Sustainability Committee/IQAC                                 |
| Corrective actions                   | Concerned food-service operator and University Administration |
| Annual sustainability reporting      | IQAC/Sustainability Cell                                      |
| Outsourced catering compliance       | Contract/Administration Office + Catering Agency              |

### 6. Measurement Method

#### 6.1 General Principle

Food waste shall be measured **by weight**, preferably in kilograms (kg), rather than by volume. A calibrated weighing scale shall be used for measurement.

#### 6.2 Measurement Process

The following procedure shall be followed:

**Food Waste Generated → Segregation → Weighing → Recording → Verification → Consolidation → Analysis → Annual Reporting**



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

### 6.3 Weighing Procedure

- i. Food waste shall be collected separately from general waste wherever practicable.
- ii. A designated food-waste container shall be used.
- iii. The empty container shall be weighed or its tare weight recorded.
- iv. Food waste shall be placed in the designated container.
- v. The gross weight shall be measured.
- vi. The container/tare weight shall be deducted.  
**Net Food Waste (kg) = Gross Weight – Empty Container Weight**
- vii. The measurement shall be recorded in the Food Waste Measurement Register.
- viii. Where practical, preparation waste, unserved surplus and plate waste should be recorded separately.

### 7. Measurement Frequency

Food waste measurement shall be carried out according to the following minimum schedule:

| Food-Service Area        | Minimum Measurement Frequency                            |
|--------------------------|----------------------------------------------------------|
| University canteen       | At least once per operating day                          |
| Hostel mess              | At least once per operating day                          |
| Cafeteria/food court     | At least once per operating day                          |
| University kitchen       | At least once per operating day                          |
| Outsourced catering      | For every catering operation or as specified in contract |
| University events        | For each event where food is served                      |
| Other food-service areas | As determined by the Sustainability Cell                 |

Where daily measurement is operationally difficult, the University may establish a **representative sampling schedule**, provided that the methodology is documented and consistently applied. For institutional annual reporting, the University shall ensure that sufficient measurement data are available to produce a reasonable estimate of annual food waste.

### 8. Food Waste Intensity

To facilitate meaningful monitoring, the University may calculate food waste intensity.



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

### 8.1 Food Waste per Meal

$$\text{Food Waste per Meal} = \frac{\text{Number of Meals Served}}{\text{Relevant Total Food Waste (kg)}}$$

The University may also calculate:

### 8.2 Annual Food Waste per Campus Population

$$\text{Annual Food Waste per Person} = \frac{\text{Annual Food Waste (kg)}}{\text{Relevant Campus Population}}$$

These indicators can be used to monitor year-on-year changes and identify areas requiring corrective action.

## 9. Data Recording and Storage

All measurement records shall be maintained in either:

- Physical Food Waste Measurement Register; or
- University-approved digital/Excel-based Food Waste Monitoring Sheet.

The responsible department shall retain supporting records such as:

- Weighing records;
- Monthly summaries;
- Catering reports;
- Event food-service records;
- Waste disposal records;
- Photographic evidence, where applicable; and
- Corrective-action records.

Records shall be maintained for the period prescribed under the University's document-retention requirements.

## 10. Verification

To ensure data reliability:

- i. The designated University officer shall periodically verify the measurement process.
- ii. Weighing scales shall be checked periodically for proper functioning.
- iii. Records shall be reviewed for missing entries, abnormal values and inconsistencies.
- iv. Monthly/quarterly totals shall be reconciled with food-service operations where appropriate.



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

- v. Random physical verification may be undertaken by IQAC/Sustainability Cell/Admin.
- vi. Significant variations in food waste shall be investigated and documented.

### 11. Treatment of Outsourced Catering

Food-service operations outsourced to external agencies shall not be excluded from the University's food-waste monitoring framework merely because the service is operated by a third party.

All relevant contracts/agreements with catering agencies should require the service provider to:

- i. Maintain food-waste measurement records.
- ii. Measure food waste using the University's prescribed methodology or an approved equivalent.
- iii. Submit periodic food-waste data to the designated University authority.
- iv. Maintain supporting records for verification.
- v. Follow the University's requirements regarding waste segregation and responsible disposal.
- vi. Cooperate with institutional audits and verification.
- vii. Provide annual consolidated food-waste data for sustainability reporting.

### 12. Annual Reporting

At the end of each academic/reporting year, IQAC/Sustainability Cell/admin shall consolidate food-waste data from all covered food-service areas.

The annual report should include:

| Indicator                                           | Annual Data |
|-----------------------------------------------------|-------------|
| Total food waste generated (kg)                     | value       |
| Preparation waste (kg)                              | value       |
| Unserved surplus food (kg)                          | value       |
| Plate waste (kg)                                    | value       |
| Spoiled/other food waste (kg)                       | value       |
| Number of meals served                              | value       |
| Food waste per meal (kg/meal)                       | value       |
| Food waste per campus person (kg/person/year)       | value       |
| Number of food-service areas covered                | value       |
| Number of outsourced food-service providers covered | value       |



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|                                                                                                                                      |       |
|--------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Food waste diverted for beneficial use/recovery</b>                                                                               | value |
| <b>Wet food waste recovered for use as fish food/feed by local fisheries and pond owners should be included under this indicator</b> | value |
| <b>Food waste sent for treatment/disposal</b>                                                                                        | value |

The annual report shall identify:

- Year-on-year trends;
- Major sources of food waste;
- High-waste locations;
- Actions taken to reduce waste;
- Awareness/behavioural interventions;
- Food redistribution/recovery initiatives;
- Treatment/disposal methods; and
- Improvement targets for the following reporting year.

### 13. Monitoring and Corrective Action

Where food waste is found to be unusually high, the responsible unit shall undertake a basic **Root Cause Analysis (RCA)**.

Possible causes may include:

- Excessive food preparation;
- Inaccurate estimation of meal demand;
- Menu-related issues;
- Low consumer acceptance;
- Oversized portions;
- Poor storage;
- Food spoilage;
- Inefficient kitchen practices; or
- Event-related overproduction.

Corrective measures may include:

- Improved meal-demand forecasting;
- Portion-size management;
- Menu planning;
- Better inventory management;



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398, Ramkrishnapur Road, Barasat, North 24 Parganas, Kolkata - 700 125

- Awareness programmes;
- Improved food storage;
- Staff training;
- Redistribution of safe surplus food; and
- Improved segregation and treatment.

### 14. Food Waste Reduction Hierarchy

The University shall follow the following preferred hierarchy:

**Prevent → Reduce → Reuse/Redistribute → Recover → Treat → Dispose**

Priority shall be given to **prevention and reduction** before treatment or disposal.

Where surplus food is safe and suitable for human consumption, the University may facilitate appropriate redistribution/donation in accordance with applicable food-safety requirements and institutional procedures.

Unavoidable food waste may be directed to appropriate biological treatment/composting or other environmentally responsible treatment systems available at the University.

### 15. Review of SOP

This SOP shall be reviewed **at least once every year** or earlier if:

- There is a significant change in food-service operations;
- New food-service facilities are established;
- Reporting requirements change;
- Measurement methodology is revised; or
- An audit identifies the need for improvement.

Any revision shall be approved through the University's prescribed governance mechanism.