SUSTAINABLE DEVELOPMENT GOALS

2. ZERO HUNGER

2.2 Campus Food Waste

In Chennai Institute of Technology, Food waste tracking system are implemented in a comprehensive approach to monitor and manage food waste from key areas, including the hostel mess, dining hall, and cafeteria. This system helps to improve inventory management, minimize food waste, and ensure food quality and safety. It supports arrange of activities including tracking food orders, inventory levels, meal production, consumption rates, and waste management. By integrating data from various campus dining outlets, it enables better decision-making and promotes sustainable practices.

Each day, collected waste food from different sources is gathered at the designated facility and sorted. Once sorted, the waste is carefully weighed to determine its mass, and this weight is documented meticulously. The quantity is recorded both in the system software and in physical logbooks as a backup. This dual approach ensures data accuracy and preserves a record even in case of system failures. After weighing, calculations are performed to track daily, weekly, and monthly totals, enabling better waste management planning and resource allocation. Specific details, such as the type of waste and its origin, are also noted to analyze patterns over time. These records are then

used to generate reports that highlight trends and support future projections, which are critical for decision-making in waste reduction strategies. Additionally, any deviations in weight or consistency of the waste are flagged, allowing for immediate follow-up. Ensuring data integrity across both digital and paper records plays a vital role in streamlining operations and achieving sustainability goals effectively.

2.2.1 Campus food waste tracking

This report provides a comprehensive overview of food waste data collected from July 2023 to June 2024.

Parameter	July 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23
Food Waste (Kg)	3326	3262	3218	3272	1986	1612

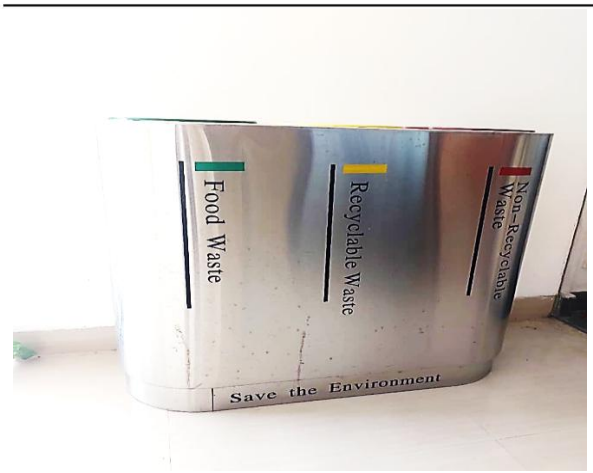
Parameter	Jan 24	Feb 24	Mar 24	Apr 24	May 24	June 24
Food Waste (Kg)	1768	3179	3203	3162	1932	1220

Total Campus Population

In the academic year 2023-24, the total population on our campus is 4863 including students, faculty, and staff. This population data also helps in planning resources, facilities, and services to better accommodate the needs of everyone on campus and ensure a positive and well-supported campus experience.

Food Waste Treatment

At Chennai Institute of Technology, food waste management is carried out systematically to promote sustainability and resource recovery. Food waste generated from the hostel mess and cafeteria is collected in designated bins and carefully segregated to remove non-organic materials. The organic waste is then processed in the campus biogas plant, where it is converted into biogas used for cooking purposes. This initiative not only reduces the volume of waste sent to landfills but also supports clean energy generation and promotes a circular, eco-friendly waste management system on campus. In 2023–2024, 31.14 tonnes of food waste were processed, of which 29.14 tonnes were upcycled through the biogas plant.



Biogas Plant

Student Hunger

As part of our commitment to Sustainable Development Goal 2 (SDG-2): Zero Hunger, our campus is taking proactive steps to combat hunger and malnutrition by providing students with access to organic, nutrient-rich foods. We understand that a healthy, balanced diet is essential for academic success, mental focus, and overall well-being. Serving only organic foods in the campus mess aligns by ensuring that students consume food free from harmful pesticides, chemicals, and genetically modified organisms, fostering better overall health. Organic farming practices are typically more sustainable, conserving water, preserving soil health, and reducing carbon emissions compared to conventional agriculture. This commitment to organic food helps reduce the campus's environmental footprint while promoting awareness of sustainable food sourcing. In addition to supporting health and sustainability, sourcing organic food from local farms or ethical suppliers also helps boost local economies, making it a community-driven initiative. By integrating organic foods into the daily meals served in the mess, students can experience the benefits of nutritious, sustainably grown food, while also learning about food security, environmental responsibility, and ethical consumption.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Breakfast	Poori (2nos) Yellow aloo pattani masala Bread Jam	Pongal Medhu Vada Gothsu White Chutney	Idly Masal Vada Vengaya Chutney Sambar	Masala Poha Rava Pongal Sambar Chutney	Idiyappam Navratan Kuruma Chilly Semiya	Bread Cut Veggies Omlette	Sweet Poha Semiya Kichdi Green Coconut Chutney
Lunch	Chicken Kuzhambu Pepper Chicken Kalaan Kuzhambu Poriyal Navaratri Saffron Kesari **	Keerai Kuzhambu Poriyal Kootu Wheel Chips **	Vathakuzhambu Poriyal Kootu Ice Cream **	Dum Biryani Chicken Chettinadu Paneer Biryani Potato Fry (Veg) **	Rajma Curry Poriyal Kootu Paapad **	Sambar Kaarakari Poriyal Aval Kesari **	Fruit Curd Rice Bisi Bele Baath Veg Poriyal Thovayal Ice Cream **
Snacks	Navaratri Saffron Kesari	Sundal	Sprinkle Biscuit	Sundal	Vanilla Milk Cake	Verkadalai	Chocolate Cake
Dinner	Veg Dosai Tiffin Sambar Kaarai Chutney **	Chapatti Channa Masala Sliced Onion **	Beetroot Raita Pudina Rice Veg Masala Boiled Egg **	Idly Vadacurry **	Parotta Kerala Chicken Curry Kelangu Curry **	Chapatti Aloo Masala Sliced Onion **	Idly Chicken Curry Kuruma **

In our hostel, a student council meeting is conducted once a month to discuss and finalize the monthly menu, ensuring that the food choices align with the preferences and needs of the residents. we believe in offering more than just regular meals—we want to surprise and delight our residents with nutrient-packed meals that are both healthy and delicious. To make dining more engaging and to minimize food wastage, a surprise menu is introduced once a week. By involving students in menu planning and offering creative meal options, we aim to provide a satisfying dining experience while promoting sustainability.

Sustainable food purchases

The Chennai Institute of Technology practices sustainable food production through hydroponic and organic farming methods within the campus. In the hydroponic system, plants are cultivated without soil using inert media such as cocopeat, perlite, and clay balls, and are nourished with nutrient-enriched water. This method reduces water consumption, eliminates the use of harmful chemicals, and ensures efficient resource utilization. The organic farm on campus is used to grow fresh vegetables for campus residents using natural fertilizers and eco-friendly farming techniques. These initiatives promote eco-sustainable agriculture, encourage healthy food habits, and contribute to the campus's commitment to environmental responsibility and self-sufficiency.

Events for local farmers and food producers

Farm 2 Plate – An Awareness Program

The Chennai Institute of Technology organized an awareness program titled "FARM2PLATE" on 20th February 2024 at Nallur. The event aimed to bridge the gap between local farmers, food producers, and students, promoting sustainable agricultural practices and knowledge exchange. The session was led by Mr. S. Gokul, an Organic Farmer and YouTuber from the NGO Streetlight, who shared valuable insights on organic farming methods, farm-to-table concepts, and community-based food sustainability. Through this initiative, participants gained practical exposure to eco-friendly farming, healthy food production, and sustainable livelihood practices.

Awareness on Importance of Food & Reducing Food Waste

The Chennai Institute of Technology conducted an awareness program titled "Awareness on Importance of Food and Reducing Food Waste" on 12th December 2023. The event aimed to promote responsible food consumption habits and raise awareness about the social, economic, and environmental impacts of food wastage. The session was led by Mr. N. S. Ramesh, President of Arogyabharathi Tamilnadu, who emphasized the importance of mindful eating, sustainable food management, and reducing food waste at both individual and community levels. This initiative encouraged students and faculty members to adopt sustainable food practices, minimize waste generation in dining spaces, and contribute toward global efforts to ensure food security and environmental protection.

One Day Training for Farmers

The Chennai Institute of Technology organized a One Day Training Program for Farmers on 14th February 2024 at Amerambedu. The initiative aimed to empower local farmers with practical knowledge of organic farming techniques, sustainable agricultural practices, and modern cultivation methods to improve productivity and environmental stewardship. The session was led by Mr. S. Gokul, an Organic Farmer and YouTuber associated with the NGO Streetlight. He shared valuable insights on natural farming methods, soil health management, waste-free agriculture, and farm-based entrepreneurship. This program served as a platform for farmers to interact, exchange experiences, and adopt innovative techniques that promote sustainable food systems and rural development.

Student Projects Contributing in SDG-2

1. Experimental study of performance improvement of solar bubble dryer for agricultural products

The project "Experimental Study of Performance Improvement of Solar Bubble Dryer for Agricultural Products" aims to revolutionize solar drying technology in agriculture. Our goal is to enhance both efficiency and affordability. Through innovative redesign and optimization strategies, we aim to boost drying efficiency by 30% while cutting costs compared to current market options. We prioritize reducing power consumption, measured in watt- hours, for sustainability and cost-effectiveness. Using interdisciplinary methods and rigorous experimentation, we seek to develop a cost-effective solution for efficient agricultural product preservation. This initiative has the potential to positively impact sustainable food processing practices, reducing food loss and improving access to high- quality preserved agricultural products. Through collaboration and knowledge sharing, we aim to encourage the wider adoption of solar drying technology, contributing to a more sustainable agricultural sector. We are excited about the prospect of leading this innovative project. By leveraging our knowledge and skills, we aim to overcome technical challenges and achieve significant advancements in solar drying technology. Through collaboration with industry partners and stakeholders, we plan to gain valuable insights and ensure the practical applicability of our solutions. By disseminating our findings through publications and presentations, we hope to inspire future research and foster continued innovation in sustainable agricultural practices.

2. Farm Management System

This report describes the development and implementation of a farm management system project that enables farmers to directly sell their products to customers. The project aims to eliminate intermediaries in the farm-to-market supply chain, thereby providing farmers with a more

profitable and efficient means of selling their products. The system includes features such as product listings, inventory management, and online ordering, which allows customers to purchase farm products directly from the website. The report outlines the project's objectives, methodology, and outcomes, highlighting the system's benefits to farmers and customers alike. Overall, the farm management system project offers a practical solution to the challenges faced by small-scale farmers in accessing markets and generating income.

3. Nutri Detect: ML-Powered Analyzer for freshness and nutrition in Fruits and vegetables

This research presents an innovative approach to classify fruits and vegetables and provide detailed nutritional analysis and freshness assessment. Leveraging OpenCV for image processing and Convolutional Neural Networks (CNN) for machine learning, our system accurately identifies and categorizes produce from images. It also extracts essential nutrient information from a CSV dataset. Integrated with a freshness detection model, it empowers consumers to make informed decisions when selecting fresh and nutritious produce.

4. Health Hub: Food Item Recognition with Calorie Estimation and Health Conscious Product Suggestions

Accurately measuring the calorie content of food is essential for promoting healthy eating habits and managing dietary intake. However, calorie estimation poses challenges due to the diverse composition of ingredients and variations in cooking methods. This paper presents a novel approach for estimating food calorie content based on ingredient recognition and thermal information. The proposed method utilizes convolutional neural networks (CNN) for image classification to identify food items and extract their corresponding ingredients from a comprehensive database enriched with nutritional knowledge. Additionally, thermal imaging is employed to analyze the heat patterns of food ingredients, aiding in the segmentation and classification process. Fuzzy logic techniques are applied to classify ingredient boundaries based on their thermal signatures and intensity levels. The classified ingredients are then aggregated, and their calorie content is calculated using established nutrition knowledge and area ratios. Comparative analysis against conventional methods demonstrates the efficacy of the proposed approach in accurately estimating food calories. Furthermore, the Health Hub Food Item Recognition system integrates this calorie estimation functionality with health-conscious product suggestions, enhancing its utility for promoting balanced nutrition and facilitating informed dietary choices.