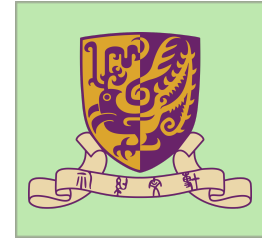


Energy Conservation Incentive Scheme

The Chinese University of Hong Kong
November 15 2022

Net Zero on Campus Community Case Study

The [Net Zero on Campus](#) initiative, a collaborative effort between SDSN, the Climateworks Centre, and Monash University, aims to facilitate the sharing of lessons and resources to accelerate the decarbonization of university campuses around the world. The initiative consists of a “how-to” guide and accompanying online toolkit that will enable universities to accelerate the planning and implementation of net zero strategies, and act as living laboratories for testing solutions.



What is the case study trying to accomplish?

Greenhouse gases are generated at every step before food reaches our plate. When food is wasted, improperly disposed of, or sent to landfills, the environmental cost is even greater. The Food TranSmarter offers the optimum solution by turning food waste into clean energy and helps reduce carbon emissions. It offers an innovative and easily scalable waste-to-energy solution by converting organic matter in the food waste into slurry (97%) for energy generation at nearby government waste treatment facilities. Every tonne of food waste recycled by the Food TranSmarter can cut emissions by 0.6 tonne CO₂eq and generate 300kWh renewable energy.

Since the start of the pilot in four restaurants on The Chinese University of Hong Kong campus in October 2020, the Food TranSmarter has treated 101 tonnes of food waste, reducing emissions by 61 tonnes

University Information
City: Hong Kong SAR
Country: China
Region: Asia
Campus Area (m²): 1,370,000
Number of Staff: Large (between 6,000 - 10,000 staff)
Number of Students: Large (between 30,000 - 60,000)
Type of Institute: Public

Case Study Overview
Category: Waste
Initiative: Implement material recovery on campus
Type of Net Zero Solution: Resource circularity
Funding Source: Government grant
Emissions Scope: Scope 3
Impact on Net Zero: Reduction of 0.6 tonne of CO₂eq per tonne of food waste recycled.
Scale: \$100,000 to \$1 million
Timeframe: Long (between 2 and 5 years)
Stakeholders: Faculty, Students Sustainability Office, University Administration, University Board, Utility Service Providers, Other Industry/Corporate organisations, Local Government/Municipalities, Local Community, University Caterers, Media

CO₂eq. The university community finds the system user-friendly, as tedious food waste separation is no longer required. The caterers benefit from the air-tight system's clean operation and simple collection logistics. Food waste collection has never been more hygienic and convenient.

In terms of facilities management, the slurry can be stored in the system for days, reducing the collection frequency from daily to every few days when necessary, thus considerably reducing the cost of transport and the associated carbon footprint. The system requires only limited water and power to operate. Overall, the logistics costs could be reduced by 95%.

With this successful trial run, we are looking into expanding the system's capacity to handle more food waste, generate more clean energy, and deliver more environmental benefits such as reducing the pressure on landfills and cutting carbon emissions.

What were the key success factors in implementing the case study?

The Chinese University of Hong Kong (CUHK) celebrates creativity and nurtures innovation, and uses its campus as a living laboratory for new technologies. With the Hong Kong SAR Government's support through the Innovation and Technology Fund, we collaborated with the system developer, the Hong Kong Productivity Council, and its industry partner, AEL (International Holdings) Limited, to install the first Food TranSmarter on the CUHK campus in October 2020. The Food TranSmarter project represents a successful multi-stakeholder partnership to drive net zero innovation.

What were the challenges or barriers you had to overcome in implementing your initiative?

The success of the CUHK Food TranSmarter Project depends on effective communication with all stakeholders. For example, we have maintained close contact and communication with the university catering committee and various caterers, providing adequate and transparent information to assist with their understanding of the system and soliciting their cooperation to support and take part in the trial.

What did you learn from the process and what are your recommendations to others?

Food waste recycling is always seen to be labour-intensive, time-consuming and costly. The Food TranSmarter offers a simple yet efficient alternative approach to food waste pre-treatment, reinventing food waste management. The system's patented technology can liquefy food waste into slurry within 2 hours on-site, capturing over 97% usable materials and leaving less than 3% waste for disposal. No tedious food waste separation is needed and caterers can load food waste from collection bins into the system at their convenience. Food waste collection is made more convenient and hygienic, with the logistics costs reduced by 95%.

Food waste is usually regarded as valueless and the recycled products are often underutilized. With the Food TranSmarter, every tonne of food waste recycled can produce 0.1 tonne fish feed and generate 300kWh renewable energy, while cutting emissions by 0.6 tonne CO₂eq.

Most food waste treatment facilities take up a large space. The Food TranSmarter is relatively compact: a system with a daily capacity of treating 2 tonnes of food waste requires a space of only 12.7 sq m. It can be applied in a variety of settings including restaurants, hotels, university and hospital complexes, airports, shopping malls, residential estates, and business and industrial parks.

The CUHK Food TranSmarter Project demonstrates how waste-to-energy constitutes the link between circular economy and renewable energy. Compared to the conventional way of food waste treatment, the Food TranSmarter is more resource-efficient and provides a renewable energy source while diverting food waste from landfills. We encourage all socially responsible universities to embark on waste-to-energy initiatives.

What resources did you use to implement this initiative?

Resource	Why is this resource helpful?
Food TranSmarter: A Food Waste Pre-Treatment System	An overview of the treatment process and the benefits of the Food TranSmarter system applied on The Chinese University of Hong Kong campus
Food TranSmarter (System Developer's Project Webpage)	A full description of the system including background, technical details and impact
Love Food. Hate Waste @CUHK	An introduction of a complementary initiative, the 'Love Food, Hate Waste @CUHK' campaign (since 2013), which promotes food waste reduction and sets up recycling facilities for caterers on campus.

Get Involved with Net Zero on Campus

Contribute to the Online Toolkit

- [Submit](#) your own case studies and decarbonization resources to be featured;
- Share your questions and/or feedback with us at info@unsdsn.org.

Join Our Community

- Join our global community of practice and Net Zero on Campus LinkedIn Group;
- Join global networks of academic institutions working on decarbonization: [SDSN](#), [Second Nature](#), and [EAUC](#). See our resource directory for more networks;
- Join the [Race to Zero for Universities and Colleges](#) campaign and make a net zero commitment;
- Empower your students and engage them in your campus decarbonization efforts: join [SDSN Youth](#) and see our guide for more information.

Learn More

- Explore [SDSN's free, open educational resources](#) from the world's leading sustainable development experts to use in your classrooms: MOOCs, educational videos and lectures, and global community of practice.

[Net Zero on Campus](#) is a collaboration between [SDSN](#), [the Climateworks Centre](#), and [Monash University](#), in partnership with [Second Nature](#) and the [EAUC](#) (Secretariat of the Race to Zero for Universities and Colleges).