

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



Soilmate Collective

- Manila, Philippines
- Recycling and Food Waste Management
- www.soilmate.app
- Analysis period: 2023

Decentralized Food Waste Composting Services

Business Spotlight

The Soilmate Collective Inc. is a company that specializes in food waste composting services so that food waste is diverted from landfills to reduce greenhouse gas (GHG) emissions from its decomposition while the resulting compost helps improve soil quality in farms and urban gardens. The Soilmate Collective initially offered a Book-a-Bucket program which provided households with airtight buckets designed to collect and ferment food waste at source using the Bokashi method. Bokashi is a method that uses Bokashi Bran (fermented rice bran) which is filled with beneficial microbes that help break down organic matter into compost to make healthy soil and help release nutrients for plant growth. Upon filling up, typically in about two weeks, the Bokashi bucket would be exchanged, and fermentation would be completed at the company's premises before sending the buckets to partner farms for further composting.

Recognising the growing number of people with access to the internet via smartphones and tablets, the Soilmate Collective received a grant from World Wide Fund for Nature - Philippines (WWF-Philippines) to develop a mobile application called Soilmate which migrated the Book-a-Bucket program to an online platform in 2023. This created a traceable and

decentralised system for food waste collection and fermentation at source, combined with centralized further composting of the collected food waste. The system enables households and businesses, especially those with limited space, to participate in Bokashi composting

As of February 2024, Soilmate had more than 150 active subscribed 'Soilmates' (businesses and households) as well as ad-hoc participants who come and go. Over 20 of the active subscribers are businesses or institutions. Between September 2020 and the end of 2023, 15,428 bucket exchanges had been completed. From 2021 to February 2024 over 204 metric tonnes of food waste had been diverted from landfills.

Keywords

Food waste, Bokashi composting, Composting services

Innovation

Product/service design, End-of-life management, Resource circularity, Resource substitution

Analysis of Soilmate Collective

Context and baseline

Soilmate Collective began as EarthVenture Inc. in 2013 when its founder, Ms. Rina Papio, was seeking a new business opportunity. She learned about a Japanese composting process initially intended to reduce the need for synthetic fertilisers in agriculture. This technology uses a starter known as Bokashi Effective Microorganisms (EM1) made into a Bokashi Bran, which is a dried mixture of rice bran and EM1 that contains live beneficial microbes, including bacteria and yeasts, that are responsible for fermentation of food waste inside a tightly sealed bucket. She also learnt of its subsequent application to prevent pollution entering rivers, similar to conventional bioremediation practices. She saw its potential for companies in the Philippines to treat their effluents or to participate in river clean-ups. This led to a partnership with the then Pasig River Rehabilitation Commission (PRRC) for the clean-up of the polluted Pasig River through its associated waterways in Metro Manila.

Later, she began using EM to compost food waste, noting that Philippine households alone, excluding commercial and business establishments, generated around 9.3 million metric tonnes, or 86 kg/capita, of food waste annually. When the Sustainable Development Goals (SDGs) were launched in 2015, more companies reached out to her group for solutions that would help them contribute to SDG targets, particularly target SDG 12.3 on food waste minimisation. This indicated to her that the market was ready to pilot a “subscription model” for composting services for restaurants and households to manage the food waste using Bokashi composting.

In 2017, the World Wide Fund for Nature – Philippines (WWF-Philippines) launched The Sustainable Diner (TSD)¹ project to help restaurants and hotels reduce their food waste at source, while also exploring the possibility of donating surplus food and diverting unavoidable food waste from landfills. One approach to lessen food waste ending in landfills is through composting to recover nutrients and organic matter that can substitute for synthetic fertilisers. WWF-Philippines and the Soilmate Collective worked together to address the challenges of limited awareness, and to create more convenient options for business establishments and households with limited space and time for composting.



Innovation

Circular Product Innovation: decentralized Bokashi composting system for food waste

The innovation of Soilmate Collective stems from the customisation of a decentralised system for composting of food waste where the Bokashi method is applied at source in the kitchens of households, food outlets and/or other businesses. A specially designed airtight bucket is used to collect food waste and layers of Bokashi bran are added to start fermentation and thereby avoid rotting and foul smells in the kitchen. A household would, on average, fill up this Bokashi bucket in about two weeks. Once full, the Bokashi bucket is picked up and exchanged with an empty one so that the user can continue collecting and fermenting the food wastes. The collected food waste is allowed to further ferment at the premises of Soilmate Collective to develop into a pre-compost, which when composted and added to soil helps produce healthy soil, release nutrients and spur plant growth. Comparable decentralised systems had been commercialised globally, for example in North America, Europe and East Asia.

Soilmate Collective initially offered its solution through its Book-A-Bucket program, which provided a bucket delivery and exchange service, along with forms to capture data. Recognising the widespread use of smartphones and tablets, the Soilmate Collective received a grant from WWF-Philippines to develop a mobile application called the Soilmate in 2023. This online platform changed the bucket

¹ During 2017-2022, The Sustainable Diner (TSD) project of WWF supported businesses in the hospitality industry to minimise food waste by providing evidence-based solutions and diversion mechanisms that make better use of food waste, and by exploring ways of helping local communities contribute to food security. See: <https://www.wwf-scp.org/sustainable-dining-future-philippines/#:~:text=The%20Sustainable%20Diner%2C%20WWF%2DPhilippines,environmentally%20friendly%20practices%2C%20for%20example.>

exchange to a compost subscription service, ranging from PHP 1,450 for three months to PHP 5,250 for 1 year (equivalent to EUR 23 to 80). Subscribers earn rewards that they can use to avail of Bokashi compost for their own garden needs. Moreover, subscribers can monitor their efforts in terms of diversion of food waste from landfill and avoided greenhouse gas emissions, which is particularly useful for businesses wishing to track and report on their environmental initiatives.

Circular Economy impact

The initiative has since expanded to business and institutional clients. As of February 2024, Soilmate had more than 150 active subscribed “Soilmates” (businesses and households), while also having irregular contributions from customers who come and go. Over 20 of the active subscribers are businesses or institutions. Between September 2020 and the end of 2023, 15,428 bucket exchanges had been completed. From 2021 to February 2024, over 204 metric tonnes of food waste has been diverted from landfills that would otherwise have released an estimated 5.5 metric tonnes of GHG emissions. Soilmate Collective has achieved a rising overall trend in composting food waste -- from 13,704 kgs in 2021, to 43,935 kgs in 2022 and 104,543 kgs in 2023.

Business and market impact

Gross revenue earned by Soilmate Collective is about PHP 18 (approximately EUR 0.29) per kilogram of food waste. Access to a global grant in 2023 helped the company to grow its business through the development of the subscription app. The bulk of revenue comes from subscriptions, but other revenue sources are:

- Solutions design and implementation fees for corporate clients: and
- Consulting services for setting up Bokashi composting systems for clients with their own composting spaces.

One of the benefits the company gained from the Soilmate App is data management. With only nine staff (including the owner and her family members who help in the business), the team struggled before with keeping track of the number of bucket exchanges, volumes of food waste collected, compost generated and estimated GHG emissions avoided, which is now easy to monitor. It also provides the subscribers (Soilmates) with personalised data on their food waste generation and estimated GHG avoidance, which companies, in particular, find useful for their sustainability reporting. This data also continues to drive interest in participating in the program.



Stakeholders

App users can opt to donate their earned compost and vegetable “gulay” credits to partner communities and garden beneficiaries such as Good Food Community (<https://www.goodfoodcommunity.com/>) and Urban Green Communes (<https://www.facebook.com/urbangreencommunes> and <https://www.da.gov.ph/da-joins-advocacy-to-grow-community-food-gardens-in-metro-manila/>). This makes the subscriber’s food waste a valuable resource instead of trash.

The company also aims to tie up with local government units (LGUs), NGOs and investors who can help make composting operations hyperlocal, so that the compost is more conveniently and quickly transferred to partner farms. The owner wishfully calculates that, initially, 100 such sites each with a capacity of about 1 metric tonne per day would significantly reduce food waste generation in the national capital region, and hopefully inspire replication.

Implementation

More needs to be done to increase the number of people joining as Soilmates to make the change from “land fillers to land healers”. Soilmate Collective will need to widen its reach, for which it will have to recruit more Soilmates and explore more partnerships with local government units.

However, with several more bucket exchanges in the pipeline, space to store the collected buckets is of growing concern. Also, the collected compost needs to be deployed more quickly and efficiently to the urban farm partners.

Ms. Papio aims to procure a 150 m² property with her own resources to house rapid composting machinery for processing about 1 metric tonne of food waste daily, collected from within a 1 km radius, using the Bokashi method. If successful, she can pitch this model to potential partners such as local governments units and NGOs. She can also hire regular staff instead of relying only on help from family members.

Takeaways

The best strategy in any waste management program is still prevention. People need to change their relationship with food, and with food waste when it is unavoidable. Bokashi composting can help create community farms, which can also help provide for those who cannot afford food. In this manner, one can shift from being a “landfiller” to a “land healer.”



Acknowledgements

This business case study was prepared within the framework of the Technical Advisory project: [Mobilising Business Action for Circular Economy in the ASEAN countries](#) under the EU SWITCH-Asia Policy Support Component for the sole purpose of documenting and analysing business experiences with the circular economy. The case study was produced by Lisa Inez Antonio (national expert, Philippines) and reviewed by Rene Van Berkel and Thomas Thomas (regional experts) on the basis of information provided and validated by Soilmate Collective, Philippines.

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