

Start-up founder uses food waste to replace plastic containers

From garbage, a way to stop wastage



Alterpacks founder Karen Cheah sharing her sustainable packaging journey with business owners at UOB The FinLab's Sustainability Innovation Programme in April 2023. PHOTO: UOB FINLAB

By FENG ZENGKUN

“I didn't understand why countries were unable to turn garbage on its head. Garbage should be seen as a means for us to recycle and reuse materials.”
— Ms Karen Cheah, founder and chief executive officer of Alterpacks

Ms Karen Cheah turned the lingering stench of garbage into inspiration for the sweet scent of success – for herself and the environment. It began with a family adventure abroad that left a sour aftertaste. “Our first reaction to Amsterdam was the stench of garbage in the air,” says Ms Cheah, who is in her 40s, of a family trip to the Dutch capital in 2010. At the time, the city was grappling with a garbage workers’ strike over wages. For two weeks, when local municipal workers left rubbish uncollected, “the beautiful streets were just packed with garbage, overflowing with food waste and plastic bags”. In 2019, the vivid memories of the stench and sight of waste came flooding back. Only this time, it proved positive. Then pursuing a master’s of science in innovation at Singapore Management University, Ms Cheah was tasked with launching a hypothetical start-up to help ease a global problem.

“I didn't understand why countries were unable to turn garbage on its head,” says Ms Cheah, a former senior media executive. “Garbage should be seen as a means for us to recycle and reuse materials.” So she turned her ideas into reality, creating Alterpacks: Food containers that are robust, reusable and biodegradable – made entirely out of food waste. “We're tapping spent grains and other food and agricultural waste to produce materials that can replace plastic,” says Ms Cheah, who founded Alterpacks in 2019 while completing her master’s. The company’s containers look and feel like paper, but can withstand freezer and microwave temperatures, she says. The containers can

also be easily composted in soil after they turn soft, typically after being washed up to three times.

Down to a science

More than a third of all food produced goes to waste globally, notes a 2024 report by the United Nations Environment Programme (UNEP). Meanwhile, half of all plastic produced is made for single-use purposes, such as disposable food and drink containers, according to the UNEP. Through Alterpacks, “we're addressing two global, pressing problems at the same time: Food waste and plastic pollution”, says Ms Cheah. “It's the lowest hanging fruit that we can target for the biggest environ-



For consumers to adopt Alterpacks, Ms Cheah says the functionality of its containers must be superior to plastic disposables. PHOTO: ALTERPACKS

mental impact.” The journey from concept to the first market-ready prototype took about 30 iterations and nearly three years. “We initially experimented with okara, which is soybean waste, because it's easily available in Singapore,” she shares. “When that didn't work, we pivoted to look at other food waste, which led us to spent grains.” Spent grains, the solid waste that

remains after brewers manufacture drinks from grains such as barley, are usually discarded or fed to animals.

But then came the Covid-19 pandemic in early 2020 – just months after Ms Cheah started Alterpacks. With borders closed, she had to get creative with her research and development. Unable to find paper pulp processing plants in Singapore or travel abroad, she approached a local art school to learn how to turn spent grains into paper-like material. “The school was using different raw materials to make paper, but the process was the same.”

To develop other parts of the manufacturing process, Ms Cheah approached a local semiconductor company, and a factory specialising in drying grains. She also continued to adjust the material's formula while seeking feedback on prototypes from friends and family. Due to the complex processing required, Alterpacks' containers are currently priced at three times that of regular plastic containers. To justify the higher cost, Ms Cheah knew they had to be “more than sustainable”. “They must perform as well or even better than plastic. That's why we made the material freezer- and microwave-friendly, and containers leak-proof, in addition to other features,” she says.

Win-win from food waste

Since Alterpacks commercialised its invention at the end of 2022, Ms Cheah says the five-strong start-up has upcycled about 4,000kg of food waste. While it has yet to turn a profit, the company fabricates over 500,000 containers a month for distribution in Singapore, Australia and Thailand. Alterpacks collects and processes the waste for its materials in China due to the higher volume of food and agricultural waste, and processing

Greener is better for business

Alterpacks' mission to replace conventional plastics with its bio-waste-based, eco-friendly alternatives aligns with the global trend towards sustainability.

But while 87 per cent of businesses across Asean and Greater China consider sustainability important, less than half have adopted greener practices, according to UOB's Business Outlook Study 2024.

Conducted from December to January, it surveyed over 4,000 business owners and executives from small to large enterprises in seven regional markets.

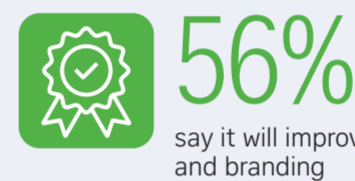
About a third of businesses cite a cost increase of products or services to consumers, and concerns about a negative impact on profits as key barriers.

Ms Kavita Bedi, head of Group Business Banking, UOB, says: “Beyond managing the challenges of rising business costs and daily operations, we partner small businesses to develop capabilities such as digital solutions that provide them access to financing more seamlessly.”

She adds how the bank also connects small businesses with its partner networks and offers a range of working capital solutions, to support their growth ambitions and decarbonisation journey.

“This helps them to build long-term resilience and relevance within the value chains that they operate in.”

How do businesses gain from embracing green? Top motivators from the study include:



and manufacturing facilities available compared with Singapore, she explains.

Alterpacks' customers include eco-conscious hotels and eateries, such as Crystal Jade, Culina, Como Metropolitan Singapore and Grand Copthorne Waterfront.

It has also branched out into the supermarket sector, with FairPrice Finest and Freshmart switching their plastic containers and styrofoam trays to Alterpacks' sustainable versions to display fruits and vegetables. Ms Cheah shares that Alterpacks is working with some local hospitals and nursing homes to trial changing their plastic bins and plastic and paper kidney dishes – used to hold medical waste – to its low-carbon options, which are liquid-resistant.

What's next for Alterpacks? Its fourth-generation containers are expected to be able to withstand direct flame and steam without burning or degrading, opening up more uses, claims Ms Cheah.

The firm also plans to sell flat sheets made from spent grains that businesses can mould into any shape they require, to bring more clients on board.

For Ms Cheah, who is single, creating Alterpacks has also influenced her personal habits. “I didn't really think about sustainability before going on this journey,” she says. “Working on Alterpacks has made me so conscious about how much waste a single person can generate.”

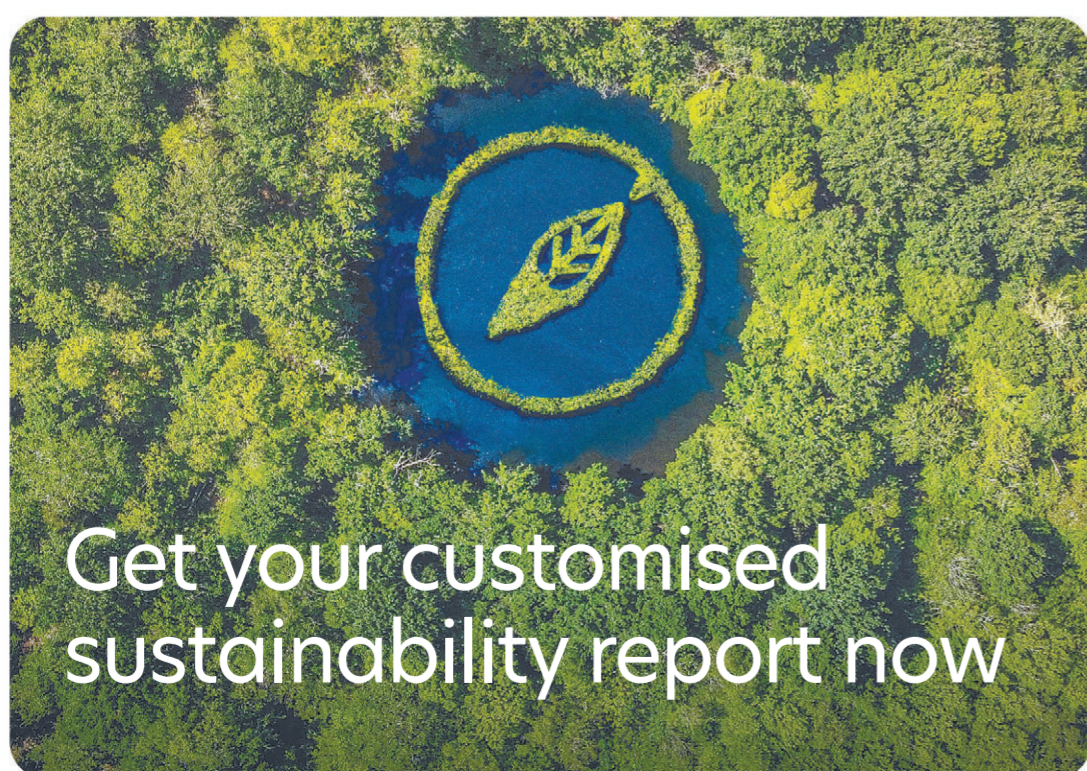
“Now, I always use a water bottle, Alterpacks and other food containers, reuse packaging, think about the materials that go into the things I want to buy, encourage my friends to recycle, and more.”

“Even as just one person, there are many things that you can do to make a change.”

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