

# 有創意的浪費管理 CREATIVE WASTE MANAGEMENT

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鼓勵本地人創造性地思考廚餘問題  
Encouraging locals to think creatively about food waste

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## 澳

門擁有美味的本地食物，絕對不乏優秀的餐廳，從傳統的茶餐廳到高級餐廳比比皆是。但不幸的是，我們也產生了大量的食物垃圾——約佔全市垃圾總量的40%。去年，環境保護局（DSPA）開始了一個回收家庭廚餘的項目，僅在前六個月就收集了超過二百四十噸的食物垃圾。同樣在去年成立的澳門食物及環境健康學會（SFEH）也希望嘗試改善這一狀況。

「SFEH的願景是重新發展人與自然之間的積極關係，建立生態文明素養，傳播『好』的食物知識，以食物為連接點推廣中國傳統文化，並倡導可持續發展的理念。」該組織主席柯學明（Ruby O）女士說，「在澳門，食物垃圾是最高數量的固體廢物，因此我們希望通過多種解決方案，通過賦予消費者和食品行業的專業人士權力，證明照顧自然資源也能帶來一些經濟利益。」

該協會大約有三十名成員，都具有食品安全、廢物管理、教育和可持續發展方面的專業背景，並定期舉辦培訓課程和研討會，使人們能夠擁更多的綠色環保生活方式，減少碳足跡。

今年4月，他們與合作夥伴大橫琴公共設施管理公司一起，在橫琴的粵澳深度合作區舉行了食品素養教育基地的落成儀式。其目的是利用現有的環保設施和基於自然解決方案的廢物處理方法，開展與可持續發展相關的活動，提高生態保護意識，並推廣利用循環經濟解決廢物問題的理念。

Macau is blessed with delicious local food and absolutely no shortage of great restaurants, from traditional Cha Chaan Tengs to fine dining establishments. But unfortunately, we also generate a lot of food waste – around 40 percent of the total waste in the city. Last year the Environmental Protection Bureau (DSPA) begun a project to recycle food waste from households and collected over 240 tonnes of food waste in just the first six months. Also established just last year, the Society of Food & Environmental Health Macao (SFEH) hopes to try to improve this situation too.

“The vision of SFEH is to redevelop a positive relationship between humans and nature, build ecological civilization literacy, communicate ‘good’ food knowledge and promote traditional Chinese culture by using food as a connecting point, and advocate the concept of sustainable development,” says the Chairperson of the organization Ms. Ruby O. “In Macau, food waste is the highest solid waste, so we hope to address this with multiple solutions and through empowering consumers and professionals in food sectors and demonstrating that environmental protection itself can contribute to economic growth.”

The group has around 30 members, all with professional backgrounds in food safety, waste management, education and sustainability, and regularly runs training sessions and workshops to empower people to have a more green lifestyle and reduce their carbon footprint.

In April this year they inaugurated their Food Literacy Education Base in the Guangdong-Macao In-Depth Cooperation Zone in Hengqin, together with partner Da Hengqin Public Facility Management Company. The objective is to utilize the existing green facilities and natural-based solutions waste practices to run sustainability related activities, raise ecological conservation awareness and promote ideas on using a circular economy to resolve waste issues.

“We want to show people that recycling can be also fun and convenient,” says Ruby, who studied Food Science at UBC in Vancouver, Canada, and lived there for 10 years before returning and contributing to food safety management in the hospitality industry in Macau.





「我們希望向人們展示，回收也可以是有趣和方便的。」柯學明博士在加拿大溫哥華UBC大學學習食品科學，並在那裡生活了十年，然後回到澳門為酒店業的食品安全管理作出貢獻。

她強調，解決食物浪費不僅僅是更謹慎地處理廢物，其實有許多有趣的方式，基於自然的回收項目可以成為工業價值鏈的一部分。

她指出：「人們通常認為我們對食物垃圾沒有什麼可做的，只是把它燒掉，或者是堆肥，這已經非常環保了，但我們想告訴人們，有機物不是真正的廢物，它實際上是一種資源，我們可以把它變成別的東西。」

這方面的一個例子是該協會的一個項目，他們用黑兵蠅的蛆蟲來消耗來自家庭住宅的食物垃圾。

柯博士解釋說：「這些蛆蟲吃了食物垃圾，大大減少了垃圾，然後這些蛆蟲成為水培系統中魚的飼料。或者，它們可以被深層冷凍並磨成粉末，可以作為天然肥料使用。蛆蟲甚至可以進一步提取成生物材料，因為它們有非常獨特的結構和化學成分。」

為了教育人們瞭解食物的價值和食物生產的內容，SFEH還在他們新的橫琴中心舉辦了農業講習班。他們對參加者的積極的反應感到有些驚訝。



Ruby stresses that addressing food waste is not just about more carefully disposing of waste. There are many interesting ways that natural based recycling projects can become part of the industrial value chain.

“People usually think there’s not much we can do with food waste, just burn it or maybe compost it, but we want to show people that organic matter is not really waste, it’s actually a resource that we can be turned into something else,” she notes.

One example of this is a project the group has, whereby they use Black Soldier fly maggots to consume food waste from domestic residences.

“The maggots eat the food waste which reduces the waste significantly, and then they become feed for the fish in an aquaponic system,” explains Ruby. “Or they can be deep frozen and ground into a powder that can be used as a natural fertilizer. The maggots can even be further extracted into biomaterials because of their very unique structure and chemical composition.”

To educate people on the value of food and what goes into food production, SFEH also runs farming workshops at their new Hengqin centre. And they have been a little surprised by the positive responses.

“At first we were worried people would think it was too dirty or too sweaty, but actually in the end, people wanted more, so we are planning longer sessions. When people say ‘this is really hard work’ then we know it’s working because we want them to know this is not easy. It takes a long time to grow food and you need to do some physical work, not to mention the impact of frequent extreme weather which can make farming even more challenging.”

The group have a range of other interesting activities and projects to encourage people to value food and be more responsible about wasting it, including workshops on how to upcycle leftover food to jams and pickles.

“We even make fresh pet food using vegetable trimmings from wholesale markets because pets and animals have to be healthy too. We turn the trimmings into snacks and jerky and donate them to different associations.”



「起初，我們擔心人們會認為太髒或太多汗，但實際上，最後參與者的反應非常熱烈，所以我們正在計劃更長的課程。當人們說『這真是艱苦的工作』時，我們就知道它在起作用，因為我們想讓他們知道這並不容易。種植食物需要很長的時間，你需要做一些體力活動。」

該協會還有一系列其他有趣的活動和項目，以鼓勵人們珍惜食物，對食物廢餘更負責任，包括舉辦關於如何將剩飯剩菜回收成果醬和醃菜的工作坊。

「我們甚至利用批發市場的蔬菜邊角料製作新鮮的寵物食品，因為寵物和動物也必須是健康的。我們把邊角料變成零食和肉乾，並把它們捐贈給不同的協會。」

另一種有趣的互動方式是通過遊戲向人們傳授可持續發展知識，而SFEH是第一個將「2030年可持續發展目標遊戲」帶到澳門的非政府組織。這是一個在日本設計的基於卡片的多人遊戲，參與者需要通過實行計劃項目來實現他們的可持續發展目標，看看他們對世界有什麼樣的影響，最終弄清楚我們如何能夠最好地生活在一個平衡和繁榮的地球上。

「有社會、經濟和環境的目標和影響，所以遊戲讓人們在兩到三個小時內非常直接地感受到他們採取了什麼行動，他們共同創造了什麼樣的世界，以及需要做出什麼改變。」柯博士說。

最終，她希望該協會的活動能夠真正讓人們意識到他們如何能夠更環保地生活，同時也看到這樣做，他們不僅可以創造一個更好的環境，還可以創造一個更好的社會和一個更健康的地球，在其中我們都可以繁榮興旺。

「在澳門有很多機會，我們如何處理我們的廚餘，如何將東西回收利用，並將它們變成新的產業或基於解決方案的產品和服務。我們可以創造新的產業，解決浪費問題，創造就業機會，並啓用新的技術和人才。這可以解決環境問題，以及經濟和社會問題，」她說，「在社區住宅層面上從小做起，如果成功了，就利用這種成功，提升並擴大規模。澳門可以成為低碳、綠色實踐的試點城市，成為其他城市和國家的基準，也可以為大灣區的世界級城市群做出貢獻。」

Another fun and interactive way to teach people about sustainability is through games, and SFEH is the first NGO to bring the ‘2030s SDGs Game’ to Macau. A multiplayer, in-person, card-based game designed in Japan, participants need to meet their Sustainable Development Goals by running projects and seeing what kind of impact they have on the world, to ultimately figure out how we can all best live on a balanced and thriving planet.

“There are social, economic and environmental goals and impacts, so the game gives people a very direct sense within two to three hours of what actions they took, what kind of world they created together, and what changes they need to make,” says Ruby.

Ultimately, Ruby hopes the group’s activities can really make people aware of how they can live more sustainably, and also see that in doing so, they can create not just a better environment, but also a better society and a healthier planet in which we can all be prosperous.

“There are a lot of opportunities in Macau for how we treat our food waste and how we upcycle things and turn them into new industries or solution-based products and services. We can create new industries that solve waste and create jobs, and enable new technologies and talent. This can address environmental issues, as well as economic and social ones,” she says.

“Start small on a community residential level, and if it works, leverage that success and upscale and expand. Macau can be a pilot city for low carbon, green practices, a benchmark for other cities and countries, and can contribute to the world class city clusters of the Greater Bay Area too.”