A Practical Guidebook to a Circular Economy:

Collaborating with Value Chain Partners for a Resilient Business

Partnership for Sustainability Leadership in Business
商界永續發展領袖計劃

Initiated by

永續坊
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Foreword

More businesses have, encouragingly, set the course for a sustainability transition by formulating longer-term strategies, roadmaps, and targets. They have increasingly realised that they are part of an interconnected system and that stakeholders expect them to take proactive actions in the face of emerging sustainability challenges. In addition to achieving net-zero emissions and expanding renewable energy use, enhancing circularity is a sought-after environmental goal by these stakeholders.

In this regard, businesses have to go beyond adopting the conventional 4R waste management approach (i.e. reduce, replace, reuse, recycle) to tackle the challenge. The culprit behind the generation of massive amounts of daily waste lies in the "take-make-consume-dispose" linear economy we live in today. In addition to being wasteful from the resource management perspective, this economic model exacerbates climate change, environmental degradation and social injustice. A fundamental shift to redesign the economy into a circular one and reframe waste as a resource is hence of paramount importance.

Same as other sustainability challenges that require systemic change, collaboration is crucial to drive significant changes. This is particularly clear in the case of circularity where different actors in a business's value chain must come together to close the loop. Besides practicing circularity, this re-engineering of value chains can occur through value-adding to value chain partners operationally and financially. If more businesses can collaborate to put circularity into practice, our economy will not only be more sustainable but also more innovative, resilient and even regenerative to the world.

To introduce this relatively novel but essential idea to all businesses, my colleagues from the Partnership for Sustainability Leadership in Business (PSLB) project have gathered a variety of the latest information through desktop research and expert consultation in this Practical Guidebook. The information ranges from conceptual and business cases of circularity as well as examples of circularity practices in different industries around the world, with a focus on food and beverage businesses. Rather than illustrating how companies can enhance circularity individually, the content in this Practical Guidebook emphasises actions that can be done along value chains, driving cross-sector collaborations.

With the goal to inspire players of different industries to take up circularity practices, I hope this Practical Guidebook will be a reliable reference to you and your value chain partners. Lastly, on behalf of PSLB, I would like to express gratitude to the parties that contributed to and reviewed the content of this Practical Guidebook.

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About This Guidebook

In the linear economy we live in today, not only are we extracting natural resources at a rate that is faster than what the nature can regenerate, but we are also dumping tremendous amounts of waste, which is suffocating the environment.

Is waste actually the end of the story? If waste is the final product that arises from the linear economy, would transforming the economy into a circular one help people rethink the possibility of such a product?

What are the Objectives of This Guidebook?

This Guidebook aims to:

- Raise awareness of circularity, and the related challenges, as a possible solution to waste issues
- Provide useful and readily adoptable practices and templates to facilitate change towards regenerative operations
- Share market-leading cases with analyses on drivers and barriers to inspire changes in the resource management approach for regenerative business

Who is This Guidebook for?

This Guidebook is for those who may initiate or undertake resource circularity projects in business operations (i.e. project owner or manager). Owners and managers of businesses from all the industries in Hong Kong – especially foodservice, including but not limited to restaurants, food courts, grocery shops with kitchen operations – are the primary targets.

What Can This Guidebook Offer to You?

This Guidebook emphasises holistic waste management from the value chain-based circularity perspective. It comprises two parts:

- **Chapter 1 - 3 draw a general overview of circularity in the business setting.** They put together information about the problem associated with a linear economy, the concepts of circularity, and the relevance of circularity to business resilience, as well as examples of circular economy initiatives in the market.

  If you wish to learn the basics of circularity and explore what businesses have done in general, this part will be suitable for you.

- **Chapter 4 - 7 focus on the food and beverage (F&B) industry.** In addition to analysing the current state of the industry and industry-specific business cases, the chapters provide recommended circularity practices that leverage technology and collaboration to reimagine waste as useful resources.

  If you are working in the F&B industry, this part is highly recommended as it may facilitate your company's sustainability transition.

The information presented inside this Guidebook is a result of extensive desktop research as well as engagement with industry experts. Please note that foodservice industry and F&B industry are used interchangeably in this Guidebook.

Part One

Getting to know circular economy

1 Basics of a Circular Economy

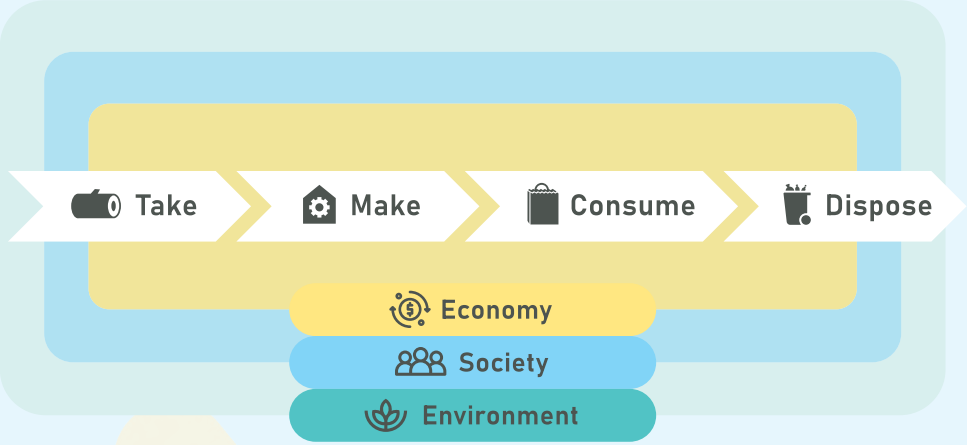
Key Messages

- The “take-make-consume-dispose” linear economy is taking a toll on the environment and society.
- The 9R framework opens up new collaborative opportunities to bring about a circular economy.

The Problems with a Linear Economy

The linear economy we live in every day is the primary driving force behind a wasteful culture. As its name suggests, a linear economy means that natural resources travel one-way, following a take-make-consume-dispose pattern (see Figure 1). Typically, raw materials are transformed into products which are consumed and eventually become waste.

Figure 1: Illustration of a linear economy



Whilst seemingly efficient and convenient, economic activities are conducted at the cost of the environment and societal wellbeing. Here are some of the associated issues:

- **Waste-related carbon emissions**
  When food waste and other organic waste rot, they emit greenhouse gases that contribute to global warming.
- **Climate change induced food security crisis**
  Due to climate change induced extreme weather (e.g., typhoons, rainstorms, droughts), the supply of local and regional food resources can run low.
- **Wasted inputs from production and logistics**
  Unused or underutilised products mean that the natural resources applied along the product lifecycle are often wasted.
- **Pollution caused by mismanaged waste**
  Poorly managed waste can escape the designated waste stream and cause havoc to the environment.
- **Reduced quality of living for disadvantaged communities**
  In addition to odour problems, air pollution and related health implications can reduce the quality of living of these communities.

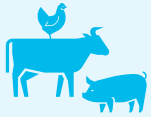
The wasteful linear economy is hindering the pursuance of sustainable development. With conventional linearity at the root of the problem, a systemic change is believed to be necessary. By involving other parties in the value chains, such as those on page 7 or 27, the materials that were once considered as waste in the linear economy can continue to be utilised in the system, retaining or even increasing their value.

The Processes in a Circular Economy

Accordingly, all resources can be categorised into biological and technical materials (see the examples below). A 9R framework is commonly quoted in circular economy-related literature to outline strategies to design-out waste.

Biological materials

Plants



Animals

Micro-organisms

Biomass-derived resources
(e.g., food, feed, wood pallet, natural fibre, bamboo scaffold, organic waste)

Technical materials

Metals

Ceramics

Glass

Cement or concrete

Plastics

Table 1: 9R framework of circular economy (Opferkuch et al., 2022)

R0: Refuse	Make a product redundant by abandoning its function or by offering the same function with a radically different product
R1: Rethink	Make product use more intensive through design
R2: Reduce	Increase efficiency in product use or its manufacture by consuming fewer natural resources
R3: Reuse	Reuse by another consumer of a discarded product that is still in good condition and fulfils its original function
R4: Repair	Repair and maintenance of defective products so they can be used according to its original function
R5: Refurbish	Restore an old product and bring it up to date
R6: Remanufacture	Use parts of a discarded product in a new product with the same function
R7: Repurpose	Use a discarded product or its parts in a new product with a different function
R8: Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
R9: Recover	Incineration of material with energy recovery

Biological materials that would have been treated as waste in a linear economy can be managed through composting or waste-to-energy technology (i.e. anaerobic digestion) as well as through cascades where material reuse can happen across value chains. Cascades can optimise resource use and bring additional value for the economy prior to returning the biological materials safely to the environment.

Similarly, circularity can be applied on technical items through reuse, repair, remanufacture, and, if these are not possible, recycling (Stehel, 2016). For instance, a used car can be reused until parts of it break down. Repair or refurbishment, however, can restore the car to a good condition for further use. If the car's condition is beyond repair, its reusable and functioning parts can still be remanufactured into a new car to optimise the utilisation of the objects and preserve their value (Stehel & MacArthur, 2019).

Keeping products within the value retention loops (United Nations Environment Programme, n.d.) means that we can **design out waste, improve environmental quality, avoid resource depletion and enhance system resilience.**

In essence, the transition from a linear economy to a circular one requires us to go beyond thinking in silos and to take a system perspective. Referring to the guiding framework of British Standard Institute's BS 8001 Circular Economy (2017) in Figure 2, we should ultimately transition to business model innovations, changing the value proposition and ways of doing business. Along the pursuit of a circular economy, not only do we need to improve the operations and re-engineer products, services and processes but also value chains to prolong the lifecycle of materials.

Useful Resource

What can your company do with your value chain partners to facilitate circularity of the materials you use? Try to draw your own version of the 9R value chain map using the Template for Planning Circularity Practices with Value Chain Actors in the Appendix.

For more details of circular economy, you are recommended to visit Ellen MacArthur Foundation's website, which has comprehensive background information and useful resources:

https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

Figure 2: Guiding framework of BS 8001 Circular Economy and four possible avenues to practice

Guiding Framework of BS 8001 Circular Economy		Four Possible Avenues to Practice
Level		
4	**OPTIMISING** **Business model innovation** Improved organisational ways of doing business and creating value	Holistic closed-loop operations for circular resource use
3	**ENGAGED** **Product / service / process innovation** Improved value proposition	Initiative to circulate certain resources in other value chains / industries Initiative to circulate certain resources within a(n) value chain / industry
2	**IMPROVING** **Process improvement** Improved ways of working	Initiative to circulate certain resources within own operation
1	**BASIC** Initial framing and scoping – actively exploring opportunities	
0	**UNFORMED** Characterised by limited and / or ad-hoc actions (e.g. waste legal compliance)	

Organisational progress over time

Echoing the guiding framework of BS 8001, we believe that businesses can practice circularity through four possible avenues. These avenues can help companies achieve Level 2 to 4 correspondingly.

Source: Adapted from Mukhopadhyay (2020)

2 Implications of a Circular Economy for Business Resilience

Key Message

- A circular economy is not only associated with environmental quality but also with improved resilience of businesses, the economy and society.

A circular economy may seem to be only an issue for environmental sustainability. Nevertheless, addressing the environmental issue will contribute to the resilience of businesses and the overall economy. By highlighting the relevance of a circular economy and resilience below, the benefits of practicing circularity for your business and the wider society are evident.

Safeguarding supply chain resilience

To better cope with disruptions like COVID-19, businesses can leverage what would otherwise be disposed of in a linear economy for manufacturing. In this way, companies can ease their reliance on raw materials.

Future-proofing against long-term sustainability risks

From the perspective of risk management, practicing circularity can help companies de-risk in the long run and adapt to imminent changes, including climate change, biodiversity loss, natural resource depletion and environmental degradation.

Benefits of Practicing Circularity

Innovating materials, products, processes and systems

The circularity model challenges the status quo in the linear economy, including the way things are made, consumed and handled, and necessitates changes at the system level, providing companies to play around and innovate.

Promoting societal and economic resilience

In addition to advancing risk management and innovation capacity, circularity practices inspire and foster new partnerships that would have otherwise been absent in a linear economy for sustainable value chain management, and hence sustainable development.

3 Examples of Circular Economy Solutions

Key Message

- Some pioneering businesses in Hong Kong, including the case subjects Mil Mill and The Billie System, have developed services and products that can help advance their value chain partners' resource circularity agenda, adding value to the objects.

Having explored the potential of circular economy in facilitating regenerative growth and enhancing business competitiveness, you may wonder how circular business has developed in Hong Kong. In fact, circular business is not distant from our everyday lives: from Uber, Carousell and Locobike to those companies that offer after-sales maintenance services. With reference to a research project by Benjamin (2021) on Hong Kong's circular economy landscape, the companies which are small- and medium-sized enterprises (SMEs) in Table 2 can be regarded as businesses that provide circular solutions.

These pioneering companies have demonstrated how tapping into the business opportunities can bring business benefits for not only their own companies but also their value chain partners. Among them, the following cases of Mil Mill and The Billie System are two good examples to showcase the business value of practicing circularity, highlighting the win-win situation through value chain collaboration.

Table 2: Local SMEs providing circular solutions by material / product (Benjamin, 2021)

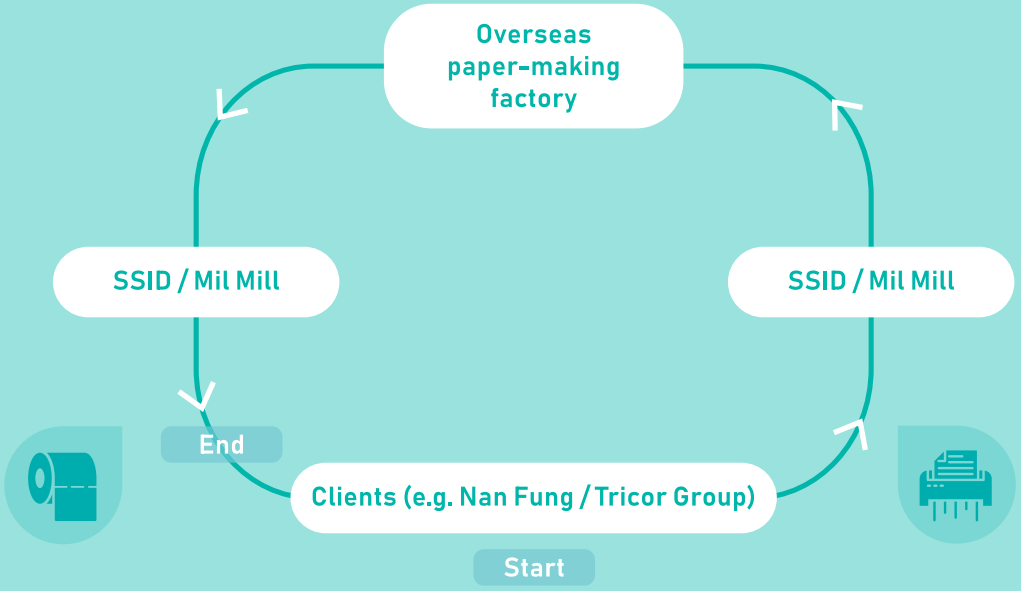
Material	Company Name	Material	Company Name
Book	reBooked	**Leather**	Upcyco
Clothing and handbag	Prêt-à-Dress	**Mobile phone**	Ecofones
	Wardrobista	**Packaging**	Mil Mill
	Retykle		Sustainabl.
	Coo Club		Vegware
	Style Theory	**Paper**	Conscious Paper
Consumer goods	Gaifong	**Personal vehicle**	Carshare
	Fleababy		YourCar
	Carousell	**Plastic**	V Cycle
Decoration	Decor Redefined	**Soap**	Soap Cycling
Food	GreenPrice	**Tableware**	WeUse
	Feeding Hong Kong	**Textile**	Earth.er
	Penicillin Bar		Saupei
	Dyelicious		The Billie System
	Work, Sheet. Studio	**Toy**	Happy Baton
	bREER	**Wood**	Carbon Lite System
Furniture	Føerni		DOSHA woodcraft
	2nd Chance		HM Environmental Technologies
	HAPPYSHOP		
	Green dot Home		

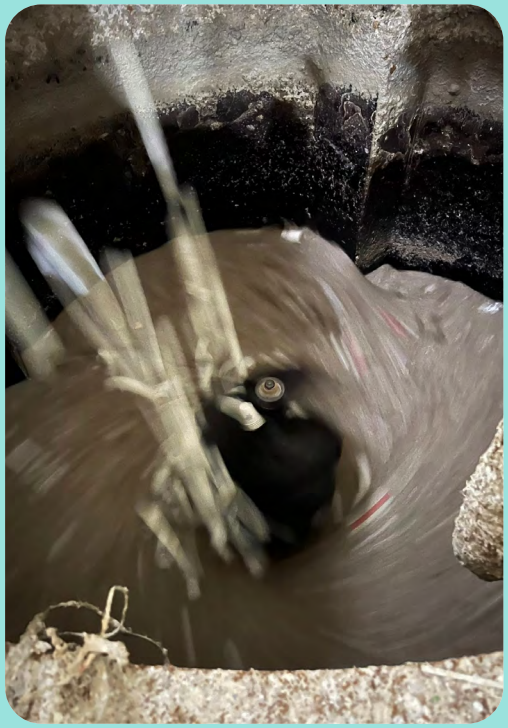
Creating a Circular Value Chain through Paper Cycle by Mil Mill

Company Profile

(Secure Information Disposal Services Limited, n.d.)

Secure Information Disposal Services Limited (SSID) was founded in 2009 by several paper professionals, with a vision to develop a circular economy for paper. SSID originally specialised in the destruction of offices' confidential documents but gradually expands into integrated waste management solutions for a broad spectrum of organisations. The company has also helped hundreds of listed companies to commit to environmental, social and governance (ESG) requirements and supported them in their ESG initiatives through services including waste audit, consultancy, recycling and reporting. Mil Mill is a subsidiary of SSID, recycling beverage cartons and composite-paper-products into paper pulp.





About the circular solution

To maximise the recycling potential of paper in Hong Kong, Mil Mill introduced a Paper Cycling programme to realise circularity between corporates, pulp mills and a paper-making vendor. The two companies that participate in the programme are Nan Fung and Tricor Group. Paper waste from their operations is collected and sent to Mil Mill and turned into paper pulp. The paper pulp is then sent to a paper-making factory overseas and repurposed into toilet rolls and paper towels. These products are then used by the two companies, closing the loop of the office paper waste.

Value created

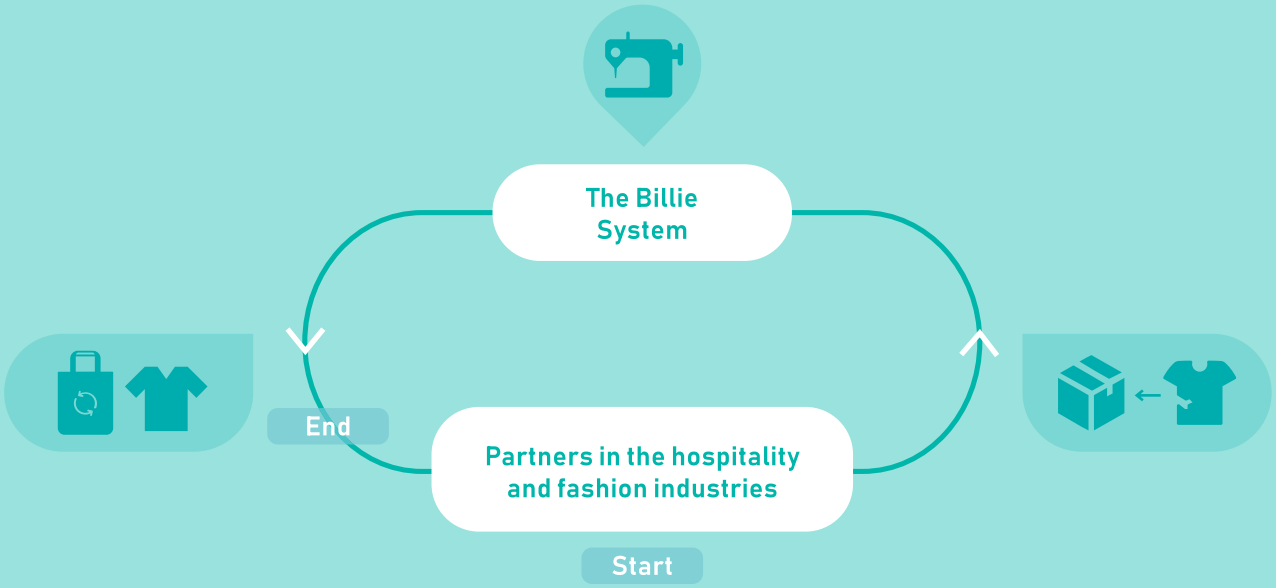
This business model has been a win-win for both the local recycler and participating corporates. On one hand, the local recycler can maintain or increase the recycling volume. On the other hand, the participating companies can reap the benefit of paper recycling to reuse the material. The programme has helped Mil Mill's clients to raise internal awareness of paper recycling and has demonstrated that a closed-loop model is possible for paper recycling between corporates and recyclers.

Upcycling Textile Waste for Businesses by The Billie System

Company Profile

(The Billie System, n.d.)

Launched in 2019 by Novetex Textiles Limited, The Billie System is an upcycling factory and textile mill in Hong Kong that helps promote a circular economy in the textile industry. A system combining new and existing technologies was designed to process and recycle textile waste, including discarded garments, excess apparel and raw material inventory, into fibres. The Billie System yields quality recycled fibres without consuming any water or discharging hazardous waste. The fibres can be spun into yarn to produce a variety of textiles.



About the circular solution

Collaborating with players in the hospitality and fashion industries, The Billie System is turning excess inventory, unused raw materials and textile waste collected from businesses into recycled yarn. This material is subsequently turned into various products such as knitted apparel, shawls, tote bags and pouches for its partners, such as Shangri-La Hotels and Wynn Resorts (Macau) S.A. (The Index Project, n.d.), to use in their operations.

Value created

Through the involvement of The Billie System in the value chain, the partners' textile waste has not only been reduced but also has become a useful resource that can be re-utilised in garment manufacturing. The Billie System presents a win-win-win situation for itself, its collaborators and the environment.

Part Two

Industry Guide for Circularity: Hong Kong's Foodservice Industry

Introduction

The foodservice industry provides products and services that satisfy humans' basic physiological needs and gastronomic desires. In an urbanised and lifestyle focused setting like Hong Kong, many people rely on foodservice operations, including restaurants, grocery stores and food delivery service providers, not only for sustenance but also for enjoyment. Since the abovementioned foodservice operations are downstream value chain players in a food system, their actions are particularly crucial to rewire the existing linear system into a closed-loop one.

This part looks into how these resource-intensive operations may adopt circularity practices collaboratively with different value chain actors to minimise waste and the associated impacts, alongside brief analyses of the business considerations and existing implementation challenges. It aims to throw light on the value of realising a circular economy for foodservice operators in Hong Kong.

4 Applicability of Circular Economy in Foodservice Operations

Key Message

- Through mapping the value chain actors against the 9R framework of circular economy, a variety of opportunities are available for these foodservice operations to practice circularity.

To cater to demand, foodservice operations, including restaurants and grocery stores, procure different kinds of resources to make and serve meals and, in turn, produce waste. In fact, the mere process of food delivery can burden the environment. The diagram below shows the types of waste that can be generated from these foodservice operations. Other than food waste, which has attracted much attention in the industry, foodservice operations also contribute to other types of waste.

Figure 3: Major waste resulting from operation in a restaurant

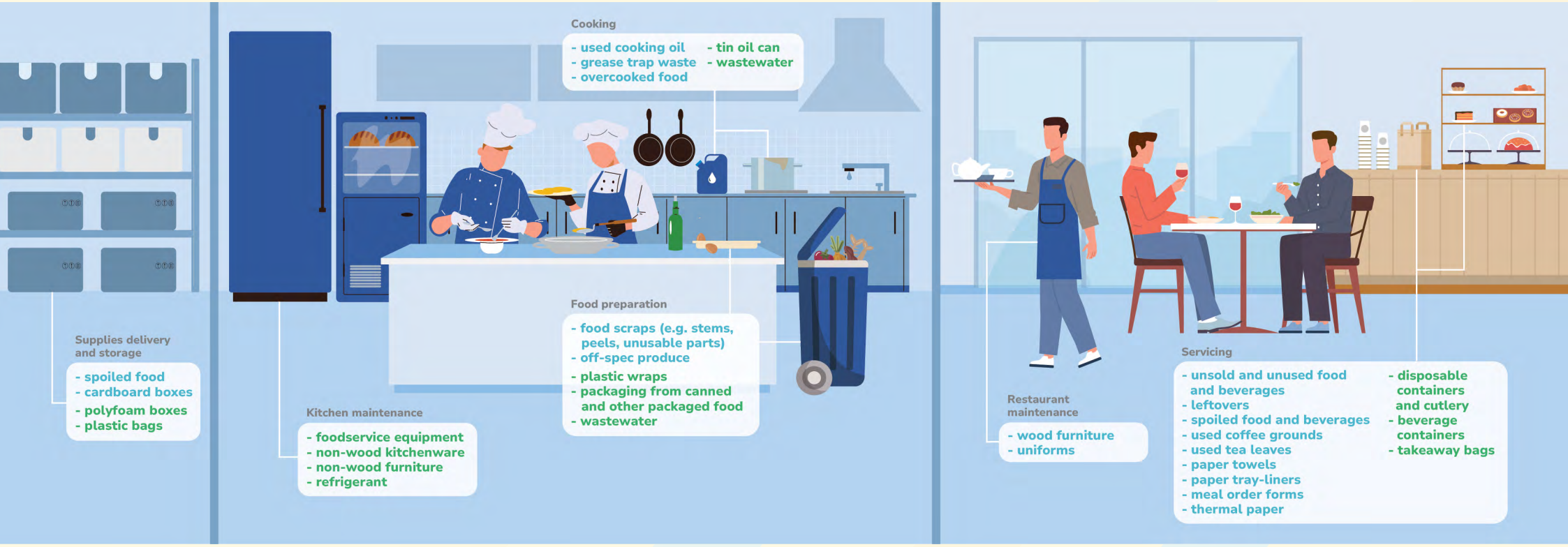


Figure 4: Major waste resulting from operation in a grocery store

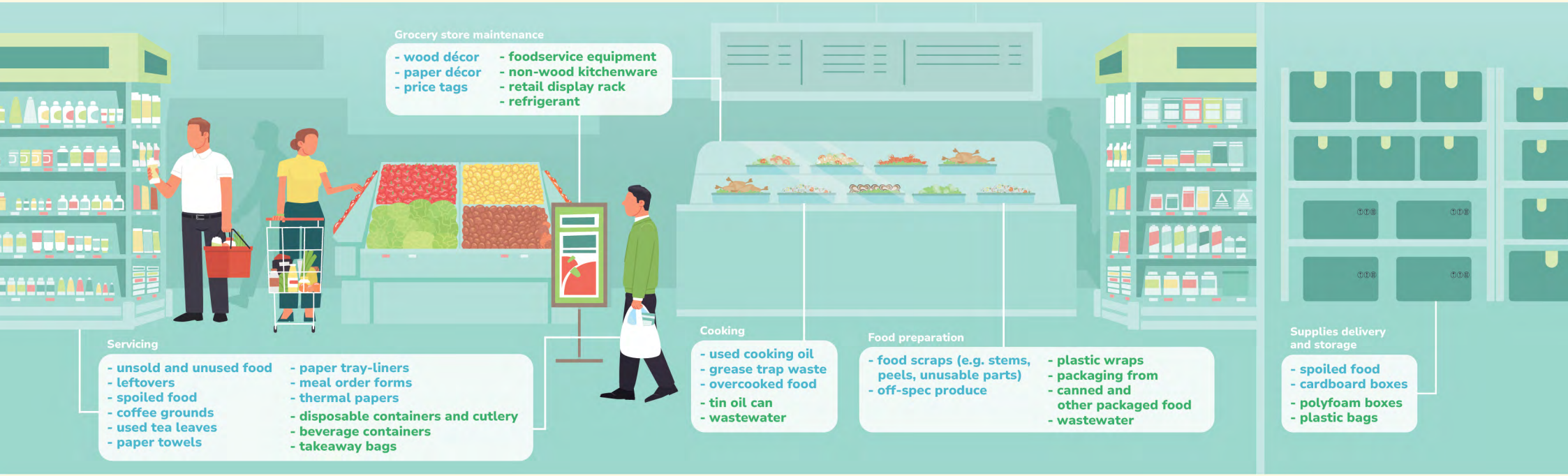


Figure 5: Major waste resulting from operation in a food delivery service provider

While the majority of waste is unavoidable for most foodservice operations, companies that are keen on pursuing waste minimisation or zero waste can try to apply the processes in the 9R framework (see The Processes in a Circular Economy) to design out waste.

By referring to the following illustrative example, circularity can be achieved by collaborating with other value chain actors, delivering value to the environment and society through the regenerative economic model.

Figure 6: Illustrative example of value chain actors for circularity

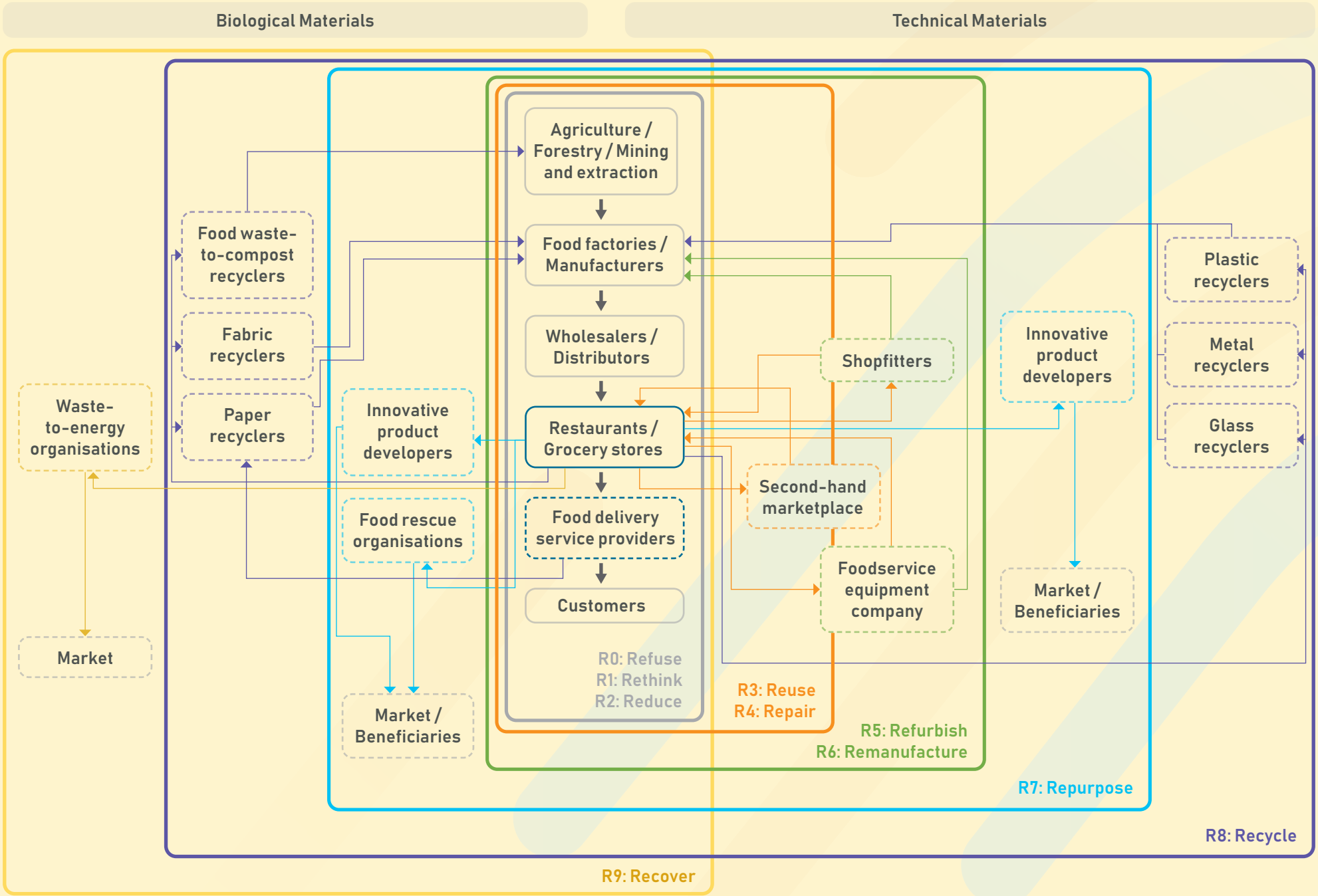


Figure 6 highlights how involving additional value chain actors and collaborating with them can put the processes of the 9R framework into practice for biological and technical materials. While R0: Refuse, R1: Rethink and R2: Reduce would primarily be applied by the foodservice operations, they can line up partnerships with others to achieve the rest:

R3: Reuse and R4: Repair (Technical materials)

Shopfitter, Equipment company, Second-hand marketplace, Industry peer

Equipment, furniture, uniforms, thermal bags and so on can be reused immediately or after repair by other stakeholders within the company. Some of these may even be re-utilised by industry peers. Second-hand marketplaces that take in used objects that are in good condition or that require minor repairs facilitates these processes. Shopfitters and foodservice equipment companies that provide after-sale maintenance service can also promote the processes.

R5: Refurbish and R6: Remanufacture (Technical materials)

Shopfitter, Equipment company, Manufacturer

For objects that are out-of-date or are no longer functional, even after repair, shopfitters and foodservice equipment companies that offer take-back programmes can send these objects to the manufacturers for processing, restoration or using their parts in new products. They can then re-enter the economy.

R7: Repurpose (Biological and technical materials)

Product developer, Alternative market, Food rescue organisation, Beneficiary

By thinking beyond an object's original use, repurposing presents opportunities to get them back into the system via alternative value chains. This is especially useful for objects belonging to the biological category where R4 to R6 are not applicable. For example, used coffee grounds are a natural air freshener, and excess bread can be used for brewing beer. These can be done through engaging innovative product developers. More commonly, foodservice operations can partner with food rescue organisations to re-route material to alternative markets or beneficiaries.

R8: Recycle (Biological and technical materials)

Recycler, Manufacturer

Perhaps most familiar to all, recycling can be achieved through engaging different recyclers. These recyclables include but are not limited to food waste, paper, fabric, plastic, metal and glass. When clean recycling is practiced, the recycled materials can be reapplied by actors in the upstream value chains. In the case of the foodservice industry, this includes farmers (e.g. compost from food waste), textile and plastic manufacturers.

R9: Recover (Biological materials)

Waste-to-energy organisation

For waste-to-energy recovery, foodservice operations are reliant on organisations that have such technical capability. The used or spoiled organic materials, including food waste, grease trap waste and used cooking oil, can be turned into fuel to power operations in the economy. In other words, these materials can be developed into alternative energy by collaborating with waste-to-energy organisations.

The above example only shows some of the collaborations that the foodservice operators can take to practice circularity. After determining which materials your company would like to work on, you can make use of the Template for Planning Circularity Practices with Value Chain Actors in the Appendix to map your collaborators against the 9R framework. This will help your company draw an overall picture of how they can benefit different value chain activities.

Useful Resource

Regardless of which processes of the 9R framework your foodservice operation is attempting, having a sound and effective collection system on used or underutilised materials is fundamental. Make sure your operation has:

Dedicated bins to collect different types of waste

Optimal conditions (e.g. temperature, enclosed environment) to store the waste

Aligned staff's practice in handling waste at the workplace

You can refer to Appendix – Checklist for Waste Management to get a sense of how well your company is managing waste and where improvements can be made. The Checklist was developed with reference to the guideline in ISO 14001 Environmental Management System.

5 Gaps and Policies for Circularity in Foodservice Operations

Key Messages

- Food and plastic waste which are material to foodservice operations remain problematic in Hong Kong.
- Relying solely on government's actions will not realise circular economy. Collective and innovative endeavours from the industry is needed.

In general, the uptake of circularity practices is still at infancy in Hong Kong (Business Environment Council, 2021). While some of the foodservice operations have taken actions for circularity (for more details see: Examples of Value Chain-based Circularity Practices), the scale remains too small to drive systemic change. Efforts from more industry players are necessary. On the other hand, despite the recent waste reduction measures by the government, collaborations between foodservice operations and other value chain actors are still essential to foster a circular economy.

Urgency for the Foodservice Sector to Better Manage Waste

While no foodservice sector-specific waste database is available, the following data offer some clues on how much waste foodservice industry-related activities are producing:

Food waste

Based on waste statistics from the Environmental Protection Department (EPD) (2021), in both domestic waste and commercial and industrial (C&I) waste categories, food waste comprises the greatest proportion (i.e. 30%) of the total weight of waste.

Plastic waste

According to an estimate in 2019 (Vanthournout & Bang, 2021), Hong Kong used 3.94 billion single-use food and drink containers handed out by local restaurants, coffee and snack shops, cafeterias etc. As plastic recyclables' recovery rate remains low, a large amount of these containers, together with cutlery, end up being disposed of in landfills (EPD, 2020; 2019a; 2019b; 2018).

Used cooking oil

The recovery rate of used cooking oil for producing biodiesel was estimated to be 30% or 60%, depending on the sources (Hong Kong Productivity Council, 2014; Yau, 2014). This highlights that a portion of the used cooking oil is either thrown away or put to other purposes.

Government Measures on Foodservice-related Waste

The government has been implementing measures to curb foodservice-related waste, namely municipal solid waste charging, regulation of disposable plastic tableware, producer responsibility schemes, waste recycling facilities and Food Wise Hong Kong.

Municipal solid waste charging

The introduction of municipal solid waste charging in Hong Kong was confirmed in 2021, and will be implemented at the end of 2023 (The Government of the Hong Kong Special Administrative Region, 2021; EPD, n.d.-a). Waste disposal will hence come at a cost. Reducing waste at source and diverting recyclables from landfills would become key to keep the additional operating cost at the minimum. The government has published sector-specific best practice guides (EPD, n.d.-c), including the catering trade sector (EPD, n.d.-g), to provide details of the municipal solid waste charging and corresponding information about waste reduction and recycling.

Regulation of disposable plastic tableware

The government is proposing a phased regulation of disposable plastic tableware and other plastic products, expecting to enforce the first phase regulation in the second half of 2024 the earliest (The Government of the Hong Kong Special Administrative Region, 2023). In terms of disposable plastic tableware, foodservice businesses will then no longer be allowed to provide tableware made from expanded polystyrene for both dine-in and takeaway services, and also prohibited to give out disposable plastic cups, cup lids, food containers to dine-in customers, with those in takeaway services banned in the second phase. Foodservice businesses also need to be aware of the control measures on other disposable plastic products, including table cloths, cake toppers, food sticks, toothpicks etc.

The government has built the Green Tableware Platform with supplier and tableware product lists to help the local foodservice businesses and the public identify alternatives conforming to the regulation (EPD, n.d.-b).

Producer responsibility schemes

Applying the “polluter pays” principle, the government has put in place producer responsibility schemes (PRS). These include the Plastic Shopping Bag Charging Scheme, PRS on Waste Electrical and Electronic Equipment, PRS on Glass Beverage Containers and PRS on Plastic Beverage Containers (EPD, n.d.-e), all of which have significant implications for foodservice businesses’ operations. For the former, the charge collected by the businesses serves to disincentivise retail customers on over-using the bags. For the latter three, they require stakeholders along a value chain to handle the specified products responsibly at the post-consumer stage.

Even if they are not suppliers (i.e. businesses not involving manufacturing the goods), the foodservice businesses and their customers are expected to contribute to the return or recycling of these goods.

Waste recycling facilities

Four food waste treatment facilities are in place or are planned. These include O·Park 1 (in use) and O·Park 2 (expected to start operating in 2024) as well as two food waste/sewage sludge anaerobic co-digestion facilities in Tai Po (in use) and Sha Tin (expected to start operating in 2023). The facilities make use of waste for biogas generation and compost production (EPD, n.d.-d). The government has also introduced Reverse Vending Machine Pilot Scheme with 120 machines installed around Hong Kong for individuals to return plastic beverage containers after consumption (EPD, n.d.-f). An instant rebate of $0.1 per container is provided to incentivise the public to take the plastic bottles back for recycling.

Food Wise Hong Kong

The Food Wise Hong Kong Campaign invites businesses and organisations to sign the Food Wise Charter to demonstrate their commitment to implementing food waste reduction measures. In return, these businesses gain recognition for their commitment. Since 2013, the Food Wise Hong Kong Campaign also provides training workshops, sector-specific toolkits, practical guides and publicity materials to promote good practices on food waste management (info.gov.hk, 2013).

Industry Efforts Needed beyond Government's Actions

The government has a vision to achieve "Waste Reduction • Resources Circulation • Zero Landfill" in its Waste Blueprint for Hong Kong 2035 (Environment Bureau, 2021). While the direction is clear, support from the business sector would contribute to the intended outcome.

Even though more waste-handling infrastructure is gradually coming into operation, these facilities cannot reach their maximum performance without upstream waste collection, sorting and clean recycling.

In other words, waste sorting at the source by foodservice businesses is essential to keep the facilities' operations running. The foodservice establishments should also clean materials that can be recycled.

Eventually, waste reduction at the source is most helpful to the situation. Collective and innovative efforts from the foodservice industry and other relevant stakeholders are critical to deliver the territory-wide goals.

6 Examples of Value Chain-based Circularity Practices

Key Messages

- A number of real-life examples and cases are offered in this section.
- The examples highlight that collaborations with value chain partners are critical for scaling-up sustainability impacts.

Some companies have started working with their value chain partners to create innovative solutions to realise circular economy. This section highlights some of the cases that have been identified through desktop research, which hopefully may inspire you to work collaboratively with the corresponding stakeholders to attain the same objectives. They are put into three categories to demonstrate how F&B operators can design out waste, these categories are **(1) shopping malls, (2) hotels and (3) other partners.**

We have also put in the corresponding icons introduced in The Processes in a Circular Economy under each case so that you can see how these examples approach resource circularity. Their meanings are reiterated below:

Initiative to circulate certain resources within own operation

Initiative to circulate certain resources within a(n) value chain / industry

Initiative to circulate certain resources in other value chains / industries

Holistic closed-loop operations for circular resource use

F&B Operators and Shopping Malls

Recycling plastic bottles from participating foodservice tenants for eco-bricks at Olympian City

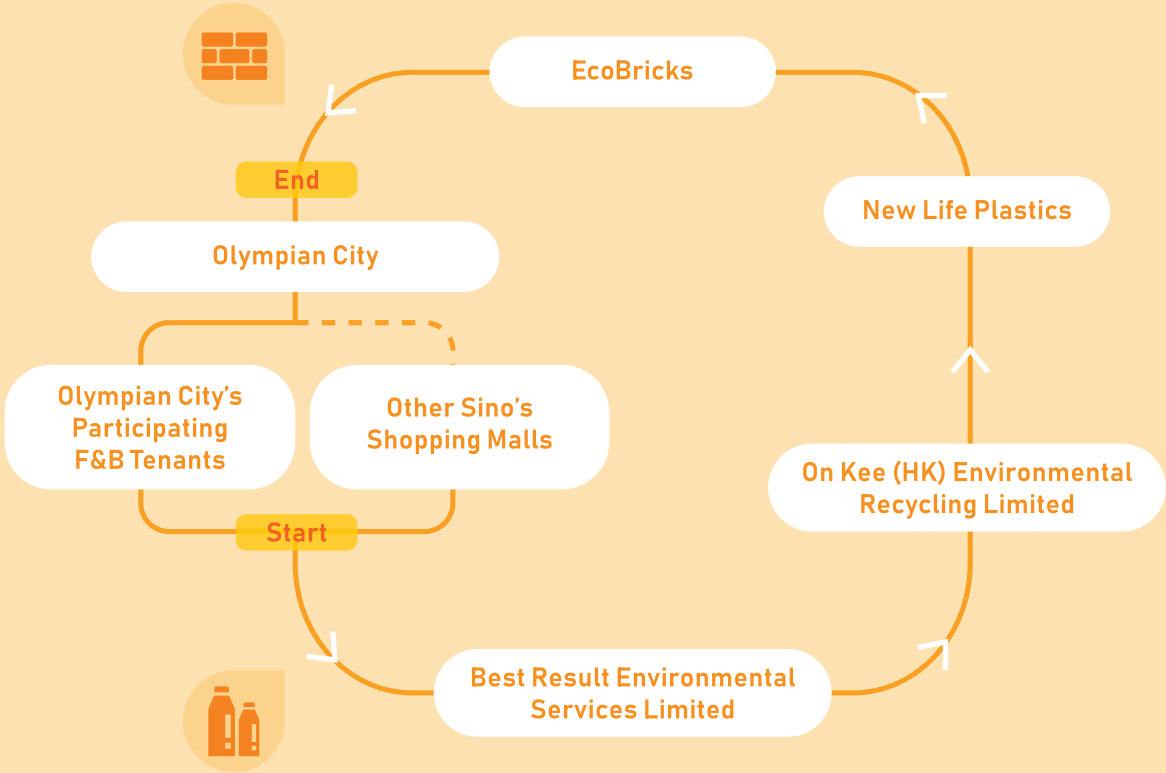
Hong Kong

A collaborative project by:

- Olympian City
- Foodservice tenants
- Recyclers
- EcoBricks

Resource concerned: Packaging waste (plastics)

Process in 9R framework: R7: Repurpose



Plastics are commonly found in restaurant supplies and products. The materials demonstrate versatility to re-enter to the economy via different forms. One of the novel ways is through recycling and applying them in construction and renovation, with a Hong Kong-based start-up EcoBricks. Sino Group has been adopting the start-up's closed-loop solution since 2021. All recycled plastic waste collected from the operations is sent to New Life Plastics for processing, before transporting to EcoBricks to manufacture industry-grade concrete paving eco-bricks for Sino Group's use and new food-grade PET bottles.

With Olympian City chosen as a pilot site, Sino Estates Management Limited (Olympian City) experimented a collaborative model for plastics circularity with some of the foodservice tenants, including A-1 Bakery, Gyu-Kaku Hong Kong, Café de Coral, Oliver Super Sandwiches and The Sky, as well as its waste recycler – On Kee Environmental Recycling Limited – in the Sustainable Value Chains Commitment Scheme by the Centre for Civil Society and Governance, The University of Hong Kong.

As the project coordinator, Olympian City's property management team liaised with these participating companies and other project partners, including Best Result Environmental Services Limited, New Life Plastics and EcoBricks, on the following items:

Coordination by Olympian City's property management team

- Understand the types of plastic products used in the tenants' businesses and ask the tenants to keep them for the project
- Remind the tenants on clean recycling when handling the plastic bottles, such as completely degrease plastic bottles, remove product stickers etc.
- Set up a schedule for recyclable collection with the tenants
- Made a recycling bin specifically for sorting and recycling plastic bottles and caps
- Arrange manpower deployment with cleaning team
- Educate the cleaners to sort all recyclables and communicate with them the location to place the recyclables
- Contact the recycler for recyclable delivery to New Life Plastics
- Communicate with EcoBricks to get the construction materials

An incentive scheme was in place to encourage and motivate tenants' staff to participate actively in the project by offering movie tickets at The Sky as reward.

Albeit an early-stage pilot project, both the Centre for Civil Society and Governance's project team and Olympian City's property management team were mindful of the need to scale up the actions for the longer-term success of the project. In addition to gaining buy-in from the other tenants in the shopping mall, the team communicated with other district managers that manage different Sino's properties on the project at the headquarter's regular meetings. As a result, Olympian City's property management team was able to expand the scope by including more of its tenants, namely Taiwan Bussan Hotpot, as well as getting support from Island Resort Mall and China Hong Kong City.

According to the figures provided by Olympian City's property management team in June 2023, the shopping mall had managed to turn 660 kg of collected plastic bottles into 975 eco-bricks and 18,150 new food-grade PET bottles. These eco-bricks would be used to replace the old and broken street bricks at Olympian City. In fact, as at early-June 2023, the shopping mall has already laid about 50,000 ecobricks around the perimeter of Olympian City, and will continue to apply ecobricks for any cracked floor tiles.

Drivers for collaboration

- Readily available plastic-to-eco-brick solutions
- Foodservice operator's commitment and proactiveness on sustainability
- Incentive offered to the participating tenants' staff
- New business opportunities
- Good story for branding

Barriers to act

- Low tenant participation rate in general faced by the shopping mall
- Limited amount of waste plastic bottle generated in daily operations by tenants
- Inadequate space for sorting and storing plastic recyclables by tenants
- Quality of the collected plastic waste not up to standard for producing eco-bricks

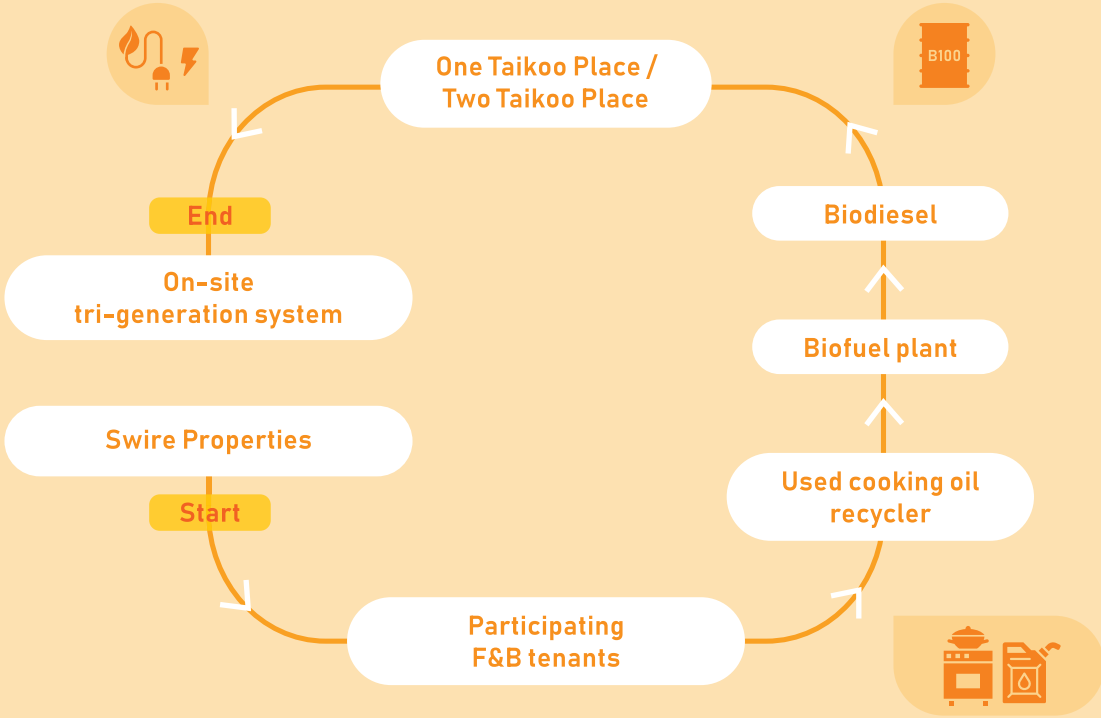
Converting food waste to energy through landlord-tenant collaboration

Hong Kong

A collaborative project by:
- Swire Properties
- Foodservice tenants

Resource concerned: Food waste

Process in 9R framework: R7: Repurpose; R9: Recover



A multi-pronged approach is needed to tackle the issue of food waste and collaboration along the value chains is always key. Many property developers, including Hysan and Wharf, have invited their foodservice tenants to join their food waste recycling programmes. They send their waste to O·Park 1 for waste-to-energy and leverage the Hong Kong SAR Government's organic waste recycling infrastructure to convert food waste to compost and electricity.

Swire Properties has been actively supporting food waste reduction and recycling since 2005 when they installed their first food decomposer in one of their Hong Kong shopping malls. In 2019, they started leveraging a programme funded by the Hong Kong Government's Environment and Conservation Fund to further promote food waste recycling amongst its F&B and office tenants.

In 2022, Swire Properties collected more than 660 tonnes of food waste in Hong Kong. The programme included participation of over 75% of F&B tenants and 113 tenanted office floors in Citygate Outlets, Cityplaza, Island Place Mall, Pacific Place, South Island Place and Taikoo Place (Swire Properties Limited, 2023).

Swire Properties recognises the importance of providing on-the-ground support to tenants for the successful implementation of food waste recycling. Therefore, they partnered with the Hong Kong Productivity Council in 2022 to review the status of food waste recycling across their portfolios. They visited over 100 office and F&B tenants to understand their food waste recycling practices, identify the support they needed (such as providing bins and bags, or posters), and offer specific advice to enhance their waste recycling performance.

On the other hand, in 2018, Swire Properties pioneered the city's first waste-to-energy tri-generation system for commercial buildings, turning waste cooking oil collected from its F&B tenants into biodiesel to generate electricity, heating and cooling at One Taikoo Place. The same system is also adopted at the newly completed Two Taikoo Place, generating on-site renewable energy for the building's use (Swire Properties Limited, 2023).

Drivers for collaboration

- Government's resource and circularity policy and infrastructure
- Landlord's proactiveness to facilitate and support recycling
- Tenants' support in source separation

Barriers to act

- Lack of collection and logistics service due to difficulty in reaching economy of scale for service providers
- Inadequate space for storing food waste
- Additional workload to cleaning staff
- Additional cost to individual foodservice operators

Facilitating transition from single-use plastics

Australia | Hong Kong

A collaborative project by:

- AMP Capital — Foodservice tenants
- Link REIT — Foodservice tenants

Resource concerned: Packaging waste (single-use plastics)

Process in 9R framework: R0: Refuse

The Hong Kong SAR Government and an increasing number of governments around the world have announced the phase-out of single-use plastics in the foodservice industry. As part of the supportive actions from the business sector, some property management companies have engaged their foodservice tenants to trial alternatives materials.

AMP Capital, which is a global investment company as well as an operator of real estate in Australia, has piloted a compostable packaging scheme with 36 of its foodservice tenants to support the transition. The pilot scheme of a zero-waste food court received a grant from the Government of New South Wales. Through the scheme, the company is trying to avoid single-use plastic, reduce contamination rates and waste outgoings for the tenants (AMP Capital, 2022).

In Hong Kong, Link REIT has similarly engaged its foodservice tenants at The Quayside to provide plastic alternatives, including paper takeaway boxes and wooden cutlery (Link REIT, 2021).

Drivers for collaboration

- New government policy and regulation
- Shopping mall landlord's proactiveness and support

Barriers to act

- Relatively high cost of plastic alternatives
- Limitations of plastic alternatives for serving customers

Foodservice Operators and Hotels

Improving kitchen design with support of landlord's green kitchen programme

Hong Kong

A collaborative project by:	**Food by EAST (FEAST)** **EAST Hong Kong** **Swire Properties**
Resource concerned:	**Water; Energy; Paper**
Process in 9R framework:	**R0: Refuse;** **R1: Rethink;** **R2: Reduce**

Having a landlord supportive of sustainability and the circular economy undoubtedly facilitates foodservice operators to practice resource efficiency. This is exactly the case for FEAST, a restaurant at EAST Hong Kong – part of Swire Hotels under Swire Properties. The restaurant participated in Swire Properties' Green Kitchen Initiative in 2020, and received the highest Three Leaf Award (Swire Properties Hotel Holdings Limited, 2022).

The Initiative serves as a platform that allows Swire Properties' portfolio management teams and foodservice outlets to discuss sustainability-related matters before fit-out and renovation projects commence, supporting foodservice operators to integrate sustainability into their kitchen design right from the outset. Not only will it benefit the tenants' environmental performance, but also that of the landlord. By the end of 2022, 76 tenants across Swire Properties' Hong Kong and Chinese Mainland portfolios have been recognised with the Green Kitchen Award (Swire Properties Limited, 2023).

At FEAST, sustainability considerations were kept top-of-mind in their latest renovation. For example, the gas cooking stoves and conveyor dishwasher carry heat recovery function

which channels hot air back into the water circuit as a source of energy. The restaurant also uses induction cookers to maximise energy transfer efficiency, and installed LED lighting to conserve energy. In order to evaluate the level of energy efficiency, a power analyser was installed to monitor electricity consumption of the kitchen's lighting, power sockets and equipment. These measures helped increased energy efficiency by 6% and Towngas usage efficiency by 31%. Apart from energy conservation measures, the restaurant also installed water tap flow rate restrictors, which increased water efficiency by 19%; and set up recycling bins inside the kitchen to minimise waste to landfill.

Drivers for collaboration

- Tangible cost savings from improved environmental performance through green kitchen operations
- Readily available energy efficiency, water conservation and paperless solutions
- Landlord's sustainability commitment to support and recognise tenants' efforts
- Tenants' willingness to collaborate with landlord and integrate sustainability considerations into their design and operations

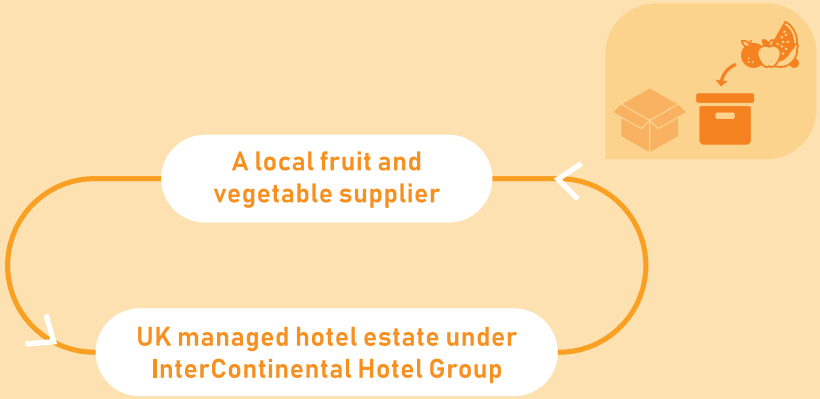
Barriers to act

- Upfront cost and operational disturbance in kitchen renovation projects

Engaging vegetable supplier to replace single-use cardboard boxes with reusable crates

United Kingdom

A collaborative project by:	**InterContinental Hotel** **A local fruit and vegetable supplier**
Resource concerned:	**Packaging waste (cardboard box)**
Process in 9R framework:	**R3: Reuse**



Single-use items, such as cardboard boxes and polyfoam boxes, are popular among vegetable, fruit and meat suppliers when transporting food to their customers as the materials are light and offer good protection. Nevertheless, they, particularly polyfoam box, burden the environment if discarded irresponsibly. To reduce waste packaging, InterContinental Hotel Group's UK managed hotel estate engaged a local fruit and vegetable supplier to adopt reusable crates instead of cardboard boxes for packaging and transportation. According to the company, the project will save about 14,500 cardboard boxes (i.e. nine tonnes) each year (IHG Hotels & Resorts, 2022).

Drivers for collaboration

- Hotel's proactive supplier engagement on sustainability direction
- Supplier's cooperation and use of reusable crates

Barriers to act

- Lack of producer responsibility scheme on bulk packaging
- Cardboard or polyfoam boxes being significantly cheaper than using reusable containers
- Low bargaining power between small-scale individual foodservice operators and suppliers
- Additional work for supplier with changes in operational flow

Discarded shells as nature-based solution for enhancing quality of the coastal environment

Hong Kong

A collaborative project by:

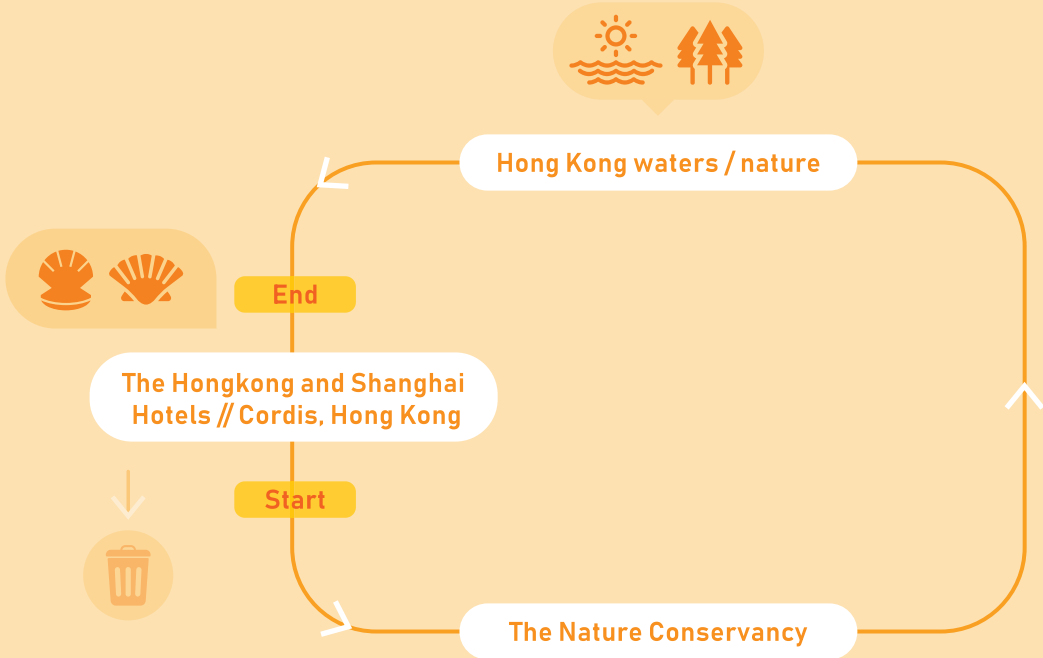
The Hongkong and Shanghai Hotels

Cordis Hong Kong

The Nature Conservancy

Resource concerned: Food (oyster shells)

Process in 9R framework: R7: Repurpose



Hong Kong's coastal setting means that the city is particularly vulnerable to coastal hazards. Oyster reefs not only maintain marine ecosystems and improve water quality, but they also reduce coastal erosion by buffering tidal energy, thereby providing a nature-based solution to these coastal hazards and to promote biodiversity.

The Hongkong and Shanghai Hotels is collaborating with The Nature Conservancy (TNC) on the "Save our Shells" project to collect once enjoyed oyster, mussel, clam and abalone shells from restaurants in The Peninsula Hong Kong and The Repulse Bay (The Hongkong and Shanghai Hotels Limited, 2022). The shells, which are typically discarded and sent to landfills after consumption, are now collected, weathered naturally and used to build artificial oyster reefs in Hong Kong waters.

The Cordis in Hong Kong is also contributing to the programme by collecting oyster shells from its restaurant Alibi (Langham Hospitality Group, 2021).

Drivers for collaboration

- Readily available solution driven by environmental NGO who has good technical expertise and understanding of hotel operations
- Alignment with the hotels' sustainability principles including waste diversion, circularity and nature-based solutions
- Good story for branding

Barriers to act

- Inadequate space for storing food waste
- Additional workload to cleaning staff
- Additional cost to take part in the programme that only tackles certain food waste

Foodservice Operators and Other Partners

Prolonging equipment life with maintenance service agreement and appliance-as-a-service programme

Sweden

A collaborative project by:	**Electrolux** **Foodservice operators** **Stockholms Kooperativa Bostadsförening (SKB)**
Resource concerned:	**Foodservice appliance**
Process in 9R framework:	**R4: Repair;** **R5: Refurbish;** **R6: Remanufacture**

Circular economy emphasises prolongation of product life instead of end-of-pipe treatment. One key means to achieving this is through regular maintenance. The appliances used by foodservice operators typically come with product care service provided either by the equipment manufacturer or supplier. For example, Electrolux Professional offers Essentia with customised service agreement packages to safeguard the kitchen equipment's performance, safety and prolong lifetime.

Separately, Electrolux introduced appliance-as-a-service to landlords in 2022 (Electrolux Group, 2022). With reference to the result released by Vinnova and Electrolux (AB Electrolux, 2022), around 16 out of the 24 landlords surveyed had thrown away white goods such as stoves and fridges while the appliances could still be repairable. Gaining support from its first customer SKB – Sweden's largest landlord, Electrolux's monthly subscription-based service offers product installation, maintenance and repair. The programme lengthens the service life of the home appliances and cuts the buildings' greenhouse gas emissions. The company also takes care of refurbishing and recycling the appliances if they need to be replaced.

While this programme is available only to residential properties, such a product-as-a-service model demonstrates how equipment manufacturers can join forces with property owners to increase resource circularity and reduce environmental footprint.

Drivers for collaboration

- Saving costs for foodservice operators from repairing instead of replacing equipment
- Issues to be addressed aligned with the landlord's sustainability direction
- Easy access to service by clients
- New business opportunities

Barriers to act

- Appliance-as-a-service solution not available in operating locations
- Operational adjustments for regular maintenance

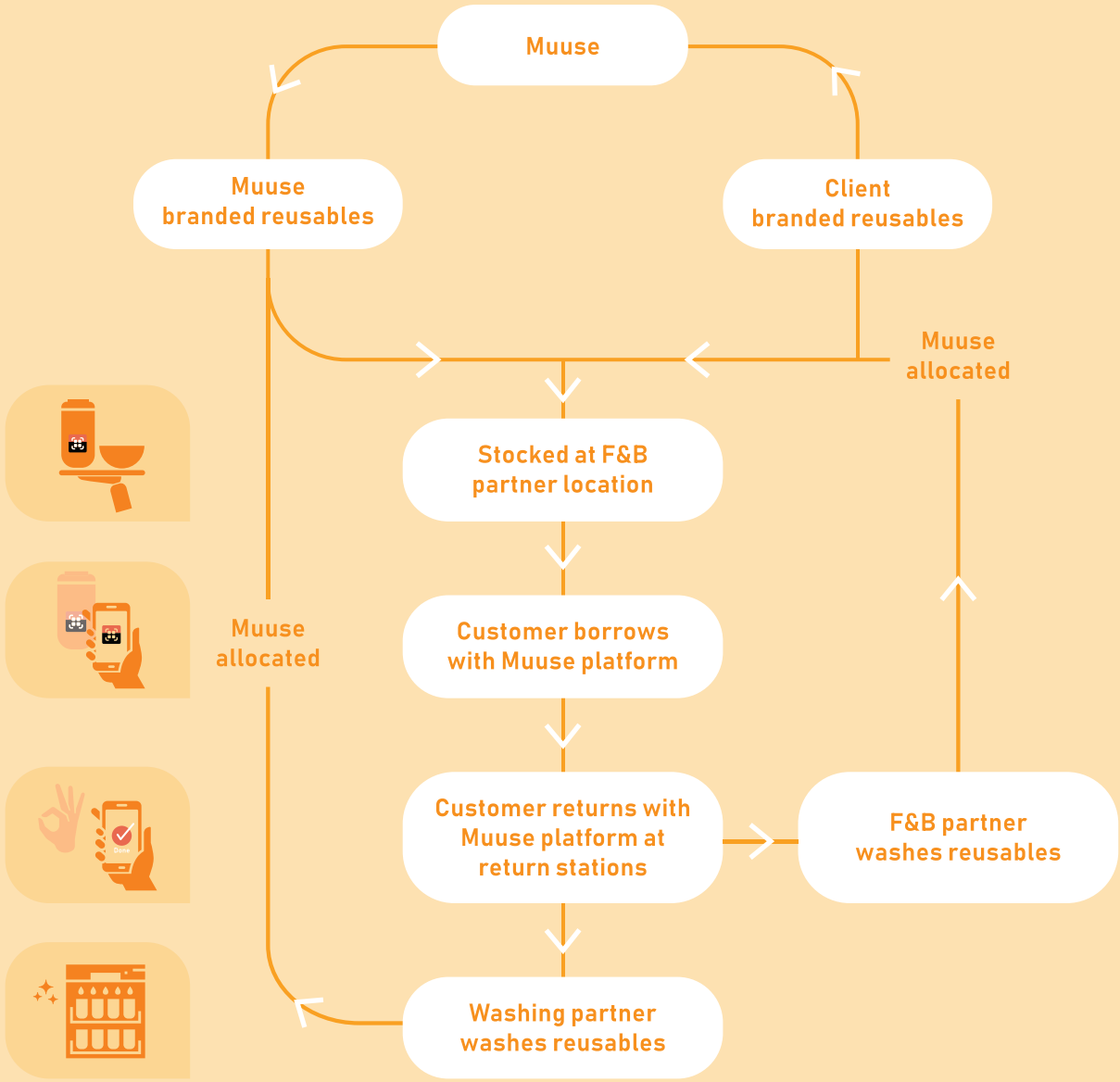
Providing options for customers to cut the use of single-use containers

Hong Kong | Singapore | Canada (Toronto)

A collaborative project by: Swire Properties | foodpanda | Muuse | Starbucks | GrabFood

Resource concerned: Packaging waste (single-use containers)

Process in 9R framework: R3: Reuse



Disposable cups have brought people the convenience of enjoying a cup of their favourite drink anytime and anywhere. However, they are also creating a serious waste problem for all countries around the world. While asking people to refrain from using them is not possible, a borrow-and-return programme may be an appealing solution.

Companies including Starbucks and Swire Properties have partnered with Muuse, which lends reusable cups and containers in a network of cafes and restaurants in Singapore, Hong Kong and Toronto, at some of their operating locations. Muuse facilitates the service for reuse through its electronic platform, keeping record of the transition from the companies to their customers and then the return points. The provision of reusables can be sourced by Muuse or provided by the companies. For Starbucks, the programme is running across five stores in Hong Kong and are looking to expand further.

Swire Properties' programme is of a larger scale. They piloted Hong Kong's first smart reusable cup network at Taikoo Place back in 2020, and expanded the network to eleven participating café partners at Taikoo Place in 2022. Since the programme's launch, Swire Properties prevented the disposal of over 16,800 single-use coffee cups (Swire Properties Limited, 2023).

Furthermore, corporate tenants like JLL have introduced Muuse's rentable reusables to office spaces. Muuse are also able to offer reusables to event spaces around Hong Kong.

After downloading and registering on the app or web browser, users can ask for a Muuse cup when ordering a drink at participating F&B outlets, receiving a reusable discount each time they borrow a cup. After finishing the drink, they can return the cup at designated return stations. The cups are then washed and sanitised by an on-site cleaning partner before being used again.

With Muuse, people in Singapore can also order waste-free delivery meals from participating merchants via GrabFood and foodpanda. The ordered meals are packed in reusable containers. Customers can return the containers to any of Muuse's partner cafes after enjoying their meals. The containers are then cleaned commercially and reused (Muuse, n.d.).

Muuse is just one of the companies offering an option for customers to reduce the use of single-use containers. In Hong Kong, Circular City has a similar coffee cup borrowing pilot programme with cafes in Discovery Bay (Circular City, n.d.). In parts of the United States, United Kingdom and Canada, Loop, a global platform for reuse managed by the social enterprise TerraCycle, is partnering with fast food restaurant chains including Burger King and Tim Hortons to provide reusable cups and containers for beverages and food items (Loop, n.d.).

Drivers for collaboration

- Readily available and scalable reusable cup and container solution
- Target customer segment being relatively environmentally conscious, increasing the willingness to use reusable containers
- Financial incentives offered to the customers by using reusable cups and containers (e.g. $2 discount)

Barriers to act

- Customer's misunderstanding of cleaning and hygiene with reusable containers
- Hard to achieve economies of scale without a competent reusable cup and food container provider, logistics partner and cleaning facilities
- High logistics and cleaning cost in Hong Kong

Putting biodiesel generated from restaurants' used cooking oil to logistics use

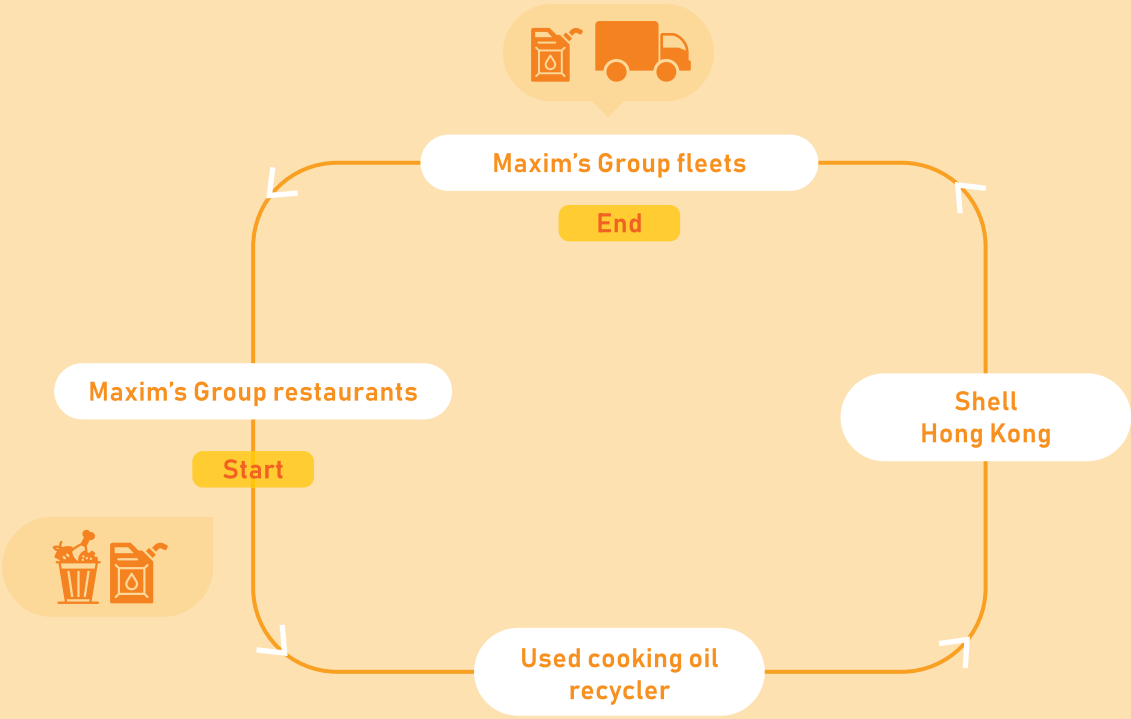
Hong Kong

A collaborative project by:

- Maxim's Group
- Used cooking oil recycler
- Shell Hong Kong

Resource concerned: Used cooking oil

Process in 9R framework: R9: Recover



The practice of converting used cooking oil into biodiesel is increasingly being adopted by foodservice operators in Hong Kong and the region. An industry-first, collaborative project had taken the idea even further to become a closed-loop solution. It was a used-cooking-oil-to-B5-biodiesel pilot programme in 2019 between Maxim's Group and Shell (Shell Hong Kong Limited, 2019).

Indeed, before the programme, the used cooking oil from Maxim's Group's restaurants would already be collected and recycled through a recycler. Nonetheless, the collaboration with Shell allowed the recycled resource to be utilised further by Maxim's Group as an alternative fuel for its fleets. Shell received and blended the B100 biodiesel (i.e. pure biodiesel) produced by the recycler at its refinery, converting it into B5 biodiesel (i.e. 5% biodiesel and 95% diesel). Available at Shell's Tai Po Market station (also Tsing Yi and Hong Kong International Airport stations), Maxim's Group's fleets were able to access the biodiesel conveniently within short distance from Maxim's food production plants. It was suggested that the programme would power over 100 delivery trucks with 396,000 litres of biodiesel consumed annually. This collaborative programme enabled Maxim's Group to reduce waste and carbon emissions.

However, the closure of the fuel station in Tai Po Market later due to land sale (Google Map, n.d.; Lands Department, n.d.) made the closed-loop solution no longer practical for Maxim's Group. As the food production plants are located in Tai Po Industrial Estate, it is cost-inefficient to have the fleets travel all the way to Tsing Yi or Hong Kong International Airport station to refill the tanks. The closed-loop pilot programme had hence been discontinued.

Drivers for collaboration

- Company's sustainability and circular economy commitment
- Readily available solutions by energy business
- Proximity to the fleets' daily logistics routes to access the fuel
- Large-scale used cooking oil collection and biodiesel adoption in daily operations with economies of scale

Barriers to act

- Biodiesel fuel station being far away from daily logistics routes, necessitating change in operation and increasing operating cost
- Hard to achieve economies of scale for small-scale individual foodservice operators

Creating products with local breweries that upcycle food waste from own operations

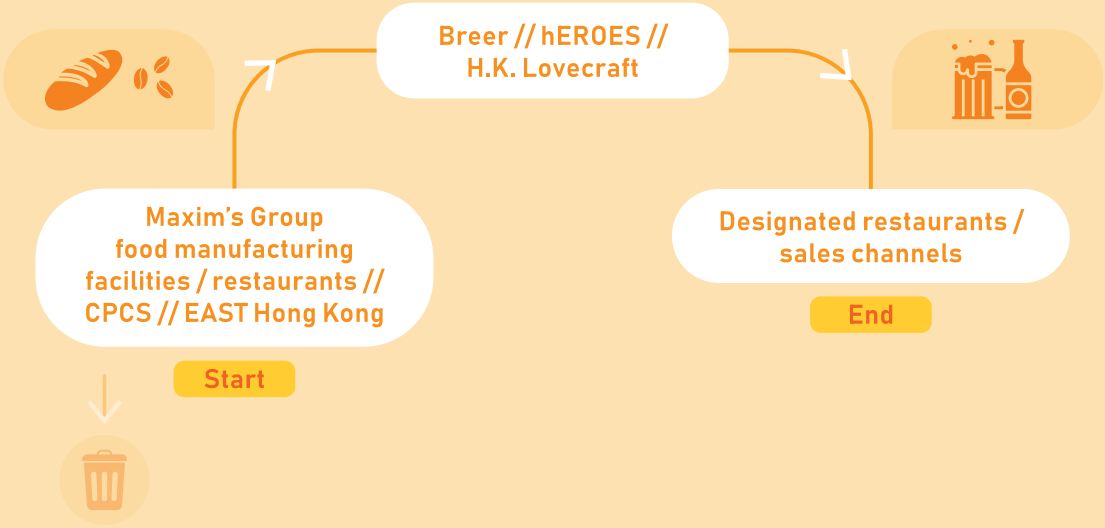
Hong Kong

A collaborative project by:

- Maxim's Group
- Cathay Pacific Catering Services (H.K.) Limited
- Breer
- hEROES
- EAST Hong Kong
- H.K. Lovecraft

Resource concerned: Food waste (bread and coffee grounds)

Process in 9R framework: R7: Repurpose



Bread is commonly served in our everyday diets, and it is also suggested to be one of the major types of food waste in Hong Kong (Ho, 2020). Some F&B operators have been donating surplus bread to reduce wastage. For example, Maxim's Group (2023) bakery chain has introduced "Love Bread Programme" since 2009 to donate unsold bread to NGOs to help those in need. However, vertically integrated companies like Maxim's Group have other leftover bread arising from its food manufacturing activities. This includes bread heels and odd-shaped bread products that would not hit the shelves.

With the intent of closing the loop, utilising these usable resources, and supporting local start-up development, Maxim's Group introduced BOB ("Bottle of Bread") in 2021 with a food upcycling start-up – Breer. The uniqueness of Original BOB lies in the fact that by applying surplus bread and bread crusts, it replaces the use of barley in the brewing process entirely which reduces the natural resources otherwise required for the beer production.

Breer collects these leftovers from Maxim's Group food manufacturing facilities. Afterwards, the start-up blends the bread leftovers and malt with hot water in mash tun. Following the fermentation with hops, Breer bottles and packages the drinks. The products are subsequently distributed to the designated restaurants for sale.

Building upon the BOB project, Maxim's Group had hoped to expand the effort on circularity for another resource that is frequently produced in its restaurant operations – coffee grounds. Through further research and development with Breer, it introduced Coffee BOB to the product portfolio in 2023. Coffee BOB is made of coffee grounds collected from its restaurants with an adjusted recipe.

As at May 2023, more than 1.6 tonnes of surplus bread have been upcycled for producing BOB. It makes a clear case that leftovers can still be useful and valuable if we know how to apply them.

Besides Maxim's Group, Cathay Pacific Catering Services (H.K.) Limited (CPCS) and EAST Hong Kong have been approaching circularity on surplus bread similarly in collaboration with local craft beer breweries. For the former (Cathay Pacific Airways Limited, 2023), CPCS partnered with hEROES in 2021 to produce VHHX, turning leftover bread after flight into craft beer for purchase.

According to the reported data, about 12,000 cans of VHHX (approximately 4,000 litres) were produced using around 250 kg of surplus bread for this project. EAST Hong Kong (Swire Properties Hotel Holdings Limited, n.d.) also collaborated with H.K. Lovecraft in 2021, transforming surplus bread from different foodservice operations within the hotel into “Bao Beer”, the locally brewed sustainable craft beer. The utilised breadcrumbs and grains would be sent to local farm for feeding animal or composting.

BOB, VHHX and Bao Beer present a creative way to cascade the use of food waste in another product’s value chain.

Drivers for collaboration

- Company’s sustainability and circular economy commitment
- Readily available solutions by local businesses
- Bread and coffee as major products in daily operations with large-scale food waste collection enjoying economies of scale
- Growing customer demand for differentiated and local products
- Support to local economies

Barriers to act

- Investment of time and money required to research and develop the recipe
- Customer’s sentiment to the product and hence sales performance
- Hard to achieve economies of scale for small-scale individual foodservice operators

Innovating retail products with reusable packaging

United States | United Kingdom | Japan

A collaborative project by: Haagen-Dazs | Nutella | Loop | Glad | Tesco | AEON

Resource concerned: Packaging waste (single-use containers)

Process in 9R framework: R3: Reuse

Envisioned to bring in exceptional customer experience, accessibility and convenience while reducing the global reliance on single-use disposables, Loop (n.d.) is collaborating with different world-leading brands and manufacturers, including Haagen-Dazs, Nutella, Glad and Clorox, to provide refillable and durable option of their products. It is also partnering with retailers, such as Kroger in the United States, Tesco in the United Kingdom and AEON in Japan, to make these options available in their retail stores and online shops.

Since May 2021, AEON has introduced items in reusable packages like food, detergent and shampoos in Tokyo, Kanagawa Prefecture and Chiba districts. While customers purchase them at slightly higher prices than the same products in regular packages, they can get between 110 yen and 880 yen back after they return each empty container in the collection box. The returned items are then cleaned by a specialised company before sending them to the manufacturers for reuse (Joe, 2021).

Drivers for collaboration

- Readily available solution by reusable container business
- Financial incentives offered to the customers by using reusable containers

Barriers to act

- Solution not available in operating locations
- Customers unwilling to accept reusable container (e.g. hygiene especially during COVID-19 pandemic,convenience)
- Hard to achieve economies of scale for small-scale individual foodservice operators

Locally sourced protein derived from leftovers

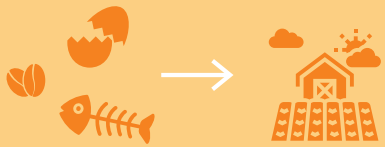
Singapore | Hong Kong

A collaborative project by:

- dnata
- Blue Aqua Food Tech
- Maxim's Group
- Hung Yat Farm

Resource concerned: Food waste

Process in 9R framework: R7: Repurpose



While many companies focus on composting and waste-to-energy for food waste management, some are taking a different approach. One such example is food waste-to-protein. dnata, which operates airline catering and ground handling services, has partnered with Blue Aqua Food Tech to upcycle the organic waste from its Singapore operations into aqua feed through bioconversion technology.

After the airline food leftovers are collected from dnata and biologically treated, they are fed to insects that are native and commonly cultured in the region, such as mealworms and crickets. The cultured insects then become fishmeal for Blue Aqua Food Tech's shrimp farms in Singapore. The partnership also enables dnata to purchase locally farmed seafood from Blue Aqua Food Tech for its catering operations (Byrne, 2021).

On the other hand, Maxim's Group is experimenting a project with Hung Yat Farm in Yuen Long that practices regenerative agriculture (Television Broadcasts Limited, 2023). The project turns food waste into enzyme for producing crops with zero pesticide and chemical fertiliser, safeguarding food safety while maintaining the environmental quality (鄧康翹, 2023).

More than ten types of food waste, including but not limited to coffee grounds, mango peel, eggshell and salmon bone, are collected from Maxim's Group restaurants and sent to this local farm. The farm then processes the materials to extract enzyme from them. A suitable amount of enzyme is added to the farmland. The enzyme not only replaces the use of chemical fertiliser but also prevents pests from damaging the crops. Furthermore, the farm practices crop rotation for better soil quality (邱潤青 & 鄭智文, 2023). As a closed-loop initiative, around ten Maxim's Group restaurants have served meals with the produce grown in this pilot project.

Drivers for collaboration

- Company's sustainability and circular economy commitment
- Readily available food waste-to-protein solution
- Good story for branding
- New business opportunities

Barriers to act

- Hard to achieve economies of scale for small-scale individual foodservice operators
- Additional work for foodservice operators with changes in operational flow

Offering option to takeaway customers to use reusable food packaging

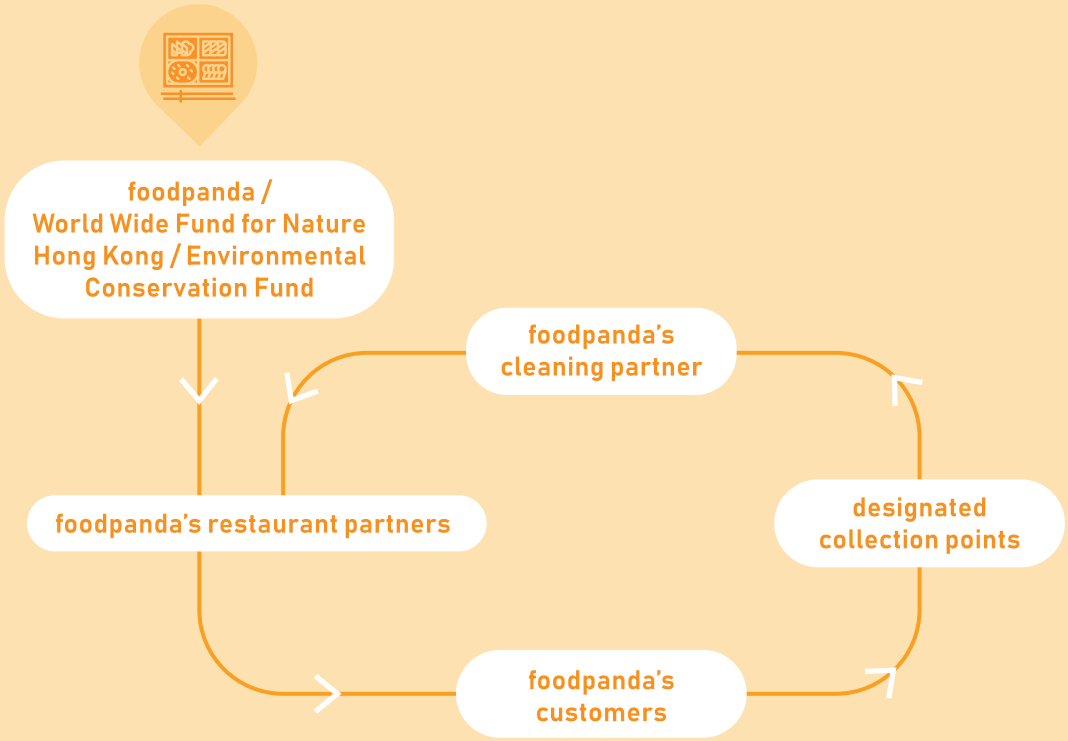
Hong Kong

A collaborative project by:

- foodpanda
- World Wide Fund for Nature Hong Kong
- Environment and Conservation Fund
- Participating restaurant partners
- Participating shopping malls and office buildings

Resource concerned: Packaging waste (single-use containers)

Process in 9R framework: R3: Reuse



The hectic lifestyles and convenience-oriented consumers, together with the territory's social distancing measures amid the COVID-19 pandemic, imply a sizable demand on takeaway food in Hong Kong. So is the use of food delivery platforms to order takeaways nowadays. However, with substantial amount of packaging waste thrown away every day, it takes more than opting out disposable cutlery when ordering to address the problem. It is necessary for foodservice operators and food delivery service providers to explore new ways to get these meals to the customers in an eco-friendly, convenient, and safe manner.

In 2022, foodpanda (n.d.) introduced Hong Kong's first Reusable Food Packaging Pilot. Funded by the Environment and Conservation Fund and implemented by the World Wide Fund for Nature Hong Kong, the pilot brings about a closed-loop takeaway experience for customers. With the support from some of foodpanda's restaurant partners in Central, Admiralty, Wan Chai and Causeway Bay, customers can choose a selection of food items from the restaurants' "Reusable Packaging" menu category. The restaurants will then package the meal in reusable containers for delivery or self-pick up.

After enjoying the meal, it is the customers' turn to either bring the empty containers to foodpanda's collection machines for return, or try to ask foodpanda couriers to take back the used containers on the next foodpanda order. In addition, by taking the containers to the collection machines themselves, customers can get back the initial deposit paid via Octopus and receive a foodpanda e-voucher every time a container is returned. Afterwards, the containers are washed by a cleaning partner – gategroup Solutions before redistributing back in tight-seal, disinfected storage boxes for the restaurants' use.

For corporates, they can participate in the initiative when organising events. The online food delivery platform gives them an option to request the food to be packaged in reusable containers. foodpanda will collect used containers on the same day from the event venue. This option is not bound to the pilot locations but Hong Kong-wide.

Drivers for collaboration

- Shopping mall and office building landlord's proactiveness, facilities and support
- Financial incentive and convenience offered to the participating customers

Barriers to act upon the case

- Customers unwilling to accept reusable container (e.g. hygiene especially during COVID-19 pandemic, convenience)
- Hard to achieve economies of scale without a coordinator between small-scale individual foodservice operators

Engaging takeaway customers to recycle single-use containers

Hong Kong

A collaborative project by:	**foodpanda** **Baguio iRecycle**
Resource concerned:	**Packaging waste (single-use containers)**
Process in 9R framework:	**R8: Recycle**

While food delivery services offer convenience to customers, the associated problem of single-use containers cannot be overlooked. To reduce the environmental damage from the growing demand for takeaway services, foodpanda has announced its partnership with a waste management company Baguio iRecycle to offer door-to-door recycling service for its customers free of charge (Joe, 2021b).

Customers of foodpanda can contact Baguio iRecycle's customer service to arrange pickup. The collectors will take cleaned plastic bottles (PET, HDPE), plastic food containers (PP), as well as glass bottles (available only in Hong Kong Island and the New Territories). To incentivise customers to recycle in the first six months of the programme, the top five recyclers in terms of number of items recycled are picked each month and rewarded with the food delivery company's vouchers. iRecycle mobile app users can use the iDollars earned through recycling to redeem discounts on entertainment, healthcare and other services.

Drivers for collaboration

- Incentives offered to the customers by using the recycling service
- Convenient to customers

Barriers to act

- Low bargaining power between small-scale individual foodservice operators and waste recycler

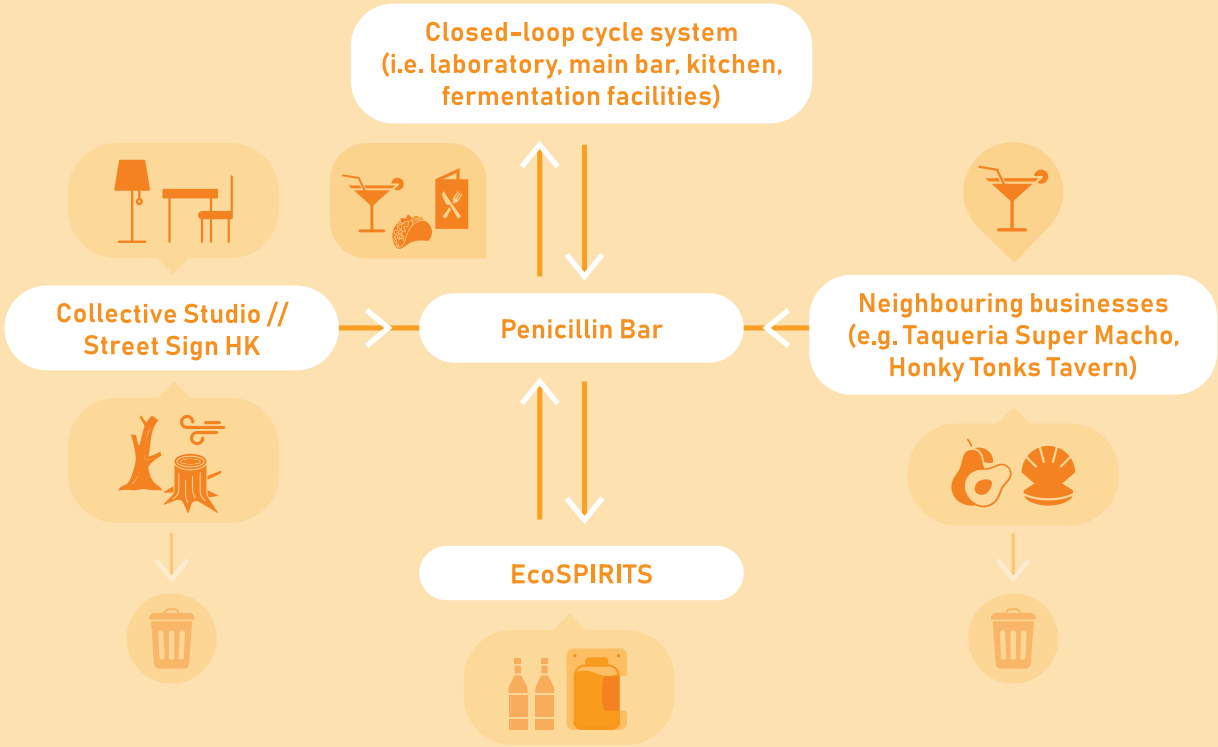
Experimenting with materials collected from collaborators and minimising single-use bottles

Hong Kong

A collaborative project by: Collective Studio | EcoSPIRITS; Penicillin Bar; Street Sign HK | Honky Tonks Tavern | Taqueria Super Macho

Resource concerned: Food waste; Packaging waste (single-use glass bottles)

Process in 9R framework: R7: Repurpose; R3: Reuse



For foodservice operators, designing out waste may sound impossible to achieve. However, the case of Penicillin Bar presents an encouraging case that such a goal is indeed feasible through trial and experimentation. As one of the Asia's 50 Best Bars and winner of the Ketel One Sustainable Bar Award (Asia's 50 Best Bars, n.d.), Penicillin is a closed-loop cocktail bar in Hong Kong (Penicillin Bar, n.d.). With exceptional circularity practices within and beyond its operational boundary, the bar is an exemplar for its peers to learn from in terms of eliminating waste and seeing what others would consider waste as useful resources.

From the bar's decorations and supplies to its products, Penicillin Bar has clearly embedded the concept of circularity into its business. Penicillin's furniture and shop fittings were designed by the architecture firm Collective Studio and produced locally. For example, the tables in the bar are made from the trees felled in Typhoon Mangkhut in 2018 and recycled aluminum cans. The bar's wall lights are rescued neon light tubes sourced from a local cultural conservation group, Street Sign HK. The business cards and uniforms are produced with recycled paper and cotton (Cairns, 2021).

Penicillin Bar upcycles ingredients for food and drinks in-house with the closed-loop cycle system. This system comprises a laboratory, main bar, kitchen and fermentation facilities, which facilitates the transformation of leftovers from one production process into the ingredients for another process. It enables the bar to create signature drinks by using upcycled vermouth, made by collecting leftover oxidised wine adding local botanical (Young, 2021) and garnished with fermented pickled red cabbage or other food scraps. The bar even turns lemon peel scraps into hand sanitiser for staff and customer use.

Penicillin Bar is also collaborating with its neighbouring businesses to leverage their "waste". The bar collects avocado seeds from a nearby Mexican restaurant, boils them and places them in the freezer to reuse them as ice cubes in a cocktail. It also takes in oyster shells from a seafood restaurant and redistills whiskey with them as a cocktail tincture.

To reduce the use of single-use glass bottles, the bar is partnering with a Singapore start-up, EcoSPIRITS. Instead of purchasing premium spirits bottle by bottle, Penicillin Bar orders them through EcoSPIRITS, which puts the liquor in refillable 4.5-litre, tamper-proof bottles (i.e. EcoTOTEs). The bar can then refill and reuse the branded bottles. The emptied EcoTOTEs are picked up when a new order is delivered. Besides single-use packaging waste, the closed-loop distribution system cuts logistics-related carbon emissions.

Through these circularity practices, the bar generates as little as 3 kg of waste per day (黃怡穎, 2021).

Drivers for collaboration

- Foodservice operator's commitment and proactiveness on sustainability
- Readily available solution by reusable container business
- Good relationship with neighbouring foodservice businesses
- Good story for branding

Barriers to act

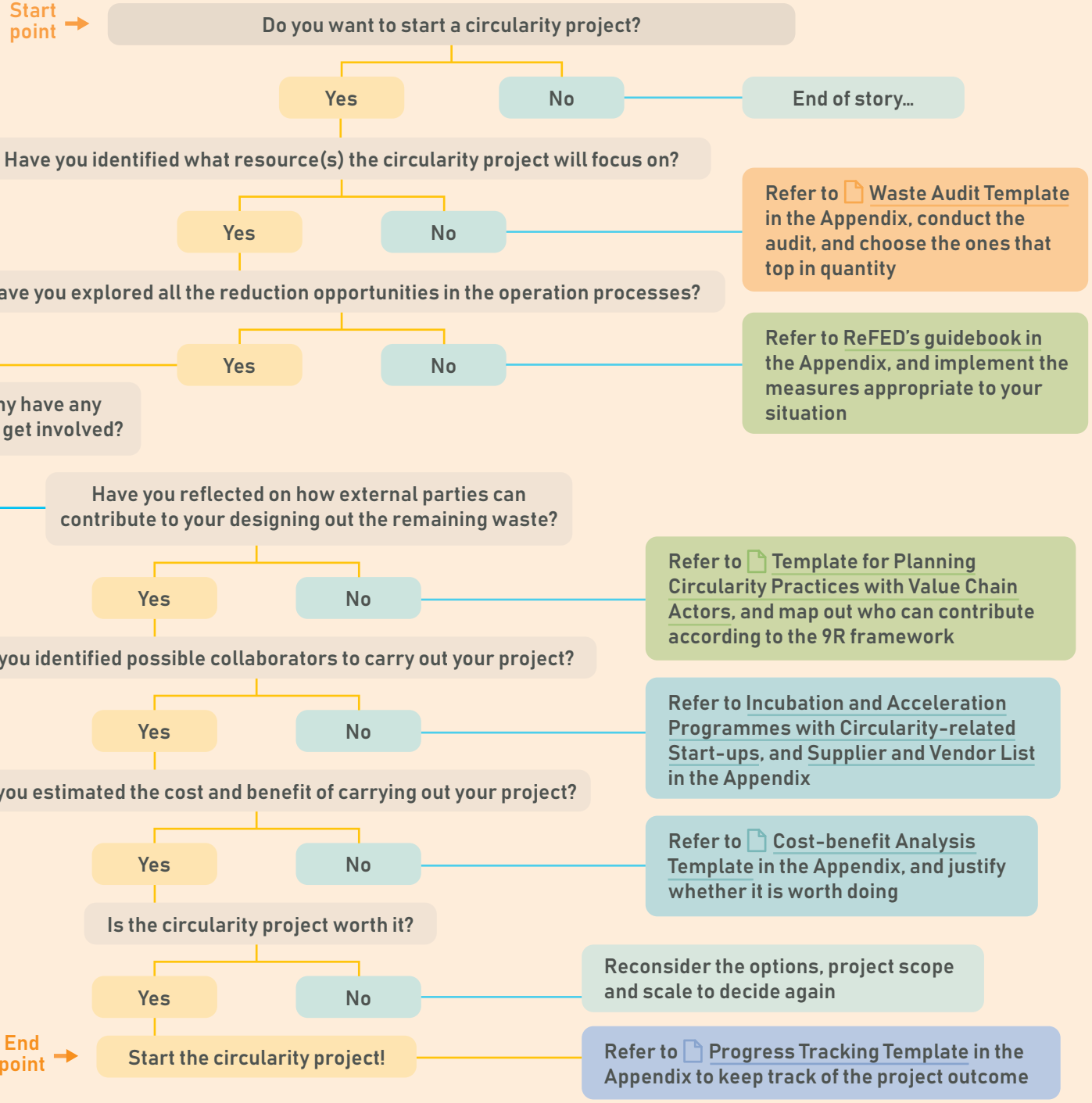
- Additional work for foodservice operators with changes in operational flow
- Inadequate space for storing leftovers
- Inadequate knowledge on how to creatively reuse the leftovers
- Niche market in Hong Kong

7 Value Chain-based Collaborative Circularity Practices

Key Messages

- Understanding the baseline performance and available solutions lay a solid foundation for initiating a circularity project.
- Having a common ground, starting small, keeping track of performance and incentivising good behaviour increase the project's likelihood of success.
- Shopping malls and hotels are influential partners for circularity.

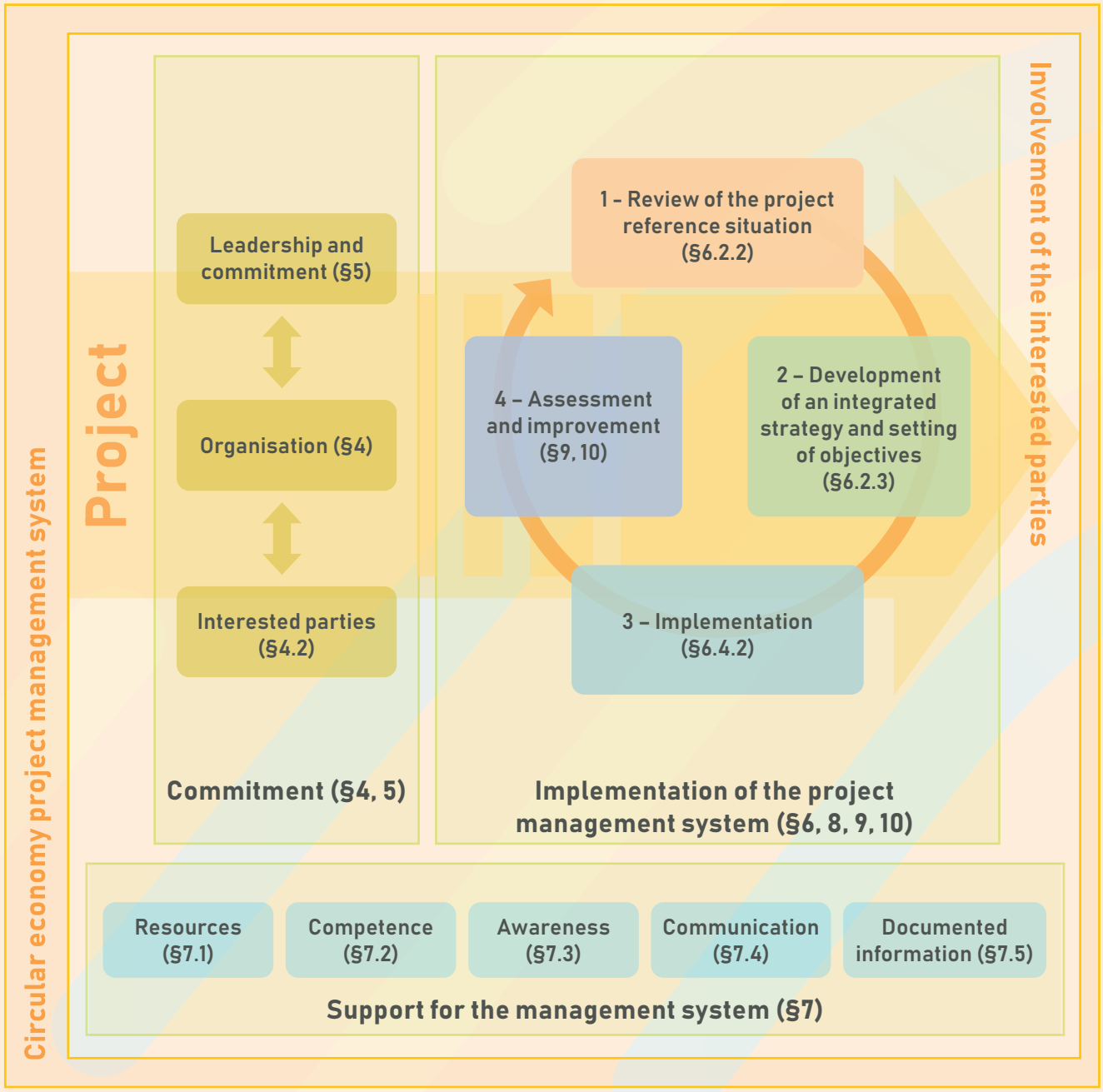
Having read the previous sections, are you ready to approach the waste challenge with a resource circularity mindset? To help you as a project owner systematically carry out the work to realise such projects, we have come up with a step-by-step guide to save you the efforts in figuring out what to do next.



This self-explanatory diagram is drawn from the project experience by the PSLB team in facilitating companies to ideate their respective circularity projects in the Sustainable Value Chains Commitment and SMEs Sustainability Leadership Recognition Schemes, and developed in alignment with the French Standard's AFNOR XP X30-901 – Circular Economy Project Management Standard (2018). The project management system laid out in this certifiable standard is also depicted in Figure 7. While different companies may have their own process flows, it serves as a general project ideation guide for reference.

Besides following the thought process, you can make use of the templates mentioned in the diagram in the Appendix. They can help you put together the necessary information and decide the suitable actions to take. **As a rule of thumb for managing any kind of project, securing top management's buy-in, project budget and manpower are critical to make the plan happen.**

Figure 7: AFNOR XP X30-901 - Circular Economy Project Management Standard



Source: Adapted from Thaiindustrialoffice (2020)

Circularity is best approached through collaborations, rather than by referring to a list of waste reduction practices that can be done individually by restaurants, grocery stores and food delivery service providers. As such, this section focuses on arrangements that are value chain-based. These are practices that are observed in sustainability disclosures among progressive local and multinational corporates regarding the topic of a circular economy. It should be noted that some of these practices require for the appropriate facilities to be in place and this list is by no means exhaustive.

These practices are not all driven by foodservice operators and upstream manufacturers. Some are initiated by landlords or property management companies. Through collaborating with these larger-scale businesses, including shopping malls and hotels that have foodservice operations on their premises, the impact of these circularity practices can be scaled up.

Regardless of who takes the lead, as initiator of such a value chain-based collaborative programme, **thinking through the six conditions on the right can facilitate the process, increasing the programme's likelihood of success.**

How foodservice businesses can reduce waste within their own operations has been explored extensively by other organisations. We have consolidated a list of these publications for your reference in: Appendix – Relevant Standards, Protocols and Guidelines.

With cost and benefit subject to various factors over time as well as the scale of implementation, the information in Table 3 is indicative and is for reference only.

Six conditions to effective collaboration

Engage like-minded organisations

Start with a small-scale pilot project

Clarify roles and responsibilities

Set common goals and KPIs

Track and communicate the collaborative programme's performance

Provide incentives (e.g. financial, award, publicity opportunities)

Table 3: Value chain-based circularity practices observed in Hong Kong with indicative prevalence, cost and benefit

Material	Value Chain-based Circularity Practice	Relevant Process in 9R Framework	Possible Stakeholders to Collaborate with	Prevalence of the Practice in Hong Kong	Cost to Foodservice Operators		Benefit to Foodservice Operators		
					Money / to ●●●	Manpower / to ●●●	Performance Gauge / to ●●	Resource Circularity / to ●●	New Business Opportunity / to ●●
All Biological and Technical Materials	Develop partnerships with landlords that enhance environmental data transparency and performance management (e.g. a green lease)	R0: Refuse R1: Rethink R2: Reduce	Landlords	Moderate	/	●○○	●●	●○	/
	Take part in or jointly organise site-wide customer awareness-raising programmes for circularity	R0: Refuse R1: Rethink R2: Reduce	Landlords Relevant businesses Recyclers Environmental NGOs	High	●○○	●●○	/	/	●○
	Take part in a waste audit programme	R0: Refuse R1: Rethink R2: Reduce	Landlords Recyclers	Moderate	●●○	●●○	●●	●○	/
	Sell unused or used products or equipment that are still in good condition to suitable parties at a discounted price	R3: Reuse	Second-hand market Relevant businesses	Moderate	●○○	●○○	/	●●	●●
	Join centralised waste collection, recycling and/ or waste-to-energy programmes	R8: Recycle R9: Recover	Landlords Recyclers	Moderate	●○○	●○○	/	●●	/

Food	Use on premise waste-to-energy facilities	R9: Recover	Landlords	Low	●○○	●○○	/	●●	/
	Use a dehydrator or food decomposer for food waste treatment	R8: Recycle	Landlords	Moderate	●○○	●○○	/	●●	/
	Develop partnerships with food rescue organisations or mobile apps (e.g. Phenix)	R1: Rethink	Food rescue organisations Food rescue app providers Landlords	Moderate	●○○	●●○	/	●●	●●
	Contribute used biological materials to ecological conservation programme (e.g. Save our Shells project by The Nature Conservancy)	R7: Repurpose	Environmental NGOs	Low	●●○	●●○	/	●●	/
	Develop partnerships to turn non-sellable products or food scraps into other uses (e.g. juice, sanitiser)	R7: Repurpose	Relevant businesses	Moderate	●●○	●●○	/	●●	●●
	Develop partnerships to turn food waste into insect-based protein for agriculture	R7: Repurpose	Insect farms Farmers	Low	●●○	●●○	/	●●	●●
	Implement programmes to capture used cooking oil and grease trap waste to transform into biodiesel and other uses	R7: Repurpose R9: Recover	Recyclers Relevant businesses	High	●●○	/	/	●●	●●

Furniture and Equipment	Rent instead of buy kitchen equipment	R3: Reuse	Equipment providers	Low	●●●	/	/	●●	/
	Make use of maintenance services offered by suppliers	R4: Repair	Furniture manufacturers Equipment providers	Moderate	●●○	/	/	●●	/
	Adopt used equipment that is reconditioned by equipment providers	R5: Refurbish R6: Remanufacture	Equipment providers	Low	●●○	/	/	●●	/
Packaging	Source eco-friendly packaging in bulk	R0: Refuse	Packaging suppliers Landlords	Moderate	●●●	/	/	●●	/
	Develop partnership with companies with closed-loop distribution system (e.g. ecoSPIRITS, Loop, Muuse)	R3: Reuse	Relevant businesses	Low	●●○	/	/	●●	●●
	Participate in take-back programmes (e.g. Vegware)	R8: Recycle	Product manufacturers	Low	●●○	●●○	/	●●	/
	Take recyclables to smart bins or reverse vending machine	R8: Recycle	Product manufacturers Landlords	Moderate	/	●●○	/	●●	/

Legend

Prevalence of the Practice in Hong Kong

Low	Limited cases observed
Moderate	Some cases observed
High	Many cases observed

Cost to Foodservice Operators

Money

/	Not applicable
●○○	Minimal investment required
●●○	Some investment required
●●●	Large investment required

Manpower

/	Not applicable
●○○	Minimal input and training required
●●○	At least some input and training required
●●●	Significant input and training required

Benefit to Foodservice Operators

Performance Gauge

/	Not applicable
●○	Minimal data clarity improvement
●●	At least some data clarity improvement

Resource Circularity

/	Not applicable
●○	Allowing better waste reduction and management without applying circular economy principles
●●	Allowing better waste reduction and management with circular economy principles applied

New Business Opportunity

/	Not applicable
●○	Likely non-financial return without immediate financial gain
●●	Likely non-financial return with at least some immediate financial return

Appendix

Appendix I

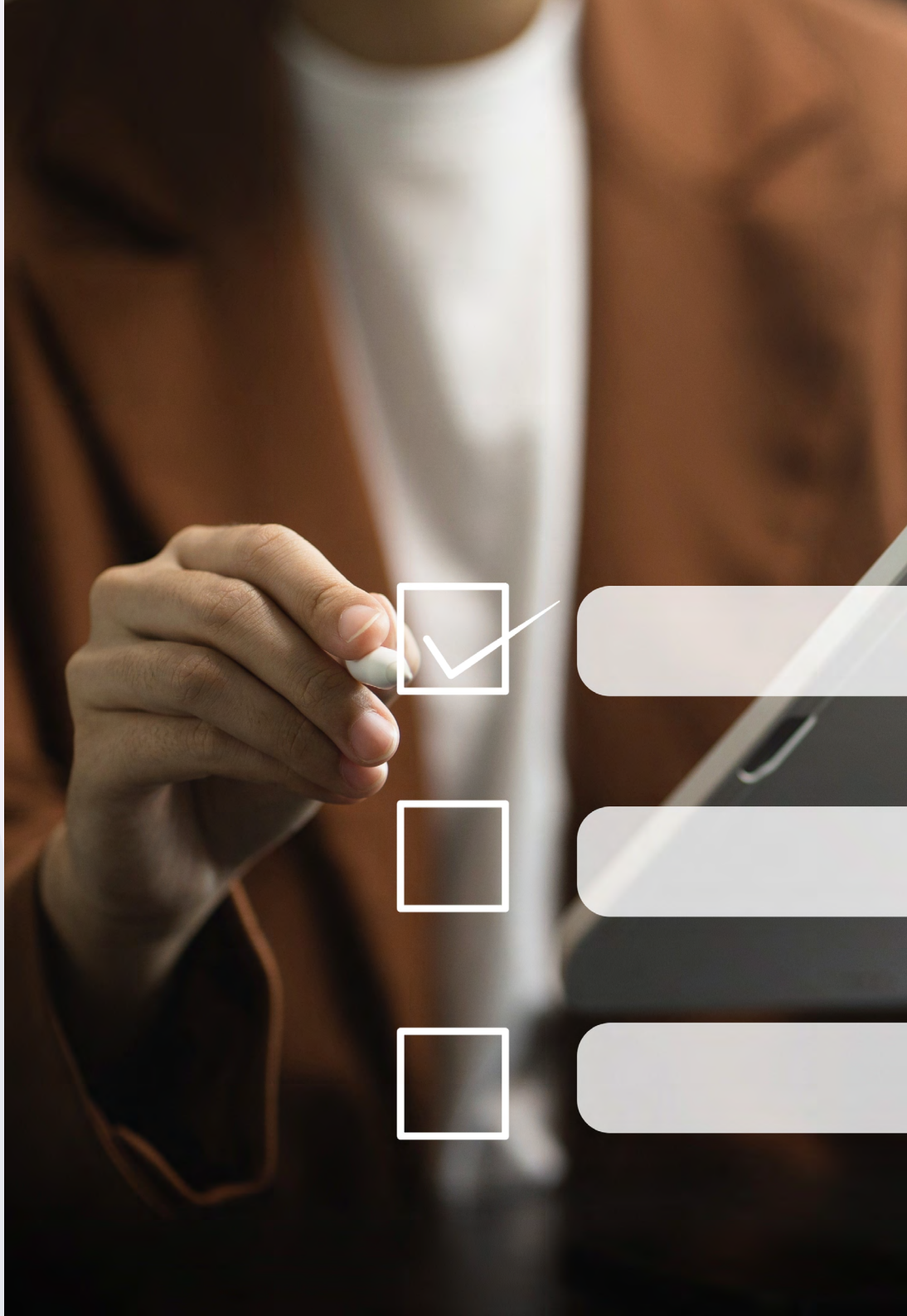
Checklist for Waste Management

You are advised to use the following checklist to assess how systematic your operation manages waste. Compiled with reference to the components of ISO 14001 Environmental Management System (EPD, 2014), the items in the checklist can be seen as the basic building blocks for a proper management system on waste. It would be considered good if your operation has put more than 12 out of these 15 items into practice, and you should advance the management through referring to the good practices in this Practical Guidebook. Otherwise, you are encouraged to work on these basic practices.

Useful Resource

To help SMEs tap into the opportunities of sustainable growth and meet the heightened expectations from clients, strategic business partners and other stakeholders, the PSLB project team has developed the SME Sustainability Roadmap and Kick-Starter Impact Toolkit. The Toolkit is available for free at:

https://ccsg.hku.hk/pslb/sme-resources/kick-starter-impact-toolkit/



Waste Management Practices	Yes	No
Waste Management Basics		
Your operation appoints authorised, credible waste collectors to handle your waste		
Your operation has compiled a list of waste that can be generated from the operation		
Your operation has distinguished which waste is recyclable and which is not		
Your operation applies waste hierarchy as the waste management approach (i.e. prevention, reuse, recycling, recovery, disposal; importance in descending order)		
Your operation has conducted waste audits to understand the baseline performance of waste generation and management		
Waste Data		
Your operation keeps monthly records of waste disposal		
Your operation documents monthly how much waste is recycled		
Your operation monitors the above mentioned statistics by waste category		
Your operation conducts analysis on waste performance and the associated monetary loss		
Waste Management System		
Your operation has a green manager responsible for waste performance		
Your operation has a green management committee comprising of different divisions for evaluating waste issues		
Your operation has a policy to outline the principles and framework for action on waste management		
Your operation has quantified waste reduction targets supporting waste management goals		
Your operation's top management reviews the waste management reports regarding waste performance and corresponding actions		
Your operation has an action plan on waste management for continual improvement		
Total Count	**/ 15**	**/15**

Appendix II

Waste Audit Template

This waste audit template lists out the fundamental questions for you as the project owner to collect the waste-related information at an operating site. It serves to help you identify the major waste types and matters on waste and recycling practices at the venue, and to facilitate the discussion with the site manager after taking the waste audit. While designed with foodservice operations in mind, you can edit and adapt the template according to your business's nature and need.

The waste audit is recommended to be conducted in the following manner:

Step 1 – Arrange a waste audit with the site manager

Step 2 – Complete this waste audit template and take photos as evidence when inspecting the venue with the site manager

Step 3 – Analyse the waste data by factoring in the operational metrics (e.g. gross floor area, number of patrons) and compare across sites (if applicable)

Step 4 – Identify major waste types and issues on waste and recycling practices

Step 5 – Propose improvement targets, plans and resource circularity projects accordingly

Step 6 – Communicate the findings and plans with the site manager, then implement them

Alternatively, you may ask the waste management company or recycler to see if it offers waste audit service.

Location: _____

Site Manager [Name, Position]: _____

Audit Taken on [DD/MM/YYYY]: _____

Audit Taken by [Name, Position]: _____

Site Information

1a. What is the store's gross floor area?

_____ m^2

1b. On average, how many patrons visit the store per day?

_____ per day

General Waste Management Practice

2a. How many bins are available at this venue?

_____

2b. Does the site have a designated area to store the general waste?

☐ Yes

☐ No

2c. Is dry (i.e. paper, glass, plastic, cardboard, styrofoam, rubber, metal and food packaging) and wet (i.e. food scraps, food waste) waste separated when placing into the bins?

- ☐ Yes
- ☐ No

2d. Who collects the general waste?

- ☐ Centralised waste collector at mall / hotel (please specify: _____)
- ☐ Individual waste management company (please specify: _____)

2e. How frequently is the general waste collected by the contracted waste management company?

_____ times a day

Waste Recycling Practice

3a. Does the site practice recycling?

- ☐ Yes
- ☐ No (Go to Q4 directly)

3b. What types of recyclables are managed by the site?

- ☐ Paper
- ☐ Plastic
- ☐ Aluminium
- ☐ Glass
- ☐ Food
- ☐ Others (please specify: _____)

3c. How many recycling bins are available at this venue?

Paper – _____

Plastic – _____

Aluminium – _____

Glass – _____

Food – _____

Others (please specify: _____)

– _____

3d. Do all the staff know where the recycling bins are located?

- ☐ Yes
- ☐ No

3e. Are labels of the recycling bins visible to all?

- ☐ Yes
- ☐ No

3f. Do the labels indicate what can be recycled and what cannot be recycled?

- ☐ Yes
- ☐ No

3g. Based on on-site observations, is waste not belonging to the specific recycling bins inappropriately placed in them (e.g. tissue paper in the paper recycling bin)?

- ☐ Yes
- ☐ No

3h. Based on on-site observations, are the recyclables (applicable to plastic, glass etc.) cleaned before putting in the recycling bins?

☐ Yes

☐ No

3i. How frequently are the recyclables collected by the contracted recycler? (Delete as appropriate)

Paper – _____ times a day / week

Plastic – _____ times a day / week

Aluminium – _____ times a day / week

Glass – _____ times a day / week

Food – _____ times a day / week

Others (please specify: _____) – _____ times a day / week

Waste Data

4. Complete the table below by weighing the waste on site or referring to the records provided by the waste management company and recyclers. Given that the site has more than one bin to collect a specific type of waste, please weigh the waste in each bin and record the data individually in the table below for comparison.

	Weight of Waste (kg)						
	Bin 1	**Bin 2**	**Bin 3**	**Bin 4**	**Bin 5**	**Bin 6**	**Total**
Location							
For collecting							
Non-recyclable							
General waste							
Recyclable							
Paper							
Plastic							
Aluminium							
Glass							
Food							
Others (please specify: _____)							
Estimate of Wrongly Sorted Object in Recycling Bins (%)							
Remark							

Tips on Analysing the Data

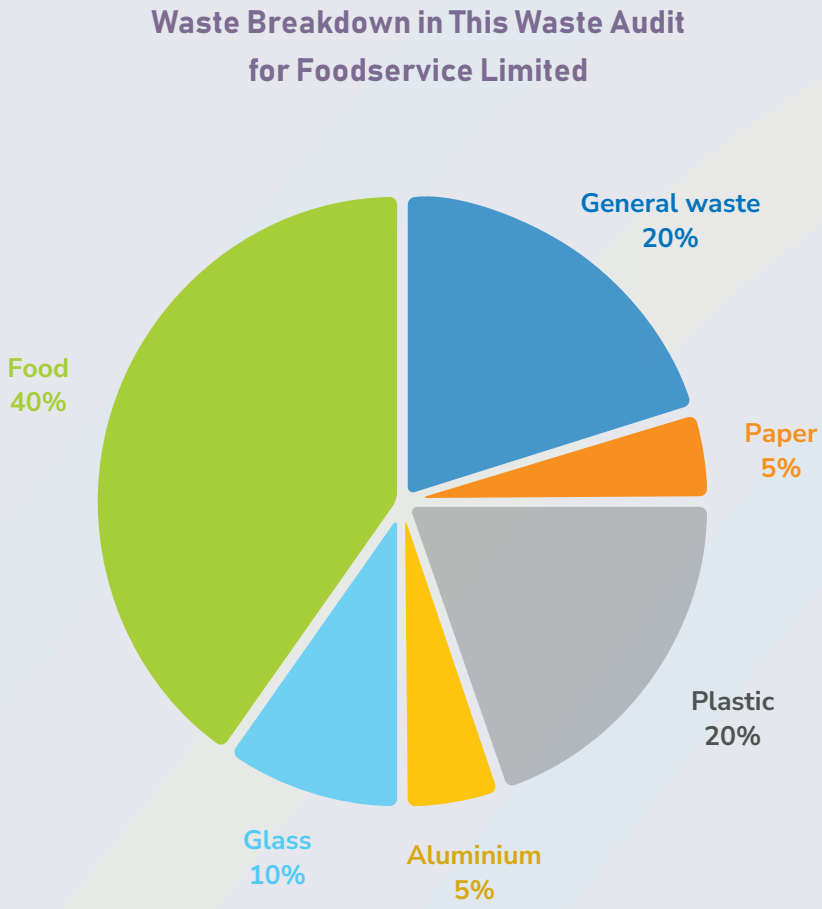
- Rather than comparing the absolute weight of different types of waste between stores, waste intensity, which takes the scale of operation of each store into account, would present better findings for you.

$$\text{Waste intensity} = \frac{\text{Total weight of a waste type in Q4 (kg)}}{\text{Gross floor area in Q1a (sq. m) or Number of patrons in Q1b (people)}}$$

- With resource constraints, prioritise the type of waste that the business generates most as a whole. This can be done by calculating the share of each type of waste against the total amount of waste (i.e. in percentage) in Q4:

$$\text{Share of a type of waste} = \frac{\text{Total weight of a waste type in Q4 (kg)}}{\text{Sum of total weight of all waste in Q4 (kg)}} \times 100\%$$

The data can then be visualised in a pie chart. Using the diagram below as an illustration, the company should prioritise the management of food waste. If resources allow, plastic and general waste can be addressed as well.



Appendix III

Template for Planning Circularity Practices with Value Chain Actors

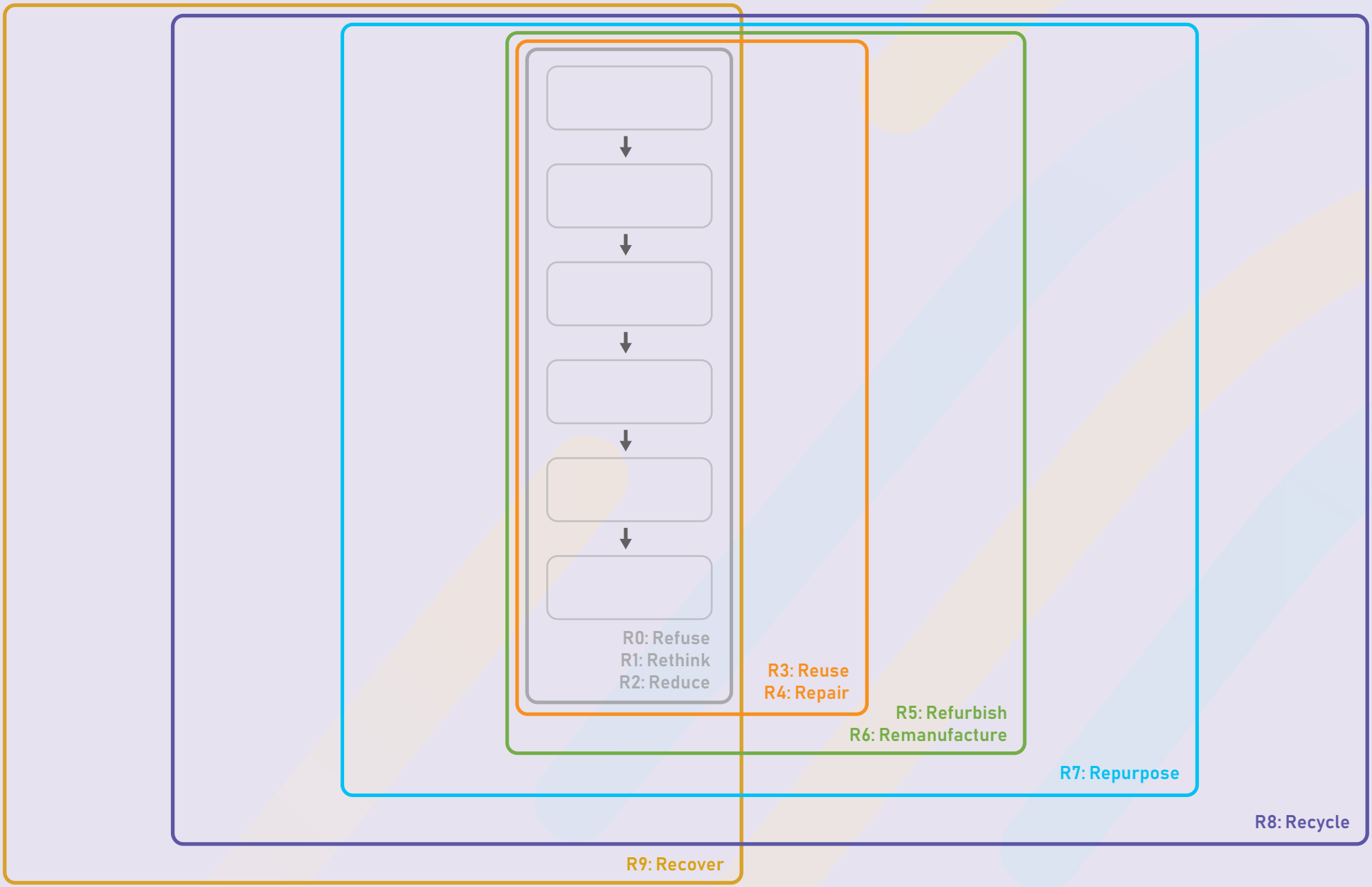
As mentioned under Applicability of Circular Economy in Foodservice Operations, you can use this template to map your collaborators against the 9R framework for circularity.

Instructions

1. Outline your company's value chain activities (i.e. from raw material to consumption stages of the major product) at the centre of the diagram
2. Insert and fill out a box for each value chain partner that can play a role in the 9R framework in the corresponding frame
3. Draw arrows to indicate how resources would flow within the value chain and economy
4. Meet with your company's senior management on the findings to gain support and strategise your company's circularity approach
5. Discuss potential collaborations with your company's corresponding value chain partners

Biological Materials:

Technical Materials:



Appendix IV

Cost-benefit Analysis Template

From the case studies shared in this Guidebook, you can see that there are many ways to foster circularity for each type of resource. However, with constraints on budget and manpower, as the project owner you may need to be selective with your use of resources. When choosing between two or more projects which are feasible for the company, cost-benefit analysis is a common and useful means to facilitate your decision-making.

To perform cost-benefit analysis, first research and list the expected cost and benefit (in dollar amount) for carrying out each project. You will then be able to derive the cost-benefit ratio by dividing the total of all expected benefits by the sum of all expected costs of the project. After that, you will compare between the ratios to select the project. The greater the value, the more cost-effective the project. This cost-benefit analysis template below provides you with a framework to which you can develop further based on your need.

It is worth noting that although quantification of some benefits may not be possible, especially those concerning the wider society and environment, these non-tangible benefits could be significant for sustainable development. You should consider such factors as well when making decisions, rather than solely relying on the resulting cost-benefit ratio.

Alternatively, you may perform the analysis qualitatively. By determining whether the cost and benefit of each project are high or low, and then putting all the projects under consideration in the corresponding quadrant, you will be able to visualise their cost-effectiveness. Those in the low cost-high benefit quadrant (i.e. low-hanging fruits) should be prioritised, followed by high cost-high benefit projects.

	[Project 1]	[Project 2]	[Project 3]
Expected Cost (e.g. upfront investment, manpower, training)			
[Cost 1 with description]	$	$	$
[Cost 2 with description]	$	$	$
[Cost 3 with description]	$	$	$
Expected Benefit (e.g. cost saving, new business opportunities, business promotion)			
[Benefit 1 with description]	$	$	$
[Benefit 2 with description]	$	$	$
[Benefit 3 with description]	$	$	$
Cost-benefit Ratio#			

Cost-benefit ratio $=$ $\frac{\text{Sum of all expected benefits of a project (\$)}}{\text{Sum of all expected costs of a project (\$)}}$

Appendix V

Progress Tracking Template

This progress tracking template enables you, as the project owner, to keep track of how the project is performing and document its implementation along the way. Besides asking the project members to fill out the form quarterly, you can schedule meetings to periodically review the progress together and determine if additional support is needed.

To effectively monitor the project's performance for progress tracking and improvement, you are advised to collect the baseline data (based on the suitable metrics identified) and establish attainable targets once the project idea is confirmed. For more information about how to set sustainability baseline with metrics and data, as well as formulate sustainability targets, you can refer to Enabler 4 and Enabler 5 of the SME Sustainability Roadmap and Kick-Starter Impact Toolkit.

Report Date	88
Report Preparer	
Project Background	
Project Launch Date	
Project in Brief (What is it about? what is the project scope? when is it taking place?)	
Division of Labour (Roles and responsibilities for different team members)	
Project Implementation	
Q1. What has been done by the team since the last report? (Please skip if this is the first report.)	
Q2. What difficulties have the team experienced so far in the project implementation?	
Q3. What will be done by the team in the next three months?	

Performance Monitoring

Q4. Please fill out the table below. For data in the last reporting periods, you should refer to the previous progress tracking forms.
(Some examples of resource circularity-related metrics are listed below)

$$\text{Waste diversion rate (\%)} = \frac{\text{Weight of diverted waste through recycling, reuse etc. (kg)}}{\text{Weight of all waste (kg)}} \times 100\%$$

$$\text{Percentage of renewed material used for production (\%)} = \frac{\text{Weight of renewed raw materials used in production (kg)}}{\text{Weight of total raw material used in production (kg)}} \times 100\%$$

$$\text{Circular water consumption rate (\%)} = \frac{\text{Quantity of treated wastewater consumption (L)}}{\text{Quantity of total water consumption (L)}} \times 100\%$$

$$\text{Renewable energy consumption rate (\%)} = \frac{\text{Renewable energy consumption during the specific period (KWh)}}{\text{Total energy consumption during the specific period (KWh)}} \times 100\%$$

	Unit	Before the Project		During the Project			
		Baseline condition	Project target	3 months into the project	6 months into the project	9 months into the project	1 year into the project
		Date:	Date:	Date:	Date:	Date:	Date:
[Metric 1]							
[Metric 2]							
[Metric 3]							
...							

Appendix VI

Relevant Standards, Protocols and Guidelines

If you are interested in learning more about a circular economy and kick-starting change, the standards, protocols and guidelines below could be useful. Please note the list is by no means exhaustive.

Circular Economy

ARUP, BAM and CE100 – Circular Business Models for the Built Environment – https://emf.thirdlight.com/link/xes8zli8r33k-thd85r/@/preview/1?o

Ellen MacArthur Foundation – Circular Economy Procurement Framework – https://ellenmacarthurfoundation.org/circular-economy-procurement-framework

Ellen MacArthur Foundation – Towards the Circular Economy – https://ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-and-business-rationale-for-an

International Organization for Standardization – ISO/CD 59004 Circular Economy – Terminology, principles and guidance for implementation (under development) – https://www.iso.org/standard/80648.html

International Organization for Standardization – ISO/CD 59010 Circular Economy – Guidance on the transition of business models and value networks (under development) – https://www.iso.org/standard/80649.html

International Organization for Standardization – ISO/CD 59020 Circular Economy – Measuring and assessing circularity (under development) – https://www.iso.org/standard/80650.html

International Organization for Standardization – ISO/CD TR 59031 Circular Economy – Performance-based approach – Analysis of case studies (under development) – https://www.iso.org/standard/81183.html

United Nations Environment Programme – Circularity Platform – https://www.unep.org/circularity

World Business Council for Sustainable Development – Circular Economy Practical Guide – https://www.ceguide.org/

World Business Council for Sustainable Development – CEO Guide to the Circular Economy – https://docs.wbcsd.org/2017/06/CEO_Guide_to_CE.pdf

Food Waste

Food Wise Hong Kong Campaign – Food Waste Reduction Good Practice Guide for Food and Beverage Sector –
https://www.foodwisehk.gov.hk/pdf/GPGuide_FB_en.pdf

Food Wise Hong Kong Campaign – Food Waste Reduction Good Practice Guide for Market Sector –
https://www.foodwisehk.gov.hk/pdf/GPG_Market_ENG_201410.pdf

Food Wise Hong Kong Campaign – General Guidelines on Methods for Estimating the Food Waste Reduction Market & Supermarket Sector –
https://www.foodwisehk.gov.hk/pdf/25-4-2016/GG_on_Methods_for_Estimating_the_Food_Waste_Reduction(Market_Supermarket)_Eng_v2_0.pdf

Food Wise Hong Kong Campaign – General Guidelines on Methods for Estimating the Food Waste Reduction Food & Beverage Sector –
https://www.foodwisehk.gov.hk/pdf/25-4-2016/GG_on_Methods_for_Estimating_the_Food_Waste_Reduction_(F_B_Sector)_Eng_v2_0.pdf

Food Wise Hong Kong Campaign – General Guidelines on Methods for Estimating the Food Waste Reduction Hotel Sector –
https://www.foodwisehk.gov.hk/pdf/25-4-2016/GG_on_Methods_for_Estimating_the_Food_Waste_Reduction_(Hotel_Sector)_Eng_v2_0.pdf

Food Wise Hong Kong Campaign – General Guidelines on Methods for Estimating the Food Waste Reduction Shopping Malls Sector –
https://www.foodwisehk.gov.hk/pdf/25-4-2016/GG_on_Methods_for_Estimating_the_Food_Waste_Reduction_(Shopping_Malls)_Eng_v2_0.pdf

Food Wise Hong Kong Campaign – Waste Reduction Good Practice Guide for Food Delivery Platforms –
https://www.foodwisehk.gov.hk/pdf/Good_Practice_Guide_for_Food_Delivery_Platform_En.pdf

Environmental Protection Department – Code of Practice on Separating, Collecting and Transporting Food Waste to Organic Resources Recovery Centre Phase 1 –
https://www.opark.gov.hk/media/CoP-%20Eng-%20Jun%202022.pdf

Hong Kong Quality Assurance Agency – Food Waste Recycling: Encouraging good practice in food waste management –
http://www.hkqaa.org/cmsimg/HK%20Registration%20-%20Food%20Waste/HKQAA_FW_web.pdf

ReFED – Restaurant Food Waste Action Guide –
https://refed.org/downloads/Restaurant_Guide_Web.pdf

ReFED – Retail Food Waste Action Guide –
https://refed.org/downloads/Retail_Guide_Web.pdf

Plastic Waste

Ellen MacArthur Foundation and United Nations Environment Programme – Global Commitment –
https://ellenmacarthurfoundation.org/global-commitment/overview

Ellen MacArthur Foundation – Plastics Pact Network –
https://ellenmacarthurfoundation.org/the-plastics-pact-network

Incubation and Acceleration Programmes with Circularity-related Start-ups

Dream Impact –
https://www.dreamimpacthk.com/community-partners-accessible/

Eureka Nova –
https://eurekanova.com/startups/

HKU iDendron –
https://idendron.hku.hk/teams/

Hong Kong Science & Technology Parks Corporation –
https://www.hkstp.org/what-we-offer/incubation-and-acceleration-programmes/acceleration-programme/portfolio-companies/

Google for Startups –
https://startup.google.com/accelerator/circular-economy/

Impact Hub Shanghai –
https://shanghai.impacthub.net/

SOW Asia –
http://www.sowasia.org/portfolio-companies

The Circulars Accelerator –
https://thecirculars.org/

The Mills Fabrica –
https://www.themillsfabrica.com/investment/

Supplier and Vendor List

Environmental Protection Department – Green Tableware Platform –
http://www.greentableware.hk/en-us/

Environmental Protection Department – Non-Exhaustive List of Local Suppliers of Electric Composters –
https://www.wastereduction.gov.hk/en/workplace/electriccomposters.htm

Environmental Protection Department – Registration Lists of "Waste Cooking Oils" Parties –
https://www.epd.gov.hk/epd/english/environmentinhk/waste/prob_solutions/waste-cooking-oils-reglist.html

Environmental Protection Department – Solutions for Pollution Problems (Solid Waste) –
https://www.epd.gov.hk/epd/english/greenrestaurant/solutions/solutions_solid.html

Green Finance for Industry's Circularity Projects

Hong Kong Quality Assurance Agency – Green Finance Implementation Guidebook – Food and Beverage Industry –
https://www.smefund.tid.gov.hk/english/tsf/deliverables/t20001019_foodandbeverage_en.pdf

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About the Partnership for Sustainability Leadership in Business

The “Partnership for Sustainability Leadership in Business” (PSLB) is a four-year (2020-2023) action research programme initiated by the Centre for Civil Society and Governance, HKU, and supported by HSBC. The Project is led by Professor Wai-Fung Lam together with a group of sustainability experts. It is aimed at fostering sustainability leadership and collaboration in the business sector of Hong Kong through knowledge transfer, capacity building, and network development; in particular, the Project strives to foster strong partnerships between big corporations and SMEs in pursuit of sustainability. The Project aspires to build a collaborative ecosystem, which will enhance the capacity and role of SMEs in Hong Kong and the Greater Bay Area in attaining sustainable development. More information about the Project can be found on https://ccsg.hku.hk/pslb/.

About the Centre for Civil Society and Governance

Established in December 2002, the Centre for Civil Society and Governance (the Centre) strives to enhance our knowledge of civil society and its contribution towards good governance, and to facilitate the attainment of a sustainable society through forging community-based, innovative solutions to inform policy deliberation and collective actions. The work of the Centre is organised around three Labs - the Policy for Sustainability Lab (PSL), the Social Entrepreneurship and Civic Action Lab (SECAL), and the Nonprofits and Philanthropy Lab (NPPL); each of them represents a research focus and an area of excellence of the Centre.

Partnership for Sustainability Leadership in Business
商界永續發展領袖計劃

Initiated by

永續坊
POLICY FOR SUSTAINABILITY LAB
公民社會與治理研究中心
CENTRE FOR CIVIL SOCIETY AND GOVERNANCE

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