



sustainable  
sentosa



# SENTOSA PLAYBOOK FOR REDUCING DISPOSABLES

WORKING TOGETHER TO REDUCE  
SINGLE-USE DISPOSABLES IN SENTOSA

# ABOUT US



## ABOUT WWF-SINGAPORE AND THE PACT INITIATIVE

World Wide Fund for Nature (WWF) is one of the world's largest and most respected independent conservation organisations. WWF's mission is to stop the degradation of Earth's natural environment and to build a future in which humans live in harmony with nature. As one of WWF's international hubs, WWF-Singapore supports a global network spanning over 100 countries. WWF-Singapore works closely with local stakeholders towards a greener and more sustainable Singapore and the region around us. We work to address key conservation areas, such as climate change, sustainable finance, deforestation, illegal wildlife trade, marine conservation, and sustainable production and consumption, through collaboration, education and outreach efforts involving the community, businesses, and governments. For more information, please visit [wwf.sg](http://wwf.sg).

Started by WWF-Singapore and based on WWF's No Plastic in Nature Initiative, WWF-Singapore's Plastic ACTION (WWF-PACT) is a business initiative that aims to reduce waste and move towards a circular economy. The programme empowers companies to adapt their business models and processes to be more resource-efficient. By providing businesses with guidance and best practices, WWF-PACT enables them to make science-based decisions for responsible production and consumption. This will lower their environmental footprint, and address the growing consumer demand for sustainability. For more information, please visit [plastic-action.asia](http://plastic-action.asia).



## ABOUT SENTOSA DEVELOPMENT CORPORATION

Sentosa, where discovery never ends, is Asia's leading leisure destination and Singapore's premier island resort getaway. Located within 15 minutes from the central business and shopping districts, it is managed by Sentosa Development Corporation (SDC), which works with about 200 businesses across the island.

In 2021, SDC announced the Sustainable Sentosa strategic roadmap in support of the Singapore Green Plan 2030, with the dual ambitions of becoming carbon neutral by 2030 and becoming a globally recognised sustainable destination.

To guide the island towards these goals, SDC initiated the Sentosa Carbon Neutral Network (SCNN), a business alliance made up of island businesses accounting for 97 percent of the island's carbon profile. Together, the SCNN brings sustainability to top-of-mind amongst guests and drives solutions addressing sustainability challenges across the island, including mitigating the impact of waste on the environment.

In 2022, together with Resorts World Sentosa, Sentosa island became the first destination in Asia to be certified according to the Global Sustainable Tourism Council- Destination criteria. The gold standard for sustainable tourism, the certificate affirms the organisation's strong push for collective and collaborative whole-of-island efforts in preserving the island for future generations.

# FOREWORD

The Sentosa Playbook for Reducing Disposables provides a structured approach based on best practices to help tourism businesses move towards reducing the impact that disposables have on the environment.

A joint effort between SDC and WWF-Singapore, this playbook serves as a guide for all businesses on the island to reduce the use of disposables in its operations across hotels, attractions, and F&B outlets on Sentosa and the Southern Islands.

As a tourism precinct, Sentosa businesses can take the lead in advocating for a more sustainable lifestyle amongst our guests. Collectively, we hope to demonstrate to our guests and stakeholders that we can all contribute to a more sustainable future in tangible ways.

I am encouraged by the commitment from the many island businesses in participating to shape the playbook and to take concrete steps toward reducing their disposables footprint. It is my hope that together as One Sentosa, we continue to make headway in these actions and move closer towards becoming a zero-waste Sentosa.

## THIEN KWEE ENG

Chief Executive Officer  
Sentosa Development Corporation



Photo Credit: © Sentosa Development Corporation

# TOWARDS A DISPOSABLE-FREE SENTOSA

## Our Collective Commitment:

The Sentosa Carbon Neutral Network (SCNN) members commit, by the end of 2023, to remove single-use plastic bottled water in dine-in, takeaway or events settings; and implement at least one recommended measure per category in the Playbook.



Photo Credit: © Sentosa Development Corporation

Imagine a future where Sentosa is disposable-free. Visitors are here for a fun-filled day on the island. They use reusable bags and containers in place of disposables. Those who did not bring their own reusable bags or containers can easily borrow or rent what they need at various stores all around Sentosa. They segregate their waste and recycle.

Making this a reality would require the collective effort of all island businesses.

As a joint effort of SDC and WWF-Singapore, this playbook consolidates feasible recommendations for island businesses to consider. The recommendations also include long-term innovative solutions that could be implemented over time, with the main objective of achieving a disposable-free Sentosa.

We hope the strategies outlined in this playbook can act as a guide for other businesses within the tourism industry to reduce their use of single-use disposables.

# INTRODUCTION

As Singapore's premier island resort getaway and Asia's leading leisure destination, Sentosa is also home to thriving terrestrial and coastal habitats. Therefore, it is crucial to ensure that the tourism activities on the island are managed sustainably to avoid any negative impact on the environment.

Consumer waste is one of the contributors to the island's environmental impact, with disposables playing a significant role. These disposables, including plastic takeaway bags, containers, and packaging, have a short lifespan but are widely used, resulting in a substantial amount of waste.

According to [WWF-Singapore](#), an estimated 900 million kg of plastic is discarded every year in Singapore. According to a [report by the Ellen MacArthur Foundation](#), only 14% of plastic packaging waste is recycled globally, while the [National Environmental Agency reported](#) that plastic recycling rate in 2020 is only 4%. This means that in Singapore, the majority of plastic disposables are incinerated.

Based on the [National Environmental Agency's report](#), disposables alone contributed about 200,000 tonnes of waste in 2020, which is about 11% of domestic waste contribution, or the equivalent of 400 Olympic sized swimming pools. According to an island-wide study conducted in 2021, Sentosa generated approximately 22,800 tonnes of waste annually, with an estimated 8% to 11% of the total comprising disposables. This adds to the limited national landfill capacity.

Although Sentosa's recycling rates have improved from 7.5% in 2016 to 15% in 2022, there is still more that can be done to reduce the impact of waste generated by disposables. This playbook acts as a catalyst for collective action across public and private sectors, to tackle our waste profile in a systemic approach and move one step closer towards a zero-waste island.



Photo Credit: © Sentosa Development Corporation

## ONGOING INITIATIVES

Starting with initiatives for reducing food waste, Sentosa Cove Resort Management (SCRM) took the lead in [piloting a food waste digester on Sentosa](#) as a shared facility for island businesses near Sentosa Cove. Other examples include Resorts World Sentosa's active tenant engagement on food waste segregation and sourcing of food waste-to-energy solution for the resort.

In the effort to reduce disposables, Sofitel Singapore Sentosa Resort & Spa has replaced small bottled toiletries with wall-mounted dispensers. Sentosa Golf Club (SGC) in its F&B establishment, is using porcelain dinnerware instead of disposables. All these initiatives ultimately contribute towards Sentosa's efforts in closing the waste loop.

## PROBLEM OF DISPOSABLES

In 2020, about 200,000 tonnes of domestic waste in Singapore were single-use disposables, comprising items such as carrier bags, food and beverage containers, tableware, and utensils. At the rate that waste is created here, our only landfill, Semakau Landfill, will be full by 2035. Cutting down on our use of disposables will help contribute towards our target of reducing the amount of waste to landfill by 20% by 2026 and 30% by 2030<sup>1</sup>.

Therefore, it is critical that Sentosa plays its part to resolve the problem of disposables. This playbook aims to serve as a useful guide containing best practices and recommendations to reduce waste on Sentosa, and for wider application across the hospitality and tourism industry. These strategies explore what can be adopted to further improve sustainability efforts in food waste, disposables, packaging and more with case studies shared throughout.

<sup>1</sup> Information extracted from NEA website: *Guide to reduce disposables*.

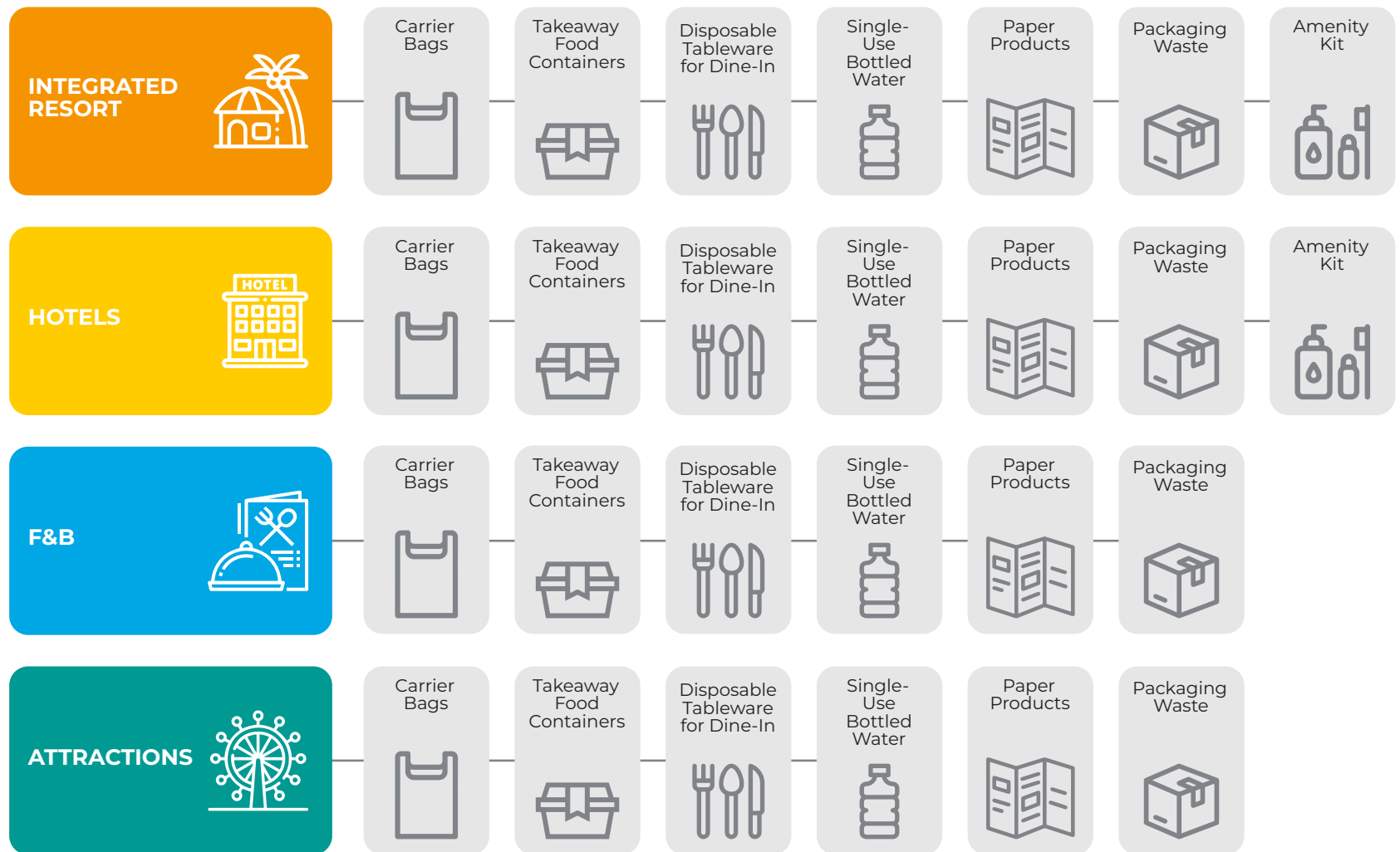


Photo Credit: © Sentosa Cove Resort Management

# OPPORTUNITIES TO REDUCE THE USE OF DISPOSABLES

This section explores best practices on reducing the use of single-use disposables. The strategies are classified according to Integrated Resort, Hotels, F&B and Attractions. Island businesses can view areas that interest them directly via clicking the icon on the overview table on the right. The clickable icons are also available at the top right corner of each page.

To help assess the current level of adoption and identify areas for adoption of best practices, a self-assessment checklist is provided in [Annex A](#) to establish a baseline of current measures and identify where there is potential for adoption of measures.



# CARRIER BAGS



An approximate [820 million plastic carrier bags](#) are used each year, which is approximately equivalent to the land area of 25 Sentosa islands. Within this, a large percentage is contributed by businesses in the retail sector, indicating that reducing single-use plastic carrier bags — commonly used in retail — plays a major role in reducing the overall amount of disposables.

## LEVY A CHARGE

By charging for a bag, be it a plastic or paper bag, consumers will usually think twice about taking one, and ponder whether it is truly necessary. A broader disposable carrier bag charge will curb excessive consumption and encourage a mindset shift. This is a movement that is growing all over Singapore, across various industries.

Retailers such as Uniqlo, Watsons, H&M, and SaladStop! have begun to charge for single-use carrier bags as part of WWF-PACT's [Retail Bag Charge Pledge](#). Such initiatives have been well-received by the public. Collectively, they have seen over 60% reduction of single-use bags, and

saved over 100,000 bags every month. Come July 2023, supermarkets in Singapore will be required to implement a mandatory bag charge provided for purchases at their physical stores. Local supermarkets such as [NTUC FairPrice](#) have also [piloted trials](#) to charge for disposable carrier bags at selected outlets.

## BRING YOUR OWN (BYO) BAG, OR PROVIDE OPTION TO BORROW OR RENT A BAG

**BYO:** Where feasible, encourage your customers (and even staff) to BYO carrier bags. A simple and polite reminder to the customers at the counter whether they have brought their own bags, helps to encourage them to reconsider asking for a carrier bag.

**Borrow:** This follows the example set by SaladStop! which has implemented a [Borrow Tree](#), where reusable bags are placed in their outlets for customers to borrow and return during their next visit to the store. Giving out free reusable bags encourages consumers to refuse taking single-use carrier bags, reducing the amount issued. This initiative demonstrates how one small action by consumers can have an enormous impact on reducing waste and conserving resources.

**Rent:** Island businesses can also consider letting visitors rent a reusable bag at a price equivalent to its retail price. Visitors who would like to keep the bag as a souvenir from Sentosa can choose not to return the bag, effectively purchasing it. If they choose to return it at a later date, a certain amount of the rent deposit will be refunded, as long as the bags are in good conditions. Otherwise, the bags will be considered sold.







## INCENTIVISING BYO OR RETURNING A RENTED BAG

To incentivise customers and staff to lower their waste footprint, a reward system can be given to anyone who brings their own bag or returns a rented bag. The incentivisation can either be a permanent feature on Sentosa as an accumulative points rewards system or for a certain period in a year for same-day redemption. This would help to drive long-term behavioural change.

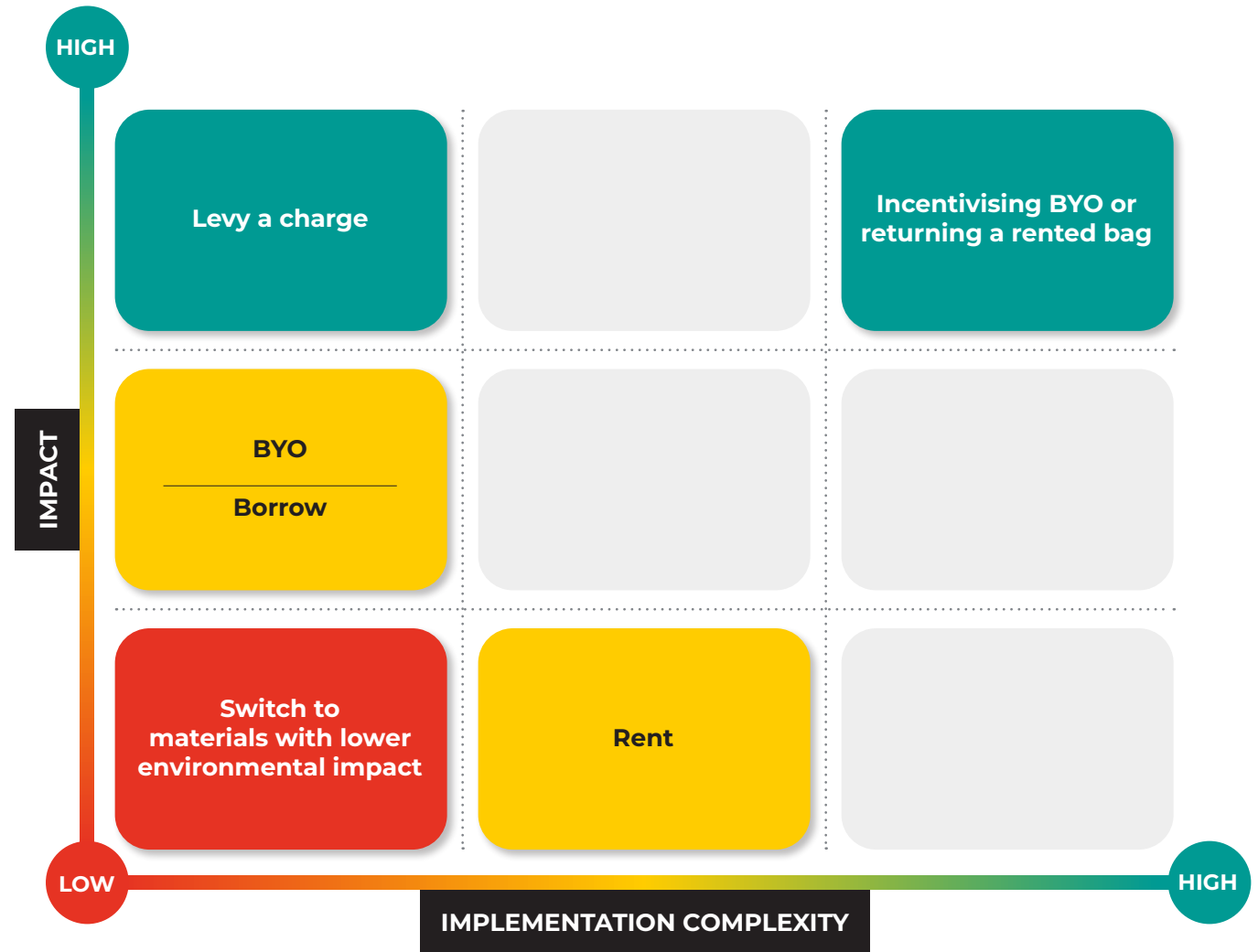
## SWITCH TO MATERIALS WITH LOWER ENVIRONMENTAL IMPACT

BYO or providing a bag to borrow or rent, may not be feasible in certain situations. Here are three alternative materials that businesses should consider procuring for their single-use bags.

1. Recycled paper (FSC certified)
2. 75% Recycled HDPE plastic
3. 25% Recycled HDPE plastic

### CONCLUSION

There are easily implementable initiatives that Island businesses could adopt to reduce the amount of single-use bags. Island businesses should provide options for visitors to borrow or rent a bag and these could be incentivised to encourage adoption and change the culture of relying on disposables.



# TAKEAWAY FOOD CONTAINERS



In Singapore, each person uses at least one to three plastic takeaways per week, resulting in [473 million plastic disposables](#) used in a year. This is enough to cover an area three times the size of Sentosa. With the convenience that takeaway meals and deliveries have provided since the COVID-19 pandemic, single-use waste has soared tremendously. Here are some steps you can take to reduce the consumption of takeaway F&B containers.

## BRING YOUR OWN (BYO) OR PROVIDE OPTION TO RENT REUSABLE F&B CONTAINERS

BYO: Where feasible, encourage your customers (and even staff) to [bring their own F&B containers](#) for takeaway. This would greatly reduce the generation of single-use waste in the first place.

Rent: Providing your customers the option to rent reusable F&B containers would help to reduce the amount of waste generated in the first place. This would also entail providing convenient stations around Sentosa for customers to return them, and would need to factor in hygiene and redistribution of cleaned containers. Visitors who would like to keep the rented takeaways as a souvenir from Sentosa can choose not to return them. If they choose to return it, a certain amount of the rent deposit will be refunded, and this must be done within a certain time frame.

## INCENTIVISING BYO OR RENTING REUSABLE F&B CONTAINERS

A rewards system can be devised by involving retailers across Sentosa to offer incentives such as discounts for customers who bring their own F&B containers. To keep this initiative running smoothly, a central platform is recommended

(e.g. an e-card distributed upon entry). Such initiative can incorporate incentivising BYO bags for greater impact.

**Case Study:** [Baristart Coffee Singapore and Muuse](#)



Photo Credit: © Muuse Pte Ltd



## SWITCH TO MATERIALS WITH LOWER ENVIRONMENTAL IMPACT

BYO may not be feasible at all times. Hence, here are three alternative materials that businesses should consider when procuring single-use containers. The section is divided into food containers (suitable for hot food as well) and cold drinks.

Alternative material for 1000ml water-proof food container

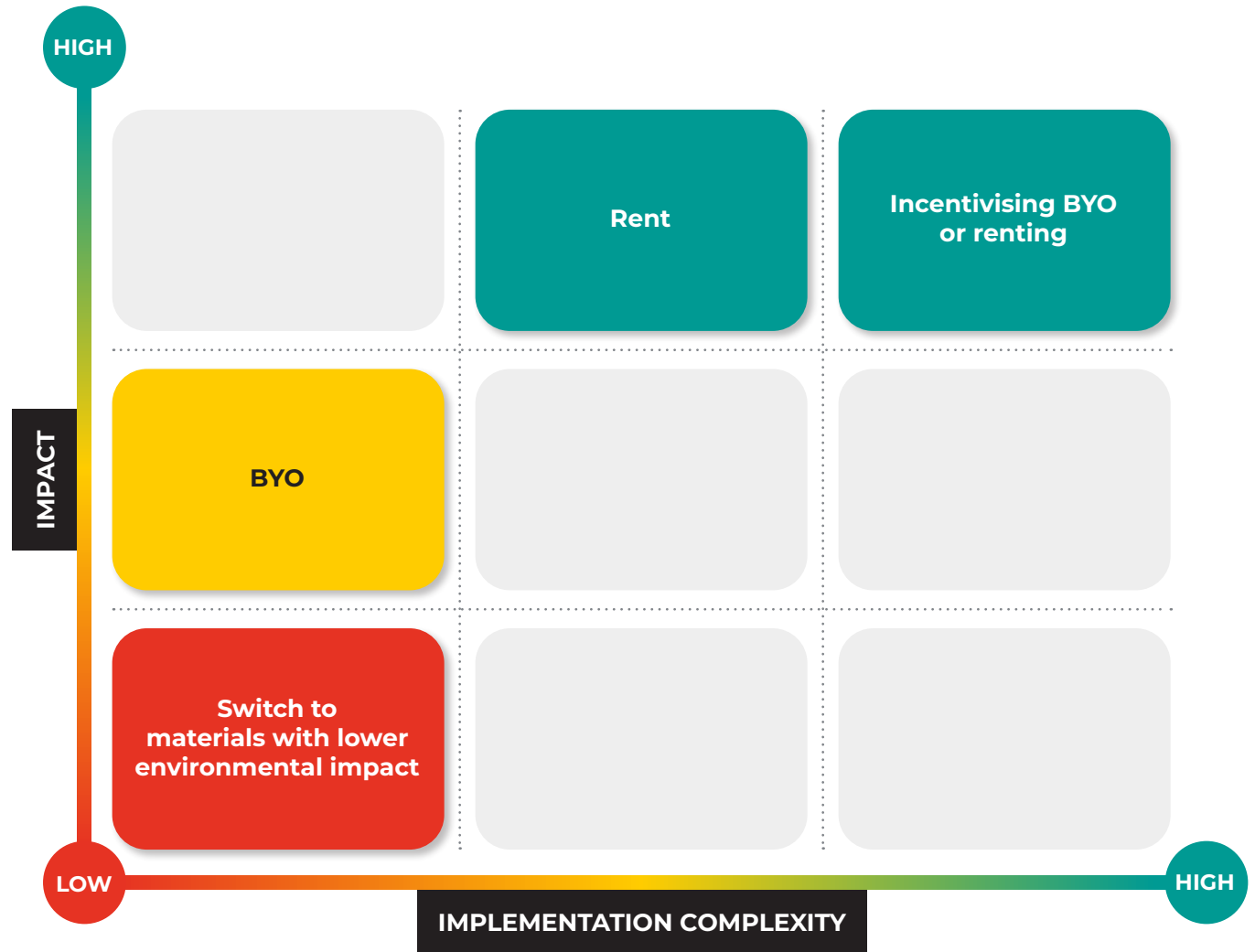
1. Pressed bagasse
2. Recycled aluminum
3. Aluminum

Alternative material for 500ml cold drinks

1. Pressed bagasse
2. Recycled aluminum
3. 75% recycled HDPE plastic

### CONCLUSION

There are easily implementable initiatives that Island businesses could adopt to reduce the amount of single-use takeaway F&B containers. Island businesses should provide options for visitors to borrow or rent these containers and incentivise it to encourage adoption and change the culture of relying on disposables.



# DISPOSABLE TABLEWARE FOR DINE-IN



Single-use disposable cutlery such as plates, bowls, cups, utensils, straws and stirrers are widely used in some F&B outlets on Sentosa for convenience. These single-use disposables have a disproportionately larger impact on the environment. Due to contamination with food, they cannot be recycled and eventually end up as waste disposed of, or worse, marine litter in the ocean. With the strategies below, reducing our usage of disposable tableware will simply take a bit of effort but yield great results.

## SWITCH TO REUSABLE CROCKERY FOR DINING IN

Switching to reusable plates, bowls, cups and utensils is encouraged when dining in. This is also possible for fast food restaurants, as [Burger King](#) has shown through a recent trial in the UK. Locally, [KFC](#) has switched to reusable trays for 13 of their dine-in menu items that were originally served in paper boxes.

## OUTSOURCE WASHING OF TABLEWARE

Some F&B establishments are not able to switch to reusable tableware due to the lack of washing facilities within the premises. If feasible, upgrading the premises to include washing facilities could be explored.

An alternative option is having a centralised washing facility within Sentosa, operated by an external company. Have a look at how this worked for [Changi Airport](#).

## GIVE ON DEMAND

Another strategy would be for F&B establishments to provide certain items on demand. Reusable straws and coffee stirrers are not always encouraged due to the level of difficulty in thoroughly cleaning them. For such items, retailers can opt to give them only upon request.

## SWITCH TO COMPOSTABLE MATERIAL

Recyclable packaging is a common solution but for food packaging, much cleaning has to be done before the packaging can be placed in a recycling bin. So this is where compostable food packaging comes in: it would reduce the need for washing while allowing composting to take place together with the leftover food. This option should be considered as the last resort only after evaluating reusable crockery is not possible.



Photo credit:  
© Sentosa Golf Club

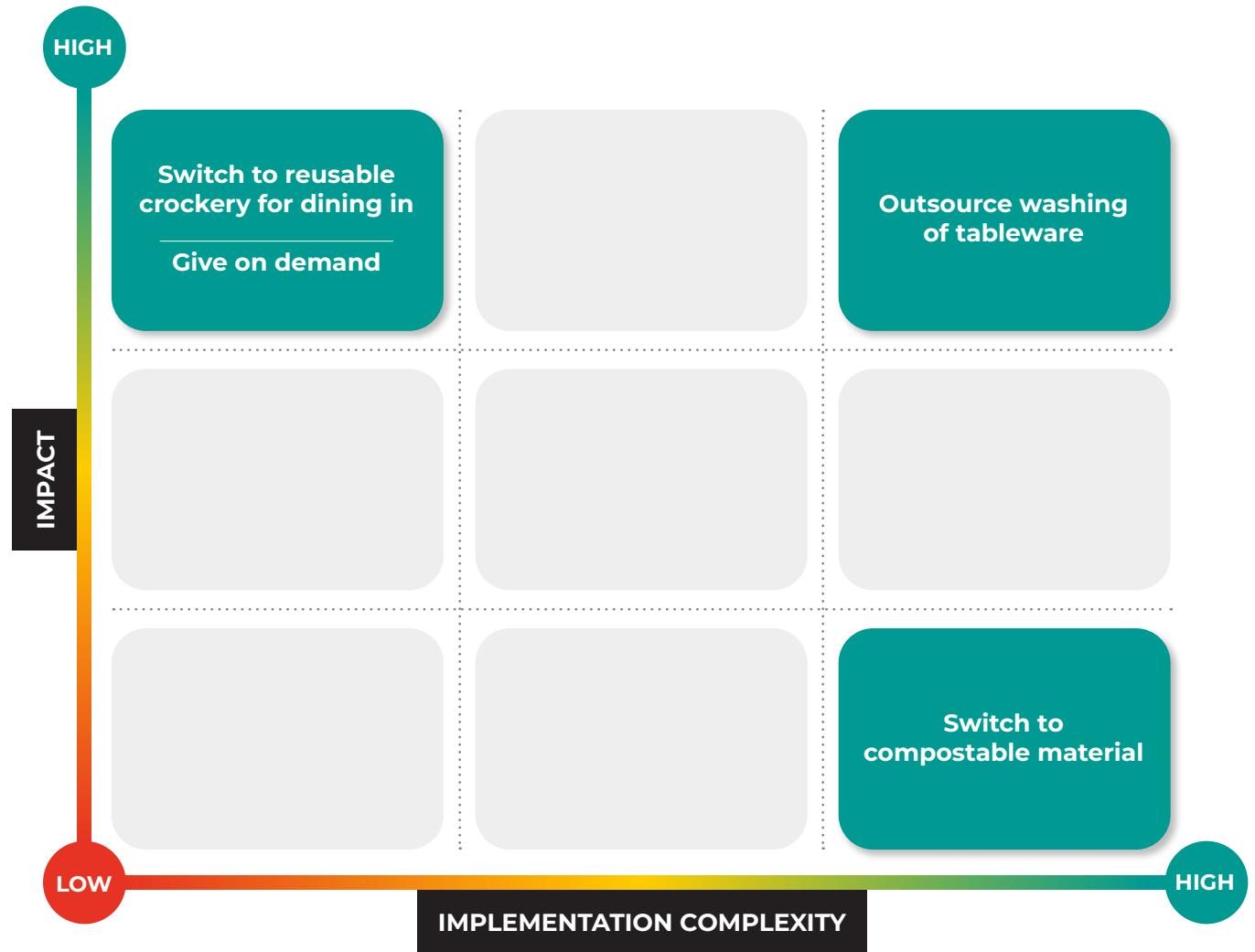


Currently there is no industrial composting facility in Singapore that caters to food packaging waste, which cannot be composted together with food waste in a conventional food digester. However, it is important to note that the environmental footprint of compostable food packaging would only be **lower** if a separate collection system is in place so as to allow composting to take place. Otherwise, it would just end up being incinerated and this would still leave a relatively high carbon footprint.

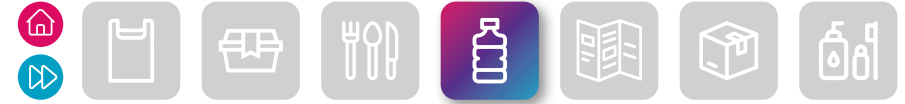
**Case Studies:** [4fingers](#) and [KFC](#)

### CONCLUSION

Providing reusable tableware is an easy measure that is already widely adopted where feasible, and we should refrain from giving out any disposables unless necessary or asked for. There is also room to explore switching to materials with a lower environmental impact for disposables which are used.



# SINGLE-USE BOTTLED WATER



[467 million PET bottles](#), equivalent to the volume of 94 Olympic-sized swimming pools was disposed of each year. On average, one to three bottles are used by each person weekly. When lined from end-to-end, bottles used within a day in Singapore would stretch for 300km, six times the length of Singapore.

## WATER DISPENSERS

As tap water is potable in Singapore, there is no need to provide single-use water bottles or plastic / paper cups in the guest rooms. Alternatively, filtered water dispensers can be installed in common areas to encourage visitors to refill their bottles. This has been adopted in many other areas in Singapore to reduce the need for disposable bottles, such as [hawker centres, sport centres and some bus and MRT stations](#). In fact, this strategy has been adopted by Resorts World Sentosa (RWS) and Capella Singapore to phase out single-use plastic bottles while implementing the use of refillable glass carafes and water dispensers. A bottling facility using refillable glass carafes can be set up within Sentosa.



# PAPER PRODUCTS



Paper is often used for plastic replacement, especially for packaging. The misconception that paper comes from trees and thus, comes from a renewable resource and is biodegradable, fuels this switch. However, [42% of all global wood harvest](#) is used to make paper, contributing to deforestation. Furthermore, the pulp and paper industry is the world's third largest consumer of water and fifth largest consumer of energy for their manufacturing process. Despite a good recycling market for paper, it can only be recycled four to six times and the production of it has [quadrupled over the past 50 years](#).

## SWITCH TO FSC-CERTIFIED MATERIALS

FSC certification signifies that the material is sourced from responsibly managed plantations. It sets standards on products made from trees and certifies them as eco-friendly based on the product's life cycle and how it came to be. Products with FSC certification give retailers and consumers confidence that their disposables are sustainably sourced.



## DISPOSABLE-FREE EVENTS

As an island destination known for the sun, sand and beach, Sentosa is an attractive place to host outdoor events. Yet without accessible washing facilities, disposable-free events may seem impossible to organise, since food and beverage have to be served with single-use materials. However, companies with circular business models have sprung up to offer services that ensure guests will enjoy both the event and the convenience in a

sustainable manner. Refer to [WWF-SG Guide to Zero Waste Events](#) and [Sustainability Event Planning Checklist](#) for more information. The recommendations are also suitable for mega-indoor events.

Below is a summary of commercially available services that outdoor event planners can engage:

- Rental of tableware
- Outsourced washing facilities
- Rent-and-return for beverage containers
- Rental of water stations
- Edible water pods



# PACKAGING WASTE



In Singapore, one-third of domestic waste comes from packaging, and more than half of this was plastic while the rest were paper and other materials. Packaging is commonly used in many applications, but is rarely reused. Thus, there needs to be different ways to reduce and consume packaging more sustainably.

Under the [Mandatory Packaging Reporting](#) scheme, retailers must submit their packaging data and Reduce, Reuse, Recycle (3Rs) plans to the National Environment Agency (NEA). Companies will have to provide information on the packaging placed on the Singapore market, broken down according to the type of material, form and corresponding weights. This set of regulations aims to raise companies' awareness of the benefits of packaging reduction and spur companies to reduce the amount of packaging used.







## TRAINING GUIDELINES ON PACKAGING WASTE REDUCTION

It can be difficult to know where to start for waste reduction. This section provides step-by-step guidance on how to implement a waste reduction program. Take note that the order of 3R (Reduce, Reuse and Recycle) is very important as recycling should be used as the last resort when it comes to waste management. When in doubt, always fall back on this order.

### STEP 1: SELF-TRACK PACKAGING WASTE GENERATION AND RECYCLING

Tracking waste data provides an insight into the types of waste generated and key areas that companies can focus on improving.

As a start, the amount of single-use packaging waste generated can be estimated based on the monthly procurement. To further simplify the task, focus on products that are procured in high volumes or have obvious excess and unnecessary packaging.

The estimated weight of the common types of packaging is listed in Annex B. The list comprises both recyclable and non-recyclable packaging. The sum of the recyclable packaging would give an indication of the possible amount that can be segregated for recycling. As for the unrecyclable ones, this is where the team can proceed to the next recommended steps on how to eliminate them or switch to recyclable packaging.

This step could subsequently be used as the baseline, and to track and measure the success of new initiatives.

### STEP 2: REDUCE

Based on the packaging identified in Step 1, filter any packaging that does not have a functional use and can be eliminated.

### STEP 3: REUSE

Further identify packaging from Step 1 that can be switched to a reusable or refillable system.

### CHALLENGE IN STEP 3:

Most packaging is brought in by external suppliers. Work closely with them to implement reusable packaging.

### STEP 4: RECYCLE

Based on the list of unrecyclable packaging in Step 1, work closely with the suppliers to switch the material to a recyclable one, if elimination and reusable approaches have been explored and found unsuitable.

### STEP 5: DEVELOP IN-HOUSE STANDARD OPERATING PROCEDURE (SOP) FOR WASTE SEGREGATION

Waste segregation is often not the staff's main priority. Without clear instructions or SOP, this task is easily neglected. The SOP should be short and easy to follow, with clear distribution of work, that includes but is not limited to:

- Understanding who is responsible for the segregation - tenants' staff vs in-house housekeeping staff vs SDC housekeeping staff
- Recommending a convenient timing to carry out segregation
- Indicating a clear location for in-house recycling bins as temporary storage
- Identifying packaging that must be segregated (use of photos are highly recommended)

With the information collected above, it is easier to identify areas that can be targeted to reduce packaging waste.



## ELIMINATE UNNECESSARY PACKAGING

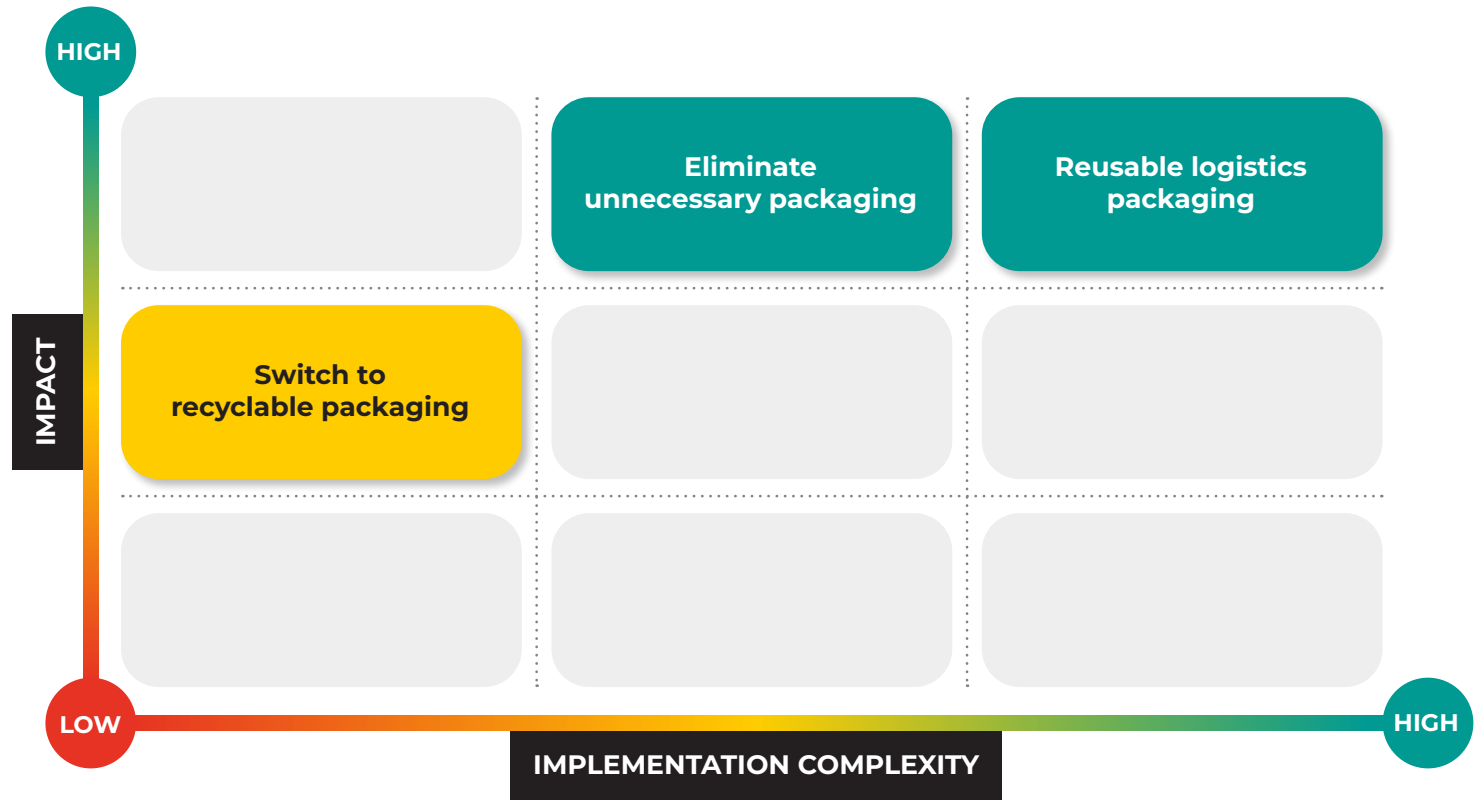
The first way to reduce unnecessary packaging is to use less material. For example, some products are packed in carton boxes but may be further wrapped with plastic, which is unnecessary. Removing this can help to cut down some plastic consumption. Purchasing large quantities of items in one package instead of several smaller containers can also cut down on excessive and unnecessary packaging. Island businesses and their suppliers / logistic partners / warehouse packers will need to work closely together to implement the measures above.

## REUSABLE LOGISTICS PACKAGING

Island businesses, together with their suppliers, logistics partners or warehouse packers can adopt reusable packaging and phase out single-use logistics packaging, such as corrugated boxes and Expanded Polystyrene (EPS) boxes which are unrecyclable in Singapore. For example, [Watsons](#) is using tote boxes for products delivered from a centralised warehouse to the various outlets and will be collected back to the warehouse at the next delivery. This results in less packaging waste to manage at their outlets.

## SWITCH TO PACKAGING WITH RECYCLED CONTENT

If reusable options are not feasible, using eco-friendly packaging such as sustainably-sourced FSC recycled paper and recycled plastic can reduce the usage of virgin paper and plastic packaging. Having recycled content in packaging is preferred because it has a lower environmental footprint.



### CONCLUSION

Adopt best practices to reduce packaging waste and this can be done through the training guidelines on packaging waste reduction.

# AMENITY KIT



Hotels are typically expected to provide amenity kits for their guests. However, such items are usually discarded after one use, contributing to the amount of avoidable waste contributed by the hospitality industry each year. In 2021, [figures from NEA](#) showed that larger hotels with more than 200 rooms have a considerably low recycling rate of only 8.6% as compared to 56%, which is the median recycling rate for mid-range hotels in Europe. Thus, there is room to reduce avoidable waste in the hospitality industry such as the provision of amenity kits, and increase the recycling rate. Below are some suggestions on how this can be done.

## GIVE ON DEMAND

In a survey done by Rakuten Insight to understand consumers' behaviour, only 28% of all amenity items were used all the time by hotel guests. This shows huge potential for reducing waste and an ideal approach is to give only on demand. Besides saving on the cost of amenity kits, operation and manpower costs in replenishing and procuring the items are reduced too.

Grand Hyatt Singapore has started by making the switch to remove less frequently used items, such as razor kits and hair brushes, and offer them when requested by guests. Upon re-opening, they will offer wet amenities (i.e. shampoo, conditioner and body foam) in large bottles to reduce waste. Similarly, other hotels that are starting to make the switch to provide some amenity kit items on demand include PARKROYAL Collection Hotels & Resorts.

The survey also showed that when the environmental messaging was clearly conveyed to guests, 80% agree or strongly agree that they would not mind asking room service for amenity items only when needed. Besides informing guests of the change in the provision of amenity items, such branding messaging highlights the hotels' commitment to the environment, thus creating a positive value proposition for the hotels.

## LIQUID DISPENSERS

Replacing small bottled toiletries with wall-mounted dispensers is a win-win move from a sustainability perspective. For a 140-room hotel, approximately [23,000 bottles of plastic](#) can be saved each year. With this change, hotels can also save a lump sum on purchasing soap bottles each year. The switch to liquid dispensers can result in an [estimated 90% waste reduction](#) for amenity wastage.

## SOAP TABLETS

Using soap tablets can replace millions of plastic containers used in hotels. Moreover, instead of providing large soap tablets, reducing the soap tablet size for up to three washes can help minimise cost and leftover waste. [Regent Singapore](#) has halved the size of their soap tablets and by doing so, reduced their purchasing cost and waste (including soap and packaging). As soap bars do not require much packaging and are small, compact, and light, this reduces the carbon footprint during transportation too.

Additionally, soap recycling can be done in Singapore, where [Soap Cycling](#) collects and recycles discarded soap and redistributes it to migrant workers in Singapore and impoverished communities in the region.



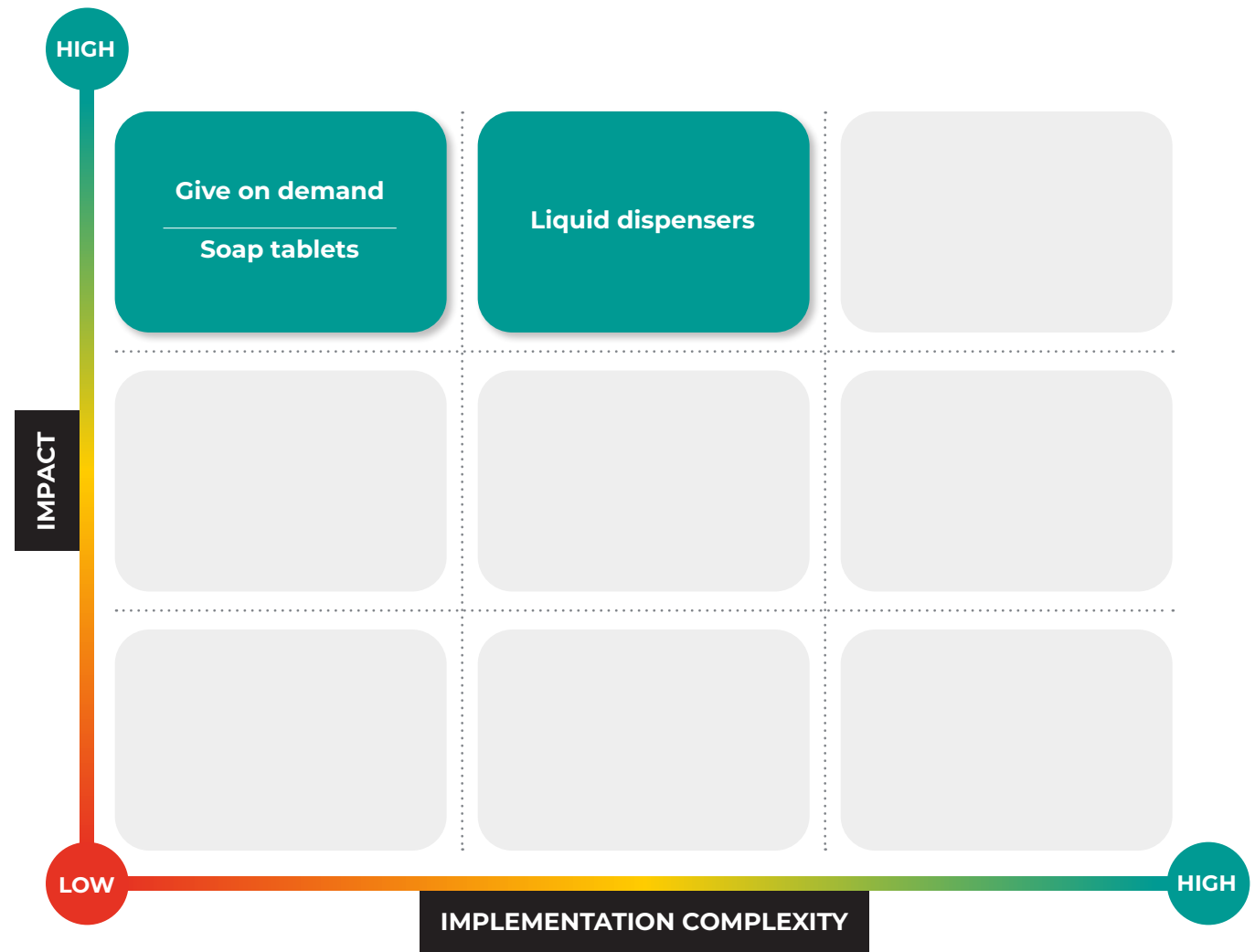
Photo credit: © Sofitel Singapore Sentosa Resort & Spa



There is also an ongoing trend to replace liquid body and shampoo gel with soap tablets. These tablets will need to be dissolved in water and guests can top them up with water in reusable containers placed in the guest rooms, thus reducing packaging waste. At the same time, this saves housecleaning time needed to refill dispensers, while ensuring guests who are particular with hygiene, providing them with cleaned reusable containers for their own refill.

### CONCLUSION

Review and adopt feasible solutions to reduce or even eliminate the need for amenity kits. This could be done in an innovative manner, without compromising on guest experience much or at all.



# BEYOND DISPOSABLES: HOLISTIC WASTE REDUCTION

This section of the playbook looks beyond practices to move away from the use of disposables. The recommendations here provide facility management team with guidance on how to identify further opportunities in waste reduction through better waste management.

## GREEN CLEANING PRODUCTS

Choice of cleaning products can play a significant role in reducing the packaging that has to be disposed of after. Opting for greener options means lesser hazardous chemicals and fewer health risks. They are better for the environment too, as they do not contain chemicals that cause significant air or water pollution. Here is a brief checklist of criteria to look out for when procuring cleaning products:

- i. Biodegradability: To improve the efficiency of detergent removal in wastewater treatment plants
- ii. Concentrated formulas, powders or tablets: To reduce the amount of packaging and transportation of water in liquid formulas
- iii. Refillables: To work with local vendors to take back empty containers
- iv. Recyclable or recycled packaging material

## WASTE AUDIT AND MONITORING

Under the [Mandatory Waste Reporting](#) scheme, hotels, shopping malls, industrial premises and convention and exhibition centres have to submit to NEA the amount of waste generated from their premises. This would give the owners or occupiers an insight into how much waste they are generating and motivate them to actively seek ways to reduce it. Unfortunately, there is no visibility on how much waste individual tenants are producing since the waste data collected currently is agglomerated. Without such information, effective action cannot be taken.

To efficiently track the amount of waste data, companies can consider engaging waste weighing services to keep track of waste disposed and recycled quantities at the premises. They can also conduct yearly waste audits within the facility. The waste audit report can help identify waste areas and uncover opportunities to reduce or recycle waste materials. It will also enable the collection of baseline data for measuring the initiatives' effectiveness.

Other solutions include emulating commercial retail malls like [Paya Lebar Quarter \(PLQ\) Mall](#) and a [pilot trial on food waste](#) at HDB blocks in the Ang Mo Kio-Toa Payoh sector, where QR codes or tokens are assigned to individual tenants/households to track the amount of waste generated. This concept can be easily customised to suit individual companies' needs in tracking and analysing waste generation.

## SMART BINS

Various smart bin designs have been developed recently<sup>2,3,4,5</sup>. Its advantage is mainly in eliminating the need to manually check whether the bins are full, saving a tremendous amount of time and manpower, especially for large estates. In the long term, the data could provide an indication on the distribution of waste generation around the island, and thereby help in planning the number of bins required within an area. Besides using sensors to detect when the bins are full, it is also possible to include foul smell detectors to alert cleaners, even when the bins are not yet full.

The bins can be solar-powered with enough capacity to compact trash, thus increasing the trash capacity by eight-fold. Cleaners will be notified via SMS to clear the bins once they are full, reducing the frequency of trash clearing used by 25%, as observed at [Resorts World Sentosa](#).

Similarly, using sensors in bin centres will also help shape a better understanding of the waste generation pattern and its unexpected peaks, thus paving the way for a flexible waste collection schedule.

Lastly, proper design of recycling bins will help to improve the recycling habits of users. This concept is currently being [piloted](#) at Hong Kah North SMC and East Coast GRC.

## FOOD WASTE MANAGEMENT

Food waste is one of the major waste streams in Singapore. Based on [MSE's statistics](#), commercial and industrial (C&I) premises account for approximately 40% of the food waste generated in Singapore each year. As part of the new legislation under the Resource Sustainability Act, owners and occupiers of C&I premises that generate large amounts of food waste will be required to segregate their food waste for treatment, either on-site or off-site, from 2024 onwards.

The following measures can be taken to prevent food from entering the waste stream:

- Inspect food service equipment regularly for leaks and malfunctions, and repair or replace as needed to prevent food wastage.
- Purchase only what is needed to prevent spoilage.
- Audit food storage to prevent food spoilage and wastage.
- Offer guests the option to order smaller portions to suit their appetite, reducing the amount of leftovers.
- Donate surplus food to food distribution organisations such as Fei Yue Community Services, Food Bank Singapore, Food from the Heart and Willing Hearts.

- Install waste-to-energy facility to treat food waste and generate energy

Currently, SCRM, [RWS](#) and [Sentosa Golf Club](#) have installed their own food waste digester. The advantage is the immediate treatment of food waste on-site, thereby reducing the need to hold the food waste for separate collection, which can lead to pest infestation.

**Case Study:** [East Coast Lagoon Food Village](#)

## SHARED CONTRACTOR FOR HOMOGENOUS WASTE

Sentosa has its fair share of cafes that are generating homogeneous food waste such as coffee grounds, okara waste, fruit and vegetable waste from juicing and possibly bread waste. Instead of putting them into food digesters, there are [local food waste recycling companies](#) and [research institutes](#) that have been developing ways to convert them into products with higher value, such as [new food like noodle and beer, and material for furniture](#). Small F&B island businesses can consider coming together to consolidate these homogenous waste for a single collection by the respective recycling companies.

<sup>2</sup> <https://www.straitstimes.com/singapore/smart-bins-gaining-traction-in-singapore>

<sup>3</sup> <https://www.todayonline.com/singapore/jtc-puts-more-smart-waste-bins-alert-cleaners-sms-when-full>

<sup>4</sup> <https://www.stewhatsnext.gov.sg/stories/tech-innovations-jurong-lake-gardens/>

<sup>5</sup> <https://www.facebook.com/changiairport/videos/smart-bins-at-terminal-4/1124284874407515/>



Photo credit: © Sentosa Golf Club

# NEXT STEPS

This playbook focuses on single-use disposables and provides practical recommendations for eliminating unnecessary packaging and replacing with reusables, wherever possible. Although the recommendations are based on Sentosa, many of them will work in similar entities, such as within a big commercial building or a cluster of estates. The recommendations are provided with an indication on the effort needed and the level of impact, as further summarised in the checklist below.

With the publication of the playbook, WWF-Singapore and SDC will work on guiding island businesses with transforming their business models, on adopting these best practices to reduce the use of disposables.



Photo Credit: © Sentosa Development Corporation

# ANNEX A – CHECKLIST FOR ADOPTION OF BEST PRACTICES IN REDUCING DISPOSABLES

As a guide to understand the current level of adoption and identify areas for adoption of best practices, your organisation can use the checklist below to determine the extent of implementation. If a recommendation is not applicable to your organisation/operations, please indicate “NA”.

TYPE OF DISPOSABLES	RECOMMENDATIONS	TO WHAT EXTENT HAS THIS BEEN IMPLEMENTED?			
		0 “NOT YET STARTED”	1 “STARTED BUT <50% INTRODUCED”	2 “> 50% INTRODUCED”	3 “100% INTRODUCED”
Carrier Bags	Levy a charge for disposable bags*				
	BYO Bag, or provide option to borrow, or rent a bag*				
	Incentivise BYO or returning a rented bag				
	Switch to materials with lower environmental impact				
Takeaway Food Containers	BYO or provide option to rent reusable food & beverage containers*				
	Incentivise BYO or renting reusable food & beverage containers				
	Switch to materials with lower environmental impact				
Disposable Tableware for Dine-In	Switch to reusable crockery for dining in*				
	Outsource washing of tableware				
	Provide disposable tableware on demand*				
	Switch to compostable material				

TYPE OF DISPOSABLES	RECOMMENDATIONS	TO WHAT EXTENT HAS THIS BEEN IMPLEMENTED?			
		0 “NOT YET STARTED”	1 “STARTED BUT <50% INTRODUCED”	2 “> 50% INTRODUCED”	3 “100% INTRODUCED”
Single-use bottled water	Provide water dispensers*				
Paper Products	Switch to FSC-certified materials*				
Packaging Waste	Eliminate unnecessary packaging*				
	Reusable logistic packaging*				
	Switch to recyclable packaging*				
Amenity Kit	Give on demand*				
	Switch to bulk liquid dispensers*				
	Switch to soap tablets / reduce soap tablet size				
	Purchase green cleaning products				
<b>TOTAL SCORE (SUM OF ALL COLUMNS)</b>					

\* Recommendations that should be prioritised for implementation for greatest impact.

The overall score will reflect the current level of adoption of measures and the checklist will serve as a guide to identify aspects where best practices can be more widely adopted.



# ANNEX B – WEIGHT OF TYPICAL PACKAGING

**Table 1:** The weight provided is an estimate due to the large variety of packaging used commercially. The list is given as an example and is non-exhaustive.

PACKAGING TYPE	RECYCLABLE (Y/N/MAYBE)	WEIGHT PER UNIT (G)	AMOUNT PROCURED PER MONTH	TOTAL WEIGHT PER MONTH (KG)	DO YOU HAVE CONTROL OVER ITS USAGE?
A1 sized plastic bag	Y	60g			
A2 sized plastic bag	Y	15g			
A5 sized plastic bag	Y	5g			
Large trash bag	N	55g			
Plastic wrapper over 12-pack 1.5L PET bottled drinks	Y	50g			
Plastic wrapper over 12-pack canned drinks	Only transparent ones are recyclable	13g			
Plastic wrapper over 24-pack canned drinks	Only transparent ones are recyclable	20g			
700ml PP cup (50 per roll)	Consumers need to empty and rinse the cup before recycling	445g per roll			
2L HDPE container	Must be cleaned	125g			

# ACKNOWLEDGEMENTS



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We would like to thank the island businesses for their participation in this study; and for providing valuable inputs and insights.

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