



CIRCULARITY  
CONCEPTS

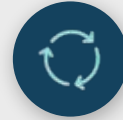
# REUSE AND REFILL: EVALUATING THE OPPORTUNITIES AND BENEFITS OF REUSE & REFILL IN A CIRCULAR ECONOMY

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May 2022

Presented by Anne Johnson, RRS

# AGENDA



**Emergence of Reuse/Refill**



**Opportunities for Reuse/Refill Models**



**Consumer Behavior and Reuse/Refill Models**



**Environmental Performance**



**Takeaways**

SECTION

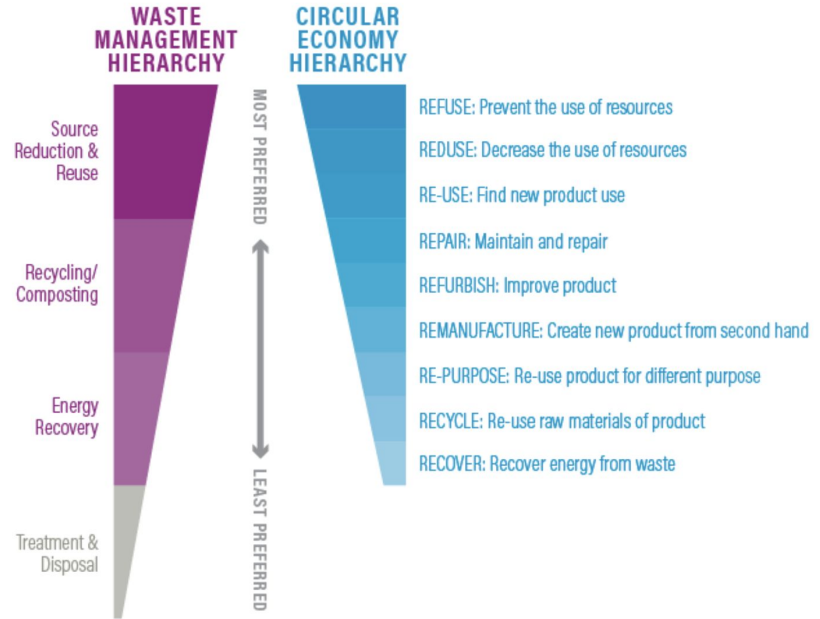
01

THE EMERGENCE  
OF REUSE AND REFILL  
MODELS

# WHY REUSE AND REFILL?

## Benefits

- Design is best opportunity to eliminate waste and reduce use of resources.
- Opportunity to displace single-use packaging.
- Area for disruptive business models and innovation.
- Restores stewardship behavior.



Source: Centre of Expertise on Resources

# WHAT IS DRIVING REUSE/REFILL?

## Influenced by:

- Growing awareness of the severity of mismanaged plastics.
- Corporate commitments to ensure all plastic packaging is reusable, recyclable, or compostable.
- Circular Economy principles.
- Regulatory pressures.
- Environmentally-conscious consumers and backlash against single-use plastics.

“The Coca-Cola Company today announced an industry-leading goal to significantly boost its use of reusable packaging. By 2030, the company aims to have at least 25% of all beverages globally across its portfolio of brands sold in refillable/returnable glass or plastic bottles, or in refillable containers through traditional fountain or Coca-Cola Freestyle dispensers.”

02.12.22

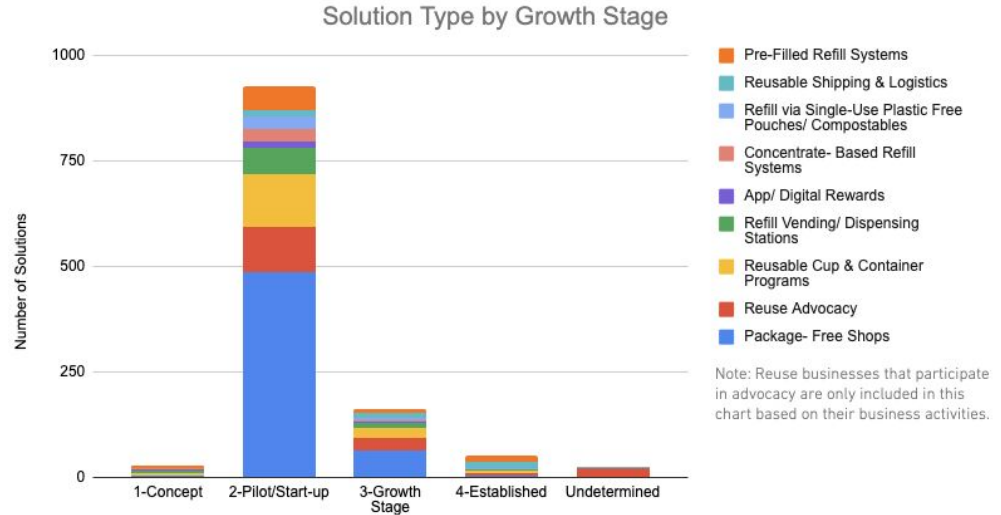


# REUSE/REFILL GROWING BUT STILL NASCENT

## Landscape:

- The majority of refill and reuse models are in startup mode.
- Most programs in SEA have been initiated in the past 4 years.
- For profit models dominate, but economics of models are largely unknown

Source: reuselandscape.org



# WHAT SCALED IMPACT OF REUSE / REFILL COULD IMPLY

## Key Issues:

- Shift of where economic value is created (e.g., Stahel's Performance Economy).
- Net total economic value within system.
- Municipalities could benefit from adopting and scaling shared reuse infrastructure.
- Reduction of waste, and new business opportunities.

Source: WEF – Future of Reusable Consumption Models

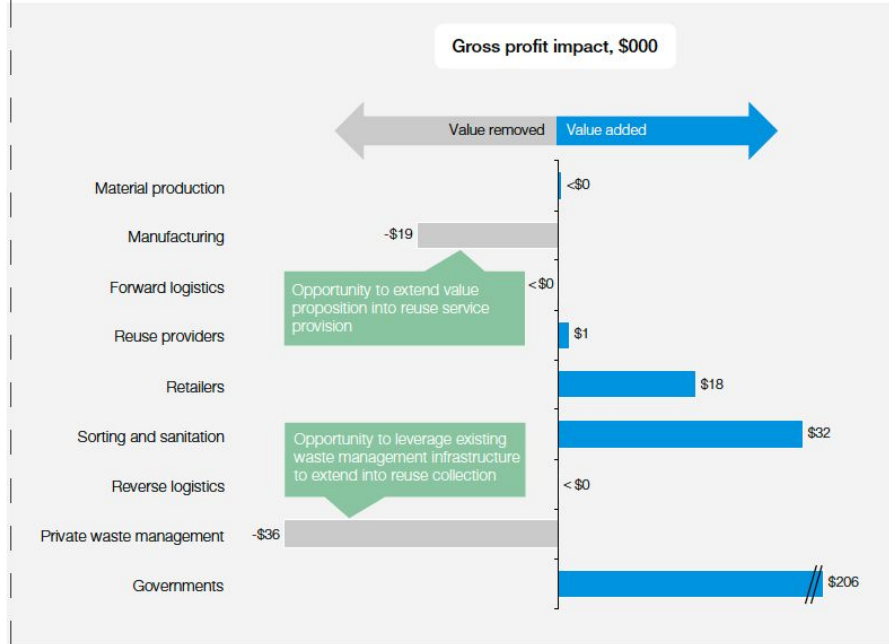
### KEY POINTS

At this scale point, governments, sorting/sanitization and retailers are receiving the most added value

Manufacturers of disposables and private waste management responsible for disposing of them bear the burden of lowered demand

Source: Kearney scenario analysis, 2021

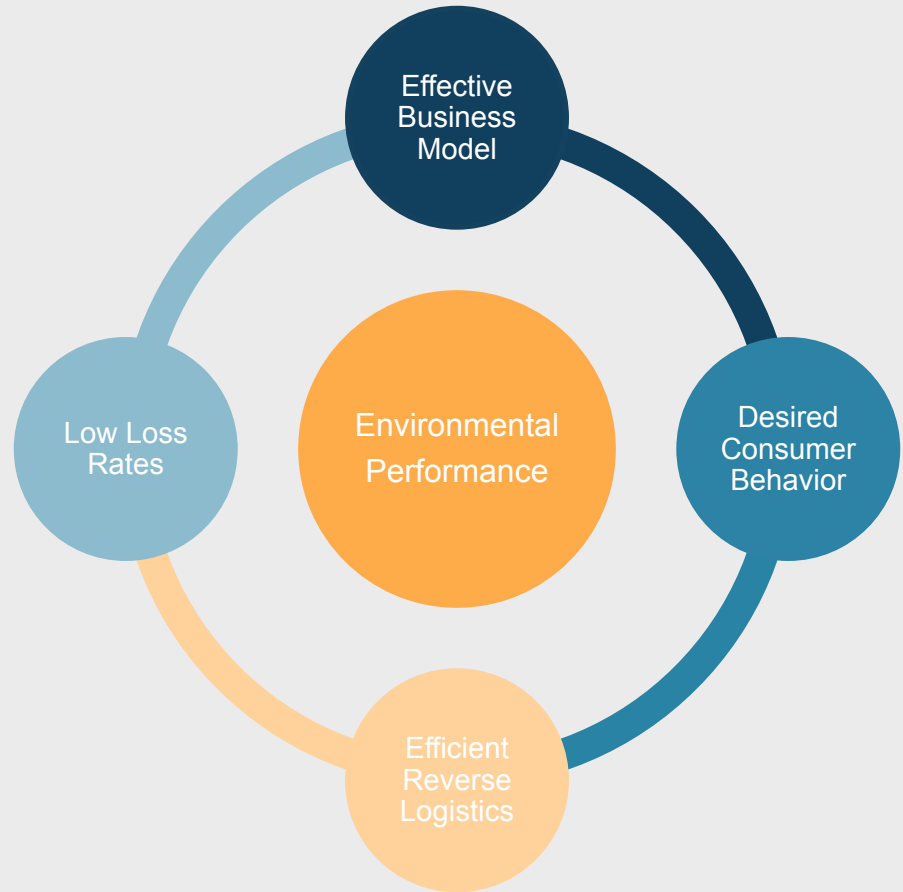
Scenario model – returnable cup, New York City





# WHAT IS NEEDED FOR SUCCESSFUL AND SUSTAINABLE REUSE/REFILL BUSINESS MODELS?

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SECTION

# 02

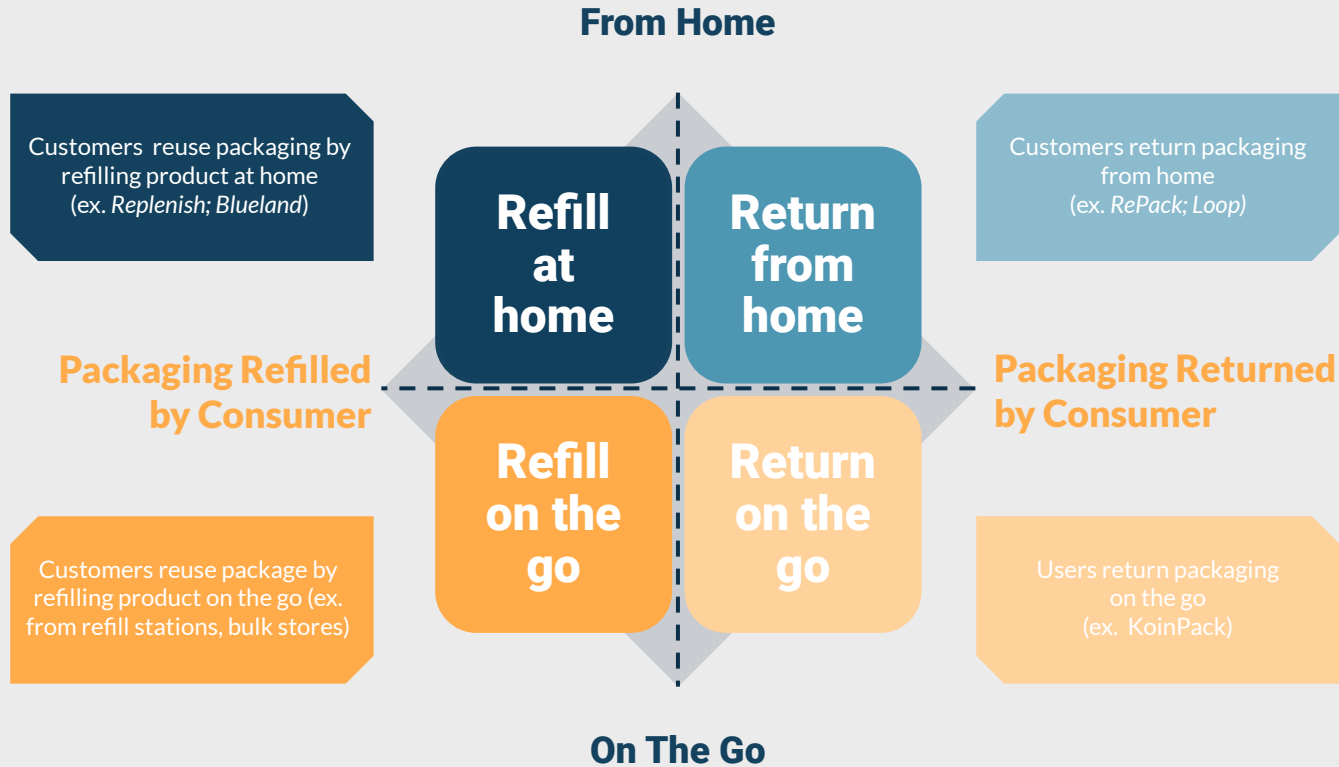
**OPPORTUNITIES AND  
MODELS FOR REUSE  
AND REFILL**

# OPPORTUNITIES FOR REUSABLE/REFILLABLE PACKAGING VARY ALONG THE SUPPLY CHAIN

- Opportunities for reuse/refill models are easiest when it is possible to build on existing reverse logistics and aggregation of product or packaging
- Shared logistics and sanitation improves financial and environmental performance

	Primary Packaging	Secondary Packaging	Tertiary Packaging
Presence of Reuse/Refill Models:	Growing B2C models	Established B2B models; Growing B2C models	Established B2B models
Participating Industries	Food and Beverage, Food Delivery, Home Care, Personal Care	E-Commerce, Distribution, Delivery Packaging	Transportation and Distribution Packaging
Examples	Bottles, Clamshells, Cups	Boxes, Mailers, Crates	Pallets and Crates
Example Business Models:			

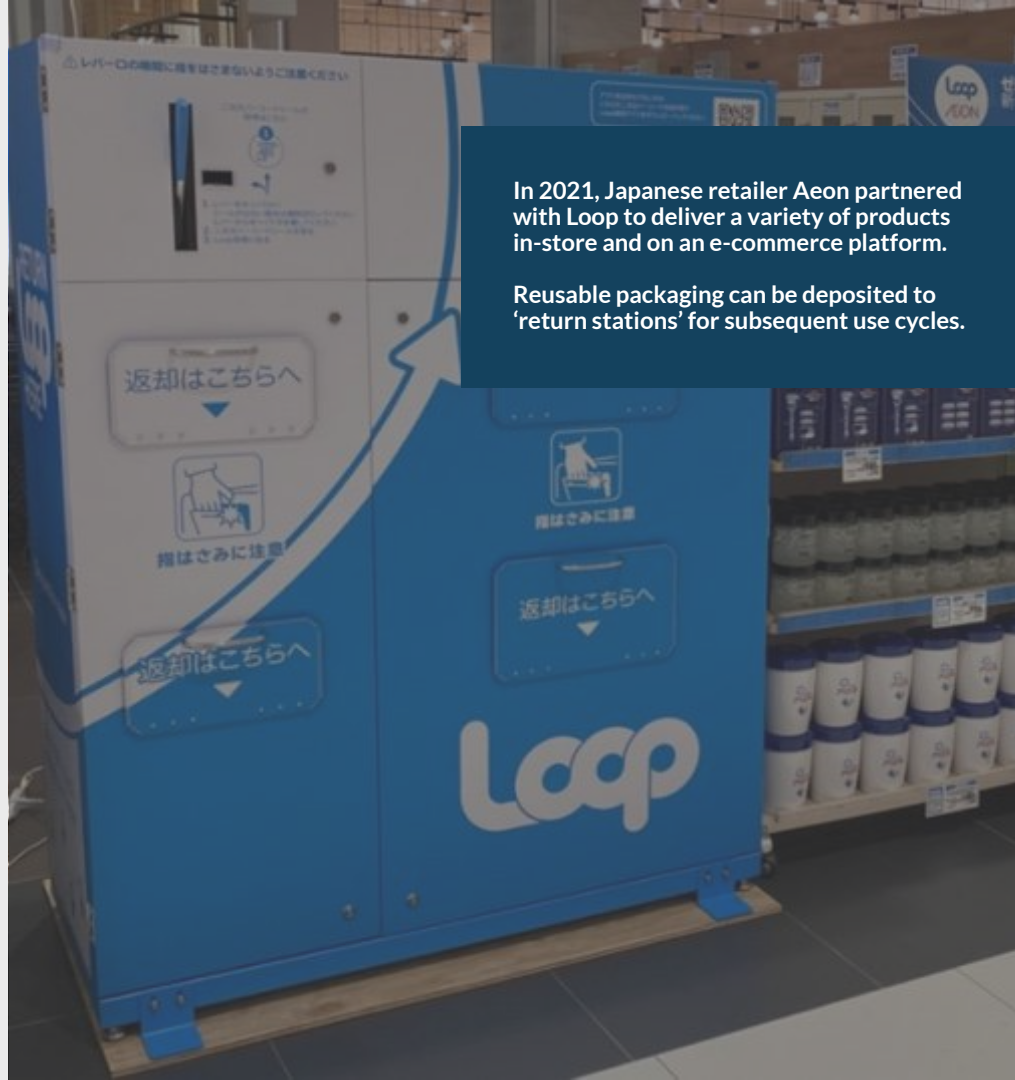
# CATEGORIZING REUSE/REFILL MODELS



# SUCCESS FACTORS FOR REUSE/REFILL SYSTEMS

## Scaled and Efficient Systems

- Aligning business model to appropriate reuse/refill products and/or service models (e.g., consumer behavior and convenience).
- Robust systems to deliver, track, collect, aggregate, clean, and prepare packaging for reuse or refill.
- Mitigating loss rates and optimizing reuse/refill cycles. Deposits are demonstrated to drive return.
- Economics of reusable packaging are sensitive to the efficiency of reverse logistics and intensity of transportation and preparation for reuse.



In 2021, Japanese retailer Aeon partnered with Loop to deliver a variety of products in-store and on an e-commerce platform.

Reusable packaging can be deposited to 'return stations' for subsequent use cycles.

# EVOLVING THE BUSINESS MODEL

## Loop

- Gen 1 based on e-commerce platform.
- Deposit of up to \$10 for each container.
- Return rate of 80%.
- Refunded when returned for refilling.
- Participation rate approximately 20,000.
- E-commerce model is expensive - round-trip shipping up to \$20 in U.S.
- Shifting to brick and mortar by partnering with retailers.
- Anticipate lower costs and greater convenience.
- Environmental benefits unknown.



SECTION

03

CONSUMER BEHAVIOR  
AND REUSE/REFILL  
MODELS AND  
EXAMPLES



ZeroMoment Refillery - Bangkok, TH

## REFILL ON THE GO

### Consumer behavior

- Requires a shift in consumer behavior to bring packaging.
- Impact on consumer convenience.
- Impacts product information (i.e., on use, nutrition and expiration labeling, etc.).
- Requires committed consumers.
- No consumer packaging and no reverse logistics required.
- Bulk purchase may result in product loss impacting environmental performance.
- May have added hygiene concerns.
- Models are generally new and economics of systems unknown.



# REFILL ON THE GO

<b>Location:</b>	Singapore
<b>Started</b>	2018
<b>Employees:</b>	Unknown
<b>Service Scope:</b>	Single Shop in Ang Mo Kio district, SG
<b>Product Categories:</b>	Wide Variety
<b>Partnerships:</b>	Unknown

## Service Model:

Customer brings containers to store

Customer dispense product, weighs and pays

Customer use

Return for refill

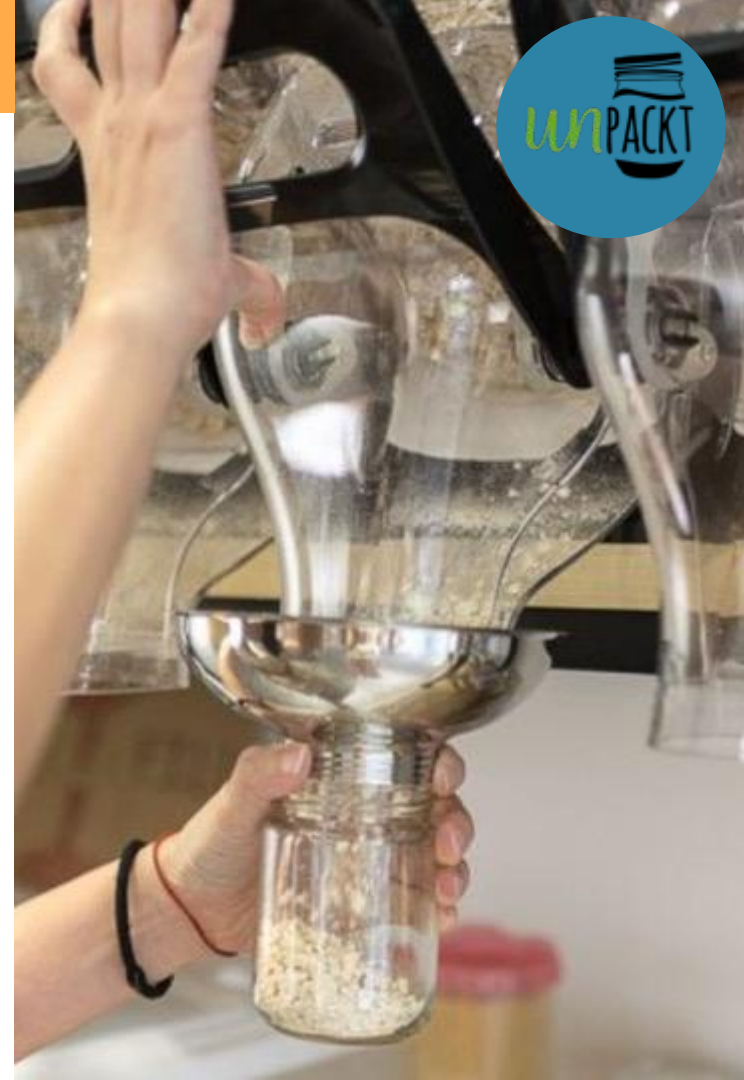
### Pros:

- Product/quantity customization
- No packaging to manage
- Consumer retail behavior provides return logistics

### Cons:

- Potential for increased product loss/spoilage
- Customer convenience
- Hygiene concerns

Source: <https://unpackt.com.sg/>





Replenish - U.S.

## REFILL FROM HOME

### Consumer behavior

- Does not require significant shifts in consumer behavior.
- Low-to-no impact on consumer convenience.
- Requires brand loyalty.
- May/may not require economic incentives and additional upfront costs for consumers to participate.
- Loss of consumer participation may result in packaging loss and negative impact on environmental performance.
- No concerns related to hygiene.
- Economics demonstrated for some models.

Source: <http://www.myreplenish.com/>

# REFILL FROM HOME

**Location:** Jakarta, Indonesia

**Started** 2019

**Employees:** 26-50

**Service Scope:** Six regions of Indonesia

**Product Categories:** Home & Personal Care

**Partnerships:** P&G; Nestle; Total; Reckitt; MARS; and more

## Service Model:

Download App and order products

Siklus delivers and refills products at home

Customer use

Repeat

### Pros:

- Customer convenience with at home delivery
- Brand loyalty
- No packaging to manage

### Cons:

- Employee safety
- Product limitations
- Scalability and efficiency of home delivery model

Source: <https://www.siklus.com/en/home>; i3connect.com





LOOP - U.S.

## RETURN FROM HOME

### Consumer behavior

- Requires some shift in consumer behavior.
- Low impact on consumer convenience.
- Scaling can build on known models for return and aggregation logistics like e-commerce models.
- May/may not require economic incentives and introduce upfront costs to participate.
- Lack of participation from consumers may result in packaging loss and negatively impact environmental performance.
- May require added burden of washing/sanitization.
- Models are generally new and economics of systems unknown.

Source: [supermarketnews.com](https://www.supermarketnews.com)

# RETURN FROM HOME

<b>Location:</b>	Helsinki, Finland
<b>Started</b>	2014
<b>Employees:</b>	11-25
<b>Service Scope:</b>	Europe & North America
<b>Product Categories:</b>	Reusable Shippers
<b>Partnerships:</b>	200+ Businesses

## Service Model:



### Pros:

- Reverse logistics uses mail system
- Consumer convenience
- Minimal requirement for cleaning

### Cons:

- Limited to vendors using RePack
- Risk of reusable packaging loss





#### Refillable “universal PET bottle”

- Designed for 25 cycles
- Indirect deposit offset by discount on next purchase
- Retailers aggregate
- Turnkey solution to clean and refill

**The Coca-Cola Company**

## RETURN ON THE GO

### Consumer behavior

- May require shift in consumer behavior as consumers are responsible for return logistics.
- Some impact on consumer convenience.
- Scale builds on existing models of collection, aggregation and if needed sanitization.
- Often requires economic incentives like a deposit. May be offset by offering coupons on back end.
- Lack of participation from consumers may negatively impact environmental performance.
- Economics demonstrated for some models.

Source: <https://www.foodnavigator-latam.com/>

# RETURN ON THE GO

<b>Location:</b>	Jakarta, Indonesia
<b>Started</b>	2020
<b>Employees:</b>	1-10
<b>Service Scope:</b>	Jabodetabek, Indonesia
<b>Product Categories:</b>	Home and Personal Care Products
<b>Partnerships:</b>	ALPLA; P&G; Barco

## Service Model:



### Pros:

- Deposit incentive to return
- Retail viability

### Cons:

- Product selection
- Consumer convenience
- Risk of packaging loss

Source: <https://www.compasslist.com>; <https://alibabacloud.kr-asia.com/>



# SURVEY OF REUSE/REFILL IN ASIA

Research Findings From a Review of Over 50+ Reuse/Refill Businesses

Country	Return on the Go	Return from Home	Refill at Home	Refill on the go
Hong Kong	●	●		●
Indonesia	●	●	●	●
India	●	●		●
Malaysia				●
Philippines				●
Singapore	●			●
Thailand				●
Taiwan	●	●		●
Vietnam	●			●

Source: Living Landscape of Reusable Solutions by reuselandscape.org



# SURVEY OF REUSE/REFILL IN ASIA

Research findings

## A review of 50+ reuse/refill models located in Asia found the following:

- 1** Most reuse/refill businesses in Asia were categorized as “zero-waste shops” that provide:
  - food & beverages
  - home & personal care items
  - a combination of the two
- 2** Indonesia led with the most reuse/refill initiatives. Most have been around since 2019
- 3** “Return from home” frequently rely on company pick-ups
- 4** Models using more durable substitutes rely on deposit-based incentive programs
- 5** “Refill from home” was underrepresented in research findings (esp use of concentrates) and often took form of delivery service

SECTION

# 04

## ENVIRONMENTAL PERFORMANCE

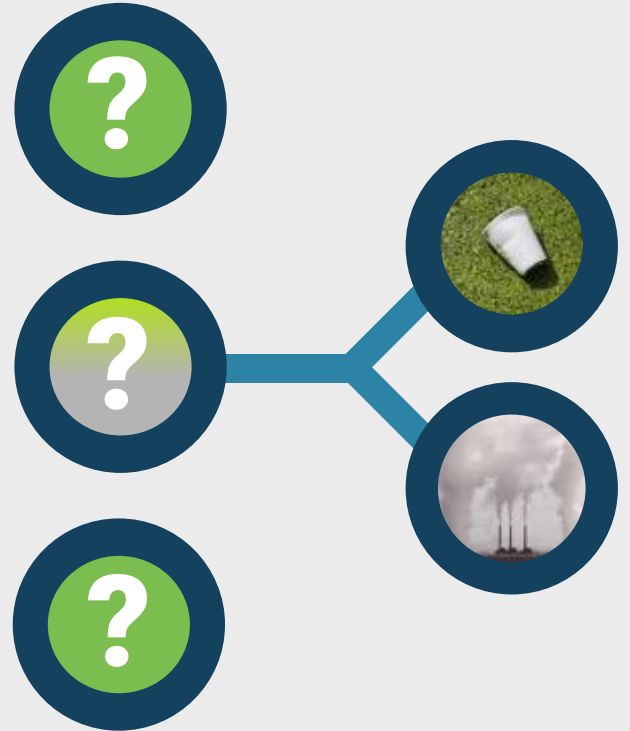
How can we know if reuse/refill is  
delivering environmental benefit?

# ASSESSING THE IMPACTS AND BENEFITS OF REUSE & REFILL IN THE CIRCULAR ECONOMY

Eliminate waste and pollution

Circulate products and materials (at highest value)

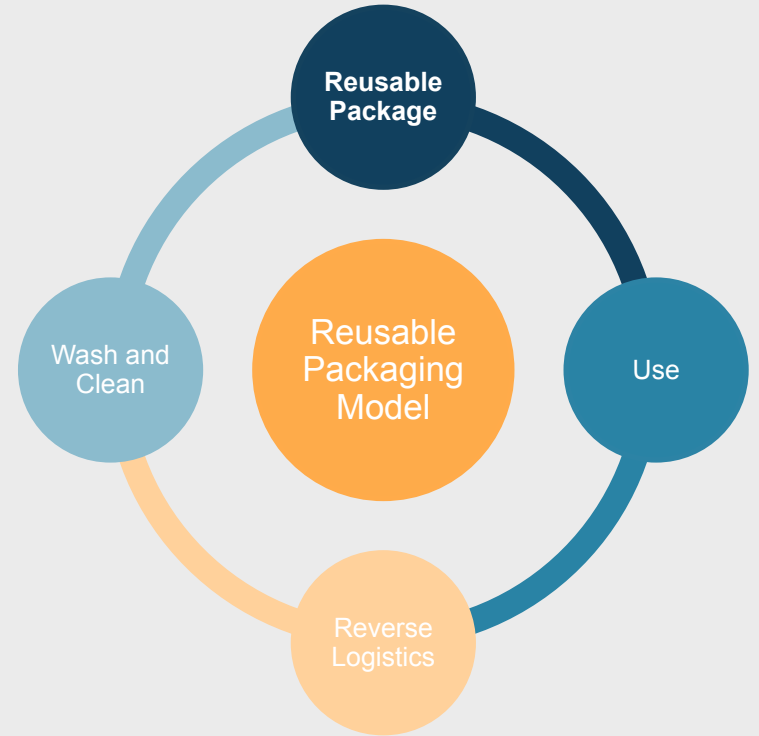
Regenerate nature



# LIFE CYCLE ASSESSMENT

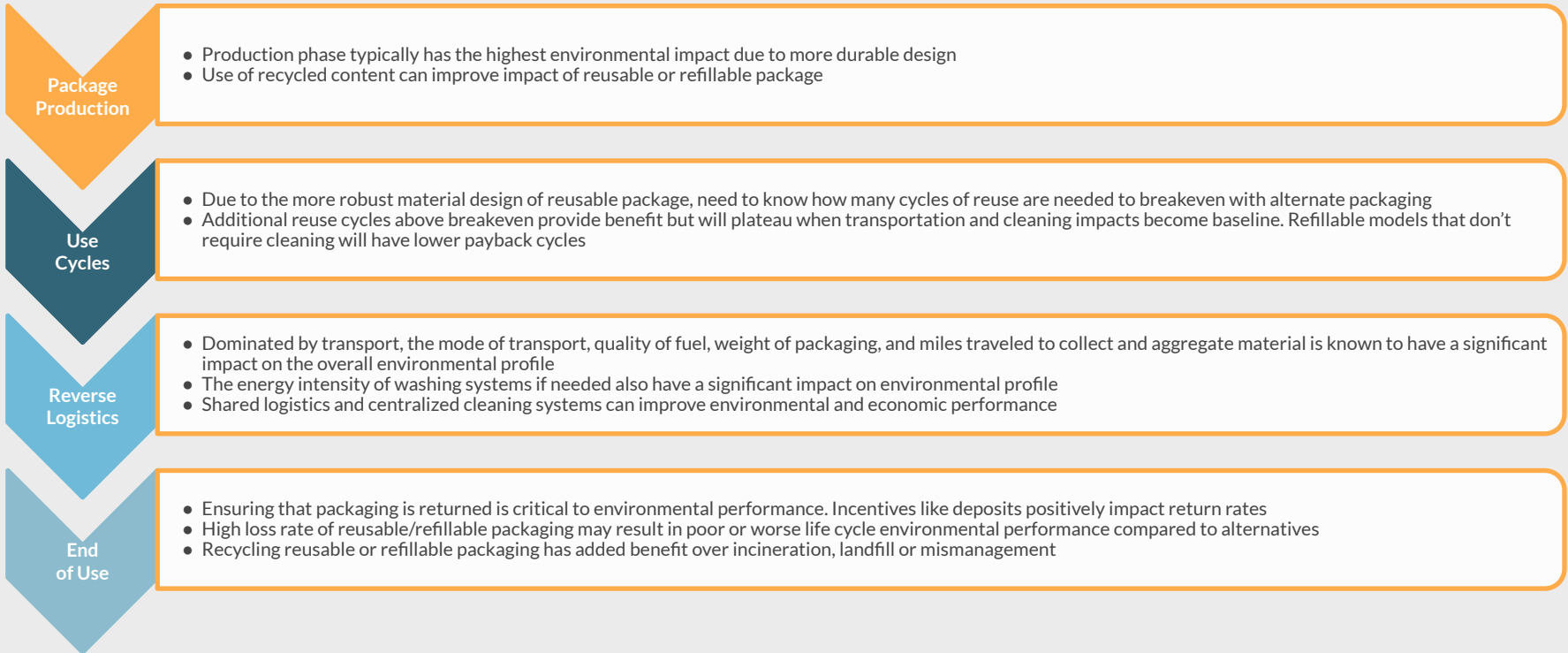
What are the things to consider?

- How resource intensive is a reusable package compared to its alternative?
- How many reuses or refill cycles is needed to realize environmental benefit?
- How much loss will occur in the system and require replacement of reusable packaging with new resources?
- How energy intensive is the process to collect, transport and prepare packaging for reuse?



# CONSIDERING ENVIRONMENTAL IMPACTS

## Generalized findings

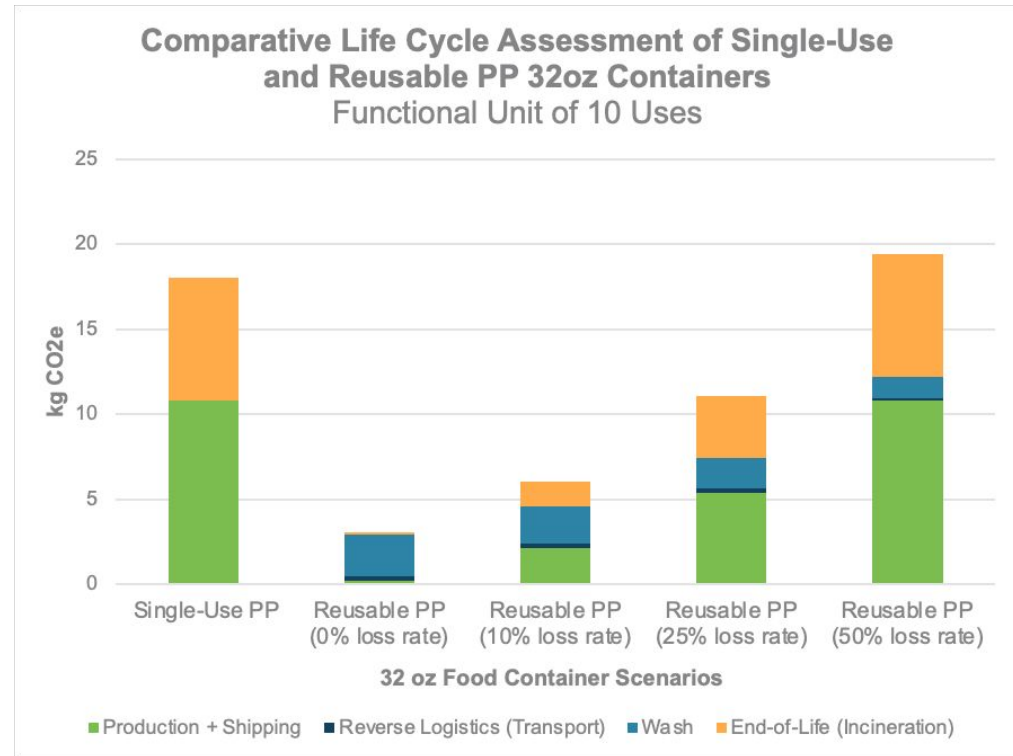


# EXAMPLE SIMPLIFIED LCA MODEL:

## Reusable vs Single-Use 32 oz - PP Food Container

### Model Assumptions:

	Reusable PP	Single-Use PP
Mass (g)	56	28
Engineered Durability (Uses)	100	1
Retail Delivery Method, Distance (km)	20 km truck delivery	
Reverse Logistics Transportation Method, Distance (km)	25 km round trip, truck transport	N/A
Cleaning Method	Industrial Wash	
Waste Management Method	Incineration	



SECTION

05

TAKEAWAYS

## HIGHLIGHTS OF REUSE AND REFILL MODELS



### **Environmental Benefit**

Production of packaging is generally the dominant life cycle impact.



### **Consumer Behavior**

Consumers are critical to reuse/refill models. Convenience and low requirements to modify behavior improve participation.



### **Reverse Logistics**

Environmental and economic performance benefit from efficient collection, aggregation and preparation of packaging for reuse.



### **Cycles of Use and Refill**

The benefits of reuse or refillable packaging is achieved when cycles of reuse exceed breakeven levels and loss rates are low.



### **End of Life (EOL) Management**

Recycling is most preferred EOL disposition. Incineration will negatively impact overall environmental performance of plastic reusables.



### **Business Models**

There can be significant cost benefits from capitalizing on shared reverse logistical and cleaning resources.



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# THANK YOU

## NEXT LEARNING SESSION:

Plastic Credits



[hello@incubationnetwork.com](mailto:hello@incubationnetwork.com)



[amonod@recycle.com](mailto:amonod@recycle.com)

Supported by



Program undertaken with the financial support of the Government of Canada provided through Global Affairs Canada.



# REFERENCES

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