



Universiteit Utrecht

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Utrecht University

# Examples of Reusable Packaging



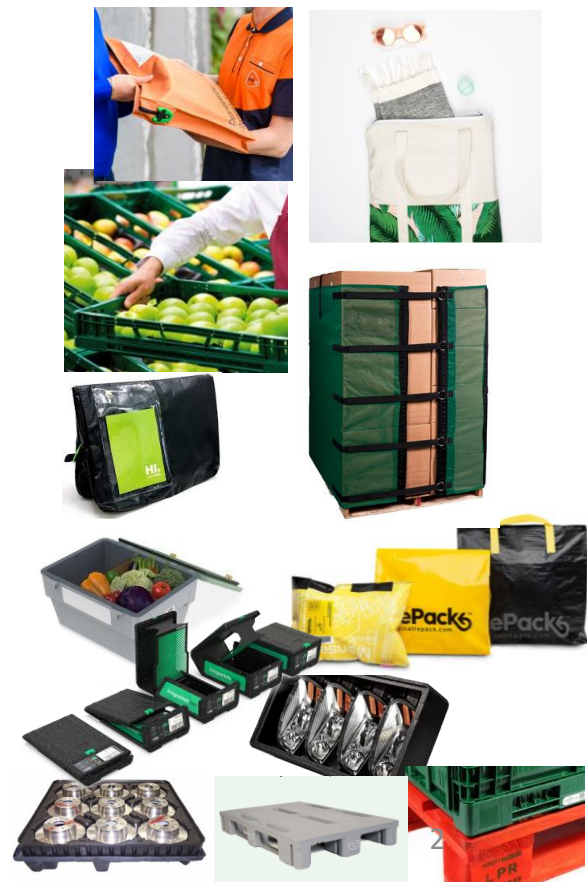
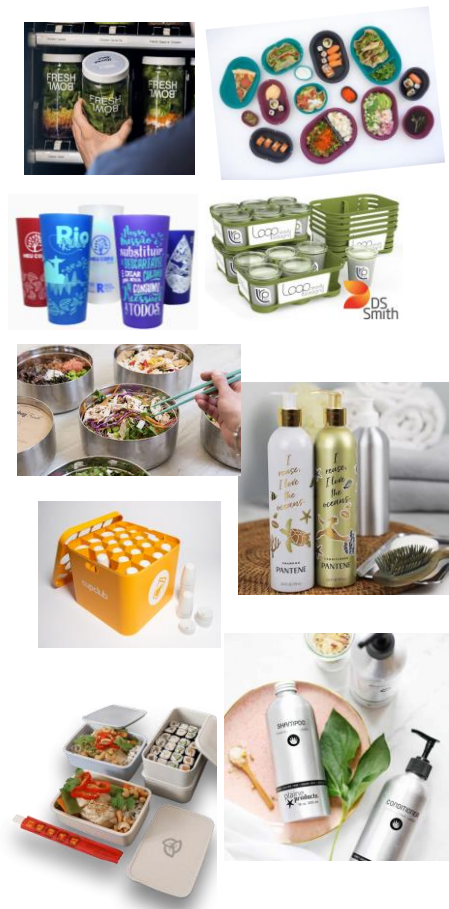
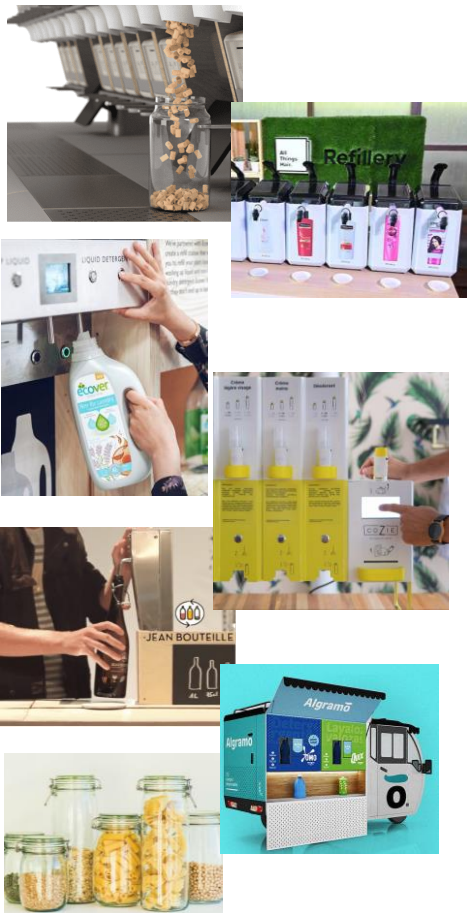
# • Examples of Reusable Packaging •

"Zero Waste"

Refillable Parent Packaging

Returnable

Transit



## Reusable Packaging Classification

### "Zero Waste"

Little or no packaging (bulk or solid). Customers use their own or brand's refillable packaging, making the use of further packaging unnecessary.



### Refillable Parent Packaging

Parent packaging is refilled by the consumer at home with content from a bottle, container, pouch or by diluting pods, tablet or powder.



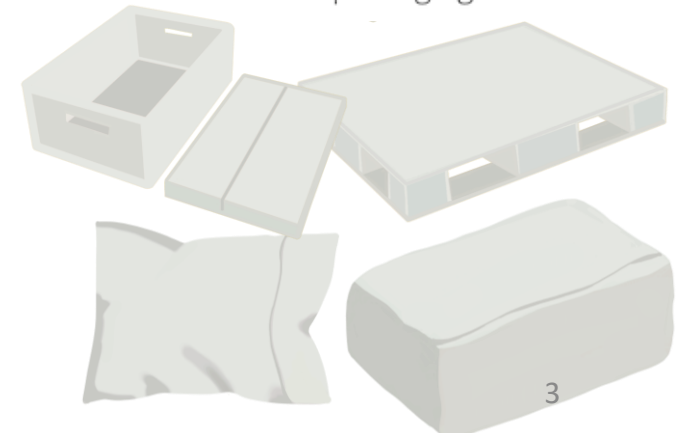
### Returnable

Reusable packaging like beer bottles, takeaway containers, shampoo bottles.. can be combined with a deposit system to provide financial incentive.



### Transit

Reusable packaging that facilitates handling in transit, like reusable boxes, crates, pallets, B2B or B2C, including e-commerce packaging.



# Reusable Packaging Classification

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It depends on the consumer to refill the packaging.  
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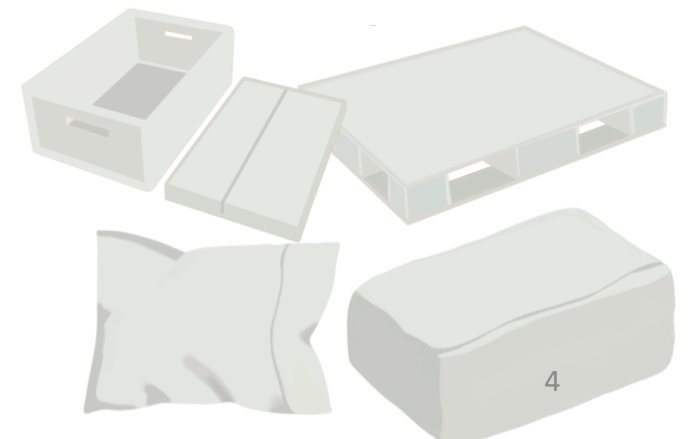
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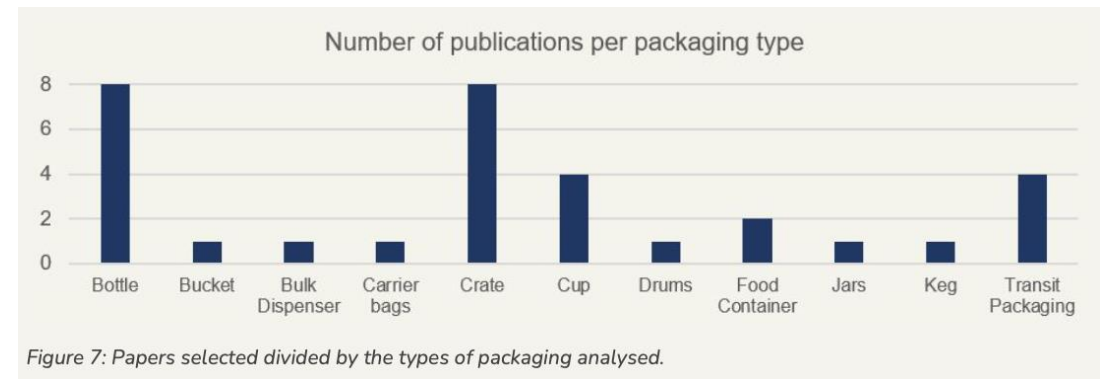
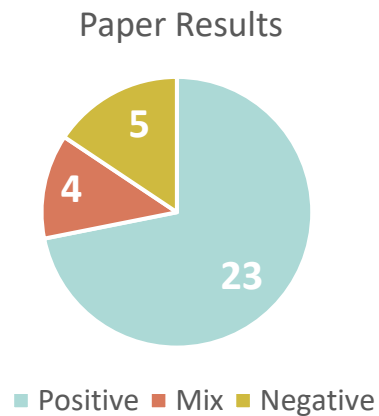


# Reviews on LCAs

## Utrecht University, Reloop and Zero Waste Europe. Reusable vs. Single-Use Packaging: A review of environmental impacts



Out of 32 LCAs that compared reusable and single-use packaging:



# Single-Use vs. Reusable Packaging

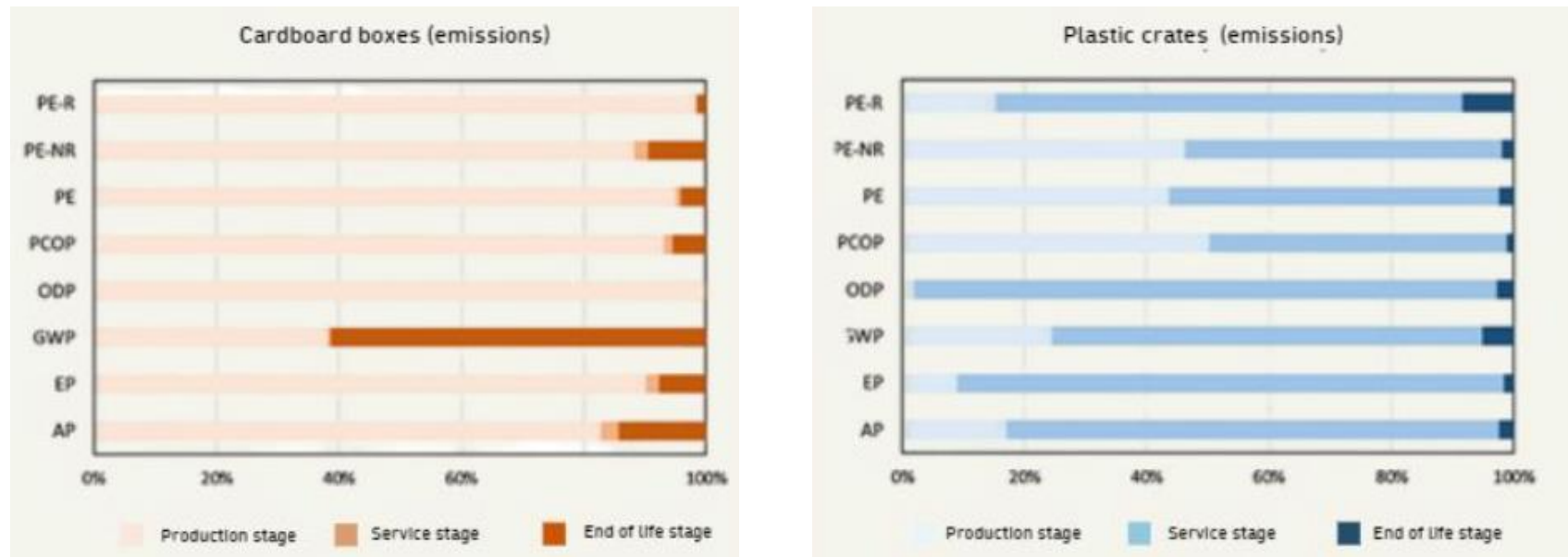


Figure 10: Emissions by life cycle stage of plastic crates and cardboard boxes. Source [13].

## Environmental Impact

Key parameters influence the success of reusable packaging

### Production Stage



### Service Stage



### End-of-Life Stage





# Environmental Impact

Key parameters influence the success of reusable packaging



- Material choice (weight, design, properties – heat resistance..)
- % of recycled content



- Number of cycles to break even with single-use alternative
- Return rate
- Cleaning (when necessary)

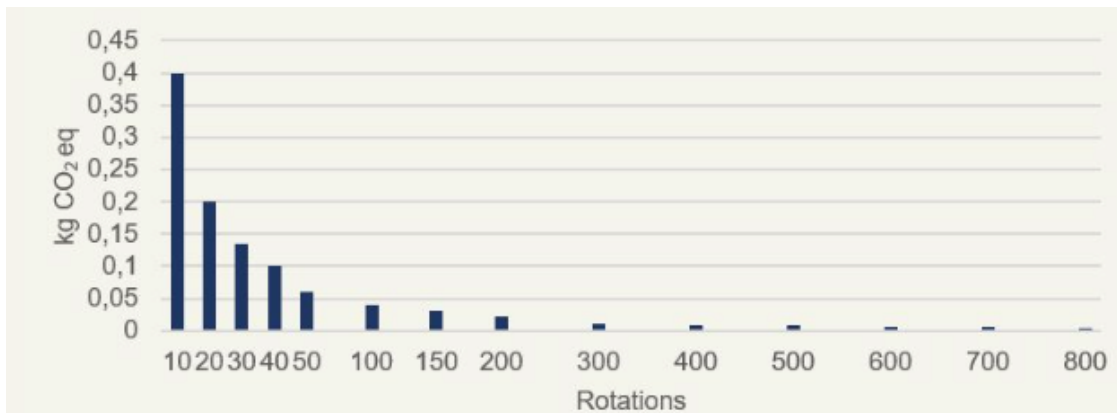


Figure 18: Reduction of kg of CO<sub>2</sub> depending on the number of cycles of reusable plastic crates. Adapted from [28].

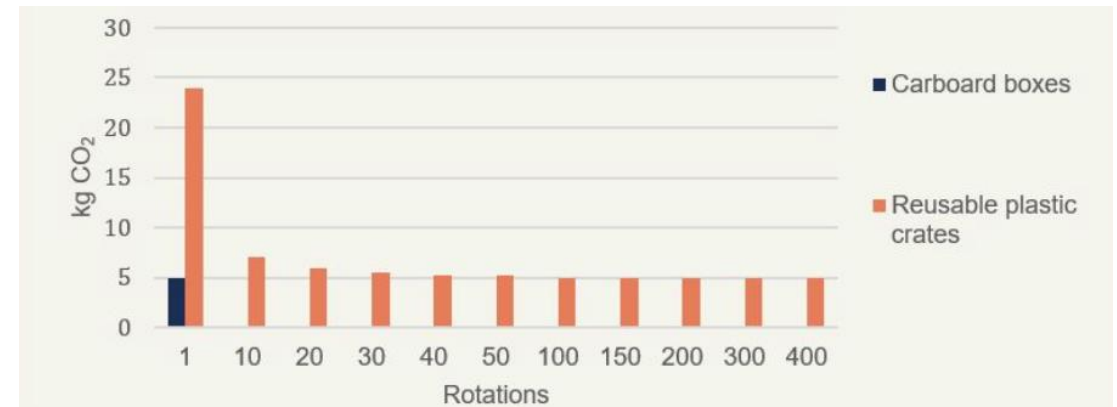


Figure 16: Reduction of kg of CO<sub>2</sub> depending on the number of cycles of reusable plastic crates. Adapted from [16].

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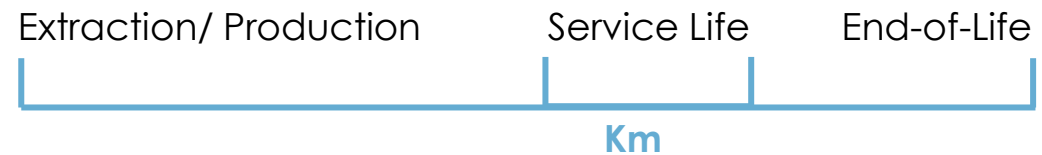


- Number of cycles to break even with single-use alternative
- Return rate
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- Distances

Life cycle of a product:



# Environmental Impact

Key parameters influence the success of reusable packaging



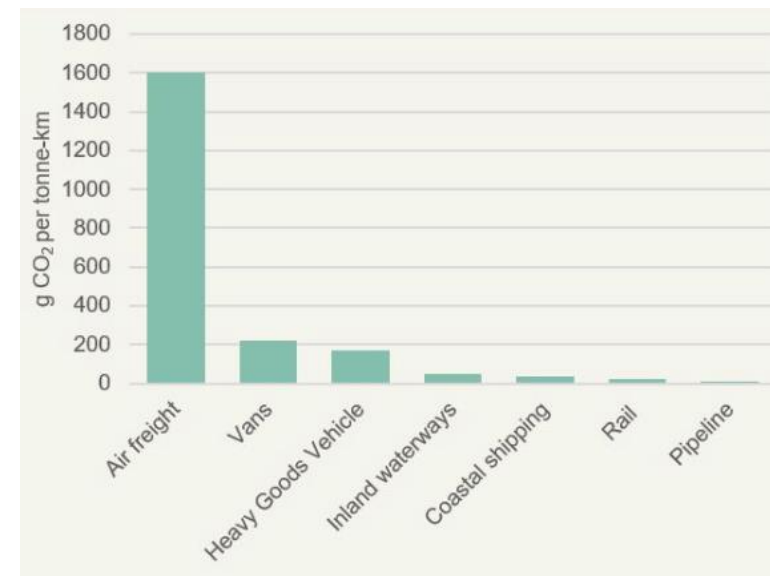
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- Distances
- Transport mode (road, rail, ship, air,..)



## Environmental Impact

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- End of Life approach chosen (recycling, incineration, landfill)
- Expectation x Reality
- Crediting

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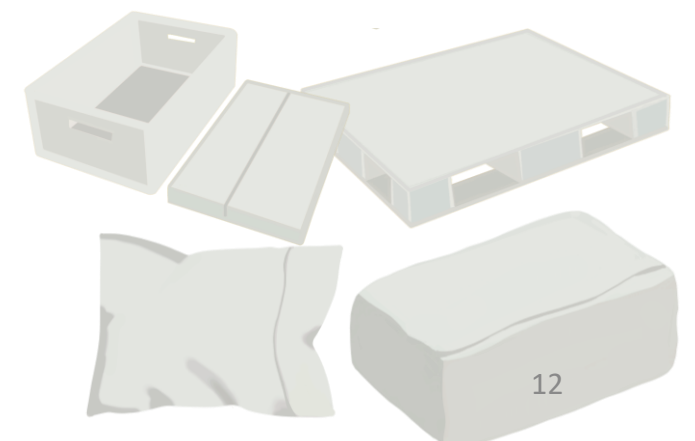
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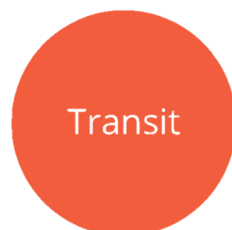
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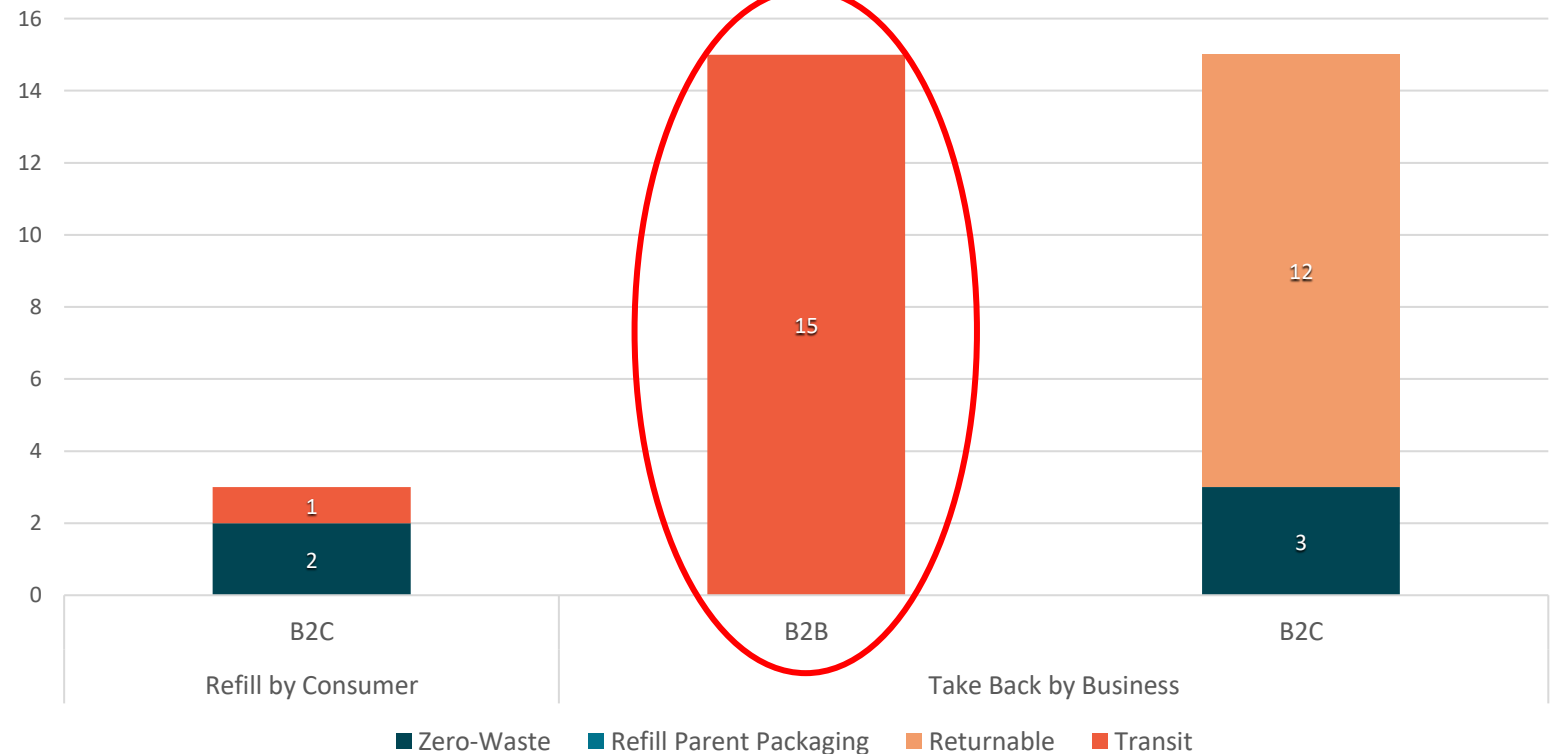
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Reusable Packaging by packaging classification and business model



# Generic Supply Chain



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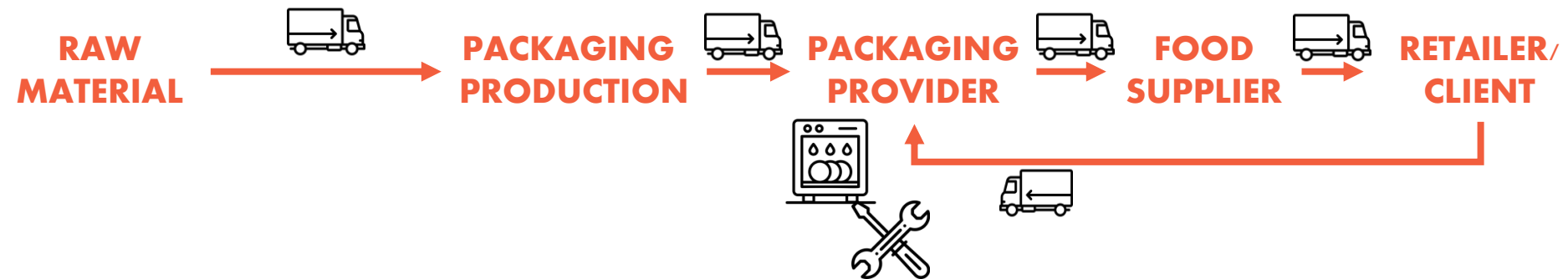
## B2B Supply Chain



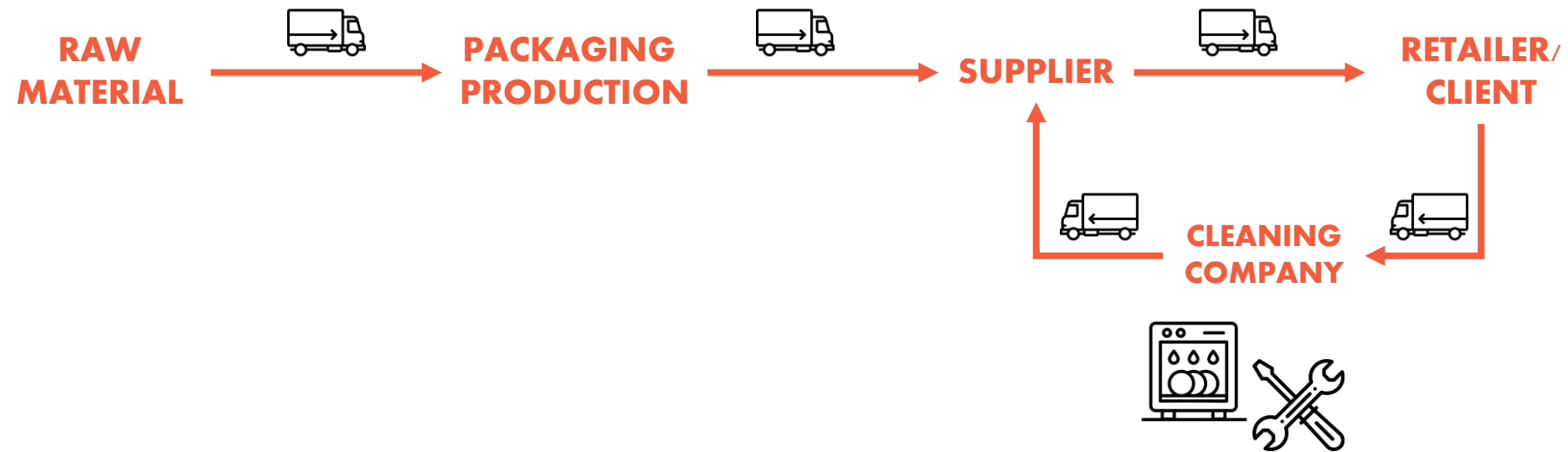
# B2B Supply Chain



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# Practical examples of reusable packaging for B2B systems

## Transit



## Logistics



# Practical examples of reusable packaging for B2B systems

Transit

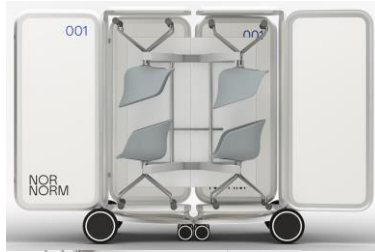
Beverage/ Liquid



Cosmetics



Furniture, Appliances



NOR  
NORM

hakola



FREEPACKNET

## Benefits of a B2B Supply Chain



- More control over the:

- Return Rate

- End-of-Life • EPR



**DISPOSAL**

- Improved quality and recycling rate

- Return logistics is part of the business model
- Shared Logistics
- Shared Infrastructure
- Can be part of a pooling/ standardized system
  - Can lead to cost and impact reduction

## • Environmental Impact & Further Improvements •

Key parameters influence the success of reusable packaging





## B2B learning and teaching



- Is a transport packaging company.
- Offer transport for renting or pooling of packaging.
- Active in Estonia, Latvia and Lithuania.



ringo

Return stations

Prices

Scanner

Start here

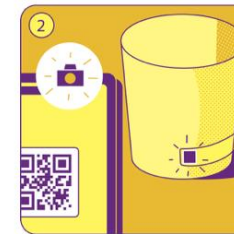
Log in

ENG

### INSTRUCTION HOW TO GET A DEPOSIT BACK



1  
Choose reusable package. Pay deposit.



2  
If the package is empty, scan the QR code.



3  
Take the empty package to the return box.



4  
The deposit will be transferred back to the account of your choice.



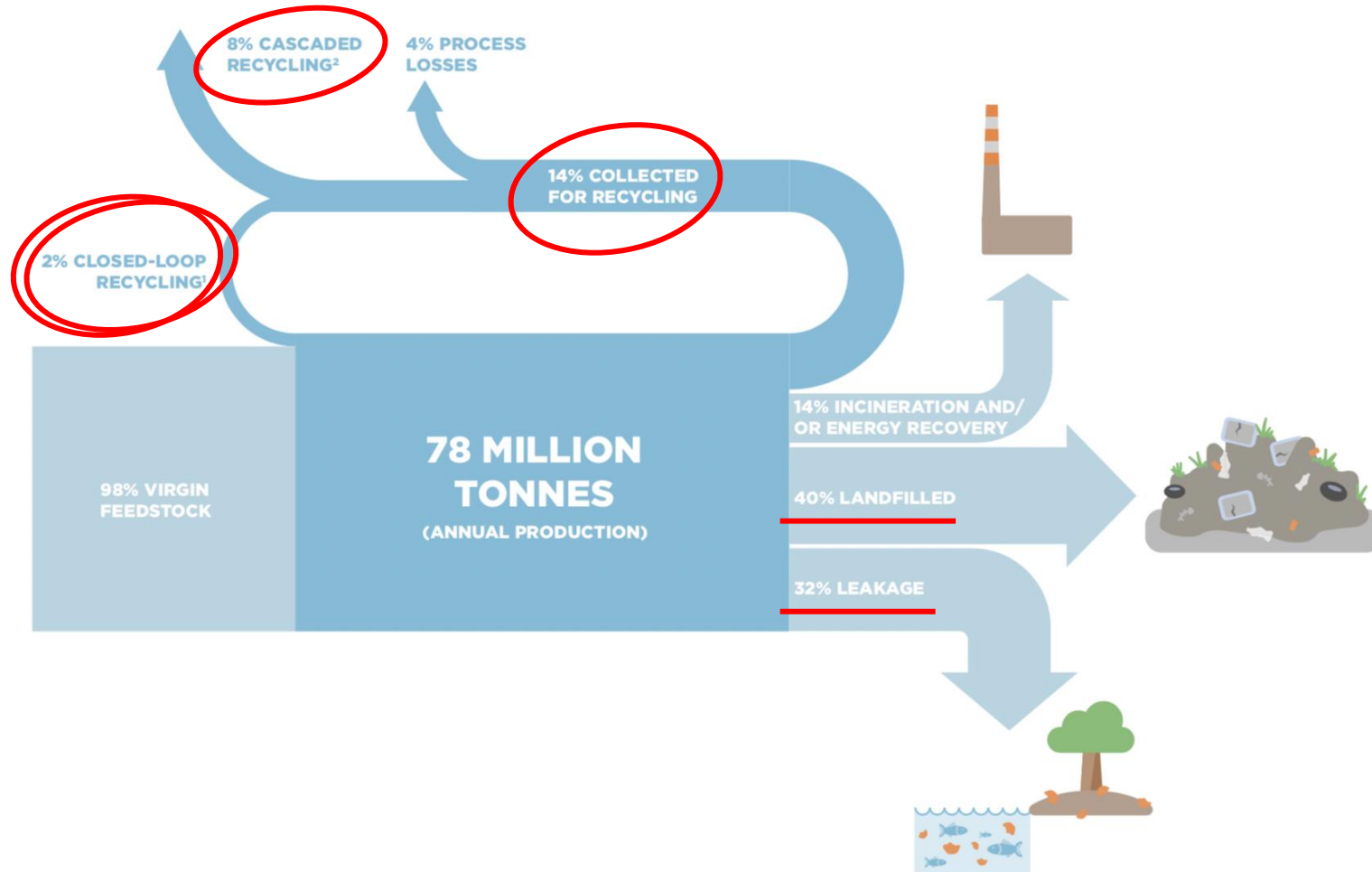
**Thank you!**

Patricia Megale Coelho

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# Global Flows of Plastic Packaging



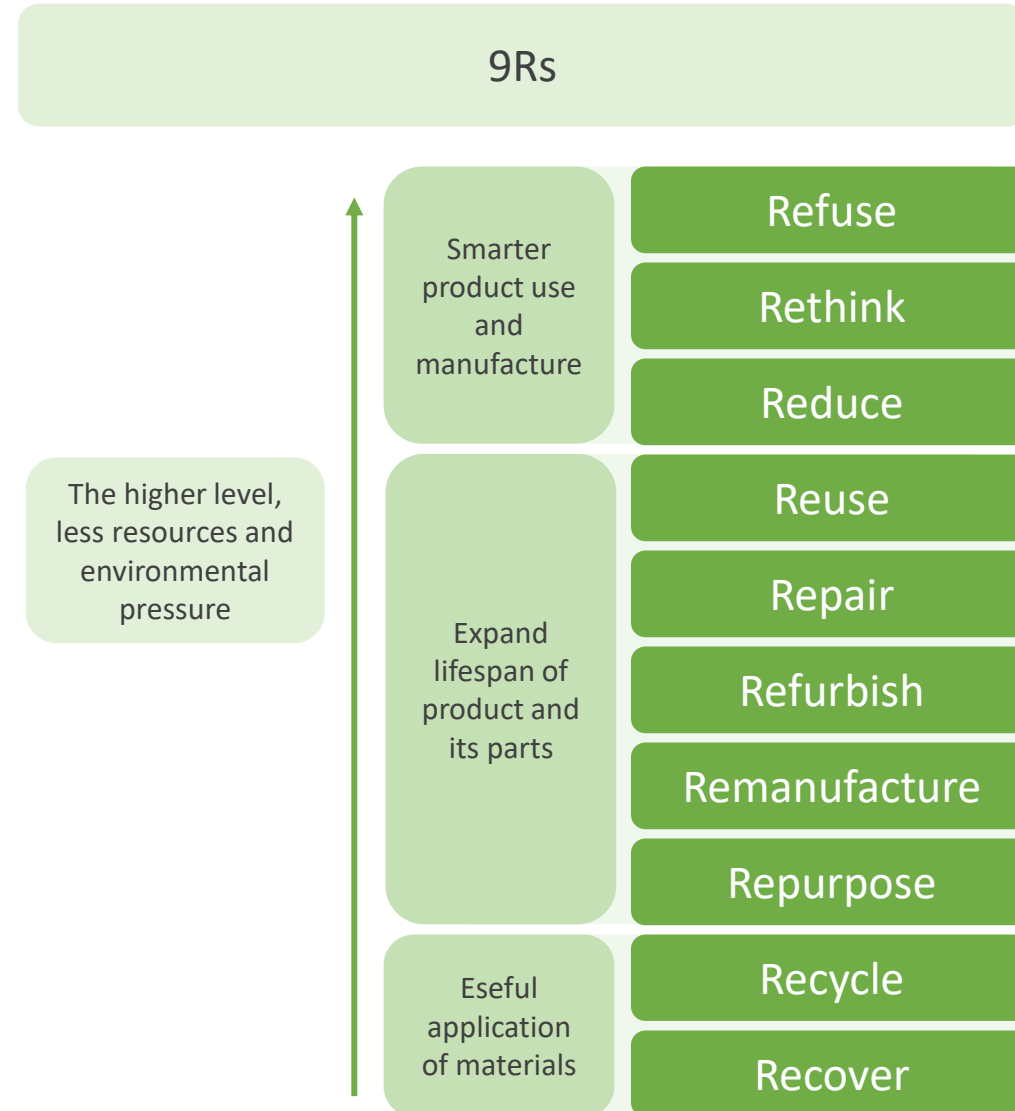
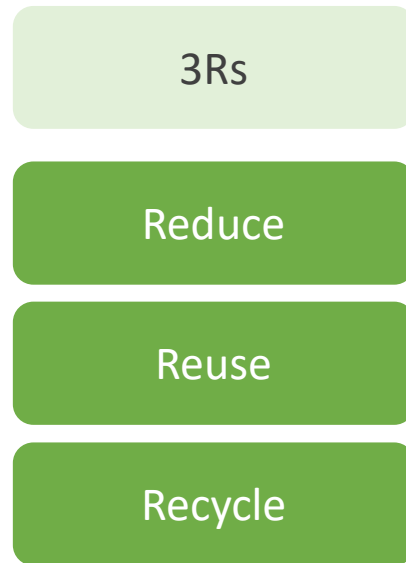
\$80 – 120 billion annually, is lost to the economy after a short first use.

What if 100% was recycled?

1 Closed-loop recycling: Recycling of plastics into the same or similar-quality applications

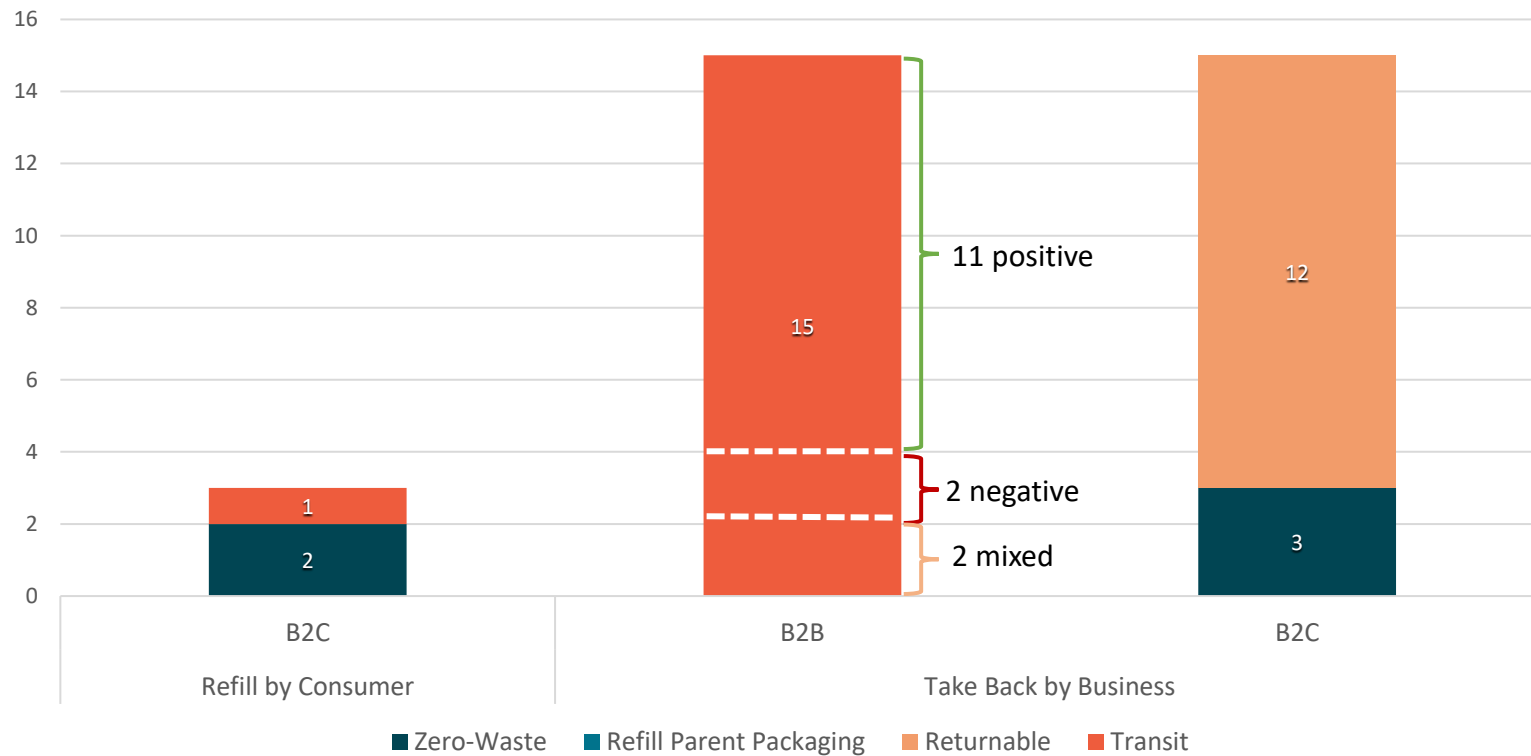
2 Cascaded recycling: Recycling of plastics into other, lower-value applications

# Waste Management



# Reusable Packaging Classification

Reusable Packaging by packaging classification and business model



Types of Transit Packaging analysed by the studies:

- 8 Crates
- 4 Especific transit packaging
- 1 Bulk Dispenser
- 1 Drum
- 1 Bucket