ZERO WASTE CITY

Mandatory Packaging Reporting

Know-how

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Introduction

ZERO WASTE CITY

Rémi Cesaro (MSc, PEM, CMVP, TRUE Advisor)

- Director and founder of Zero Waste City.
- Zero Waste City is an **engineering consulting business**, based in Singapore, helping large commercial and industrial facilities to save money by reducing waste and energy, and to achieve Zero Waste goals.
- Over 7 years of consulting experience in Australia and Singapore, for a wide range of industries, and covering energy, waste management, and packaging.

WMRAS
Waste Management & Recycling Association of Singapore

Member

TRUE

TRUE Advisor
Total **R**esource **U**se **E**fficiency
U.S. Green Building Council

CMVP

CMVP
Certified **M**easurement and **V**erification **P**rofessional
Association of Energy Engineers

Introduction

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- **Goals of this presentation**
  - Help you to organise your tasks
  - Give practical tools and advice
  - Clarify terminology

- **Agenda**
  - For decision makers
    - Strategy
    - Tactics
  - Operational aspects
    - Screening
    - Packaging assessment
    - Data collection and reporting
  - Q&A
  - 3R Plan
  - Funding programs
  - Q&A

Strategy (1/3)

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Three reasons to consider integrating the MPR into your business strategy.

1

Regulatory compliance

(Avoid penalties)

2

Sustainability commitment

(Reduce the environmental impact of the supply chain)

3

Business resilience

(Reduce the financial impact of the upcoming EPR)

Strategy (2/3) – Sustainability commitment

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- There is a global movement to drive or enforce better packaging. Don't wait to join the trend!
- The Plastic Pact by the Ellen MacArthur Foundation
  - In Europe, by 2025, the commitments are:
    - 100% recyclable plastic packaging
    - 30% of recycled plastic into packaging
    - Increase collection, sorting, and recycling by 25%
    - Reduce use of virgin plastic by 20%
- Similar commitments by other countries.
  - In Australia, by 2025, the commitments are:
    - 100% reusable, recyclable or compostable packaging
    - 70% of plastic packaging being recycled or composted
    - 50% of average recycled content included in packaging
    - Phasing out problematic and unnecessary single-use plastics packaging.

ELLEN MACARTHUR FOUNDATION

APCO AUSTRALIAN PACKAGING COVENANT ORGANISATION

Strategy (3/3) – Business resilience

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- Extended Producer Responsibility (EPR) is a framework in which producers are given a responsibility – financial and/or physical – for the treatment or disposal of post-consumer products.
- We don't know how the EPR in Singapore will work, we can only imagine based on existing EPRs around the world.
- Let's consider the EPR in France and a 1.5L water bottle.

Approximate cost breakdown of a water bottle

Production (15%)	Sales and marketing (20%)	Distribution and import (20%)	Retailers mark up (30%)	Profit margin (15%)	

S$0.50

EPR fee
1.368 ct S$

- In France,
  - EPR fee: 31,23 ct €/kg of plastic (in 2018)
  - Note that discount applies if the product is made of recycled content and if it is recyclable.
- EPR fee per 1.5L bottle
  - 1.5L plastic water bottle is about 28.4g
  - Therefore, the EPR fee is 0.844 ct €/bottle ~ 1.368 ct S$/bottle
  - **~18% of the profit margin**
- The sooner you reduce the impact of your packaging, the cheaper it will be.

Tactics (1/4)

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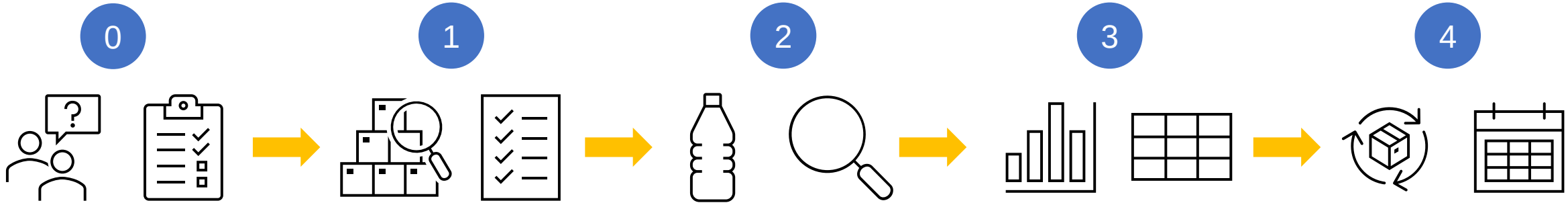
1. Assign responsibility

- Typically a manager already in charge of reporting or compliance such as sustainability manager, compliance manager, or CSR manager.
- You need someone to chase individuals and partners and to be the point of contact with the regulator (NEA).

2. Organise tasks



0 Regulatory compliance

Confirm that you are a “Producer” under the Resource Sustainability Act.

1 Screening

Identify all the pieces of packaging that will have to be reported under the MPR.

2 Packaging assessment

For each piece of packaging, determine the material composition and weight of each of them.

3 Data collection and reporting

Record the number of units introduced to Singapore and generate the data report.

4 3R Plan

Define packaging improvement targets and the timeline of implementation.

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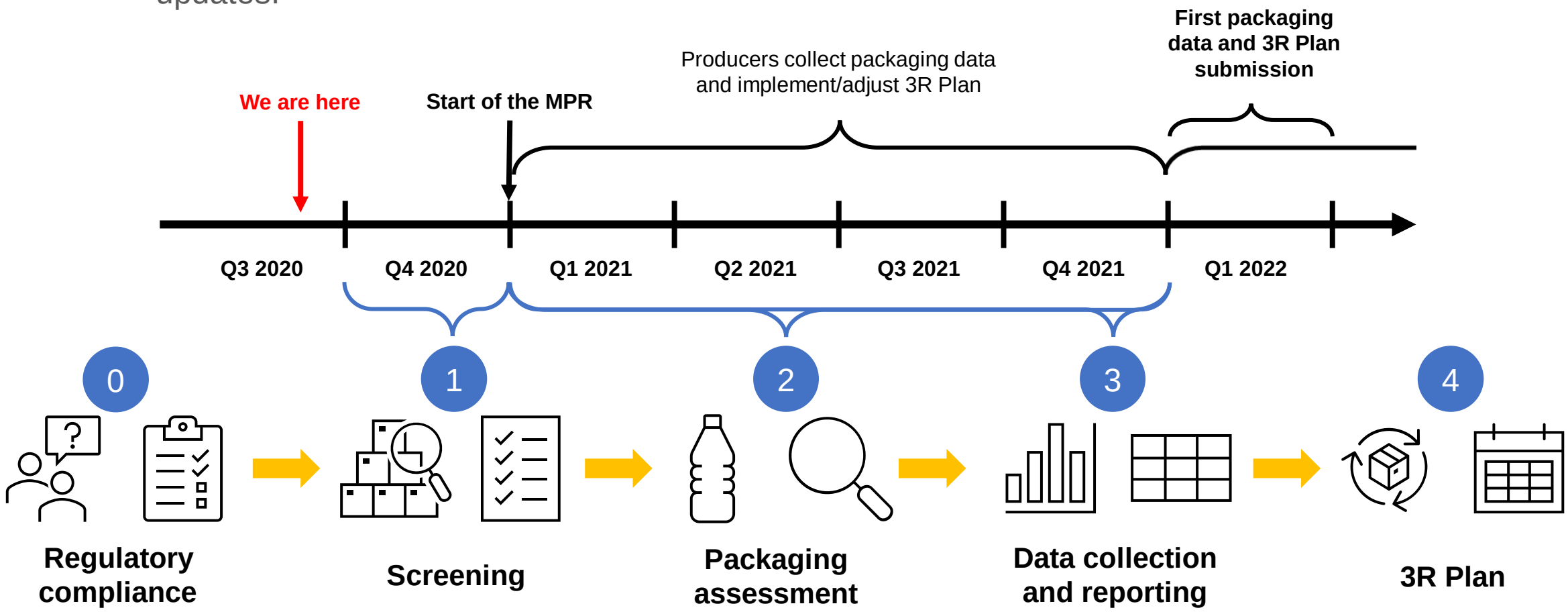
3. Organise tasks

- The first year will be the most demanding; following years will be a top-up and “simple” updates.



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4. Decide if you want to do it in-house or to outsource the work

- Estimate of working hours (for someone who is clear about the tasks to complete)
  - Screening — 1 to 10 hours per 100 inventory code
  - Packaging assessment — 1 to 20 hours per packaging
  - Data collection — 1 to 10 hours per 100 inventory code
  - 3R plan — 5 to 40 hours (might still require third-party expertise)

Tactics (4/4)

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- Example:
  - Pharmaceutical company
  - 150 inventory codes
  - 25 products

- Total estimated working hours (min to max):

Screening	2	20
Packaging assessment	25	250
Data collection	1	10
3R plan	5	40
Total	**33**	**320 (from 1 week to 2.5 months of full-time work)**
Training	10	60 of on-going training to get someone up to speed

- What kind of individual should you assign the actual work?
  - High attention of details and organised
  - Knowledge or background in packaging, engineering, or regulatory compliance
- If limited in skills, resources, or time, consider outsourcing the work for any of the above tasks.

Operations - Introduction

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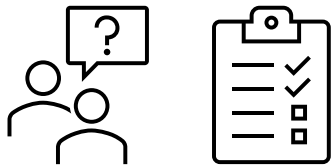

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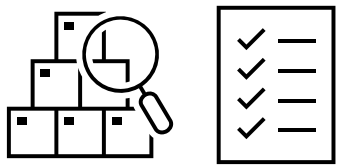

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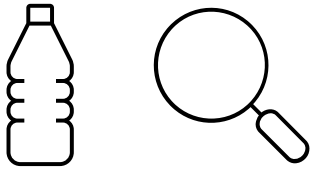

Packaging assessment

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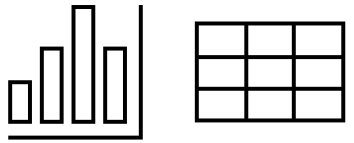

Data collection and reporting

Record the number of units introduced to Singapore and generate the data report.

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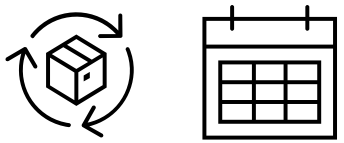


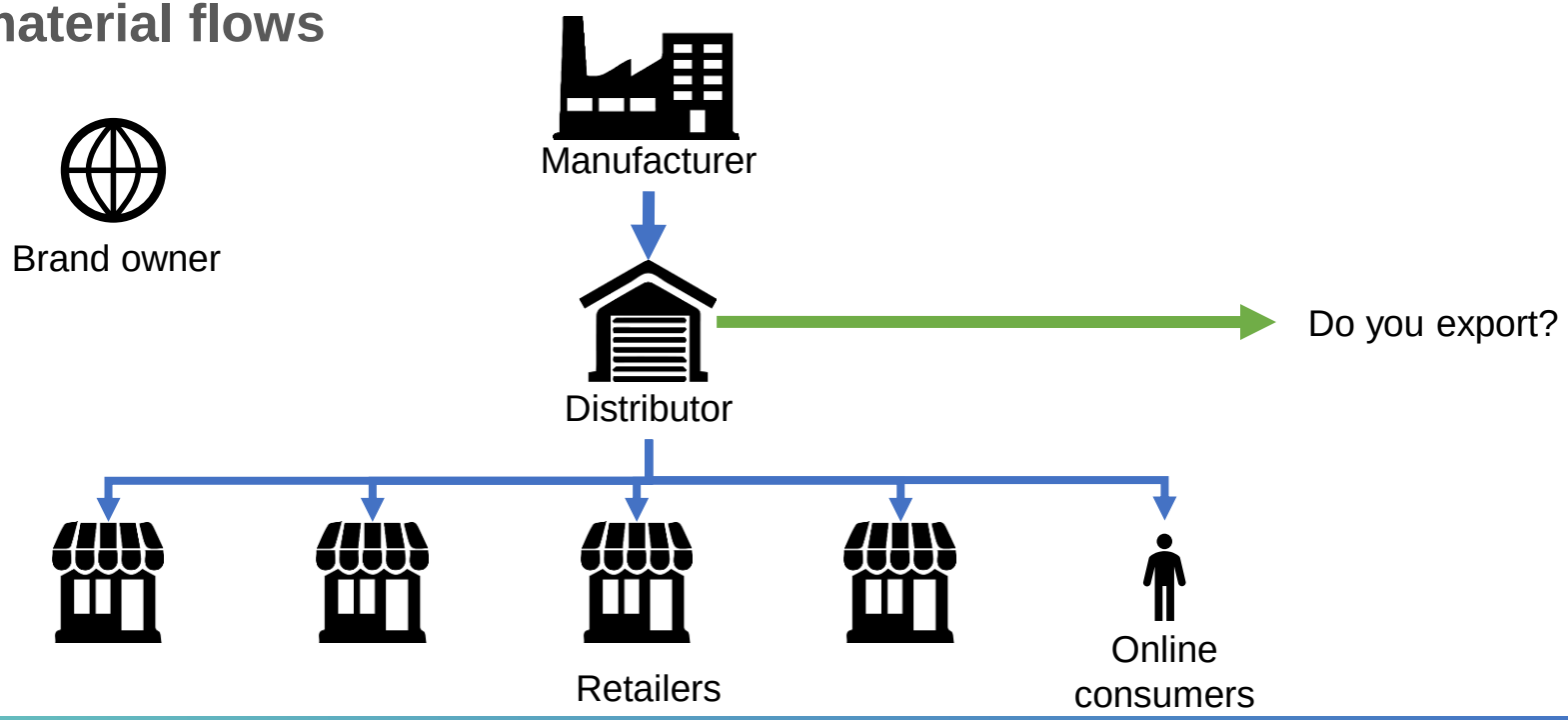
3R Plan

Define packaging improvement targets and the timeline of implementation.

Screening (1/6)

- **Do not overlook this step!**
  It will determine the amount of work required and could save you a lot of headaches!
- Goals:
  - Determine the processes and tools in place to monitor material flows
  - Identify the exact number of packaging to assess (= that you are responsible for)

1. Understand the material flows



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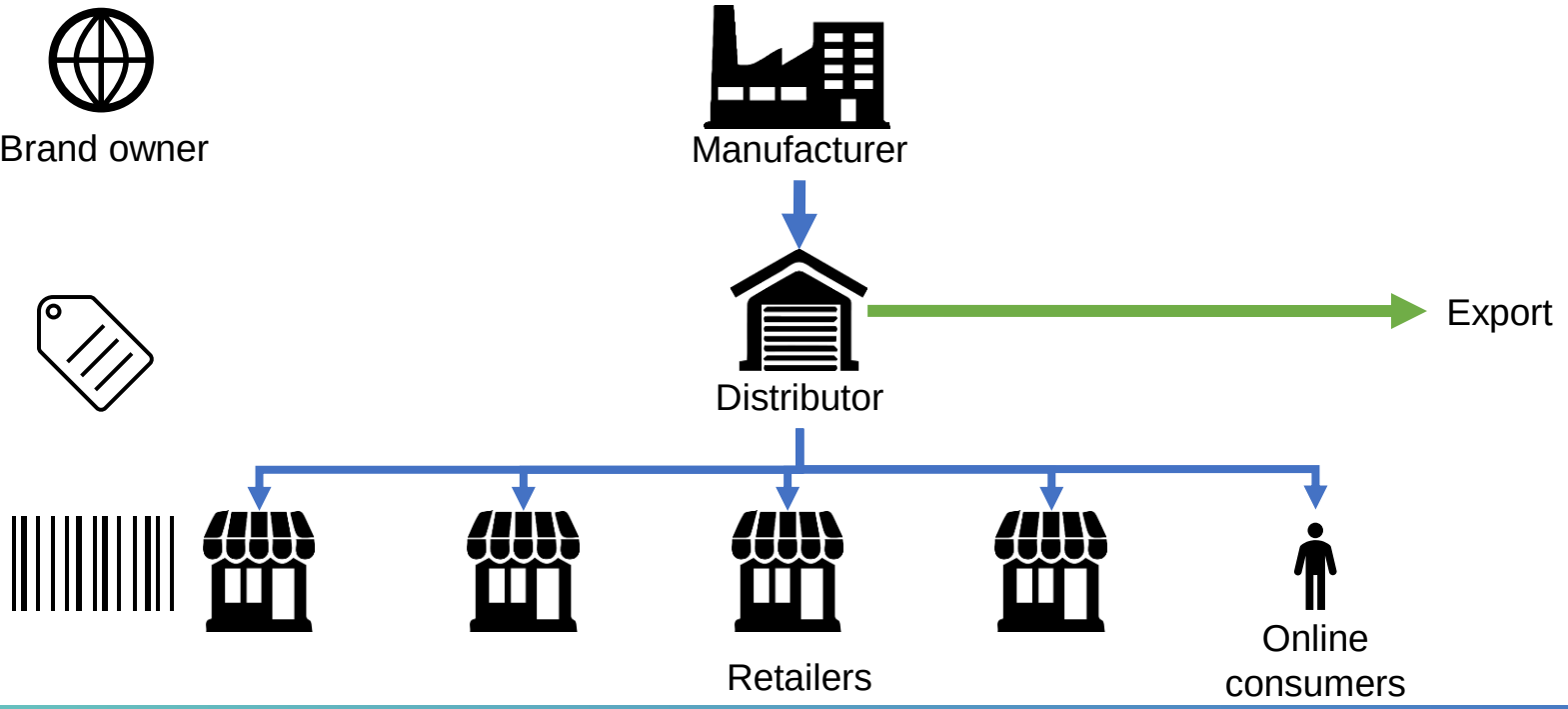
2. Determine tools to monitor material flows

- You need to determine the amount of packaging supplied to Singapore
- What's the easiest to monitor?
  - Incoming and outgoing goods from warehouse or
  - Number of transactions at the point of sale or
  - Purchases of goods (such as service packaging)

The warehouse and the retailer might be using different inventory codes.



Screening (3/6)

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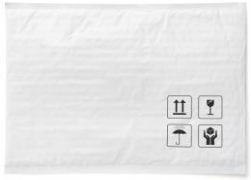
3. **Extract the inventory list from the database with all active inventory codes**
   - From the warehouse or from the retailer depending on the previous step.
4. **Get someone to go through the list and identify groups of inventory codes which refers to the same packaging and products**
   - Assign the inventory code to the packaging (which will be useful during the reporting step)
   - There are different types of packaging
     - Fixed packaging assigned to a specific product (such as ready-to-eat food)

     - Variable or on-demand packaging (such as plastic wrap for vegies and fruits, retailer plastic bag)

     - Posting packaging



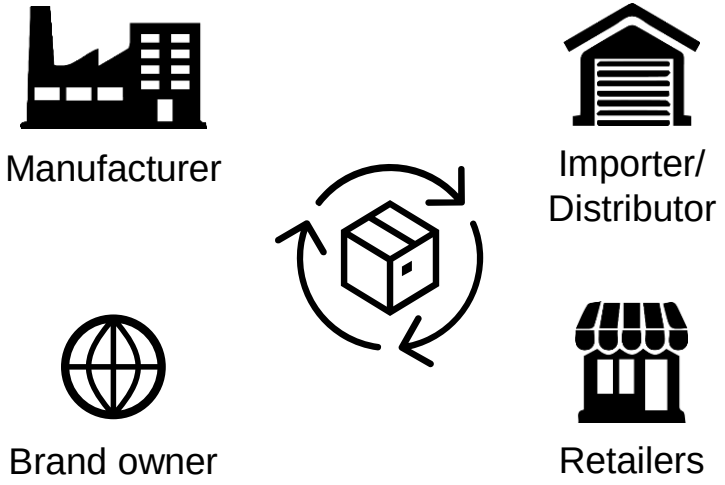
Screening (4/6)

- Example sport retailer
  - 5,200 inventory codes
  - 1 pair of shoes will have ~20 inventory codes (one for each size)
  - Then among different shoes of the same brand, several have the exact same packaging
    - Plastic string
    - Labels
    - Shoe box
    - Wrapping

Screening (5/6)

- Last advice: **Take the time to verify your responsibilities and the relevance of the packaging under the MPR!**

When the brand owner, importer, and retailer are all different entities, it gets confusing quickly.



Also, it can be difficult to distinguish packaging which is excluded from reporting. Pictures on the right:

- Left picture – the cardboard box is only used for transportation and does not have to be reported.
- Right – if the cardboard box is used to display goods to the consumers, it will have to be reported.

Screening (6/6)

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- Some of the questions, I have been asked:
  - *What if my products are sold in airport or ferry terminals where people leave Singapore, do I have to report them?* **Yes**, as long as you supply goods to Singapore. The fact that consumers leave the country is not relevant.
  - *What if the majority of the products are sold overseas?* **It does not matter** as long as you meet the eligibility requirements.
  - *Presentation packaging, is it relevant?* **Maybe**
    - There are 2 exclusions to the specified packaging to report
      1. **Packaging designed to be re-used** by the end-user for the containment of regulated goods (see the list of exception)
      2. Packaging primarily designed:
         - To **facilitate the protection or handling** of regulated goods when transported in bulk and
         - Not for presentation to the consumer.

  - Example
    - A luxury hotel imports mineral water bottles from Italy for use in its restaurant. In this case, the hotel is responsible for the reporting. If, however, the hotel purchased the same mineral water bottles from a local importer, then the importer will be responsible for the reporting.

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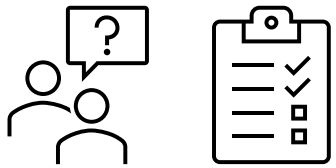

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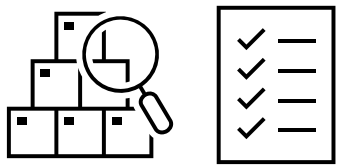

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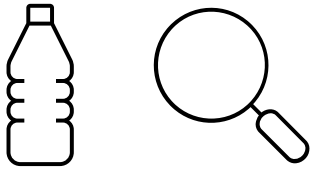

Packaging assessment

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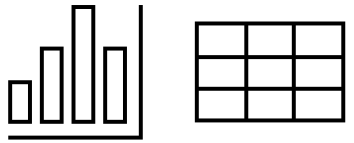

Data collection and reporting

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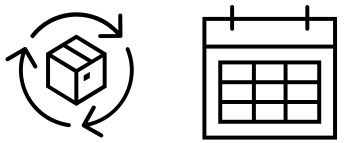

3R Plan

Define packaging improvement targets and the timeline of implementation.

Packaging assessment – methods (1/2)

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- At this stage, you should be clear about which piece of packaging you have to report.
- **Goal:**
  - For each piece of packaging, determine the material composition and weight of each of them.
  - Bonus (useful for the 3R Plan)
    - Check the recycled content composition
    - Check recyclability

- **We are given 3 methods:**

1. Physically weigh the packaging
2. Obtain packaging details from the supplier or manufacturer
3. Internal specification records

You might make use of all three methods depending on where you are on the value chain.

Packaging assessment – methods (2/2)

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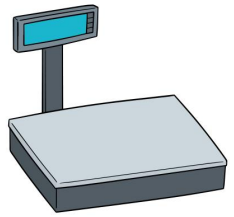
- Let's consider an example: a box of pills
  - Box – cardboard
  - Tray – plastic
  - Film – aluminium coated plastic film

- To measure the weight:
  - For cardboard - Method #1 (physically measure item)
  - For tray and film – combination of Method #2 (details from supplier) and Method #3 (product specifications)
    - Method #2 to determine the weight per square meter (kg/m^2)
    - Method #3 to determine the size of the tray
    - With the above, you can calculate the total weight of each material.
- Who is to do the job?
  - Remember that you are responsible under the MPR
  - Manufacturers and brand owners have access to specifications of products. Retailers and importers will mostly rely on details provided by the manufacturers and brand owners.
  - Anyone can physically measure products as long as:
    - You can easily separate components of a packaging, AND
    - Each component is made of one single material (mono-material)

Physically weigh packaging (1/4)

- Applicable for mono-material items only
- What accuracy?

  NEA requires that value to be reported should be minimally to the closest 100kg where possible.
- If your measurement is ±0.1g accurate, you will be out of range (>100kg accuracy) when you supply more than 1 million products.
- What balance should you use?
- Understand the terminology
  - **Readability** is the smallest division at which the scale or balance can be read.
  - **Repeatability** is the ability to display the same value when a weight is placed on a scale more than one time (refers to precision).
  - **Linearity** is the characteristic which quantifies the accuracy.



Physically weigh packaging (2/4)

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- Example (fixed packaging)
  - Box of chocolate cookies composed of 3 separable items:
    - Cardboard box
    - Aluminium coated plastic film
    - Plastic tray

  - If I sell 500,000 cookie boxes per year, a linearity of ± 0.1g is sufficient.
  - If I sell 5,000,000 then I can either
    - **Weigh 10 boxes** together to improve the linearity to ± 0.01g (if within the operating range of the scale) or
    - **Use a more accurate scale**.

- Precision scales, with a linearity of ± 0.1g, typically range from S$200 to S$600.

Physically weigh packaging (3/4)

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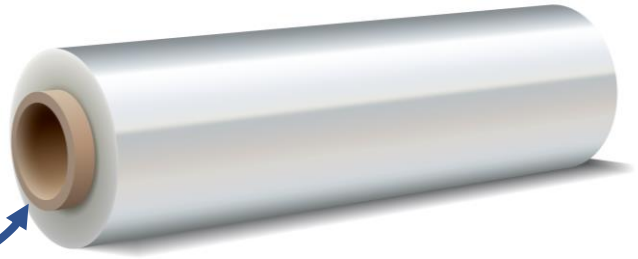
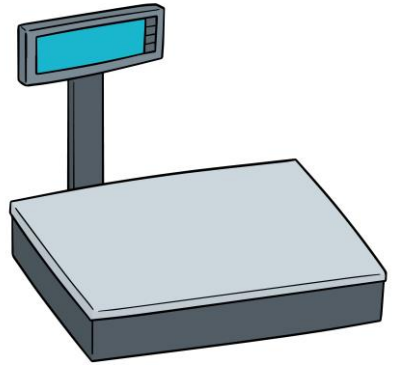
- Example (variable packaging where you are in control)
  - Plastic wrap for veggies

  - If you are the one to put the plastic wrapping on, you know how many rolls of plastic film you purchase.



1. Check how many rolls do you buy
2. Weight one roll (typically, an industrial scale with an accuracy around 0.1 kg should be sufficient).
3. Discount the weight of the inner roll.

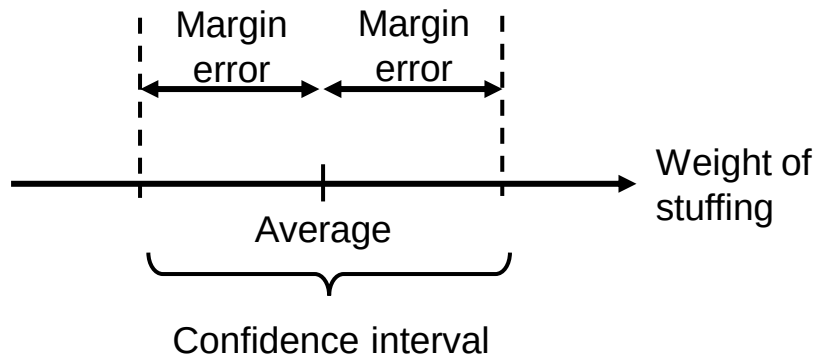
   Note that the inner roll (the packaging of the packaging) might need to be reported separately.



Physically weigh packaging (4/4)

- Example (variable packaging where you are ***not*** in control)
  - Paper filling for shoes

- Example: The paper filling is stuffed by hand by the manufacturer. You cannot know for sure how much paper filling you have per pair of shoes. You have two approaches:
  1. Ask the manufacturer to calculate the average of paper stuffing.
     - Determine the total weight of paper stuffing based on bulk purchases over a specific period of time.
     - Determine the number of pairs of shoes supplied over the same period of time.
     - Calculate the average. Note that there is a risk of low accuracy.
  2. Measure the average yourself.
     - Measure of weight of stuffing for a sample of pairs of shoes.
     - Calculate the average and the margin error using a 90% confidence interval. If the margin error is too high, you might need to take more measurements.



Record keeping

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- Ensure that you keep record of your measurement. Whatever you say, you must have records to prove it!
  - Keep track of how you made those measurement:
    - Date, time, person
    - Scale use – make, model, and calibration certificate
    - If you have cleaned the product, explain how you dry it
    - Pictures are always a good thing to keep.
  - If relying on details from a third party
    - PDF the email correspondence

- Warning for those relying exclusively on data from third parties (retailers, brand owners, and importers)
  - Be mindful about the quality of details provided! Ask for evidence.
  - If they use the same details for an EPR in another country, that could be a sufficient evidence of the quality of information provided.

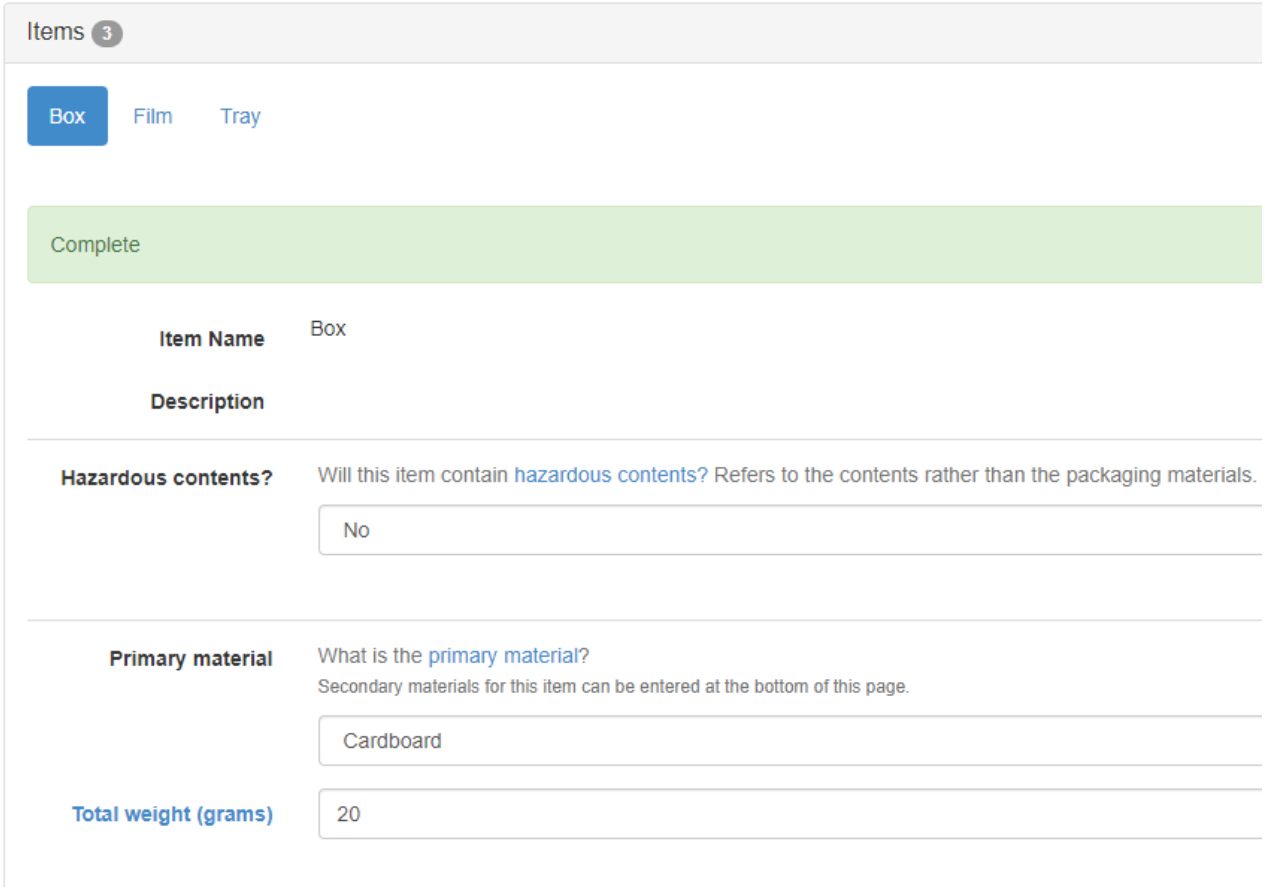
Data organisation (1/2)

- Be organised and build your data report spreadsheet on the go.
  Here is a possible suggestion to organise your spreadsheet

	A	B	C	D	E	F	G	H	I
1		**Annual Packaging Data Report**							
2									
3	**Company Name:**	ABC Company							
4	**Reporting Period:**	1/1/2021	to	31/12/2021					
5	**Annual Turnover:**	S$10.1 million							
6									
7	**Packaging Material**	**Packaging Form**	**Further Details**	**Weight (kg)**	**Remarks**	**Project**	**SKU #**	**Weight per item (g)**	**Number of sales units**
8	Glass	Beverage bottle	Green		Glass bottle (primary material)		A123456789	244.1	
9	Paper	Others	Others		Paper - secondary material of glass bottle		A123456789	0.6	
10	Metal	Others	Aluminium		Metal cap (primary material)		A123456789	2.2	
11	Plastic	Others	LDPE		Plastic - secondary material of metal cap		A123456789	0.1	
12									
13									

Data organisation (2/2)

- When dealing with multiple stakeholders and a large volume of products, consider using collaborative platforms.



Packaging Recyclability Evaluation Portal allows you to

- download and upload packaging data, and
- download of the data report.

Platform managed by Label for Recycling.

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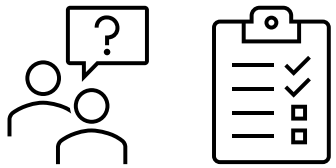

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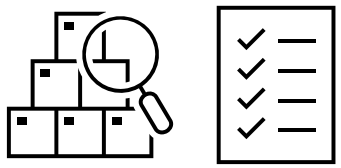

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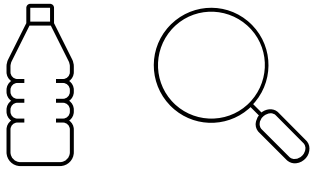

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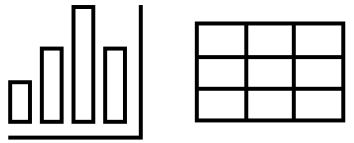

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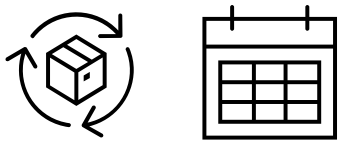
Record the number of units introduced to Singapore and generate the data report.

4



3R Plan

Define packaging improvement targets and the timeline of implementation.

Data collection and reporting – Q1 2022

ZERO WASTE CITY

- At this point,
  - For all fixed packaging, you have the weight of each material per product
  - For all variable packaging, you either
    - built an average per product, or
    - identify how to measure it for the year (number of plastic film rolls bought for instance)
- Download the sales inventory for the calendar year 2021.
  - Determine how many items were supplied to Singapore for each inventory code,
  - Gather the inventory code counts per packaging,
  - Calculate the weight of each material for the year.
- You can do it using spreadsheets or collaborative platforms.
- Verify that all evidence are available in an auditable format
  (= easy to comprehend for someone who have never seen your documentation before)

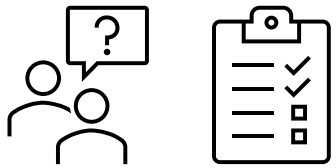
Review and Q&A

- In this section, we talked about
  - Strategy
    - Global movement
    - Business resilience with EPR
  - Tactics
    - Tasks
    - Timeframe
    - In-house or outsourcing
  - 4 steps approach
    - Screening
    - Packaging assessment
      - Direct measurement
      - Details from supplier
      - Determination from purchase of raw materials
    - Data collection and reporting
- **Coming up**: 3R Plan and funding programs

Operations - Introduction

ZERO WASTE CITY

0

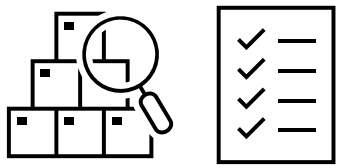


Regulatory compliance

Confirm that you are a “Producer” under the Resource Sustainability Act.

Already covered by NEA’s presentation

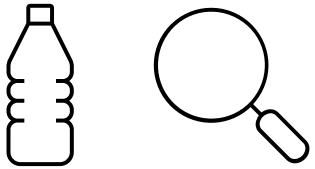
1



Screening

Identify all the pieces of packaging that will have to be reported under the MPR.

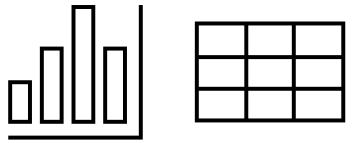
2



Packaging assessment

For each piece of packaging, determine the material composition and weight of each of them.

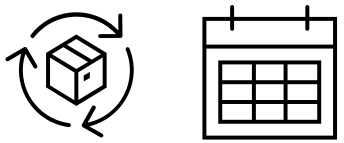
3



Data collection and reporting

Record the number of units introduced to Singapore and generate the data report.

4



3R Plan

Define packaging improvement targets and the timeline of implementation.

3R Plan - Introduction

ZERO WASTE CITY

- 7 types of 3R Plans

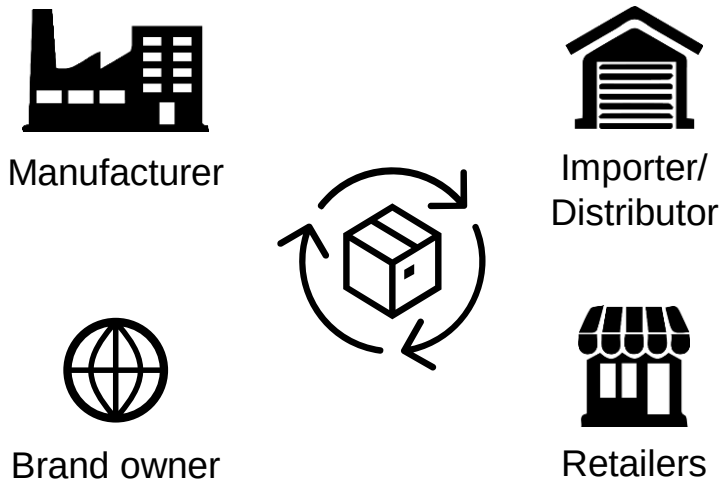
Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

- Required to do at least 1.
- Define your own commitment and targets.
- In the next years, you will have to provide updates on your packaging improvement plans.



ZERO WASTE CITY

Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

Packaging 3Rs (1/3)

ZERO WASTE CITY

Reduce

Reuse

Recycle

1. Without obvious change to the design

- Slight changes to the design by shortening or thinning down materials
- Replace materials with lighter alternatives

Singapore Packaging Agreement (SPA) Awards 2018
Top Achievement Award Winner

SPA Awards 2017
Excellence Award Winner

Packaging 3Rs (2/3)

ZERO WASTE CITY

Reduce

Reuse

Recycle

1. Without obvious change to the design

- Slight changes to the design by shortening or thinning down materials
- Replace materials with lighter alternatives

2. Redesign your packaging – the sky is the limit

- Optimised design
- Reusable packaging

SPA Awards 2018
Top Achievement
Award Winner

SPA Awards 2017
Excellence Award Winner

Packaging 3Rs (3/3)

ZERO WASTE CITY

Reduce

1. Without obvious change to the design

- Slight changes to the design by shortening or thinning down materials
- Replace materials with lighter alternatives

2. Redesign your packaging – the sky is the limit

- Optimised design
- Reusable packaging

Reuse

- Repurpose used packaging

Recycle

- Use recycled materials
- Make it recyclable

A lot of resources are available online!

- SG NEA
- UK WRAP

Packaging Reduction (1/2)

ZERO WASTE CITY

- Benchmark your product – significant resources is available on the [NEA/SPA website]

Packaging Benchmarking Database (Beer)

Content volume	Weight (grams)			% difference	
	Lightest	Median	Heaviest	Median vs. Lightest	Heaviest vs. Lightest
323 ml					
Metal can	13.3	13.5	13.7	1.5	2.9
330 ml					
Metal can	12.6	13.8	25.6	8.7	
350 ml					
Metal can	13.0	15.2	15.8	14.5	
500 ml					
Metal can	15.4	16.5	32.1	6.7	

Material: Aluminium

Terms of Use

Packaging Benchmarking Database (Chilled Juice)

Content volume	Weight (grams)			% difference	
	Lightest	Median	Heaviest	Median vs. Lightest	Heaviest vs. Lightest
1 L					
Overall	36.5	50.0	87.1	27.0	58.1
Plastic Bottle	33.2	46.3	82.2		
Cap	3.2	2.8	4.6		
Label	-	0.9	0.4		

Bottle: PE/Paper Board/EVOH Film
Cap: HDPE
Label: Directly printed

Overall weight may differ due to rounding.

PE: Polyethylene

EVOH: Ethylene vinyl alcohol

HDPE: High-density polyethylene

Terms of Use

Packaging Benchmarking Database (Dishwashing Liquid)

Content volume	Weight (grams)			% difference	
	Lightest	Median	Heaviest	Median vs. Lightest	Heaviest vs. Lightest
900 ml					
Overall	61.9	62.0	62.2	0.2	0.5
Plastic Bottle	54.4	54.9	56.2		
Cap	3.8	6.3	2.7		
Label	3.7	0.8	3.3		
1000 ml					
Overall	49.3	81.4	110.1	39.4	55.2
Plastic Bottle	44.3	63.2	82.3		
Cap	3.7	15.6	25.6		
Label	1.2	2.7	2.1		
5000 ml					
Overall	216.7	225.2	236.2	3.8	8.3
Plastic Bottle	207.3	214.8	227.8		
Outer Cap	5.7	5.4	5.3		
Inner Cap	1.8	1.8	1.4		
Label	1.9	3.1	1.7		

(Information correct as of March 2016)

Overall weight may differ due to rounding.

Terms of Use

An initiative of the SINGAPORE PACKAGING AGREEMENT

Packaging Reduction (2/2)

ZERO WASTE CITY

- When redesigning your packaging, be aware of greenwashing!

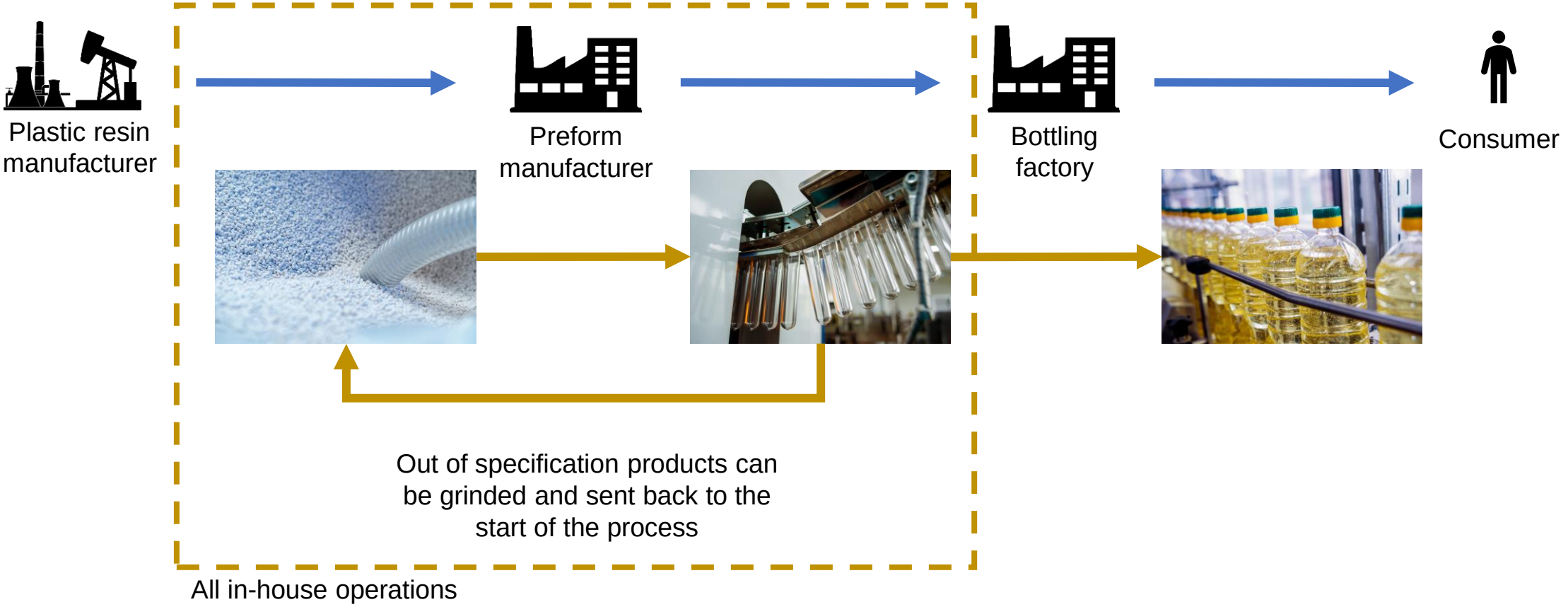
  Greenwashing = terminology used by companies to promulgate an image of environmental responsibility, which in fact is unfounded or intentionally misleading.

- Let's define a few words
  - Recycled content
  - Bio-based products, particularly, bioplastics
  - Biodegradable and compostable
  - Recyclable

Recycled content (1/5)

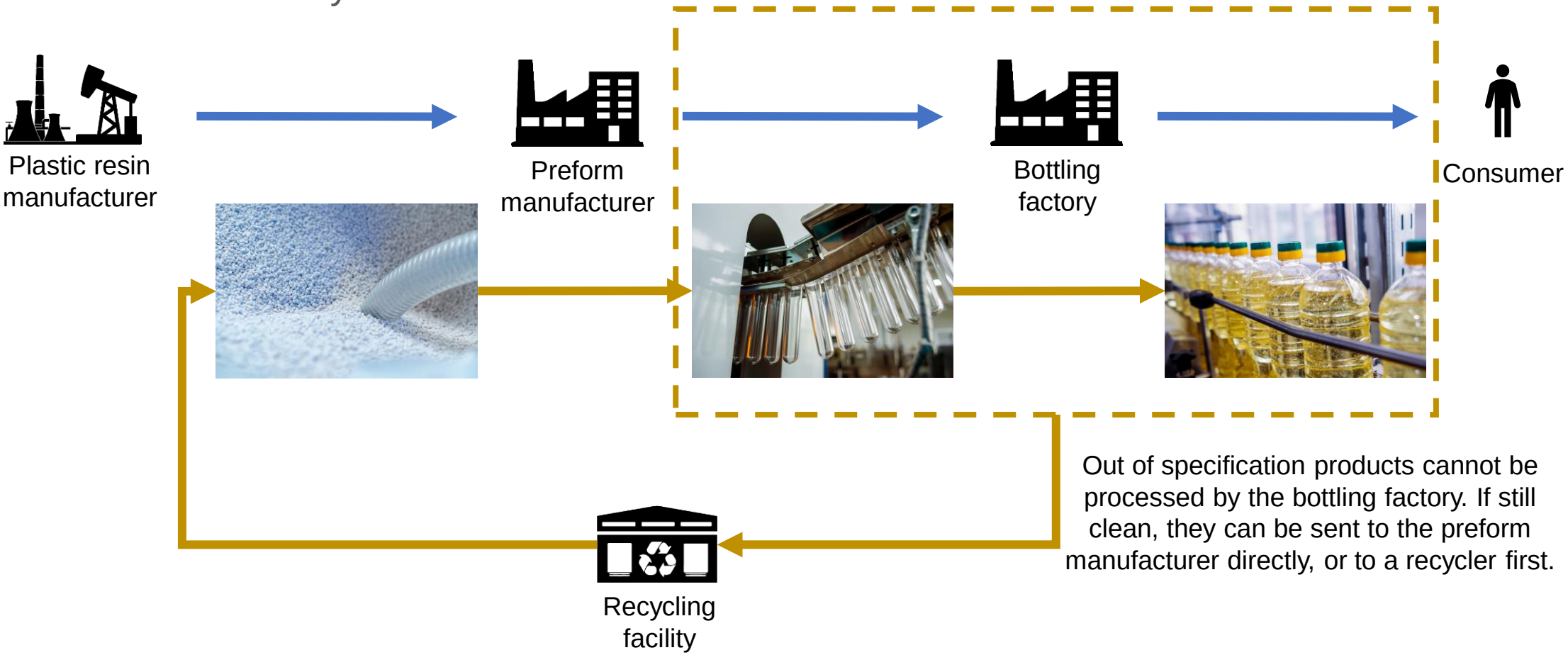
ZERO WASTE CITY

Pre-consumer recycled content – in-house work



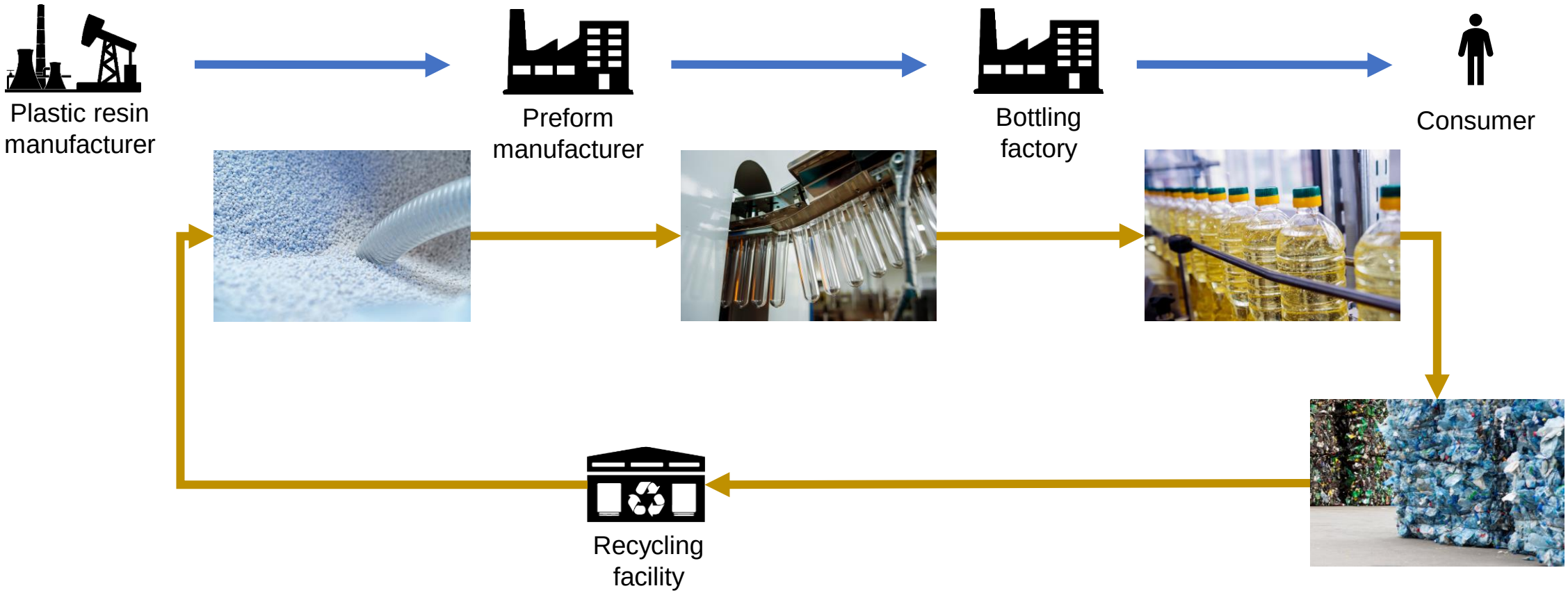
Recycled content (2/5)

Pre-consumer recycled content



Recycled content (3/5)

Post-consumer recycled content



Recycled content (4/5)

ZERO WASTE CITY

- When you make a “recycled content” claim, be specific about
  - Its origin
    - Pre-consumer or
    - Post-consumer
  - The percentage of recycled content

- To prove the amount of recycled content, the manufacturer must provide invoices of raw materials and clarify if the materials from recyclers is from post or pre-consumer sources.
- There are several certification programs for recycled content (as defined by ISO14021)
  - https://www.intertek.com/sustainability/recycledcontent/
  - https://www.ul.com/offerings/recycled-content-validation
  - https://www.scsglobalservices.com/services/recycled-content-certification?scscertified=1

Recycled content (5/5)

ZERO WASTE CITY

- Be aware of possible risks with recycled plastic!
  - Unlike glass and metal which are relatively impervious to contaminants and easily cleaned during the recycling process, plastic is more challenging to recycle and can represent a threat of contamination for food by toxic chemicals.

- The U.S. Food & Drug Administration (FDA) issues No Objection Letter (NOL) to recyclers in order to *informally* confirm that the company can produce food-grade plastic from post-consumer recycled materials.

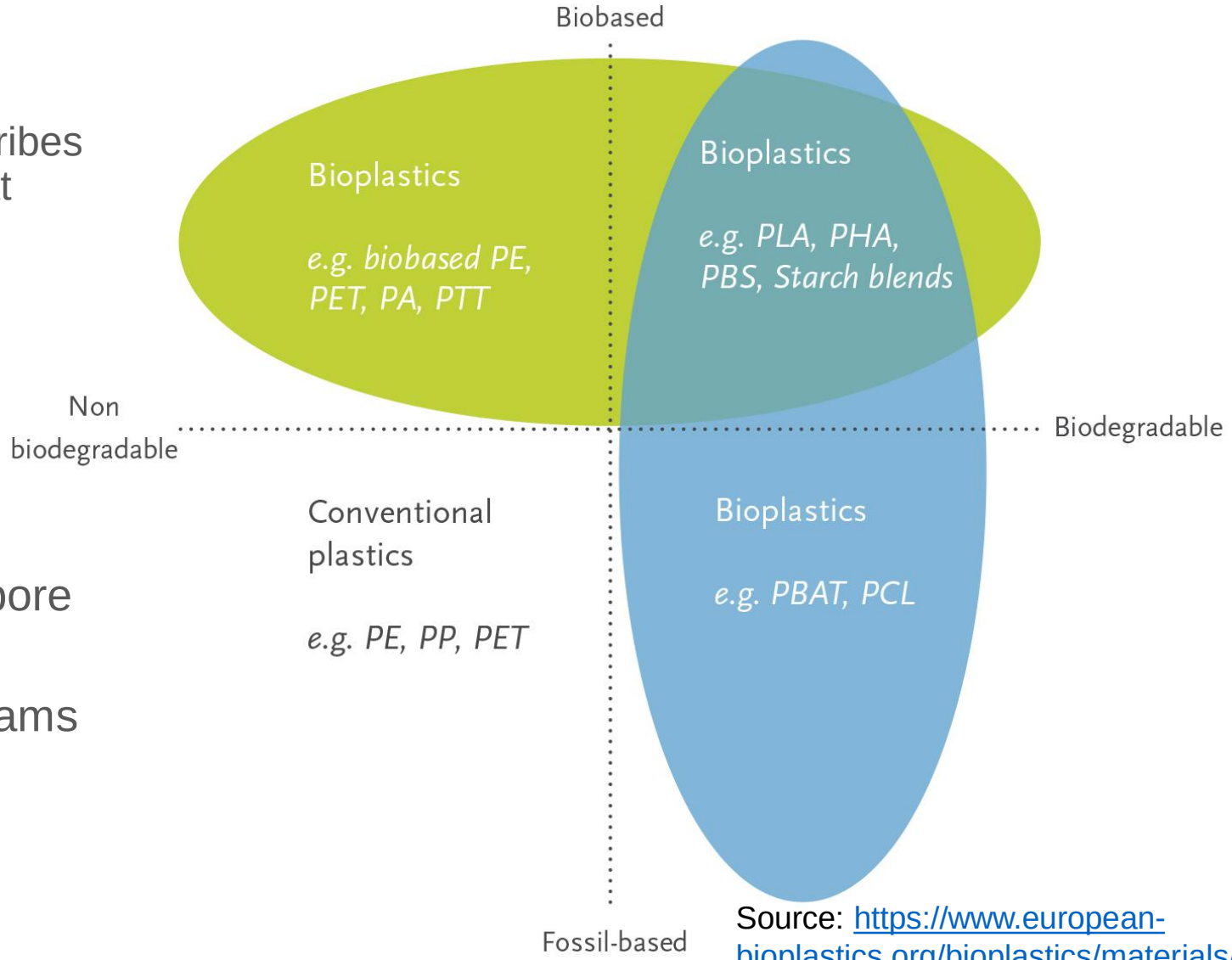
  https://www.cfsanappsexternal.fda.gov/scripts/fdcc/index.cfm?set=RecycledPlastics

- The European Food Safety Agency (EFSA) also issues formal assessment of technologies for the recycling of post-consumer plastics into food contact materials.

  https://www.efsa.europa.eu/en/topics/topic/food-contact-materials

Bio-based

- Bio-based
  - Definition: the term bio-based describes the part of a material or product that stems from biomass (EN 16575).
  - The term is worthless unless the percentage of biomass in weight is mentioned.
- Bio-based product does **not** imply biodegradability or recyclability and is **not** necessarily suitable in Singapore context.
- Example of bio-base labelling programs



Source: https://www.european-bioplastics.org/bioplastics/materials/

Biodegradable and Compostable (1/2)

ZERO WASTE CITY

- Definitions:
  - **Biodegradable**: Materials that can be broken down by microorganism into simple, stable compounds such as carbon dioxide and water (Singapore Standards SS 594:2014).
  - **Compostable**: a material that can be turned into compost.
  - **Compost**: organic residues, or a mixture of organic residues and soil, that have undergone thermophilic decomposition to achieve pasteurisation and a specified level of maturity (Singapore Standards SS 594:2014).

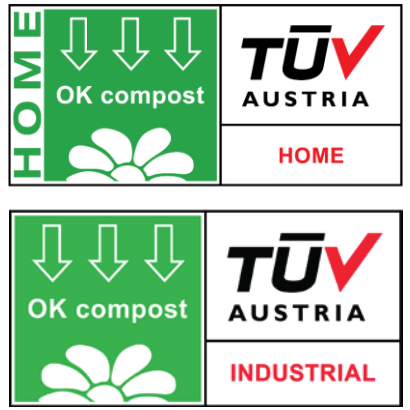
Compostable and *biodegradable* are used interchangeably

- Notes:
  - To make an accurate and specific claim about compostability, the location (home, industrial) and timeframe need to be specified.
  - Under the European Directive, companies won't be allowed to claim a product compostable unless it is compostable in domestic composters.
  - There are no industrial scale composter in Singapore! If you change the design of consumer packaging to make it compostable in Singapore, it is pointless! If your current packaging is not recyclable, then a compostable alternative might be of interest if it has a lower carbon footprint.

Biodegradable and Compostable (2/2)

ZERO WASTE CITY

- The harmonised European standard EN 13432 “Requirements for packaging recoverable through composting and biodegradation” requires:
  - at least 90% disintegration after twelve weeks,
  - 90% biodegradation (CO_2 evolvement) in six months, and
  - includes tests on ecotoxicity and heavy metal content.
  - It is the standard for biodegradable packaging designed for treatment in industrial composting facilities and anaerobic digestion.
- Other standards for compostability in domestic composter apply.
- Example of labelling programs for compostable products:

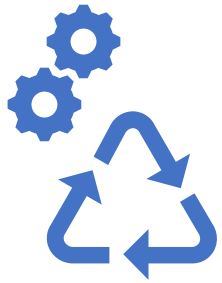


Improving recyclability of packaging

- **Recyclable**:
  - Waste that could be recovered and processed into material suitable for the manufacture of a useful new product. (Singapore Standards SS 594:2014)

  - As per ISO14021 on environmental self-declaration, a company can claim a product recyclable if it meets the following criteria:

Customers have a reasonable access to a recycling program



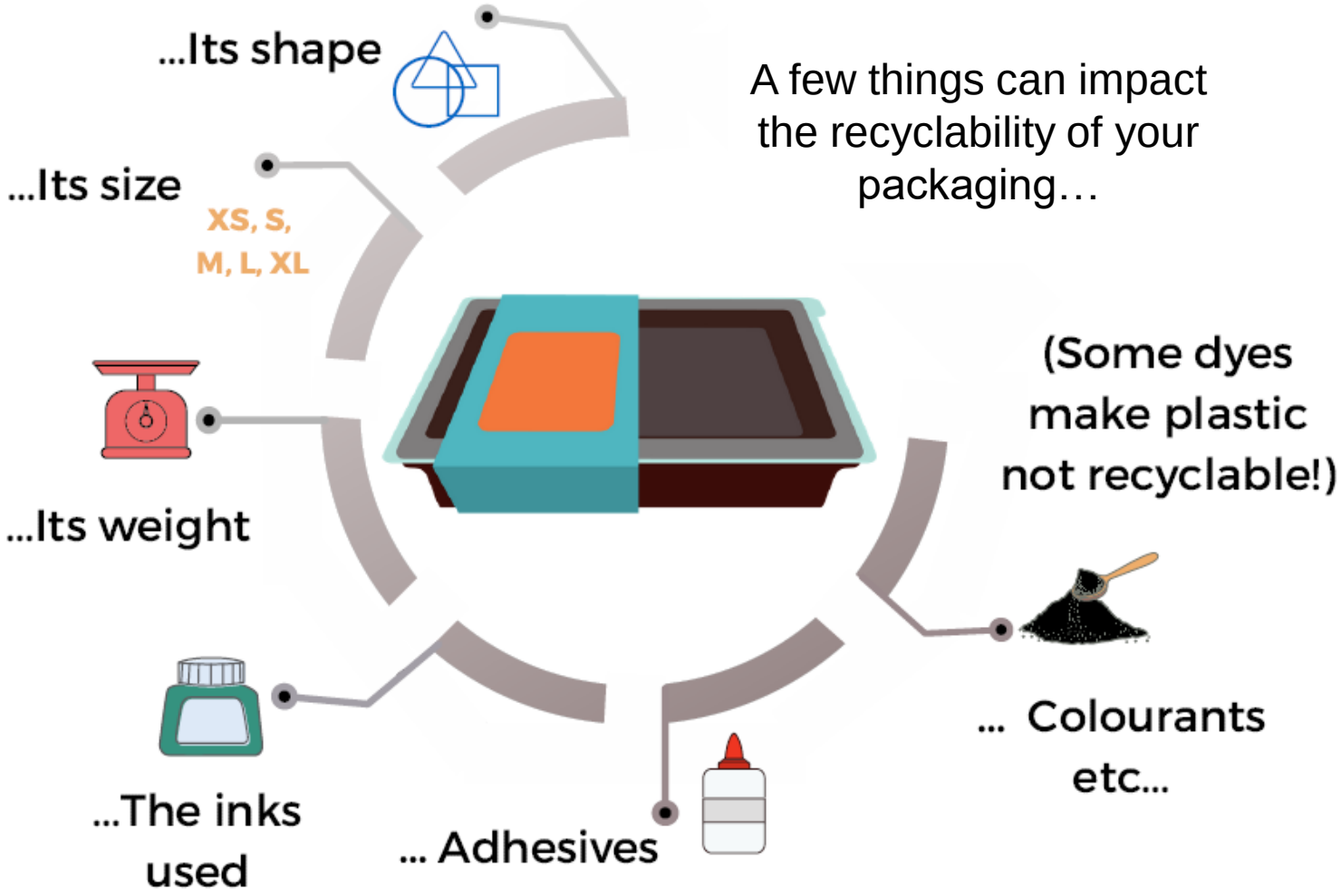
Technologies are available locally to sort and then recycle the product

There is a market for the recycled material

Improving recyclability of packaging (1/2)

Verifying if a packaging is recyclable is not always a straightforward business!

Do not blindly rely on international guidelines to know if you packaging is recyclable in the local context.

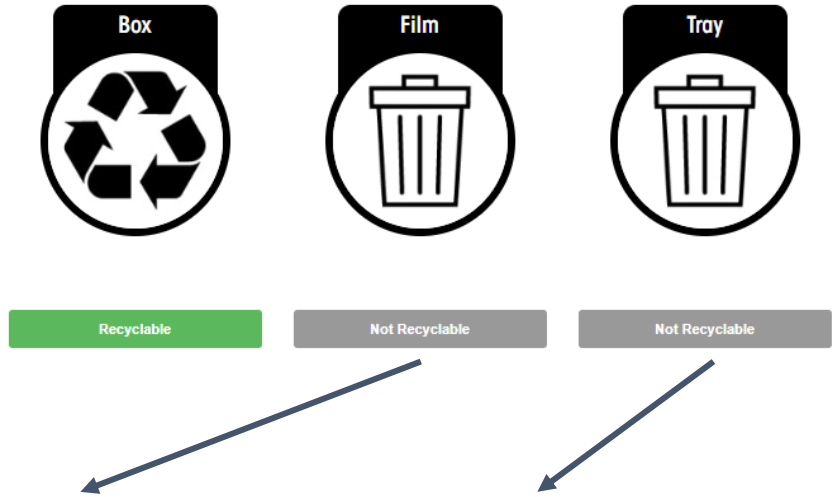


Improving recyclability of packaging (2/2)

ZERO WASTE CITY

- You cannot improve the recyclability of your packaging if you don't know what's wrong with it!
- Assess your product before redesigning it.

- To know if your packaging is recyclable for consumers in Singapore, you can:
  - Check yourself. For that, you need to
    - Contact each Public Waste Collector in Singapore and verify if they are likely to sort your product from the recycling waste stream.
    - Contact at least one recycler and check if it can recover material and value from your packaging.
  - Engage a consultant to do the work, or
  - Assess your product using the **Packaging Recyclability Evaluation Portal** from Label for Recycling. You can test different designs before committing to production.



No collection for soft plastic in Singapore

No market for recycling of PVC (3)
Recyclable if using PP (5)

ZERO WASTE CITY

Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

Packaging Reduction

ZERO WASTE CITY

For B2C - packaging reduction at the point of sale:

- Charge on plastic bags,
- Bring Your Own (BYO) incentives,
- Provide reusable packaging

For B2B – packaging reduction at the point of use:

- Reusable/returnable packaging
  - Huge cost saving potential!
  - Be aware that reusable packaging is more expensive to buy than disposable one.
  - Recommendation: Start with your tier 1 partners (long-term engagement and quick economy of scale).

Switched from jerrican (left) to intermediate bulk container (right) for transportation and storage of enzymes

SPA 2018 Top Achievement Award Winners

Products delivered in single-use carton boxes

Products delivered in reusable plastic crates, which were collected back in subsequent deliveries for reuse

ZERO WASTE CITY

Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

Promote packaging 3Rs (1/2)

Anything that you can do to promote better information and to engage consumers or the industry towards packaging 3Rs (Reduce, Reuse, Recycling).

For consumers

On-pack labelling

Recycling labelling scheme in Singapore, operated by Label for Recycling. Results of the recyclability assessment are specific to the Singapore market.

Event

Presentation by Zero Waste City at ACS International in November 2019

Several NGOs, such as Zero Waste SG, can support you in engaging consumers in schools, events, and other public spaces.

Marketing tools/campaign

Resource freely available on Clean & Green Singapore.

Promote packaging 3Rs (2/2)

ZERO WASTE CITY

Anything that you can do to promote better information and to engage consumers or the industry towards packaging 3Rs (Reduce, Reuse, Recycling).

For the industry

Plastic Action Program

PACT
No Plastic in Nature

Inspired by the EMF Plastic Action program and run by WWF SG

Event (Seminar/Webinar)

Presentation by Zero Waste City at the conference Home Delivery Asia 2019

Several industry associations can support the organisation of such seminars such as Packaging Council of Singapore, Singapore Food Manufacturers' Association and more.

Engage your supply chain

TOWARDS ZERO WASTE
Sustainable Singapore

Commit your company to achieve Zero Waste goals by engaging your suppliers and customers. Certification programs, such as the TRUE Zero Waste Certification can help you in this direction.

ZERO WASTE CITY

Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

Packaging collection for reuse

- Packaging intended for reuse for the same purpose must be designed with that in mind. Otherwise, packaging can be reusable for other applications.
- Reusing can be ***a huge cost saving opportunity***, but be aware of the risks and upfront costs:
  - Sturdier packaging = more expensive to purchase
  - Need tracking = more costs
  - Might need incentives = more costs
  - Might change the business perception by consumers.
- You can outsource the management of reusable packaging: look for start-ups in this area.
- Are there situations where you should not use reusable packaging?
  - If you cannot guarantee the quality or safety of the products you are going to put back into the packaging.
  - Questions of responsibility: as long as you follow due diligence on safety and quality, it should be all good.

Greenpac® we pack it green

ZERO WASTE CITY

Greenpac designs, manufactures, and supplies packaging to industrial and commercial applications.

barePack™ Barepack

muuse Muuse

Those companies offer packaging as a service for consumers packaging (applicable to retailers and companies).

Packaging collection for recycling

ZERO WASTE CITY

- Organising the collection for recycling is easier, simpler, and less risky than collection for reuse.
- Make sure:
  - The packaging is effectively recyclable, and
  - You work with a reliable contractor for the recycling of your packaging.

- Look out for startups in your industry. New companies are initiating programs to collect specific products. Contact incubators or accelerators to see if some entrepreneurs are already working on a solution for you.

TWO OF A KIND

Two of a Kind promotes and organises the collection of contact lens blisters for recycling.

ZERO WASTE CITY

Any money available?

Sourcing and design
- Packaging reduction
- Recycled content
- Improve recyclability

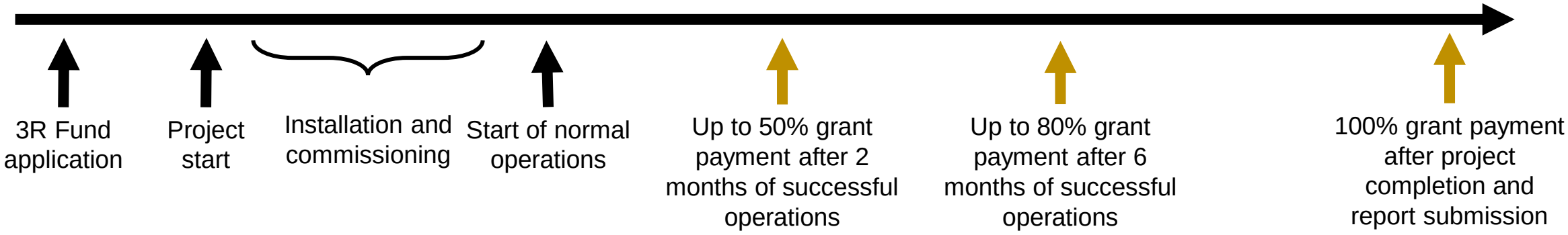
Point of sale/use
- Packaging reduction

End of life
- Collection for reuse
- Collection for recycling

Promote 3Rs to packaging end-users
- Consumer
- Industry

3R Fund

- ***Eligibility***: 100+ tonnes waste reduction within 1 to 3 years
- ***Quantum***: up to 80% of project value, up to $1M
  (note that PPP members can get up to double the funding amount)
- ***Qualifying costs***:
  - Manpower
  - Equipment, materials and consumables
  - Professional services (e.g. consulting, sub-contracting)
  - Other costs relevant to the project
- More info on NEA's website



3P Partnership Fund

- ***Objective***: organisations and companies from the People, Private and Public (3P) sectors to work together to develop innovative and sustainable environmental initiatives that promote environmental ownership amongst the local community.
- ***Quantum***:
  - 60% for the supportable cost items for the first year
  - 50% for the supportable cost items for the second year
  - 40% for the supportable cost items for the third year
- ***Qualifying costs***:
  - Consultancy fee
  - Educational material
  - Publicity
  - Administrative cost
  - Other costs relevant to the project
- More info on NEA's website

Review and Q&A

- In this section, we talked about
  - Sourcing and design
    - Reduce material use
      - Definition: Bio-based, compostable, biodegradable
    - Recycled content
    - Improve recyclability
      - Definition: Recyclable
  - Promote 3Rs to packaging end-users
    - Consumer
    - Industry
  - End of life
    - Collection for reuse
    - Collection for recycling
  - Funding programs
    - 3R Fund
    - 3P Partnership Fund

Thank you!

If you need help somewhere on the journey, feel free to contact us!

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ZERO WASTE CITY

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Zero Waste City combines engineering techniques with traditional financial analysis tools to help companies identify and implement projects to minimise and create value from non-hazardous solid waste.

For further information, please visit our website at https://zerowastecity.com