



# Circular Economy in the Food and Drink Sector

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Webinar for the  
Food & Drink Federation

29<sup>th</sup> September, 2022  
13:00 BST



# Menu du jour

❖ — *Entrée* — ❖

An introduction to the Circular Economy

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❖ — *Plat* — ❖

The principles of the Circular Economy

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❖ — *Dessert* — ❖

Practical suggestions to move forwards

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# Simon Gandy – an introduction



1988

MA, MEng Chemical Engineering,  
Queens' College Cambridge

1999

MSc Environmental Technology,  
Imperial College London

2009

Associate Director  
Navigant

1992

Process Scientist  
Procter & Gamble

2000

Environmental Consultant  
ERM

2010

Associate Director  
AEA Technology; Ricardo

2021

Technical Director  
SLR Consulting

- My expertise:
  - Life Cycle Assessment (LCA)
  - Circular Economy
  - Packaging & Waste Management
  - Resource Efficiency
  - Sustainability



# Introduction to the Circular Economy



# The Linear Economy



Extraction



Manufacturing



Retail



Home Use



Disposal

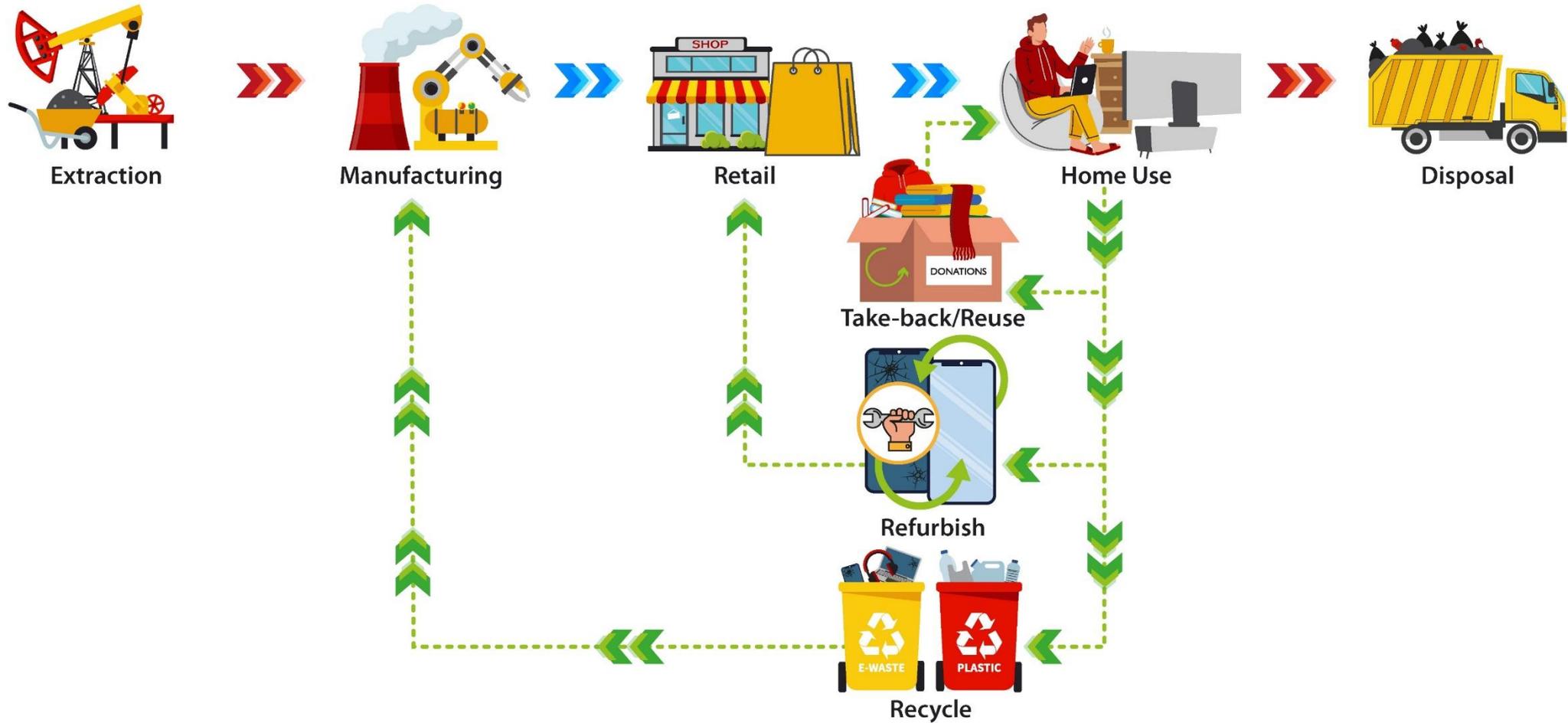
# Increasing circularity (1) – take-back/re-use



# Increasing circularity (2) – refurbish



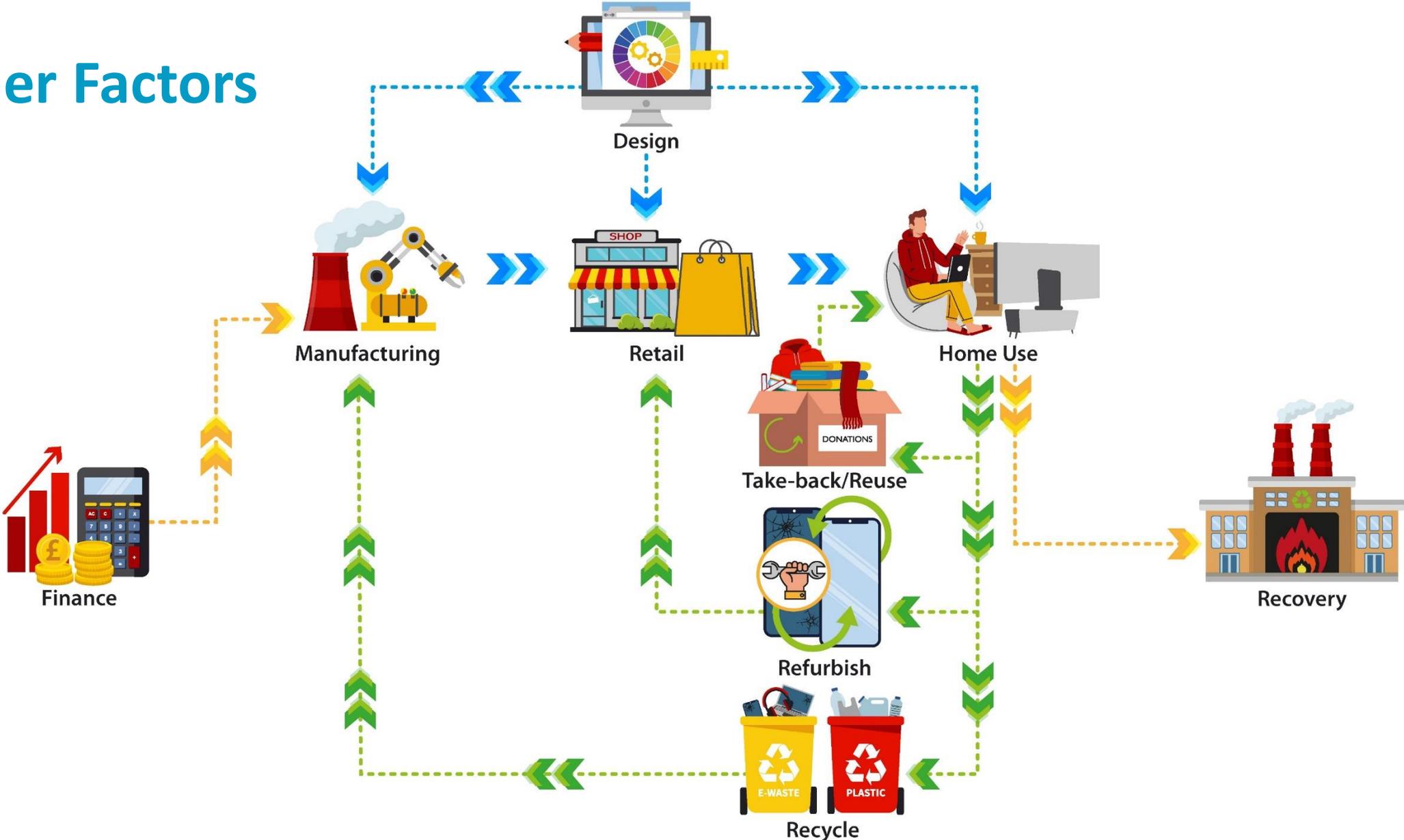
# Increasing circularity (3) – recycle



# Increasing circularity (4) – close the loop



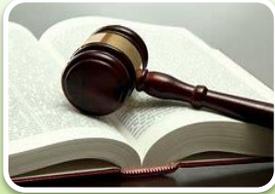
# Other Factors



# Some definitions of the circular economy

- **BS8001: Framework for Implementing the Circular Economy in Organisations**
  - *An economy that is **restorative** and **regenerative** by design, and which aims to keep products, components and materials **at their highest utility and value at all times**, distinguishing between technical and biological cycles*
- **EU Action Plan for the Circular Economy (Dec 2015)**
  - *An economy where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised*
- **UK Industrial Strategy (Nov 2017)**
  - *We are committed to moving towards a more circular economy – to raising productivity by **using resources more efficiently**, to increasing resilience by contributing to **a healthier environment**, and to supporting long-term growth by **regenerating our natural capital**.*

# Eight Drivers for the Circular Economy



## Legislation

- Waste Regs
- Industrial Emissions Dir. (BREF notes)
- Packaging (PRO and ER) Regs



## Resource Security / Supply Chain Fragility

- Resilience to geopolitics
- Guarantee of materials



## Policy

- EU Circular Economy Action Plan (2020)
- HMG 25 Year Environmental Plan (2018)
- HMG UK Industrial Strategy (2017)



## Customer & Stakeholder Demands

- Clients imposing circularity conditions
- Demand for information up and down supply chain



## Circular Standards

- ISO14009:2020 (Material circulation)
- BS8001:2017 (Implementing circular economy principles)



## Circular/Green Investment

- Qualify for funding and favourable loans terms



## Business Efficiency

- Opportunity to make product and process life-cycle as simple and efficient as possible



## Corporate Social Responsibility

- Desire to do the right thing
- Ability to demonstrate green credentials

# Principles of the Circular Economy



# The principles of circularity

- Ultimately, we want to:
  - ✓ Minimise material use
  - ✓ Keep those materials in use for longer
  - ✓ Eradicate the notion of waste
- For food and drink products, some aspects of circularity may not apply so much to the product itself, but certainly may apply to its packaging, for example.
- There are opportunities for circularity interventions throughout the life-cycle...

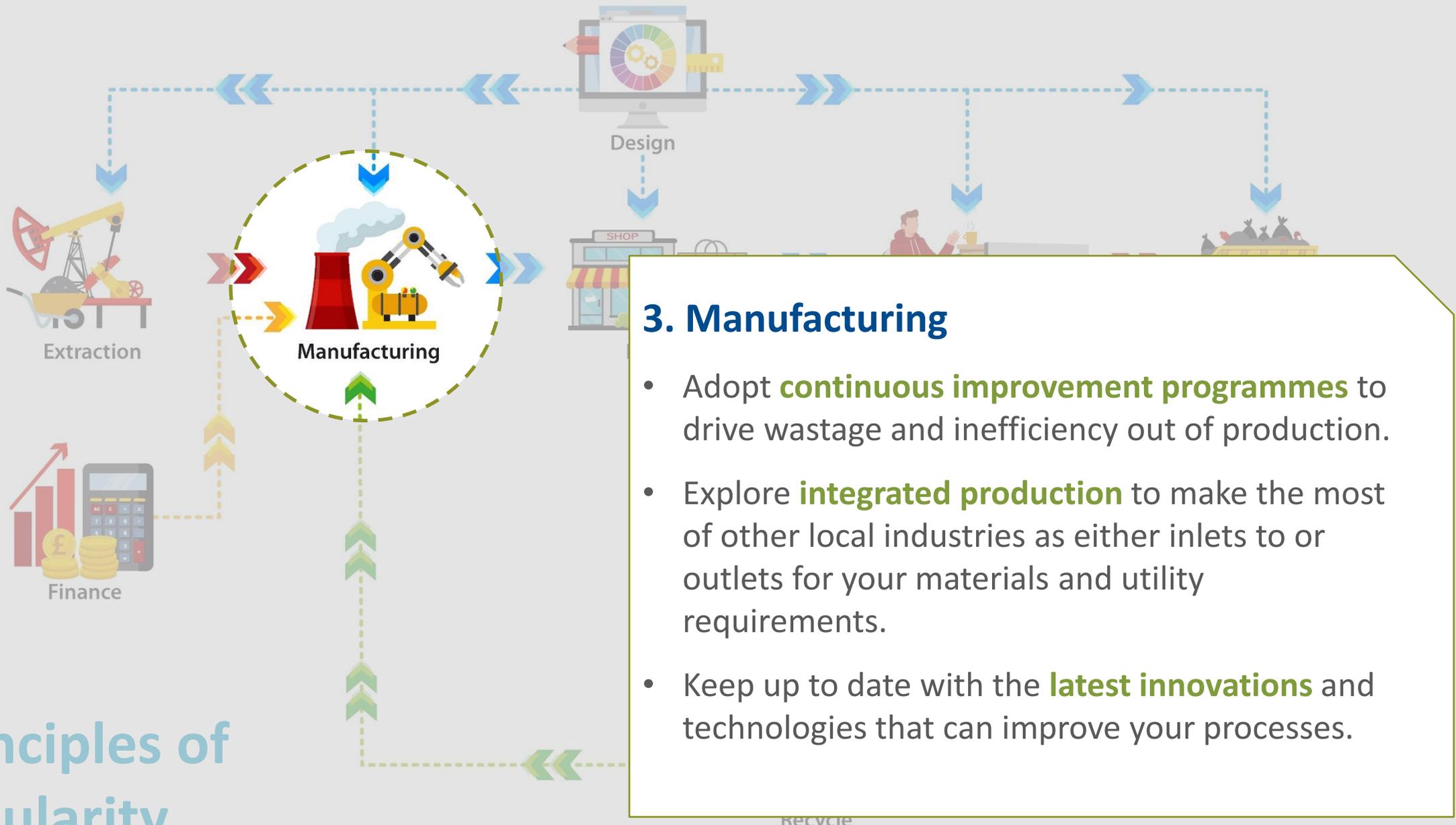
# Principles of circularity



# Principles of circularity



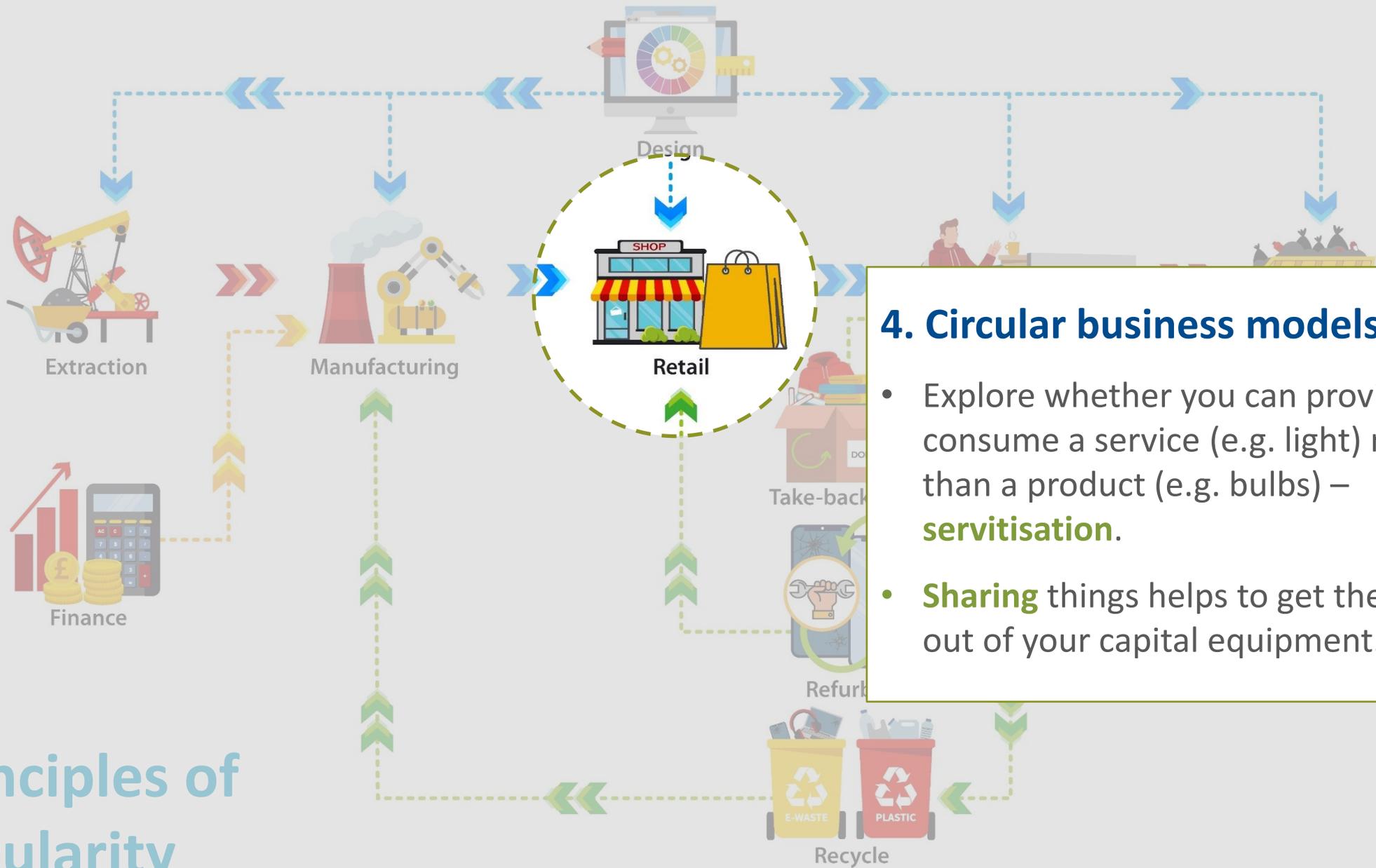
# Principles of circularity



## 3. Manufacturing

- Adopt **continuous improvement programmes** to drive wastage and inefficiency out of production.
- Explore **integrated production** to make the most of other local industries as either inlets to or outlets for your materials and utility requirements.
- Keep up to date with the **latest innovations** and technologies that can improve your processes.

# Principles of circularity



## 4. Circular business models

- Explore whether you can provide or consume a service (e.g. light) rather than a product (e.g. bulbs) – **servitisation**.
- **Sharing** things helps to get the most out of your capital equipment.

The diagram illustrates the circular economy process. It starts with 'Design' (a computer monitor with a gear icon), which leads to 'Home Use' (a person sitting at a desk with a laptop). From 'Home Use', the flow goes to 'Disposal' (a yellow truck with a pile of trash), then to 'Recovery' (a factory with smokestacks), and finally to 'Recycle' (two bins labeled 'E-WASTE' and 'PLASTIC'). From 'Recycle', the flow goes to 'Refurbish' (a smartphone with a repair icon), then to 'Take-back/Reuse' (a box labeled 'DONATIONS'), and finally back to 'Design'. There are also direct feedback loops from 'Disposal' and 'Recovery' back to 'Design'.

## 5. Use, maintain, repair

- During the use phase, the focus should be on **keeping the item in service** for as long as possible.
- Preventative **maintenance** (e.g. cambelt replacement) can extend longevity.
- When items fail, consider **repairing** them before looking for a replacement.



Design



Mail



Home Use



Disposal



Recovery



Take-back/Reuse



Refurbish



Recycle

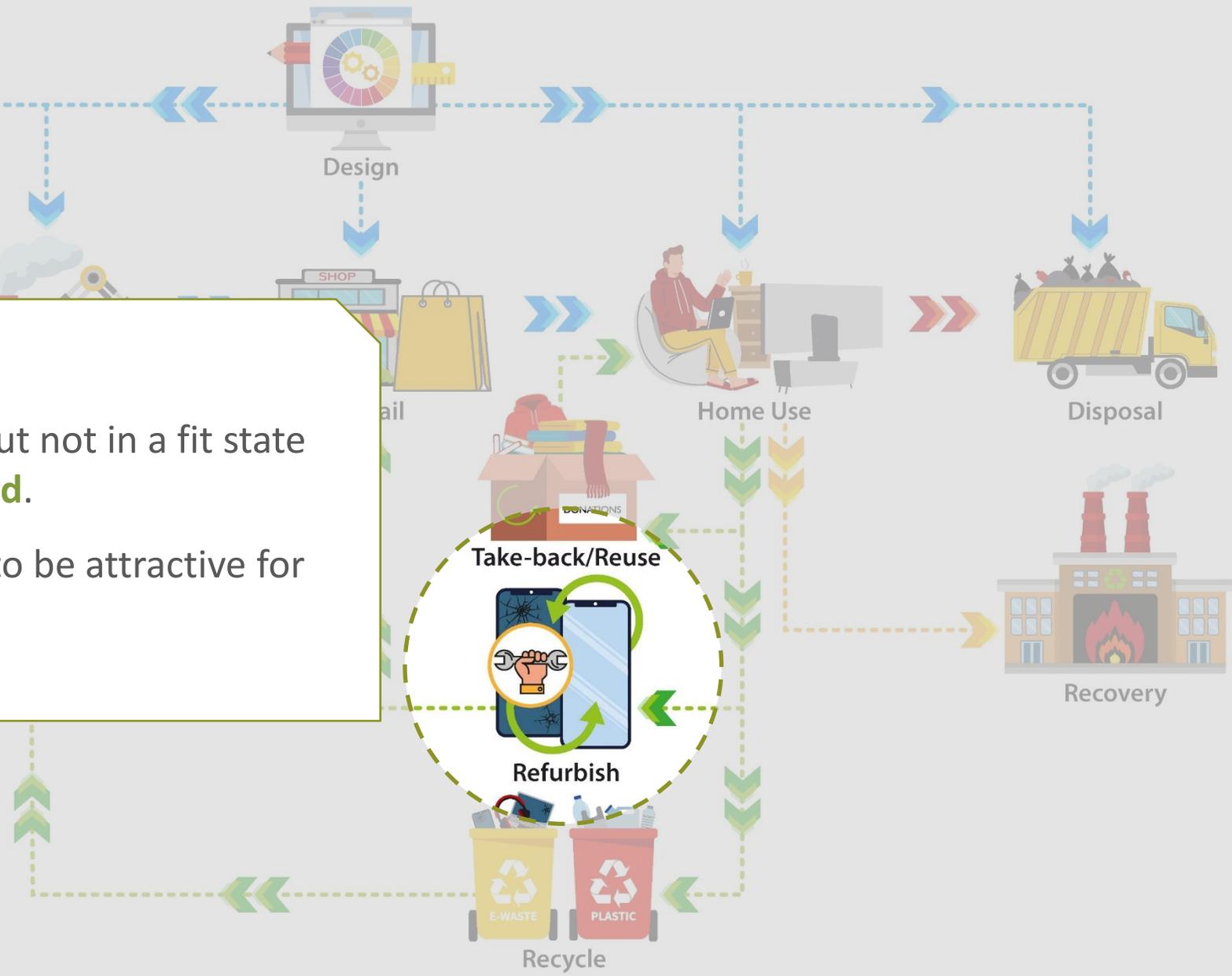
## 6. Take-back, reuse

- For food, “reuse” normally means **redirecting the food** to another consumer.
- Potential **Extended Producer Responsibility (EPR)** regulations are encouraging companies to take-back goods for reuse, refurbishment and recycling.
- This also helps **protect access** to key materials.

Circularity

# 7. Refurbish

- Products that are taken back but not in a fit state to be reused can be **refurbished**.
- Once again, this is more likely to be attractive for **higher-value products**.



# Principles of circularity



Design



Shop



Home Use



Disposal



Recovery



Take-back/Reuse



Refurbish

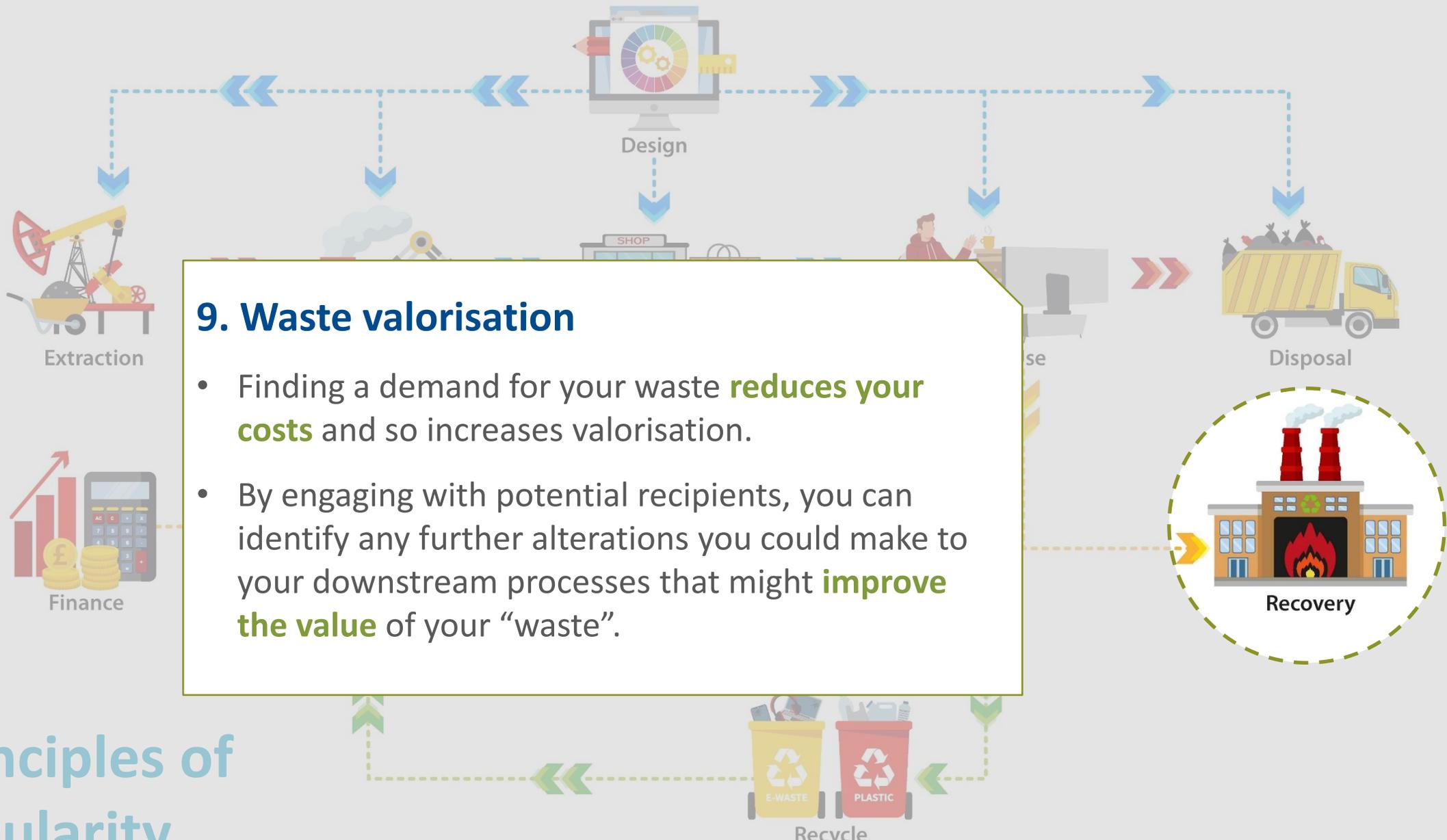


Recycle

## 8. Recycle

- We can distinguish between **recycling**, **downcycling** and **upcycling**, and also between **pre-** and **post-consumer** materials.
- Some materials are intrinsically **more recyclable** than others (e.g. metals versus paper).
- Levels of **contamination** are also important.
- The material needs to be in **reasonable proximity** to a suitable facility in order to be viable.

Circularity



## 9. Waste valorisation

- Finding a demand for your waste **reduces your costs** and so increases valorisation.
- By engaging with potential recipients, you can identify any further alterations you could make to your downstream processes that might **improve the value** of your “waste”.

# Principles of circularity

# Principles of circularity



## 10. Green Finance

- **Green finance** is an increasingly significant consideration for organisations.
- Financial institutions prefer to offer money to companies that are demonstrably green, and **may refuse** to fund environmentally damaging companies.
- Even if the latter are supported, the **interest rates may be higher** than for greener competitors.

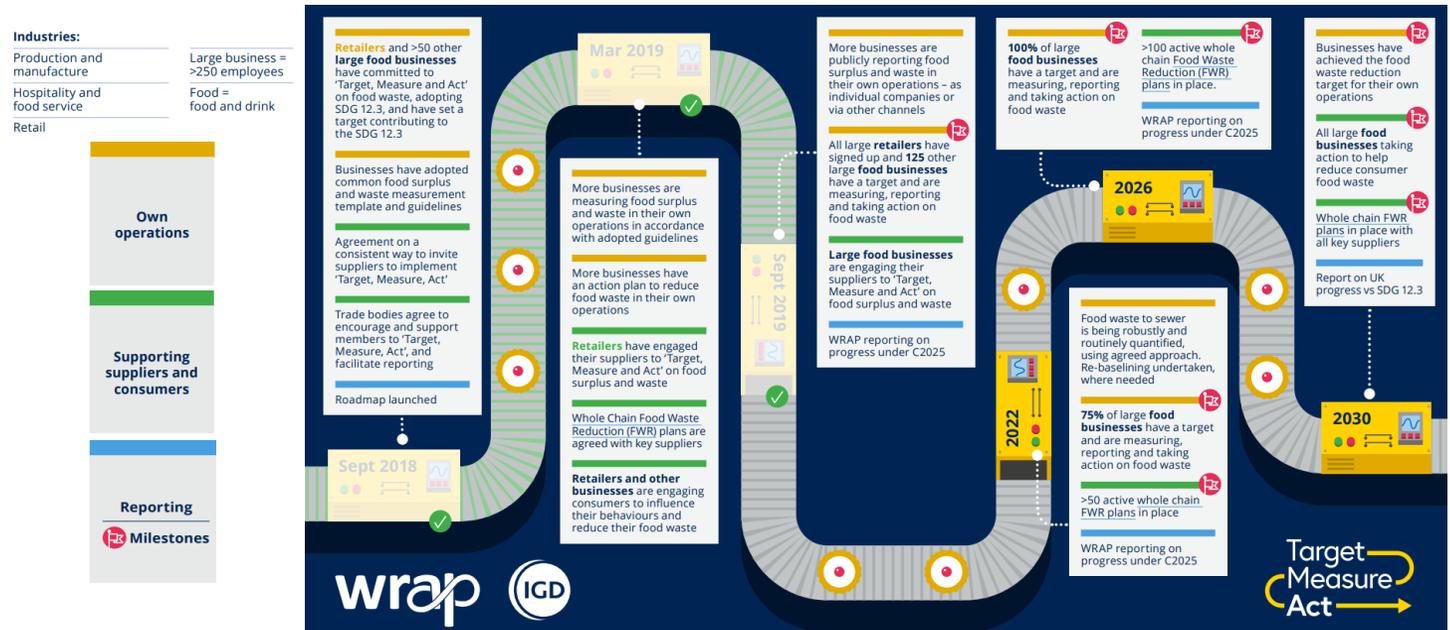
**Practical  
suggestions to  
move forwards**



# The WRAP Food Waste Reduction Roadmap

- Unsurprisingly, advice around applying the circular economy in the F&D sector focuses very heavily on **reducing food waste**, across the entire value chain.
- The WRAP Food Waste Reduction Roadmap is an excellent place to start, and features a toolkit based around the “Target Measure Act” framework.

## Food Waste Reduction Roadmap



<https://wrap.org.uk/taking-action/food-drink/initiatives/food-waste-reduction-roadmap>  
 [checked 28/09/2022]

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- The website also has a number of case studies, that might provide you with inspiration for your own product lines.

## Case studies by sector



Retail

View the case studies



Production and manufacture

View the case studies



Hospitality and food service

View the case studies



Roadmap supporting organisations

View the case studies

<https://wrap.org.uk/taking-action/food-drink/initiatives/food-waste-reduction-roadmap/case-studies>  
[checked 28/09/2022]

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 <p>Ambient foods</p> <p>Read the case studies</p>	 <p>Bakery, Cake and Cereal</p> <p>Read the case studies</p>	 <p>Confectionery and Soft drinks</p> <p>Read the case studies</p>	 <p>Convenience, Chilled Foods and Frozen</p> <p>Read the case studies</p>
 <p>Dairy</p> <p>Read the case studies</p>	 <p>Food waste to sewer</p> <p>Read the case studies</p>	 <p>Fresh produce</p> <p>Read the case studies</p>	 <p>Meat, Poultry and Fish</p> <p>Read the case studies</p>

# Action Roadmap

## Case studies by sector

 <p>Production and manufacture</p> <p>View the case studies</p>	 <p>Hospitality and food service</p> <p>View the case studies</p>	 <p>Roadmap supporting organisations</p> <p>View the case studies</p>
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# The Courtauld Commitment

- Voluntary agreement for organisations across the food system.
- The first Courtauld Commitment was launched in 2005.

## Courtauld Commitment 2025

- Successfully brought together organisations across the food system to make food & drink production and consumption more sustainable.
- **2015-18 saw a 7% reduction in food waste (480,000 tonnes)**, 7% reduction in GHG emissions (7.1 million tonnes CO<sub>2</sub>e) and collective action projects targeting water scarcity.



## Courtauld Commitment 2030

- More ambitious targets.
- To deliver farm-to-fork reductions in GHG emissions, **food waste** and water stress.
- **A 50% per capita reduction in food waste by 2030 vs the UK 2007 baseline.**
- 50% absolute reduction in GHG emissions by 2030 against a 2015 baseline.
- 50% of fresh food is sourced from areas with sustainable water management by 2030.



Food

- Overview
- Who we work with
- Examples
- Projects & publications
- Explore more

Examples and case studies

- The Ellen McArthur Foundation has a large number of further examples and case studies of circular economy initiative in the Food & Drink sector.
- Unlike WRAP, not all of these initiatives are focussed on reducing food waste.

**Alternative meat made from food by-products: Planetarians**  
Using fungi to turn waste carbohydrates into protein.

**Making new products from urban organic waste streams: De Clique**  
"We are working towards zero-waste cities in which all residual flows are reused"

**Regenerative agriculture around São Paulo: Connect the Dots**  
Supporting local farmers as they transition to regenerative practices.

**Regenerating an ecosystem to grow organic sugar: The Balbo Group**  
"We don't worry too much about the crop itself - we take care of the whole ecosystem"

**Using insects to turn food waste into animal feed: Agriprotein**  
Making a sustainable animal feed alternative with the help of a black soldier flies.

**Working with nature to make food last longer: Apeel**  
Edible plant-derived protection that's applied to the surface of fresh produce.

**Effective Organic Collection Systems**  
Success stories from Italy

**Closing the Nutrient Loop**  
A balanced supply of nutrients is essential for healthy plant growth.

**Collaborating to change local food systems: Milan**  
The modern food system is degrading and unhealthy, but cities could hold the key to changing this.

**Reducing food waste, increasing profits: Winnow**  
Winnow was founded with a simple belief that food is too valuable to waste.

**How to run a profitable circular farm: one-acre farm**  
Working with nature to regenerate the land.

**Profitable and resilient farming through grassland restoration**  
Pasture cropping is a perennial farming system that enhances wildlife and sequesters carbon.

**Restoring a degraded landscape through design**  
The Orongo Station is more productive than ever, producing sheep, cattle, citrus fruit and timber...

**Regenerative ocean farming: GreenWave**  
GreenWave's polyculture ocean farming method produces a mixture of shellfish and seaweeds in a...

**Bringing industry together to tackle food packaging waste**  
The Courtauld Commitment is a voluntary agreement between grocery industry players that aims to...

**Farm-to-fork app eliminates plastic & reduces food costs: Kecipir**  
Kecipir is an app operating in the Indonesian market that connects fruit and vegetable

**Greater resilience for smallholder farmers**  
Community Managed Natural Farming restores soil health and eliminates the need for expensive and...

**Reducing food losses, increasing profits: Agricycle**  
Agricycle works with smallholder farmers around the world to upcycle food that would otherwise be...

**Insects as part of a circular economy for food**  
Both Insectipro and Sanergy harness the remarkable metabolic power of insects to transform organic...

**Farm by-products increase yields and sequesters carbon**  
Safi Organics collects discarded rice husks and transforms them into a nutrient and carbon-rich...

**Brewing beer from surplus bread**  
Discarded bread can be used to replace a third of the malted grain used in beer brewing.

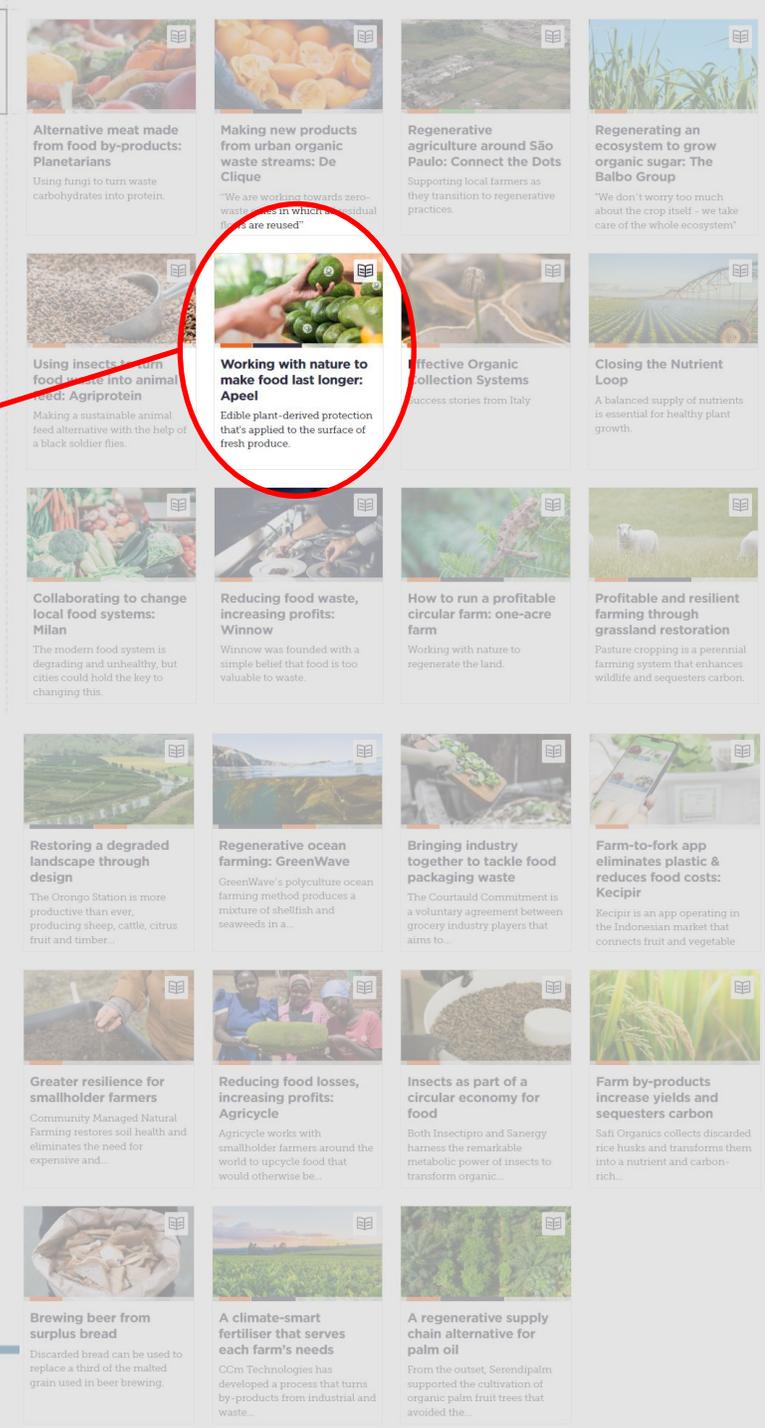
**A climate-smart fertiliser that serves each farm's needs**  
CCm Technologies has developed a process that turns by-products from industrial and waste...

**A regenerative supply chain alternative for palm oil**  
From the outset, Serendipalm supported the cultivation of organic palm fruit trees that avoided the...



## Working with nature to make food last longer

- Apeel is a layer of edible, plant-based coating applied to fresh products that mimics and enhances the natural defences of fruit and vegetables. This **slows down the two main things that cause spoilage** – water loss and oxidation.
- Apeel **eliminates single-use shrink wrap plastic packaging** on fresh fruit and veg, while at the same time tackling food waste.



# The UK Plastics Pact

- Collaborative initiative to create a circular economy for plastics.
- Brings together businesses from across the entire plastics value chain with UK governments and NGOs to tackle plastic waste.
- 68 members are responsible for 80% of plastic packaging sold in UK supermarkets, and half of all packaging placed on the market.

## Progress

- 70% of plastic packaging is reusable or recyclable
- 65% of plastic packaging continues to be recyclable
- 52% of plastic packaging recycled
- 18% average recycled content, an increase from 9% in 2018
- 46% reduction in problematic and unnecessary plastic items since 2018




# How to start embracing the circular economy?

- Seek case studies that might already help you address your needs.
- Perform your own investigation...
  1. Map out the current material flows associated with your product
  2. Engage with your supply chain to understand their processes
  3. Using the flow chart, seek interventions that deploy circular solutions
  4. Explore the environmental and social implications of the interventions (using life cycle assessment)
  5. Agree an action plan to implement the change(s)
  6. Monitor results (and, in due course, iterate...)



# Menu du jour

❖ — *Entrée* — ❖

An introduction to the Circular Economy

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❖ — *Plat* — ❖

The principles of the Circular Economy

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❖ — *Dessert* — ❖

Practical suggestions to move forwards

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# Thank you



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