

Procurement of Environmental Products towards a Circular Economy

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ANVARTA
Insights | Consulting Services | Solutions



Module I

Introduction -
Procurement for
environmental products
towards a circular
economy



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In this module we talk about...

Lesson 1 - Introduction to Circular economy

Lesson 2 - Applying principles of circular economy to products/services

Lesson 3 - Procurement for a circular economy

Lesson 4 - Promoting a new way of thinking with circular procurement

Lesson 5 - Rethinking the existing procurement systems for new alternatives

Lesson 6 - Designing a system of circular procurement

Lesson 7 - Implementing circular procurement - Product-service systems

Lesson 8 - Implementing circular procurement - New procurement approaches

Module I

Lesson 1

Introduction to Circular economy



Introduction to circular economy

In this lesson we will discuss..

What is a circular economy?

Comparing CE with other similar principles

The need for a circular economy

The benefits of circular economy

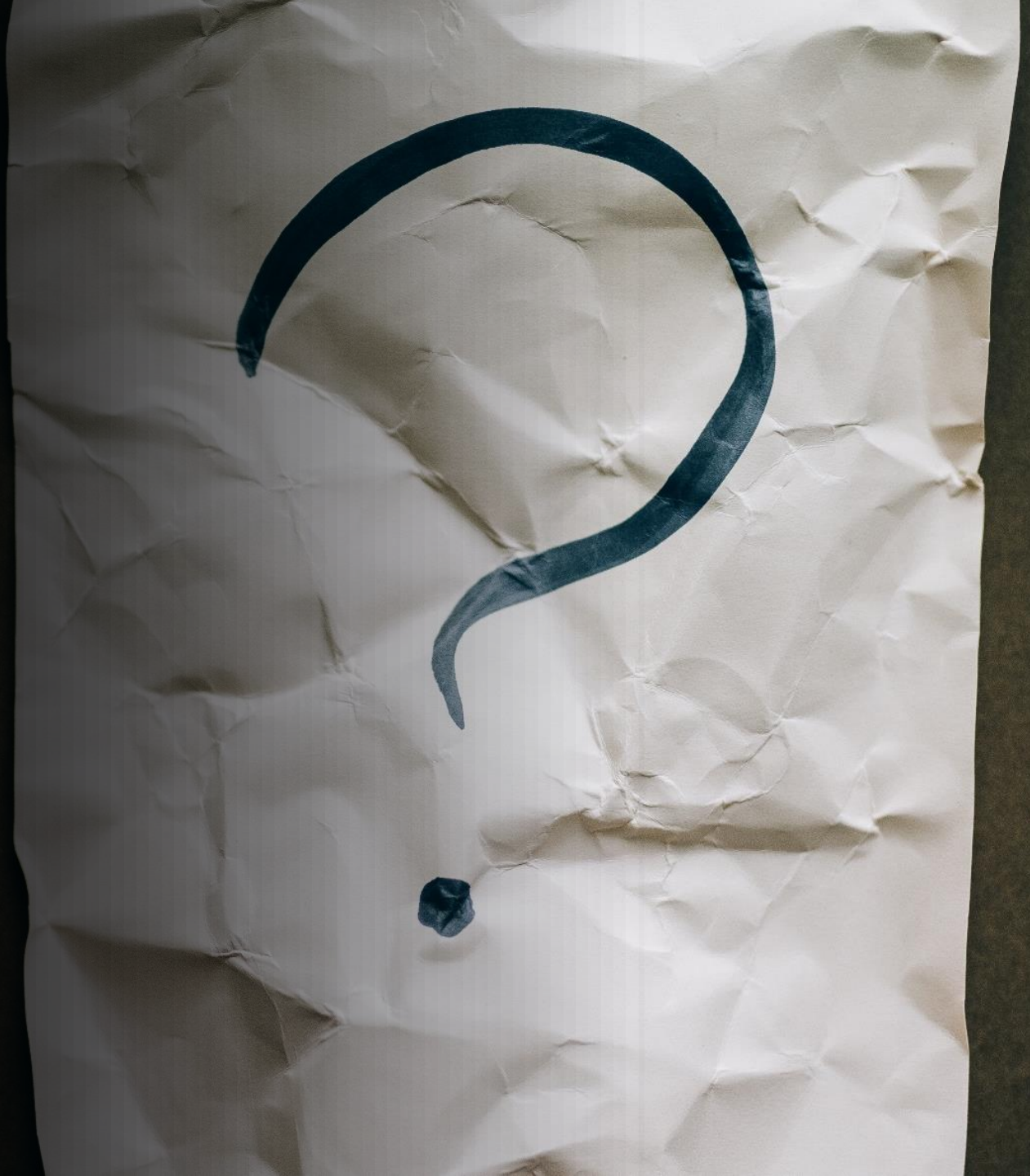
Transition to circular economy





Let's start with a question...

What words would you use to describe a circular economy?



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Waste can come in different forms...



What is waste?



Photo by [Antoine GIRET](#) on [Unsplash](#)

Photo by [Sergei Wing](#) on [Unsplash](#)



A circular economy

Circular Economy

An alternative economic model, that focuses on **regeneration** of products, components and materials to the **highest utility and value**



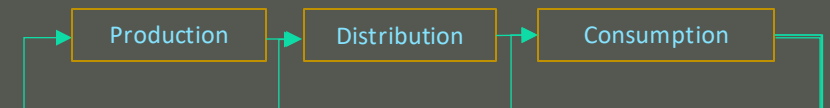
Linear Economy

Extractive, degenerative industrial model, that generates waste

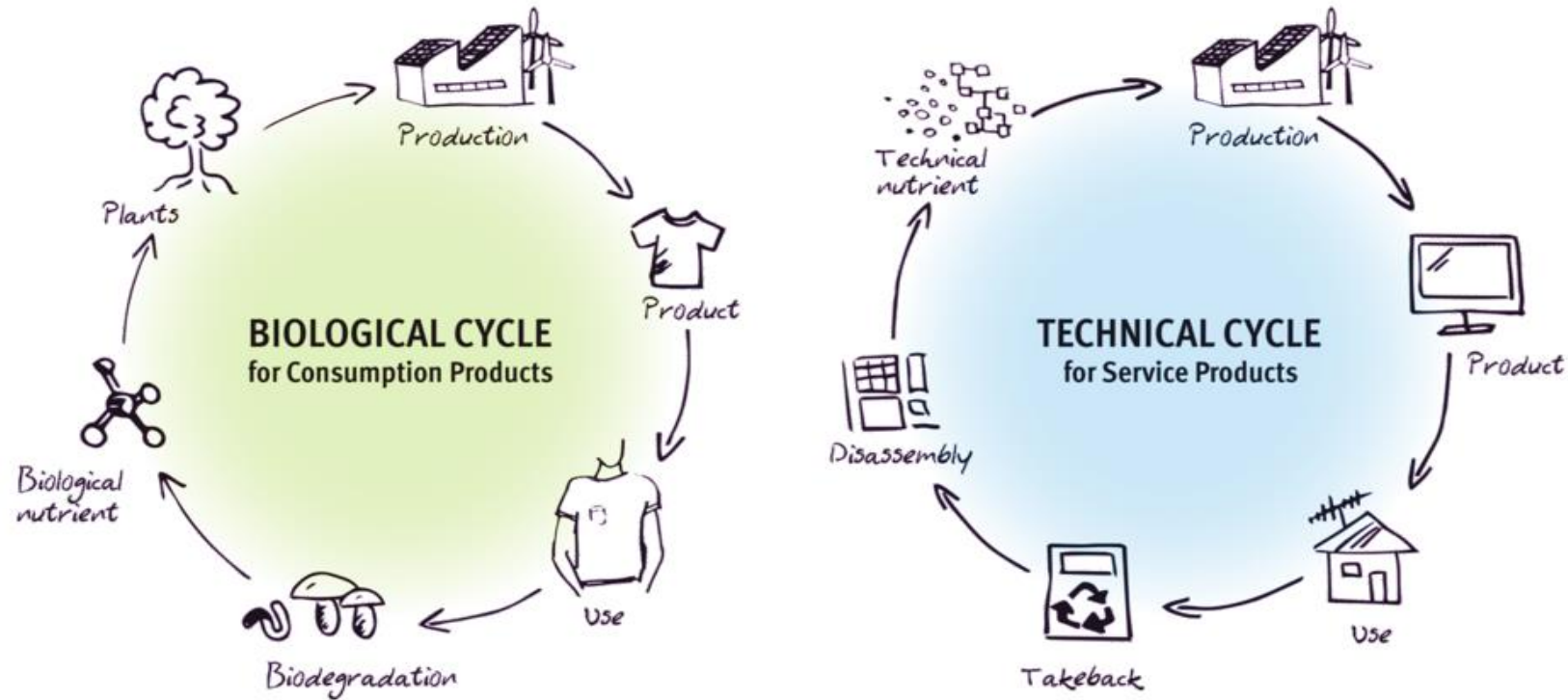


Circular Economy

Regenerative industrial model, that circulates nutrients



The core concept



© EPEA – Part of Drees & Sommer

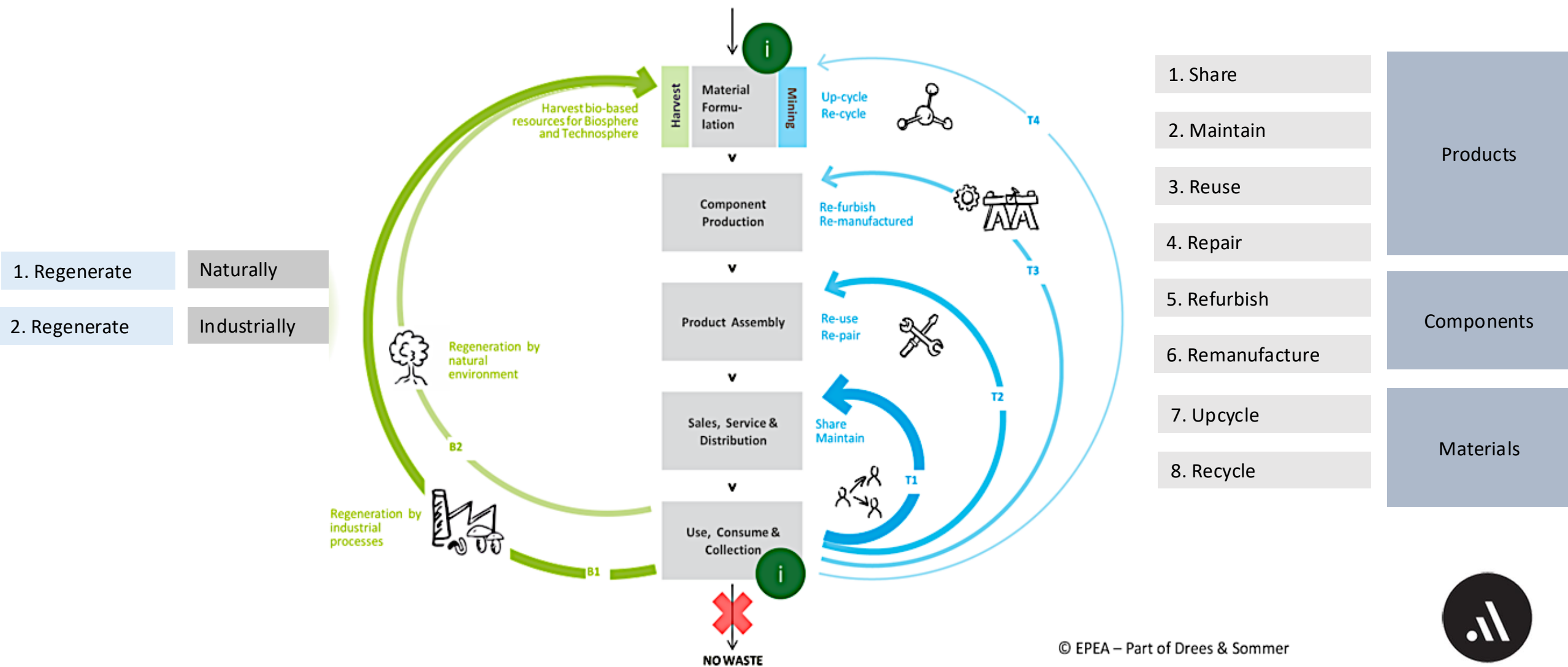


Cradle to Cradle : Michael Braungart and William McDonough



Strategies for a circular economy

REDESIGN



What are we talking about?

Low-Carbon Economy - Achieve economic output with less GHG emissions

De-materialised Economy - Achieve economic output with less resources

Performance Economy - Achieve optimum service performance from products

Circular (regenerative) Economy - Achieve regeneration of nutrients



Workshop activity

Module 1, Lesson 1

Q: What is involved in the below two products associated with the four concepts

Let's take two products to compare

1. Paper (traditional) and printing with ink
Made of wood pulp and other ingredients,
used to print content to read
Recycled to be paper at end of life
2. Thin sheets made of recyclable plastic and
washable ink



Let's compare two products

Human need - Read content at convenience, Portable item, permanent/semi-permanent print

	Paper (traditional) and printing with ink	Thin sheets made of recyclable plastic and washable ink
Environmental impact	<ul style="list-style-type: none"> • Wood growing, cutting, pulp making, paper making • Chemicals of inks, ink making • Printing • Transportation • Post consumption: Recycling paper (chemicals, energy) 	<ul style="list-style-type: none"> • Plastic manufacturing (By-product of petroleum manufacturing) • Chemicals of inks, ink making • Printing • Transportation • Post consumption: Washing the ink
Materials	Wood pulp for paper making -(942 kg CO2eq GWP)	Plastics and washable ink (x kg CO2eq GWP)
Performance	Used for reading content	Used for reading content
Regeneration	<ul style="list-style-type: none"> • Complete material regeneration through recycling with ink • Modified product (recycled plastic) in secondary life • Generally, not designed to regenerate, no incentive to return materials 	<ul style="list-style-type: none"> • Ink recyclable after washing • Plastic regenerated as a component (no material modification) • Designed to regenerate • Incentive to reuse resources

Introduction to circular economy

In this lesson we will discuss..

What is a circular economy?

Comparing CE with other similar principles

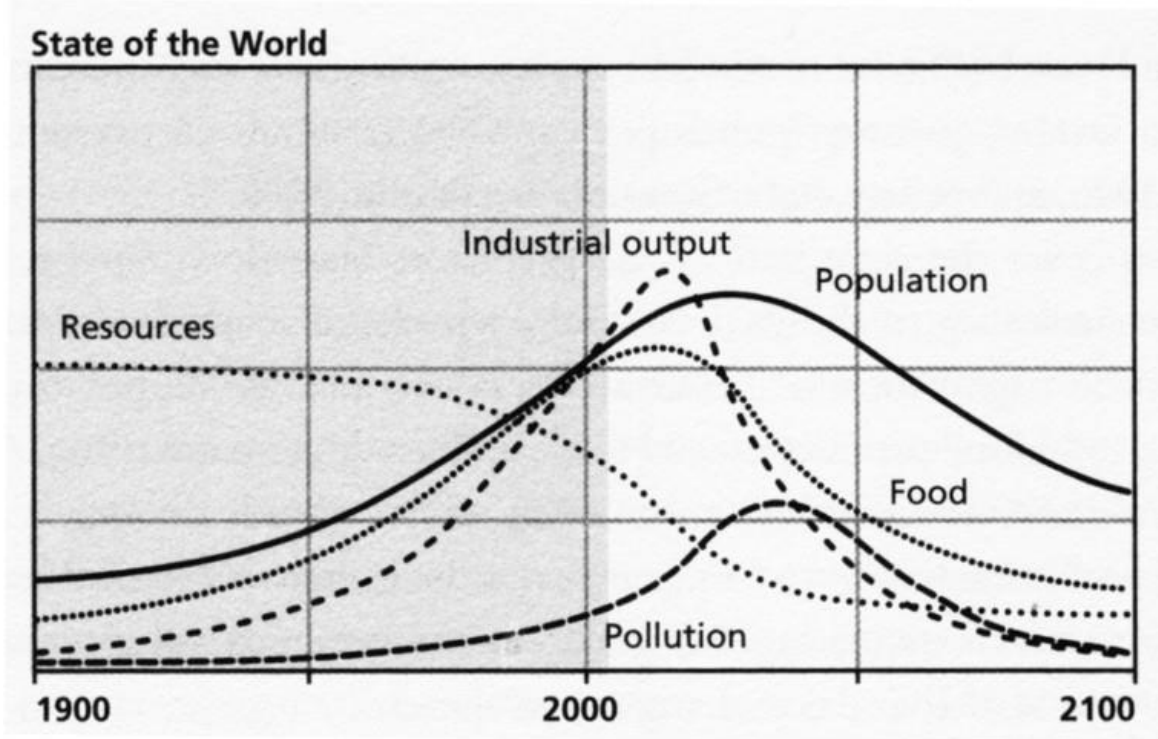
[The need for a circular economy](#)

The benefits of circular economy

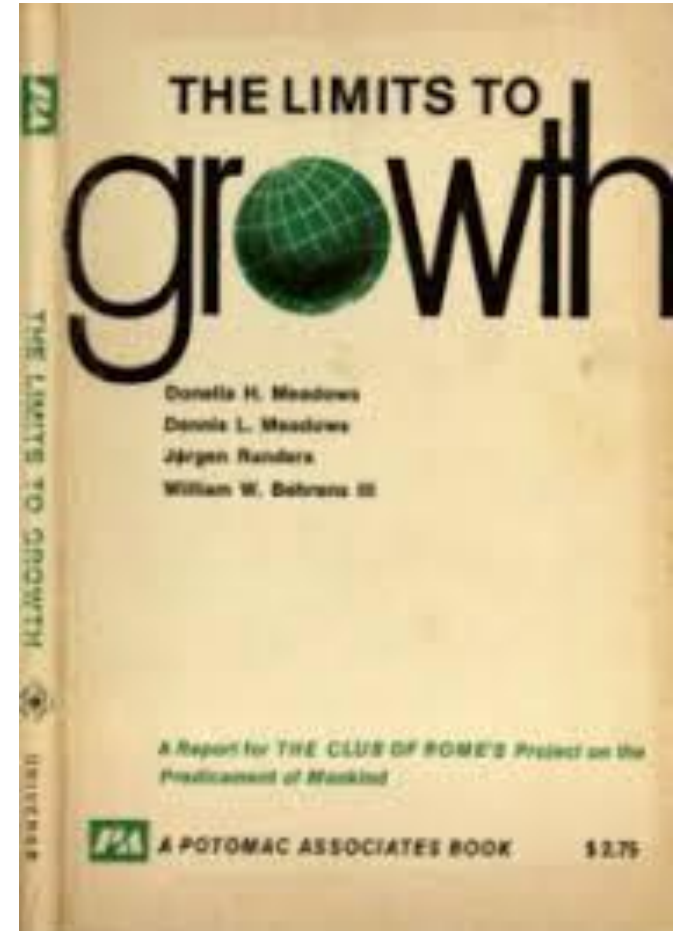
Transition to circular economy



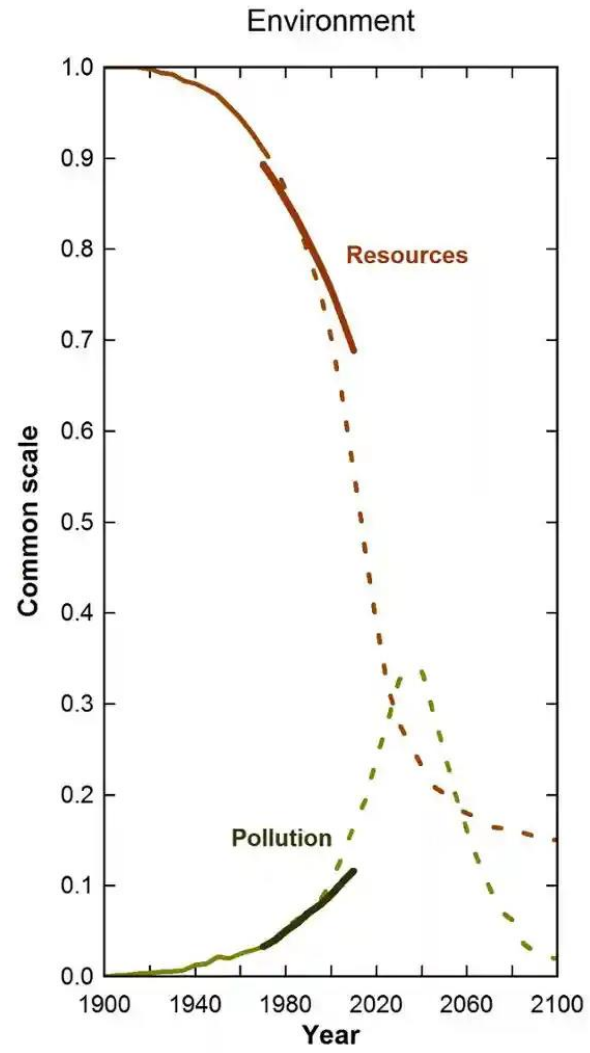
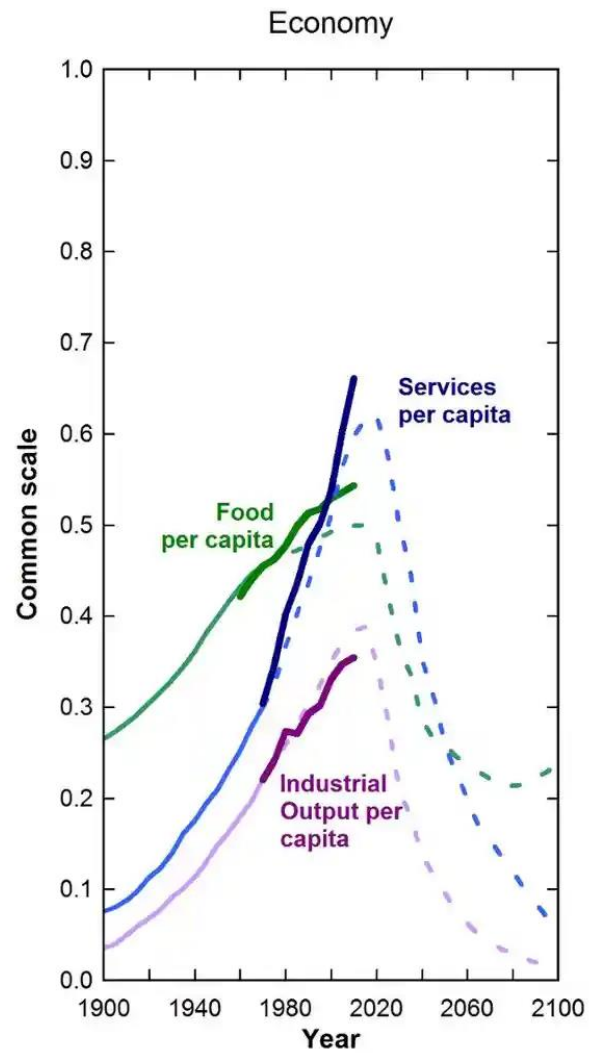
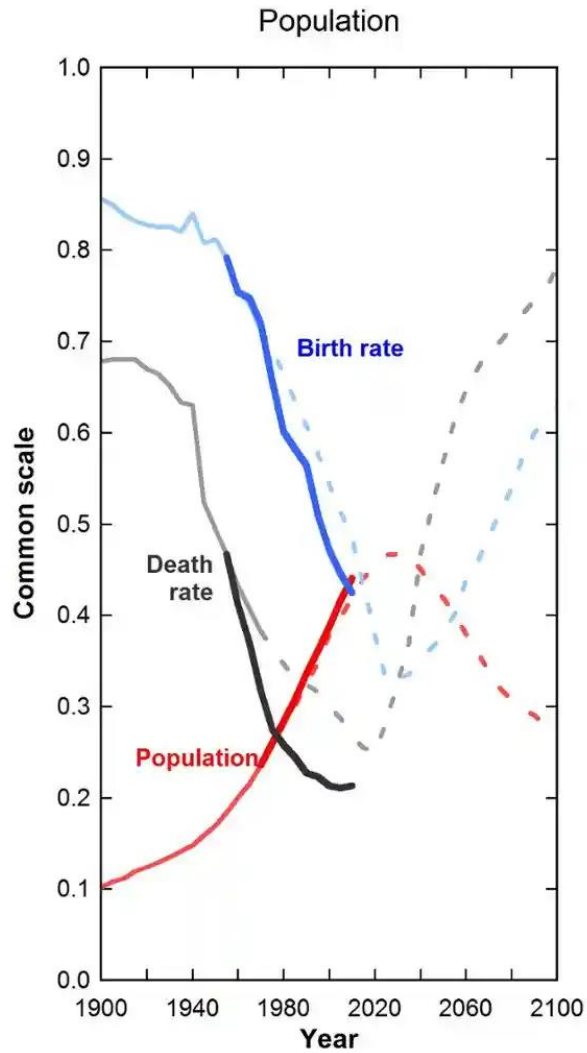
Why a circular economy? - Resources



- Predictions in 1972 by a team of 17 researchers
- Business as usual scenario: Collapse between 2020 and 2070



Why a circular economy? - Resources



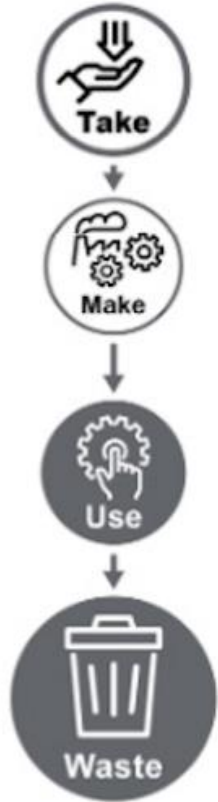
- We are on track for disaster !

Research paper in 2014: University of Melbourne



We are in a transition...

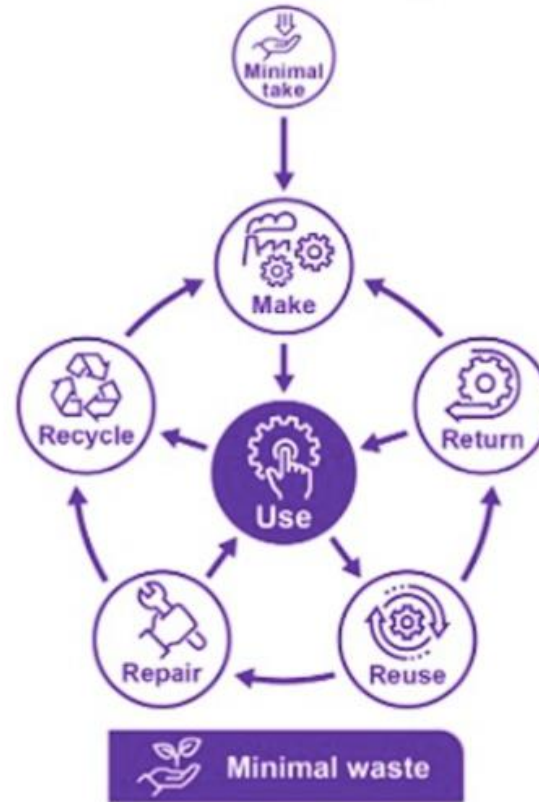
Linear Economy



Recycling Economy



Circular Economy



Circular Economy Benefits

- Transforms our current throwaway economy, eliminating waste and pollution, and circulating resources
- Tackles climate change and biodiversity loss simultaneously
- Separates the ability to achieve economic growth from the consumption of natural resources
- Create jobs, prosperity and resilience while cutting greenhouse gas emissions, waste and pollution
- Presents a business case for each sector to be more sustainable while increasing competitiveness.



Benefits of circular economy



- Enable meet **climate change goals**
- Sustain economic activities without being **limited by planetary boundaries** for resources
- Build healthy economic systems with **regenerative growth**
- Mitigation of **business risk** - Supply constraints with resources
- Mitigation of business risk and **retaining competitive advantage** - Adopting to changing consumption patterns and models
- Mitigation of current/ future **environmental liabilities** with waste
- Emergence of **service economies** - repair economy, rent and share economies



Introduction to circular economy

In this lesson we will discuss..

What is a circular economy?

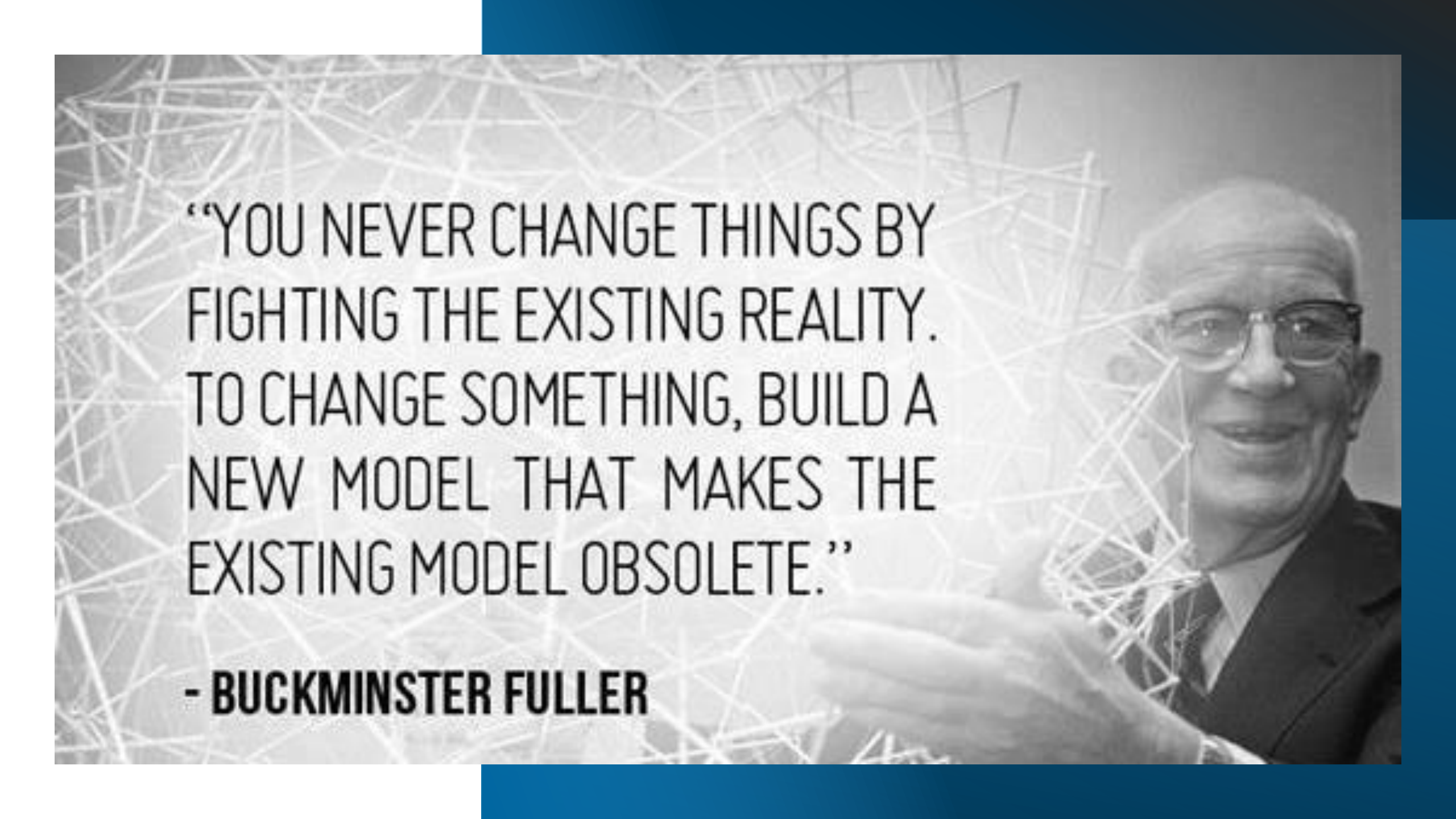
Comparing CE with other similar principles

The need for a circular economy

The benefits of circular economy

[Transition to circular economy](#)





“YOU NEVER CHANGE THINGS BY
FIGHTING THE EXISTING REALITY.
TO CHANGE SOMETHING, BUILD A
NEW MODEL THAT MAKES THE
EXISTING MODEL OBSOLETE.”

- **BUCKMINSTER FULLER**



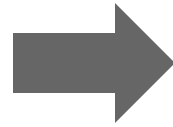
Transition to a circular economy

To transition to a "new" system...

we need replace parts of the old system with new alternatives.

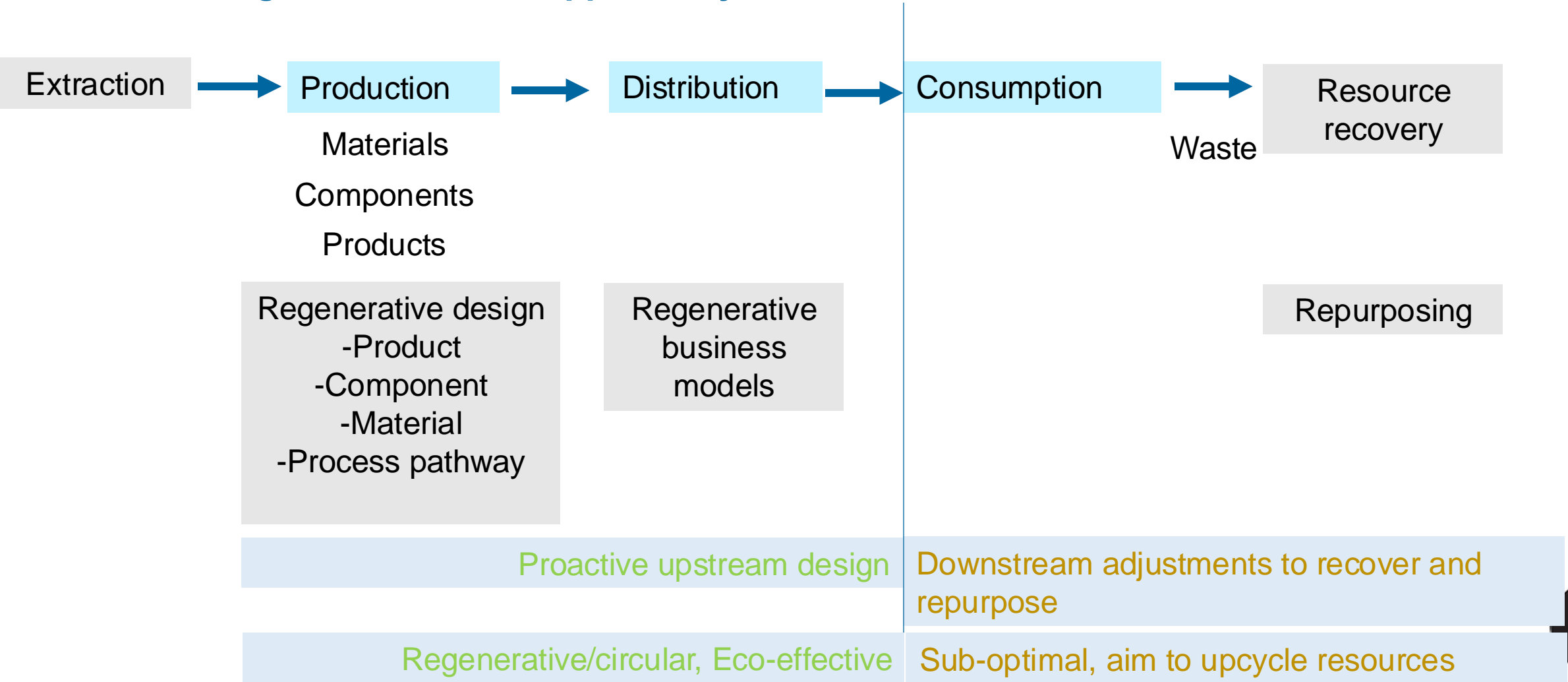


Shifting the wheels



Where to focus?

Challenge as well as the opportunity...



How do you make transition?

Develop alternatives

Technology/R&D

- Alternative products, materials
- Alternative supply chains and business models

Evaluate, make decisions / choose

Tools to evaluate

- Public policy and government decisions
- Industry and business decisions

Operationalise

Integrate in to current mechanism

- Re-design value chain
- Set incentives, disincentives for uptake

Enable markets

Create pull

- Introduce new choices for consumption
- Change buyer/consumer behaviour





Let's take a moment to discuss...

Creating markets

Create consumer pull

In your organisation what markets do you do you intend to influence for change in consumption aligned with CE?

What buyers do you need to deal with?

Identify



Module I

Lesson 2

Applying principles
of circular economy
to products/services



Applying principles of circular economy to products/services

In this lesson we will discuss..

8 Strategies for the industrial cycle

Share

Maintain

Reuse

Repair

Refurbish

Remanufacture

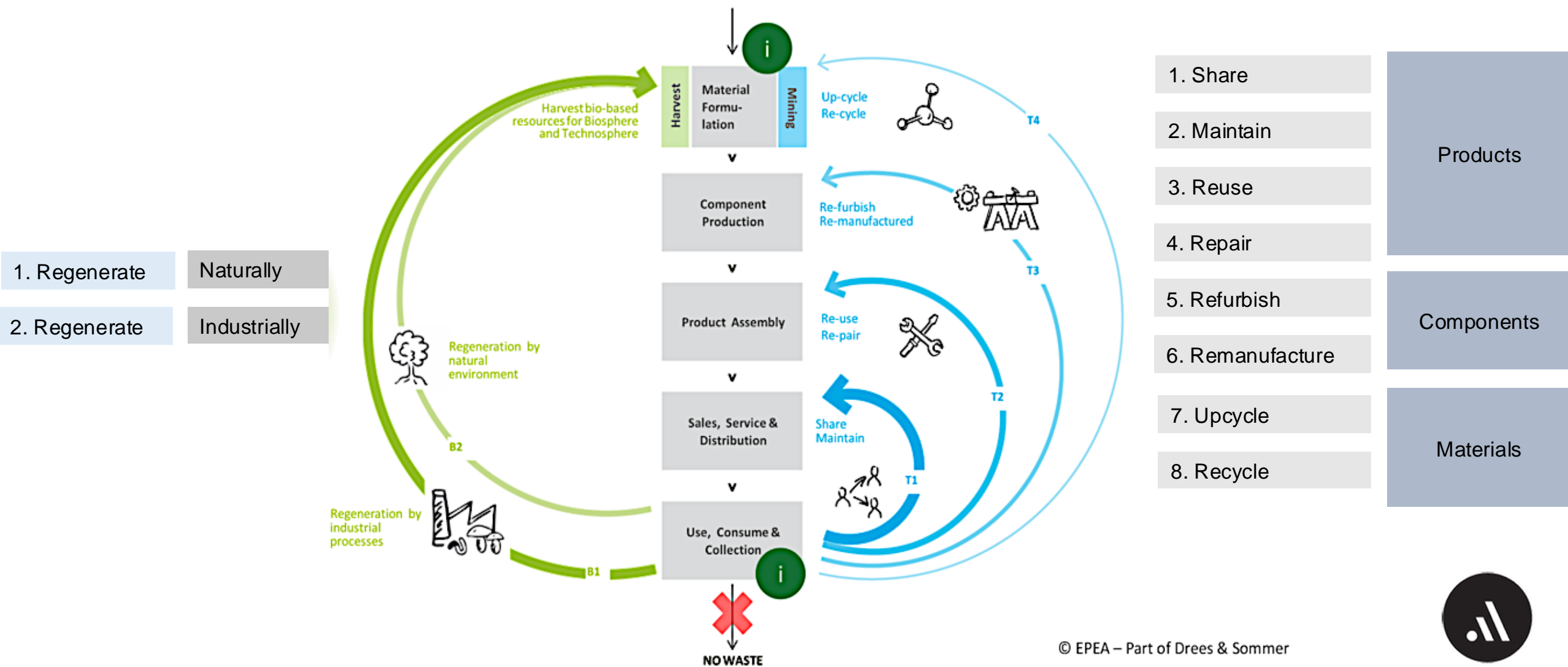
Upcycle

Recycle

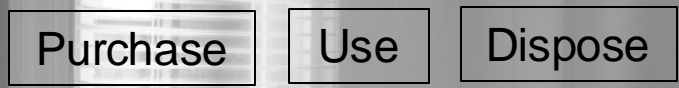


How does consumption look like in a circular economy ?

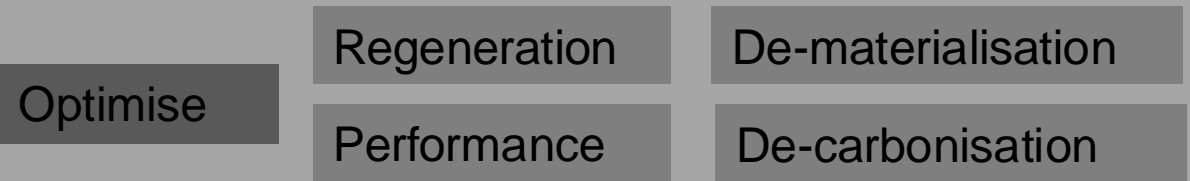
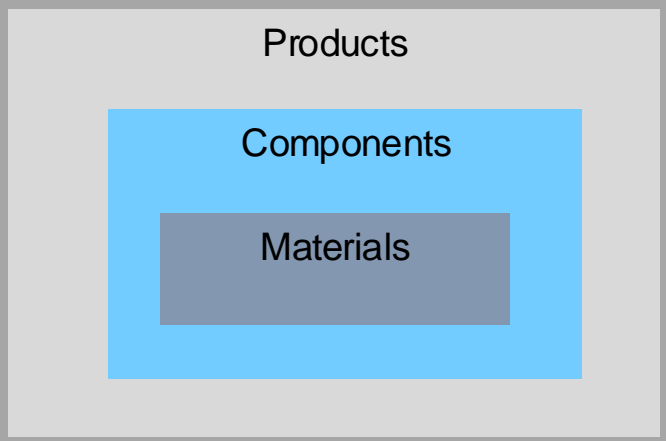
REDESIGN



Current Linear Economy



What is the fundamental human need the product fulfils?



Strategies for a circular economy

Current Linear Economy

Purchase

Use

Dispose

Circular Economy

1. Share

Through communal access/ subscription

2. Maintain

By providing access over ownership

3. Reuse

By selling second-hand & pre-used

4. Repair

By providing services to fix

5. Refurbish

By selectively repairing the worn out

6. Remanufacture

By selectively replacing some components

7. Upcycle

By processing materials to high value, specific uses

8. Recycle

By recycling materials as a commodity



1. Share - Products

-
- Product is produced once, and the utility shared by many
 - Subscription paid to access the product



1. Share - Products



Melbourne
Community
toy library

A stylized logo for the Melbourne Community Toy Library. It features the text "Melbourne Community" in red, "toy" in green, and "library" in blue. To the right of the text is a red outline of a house with a yellow sun above it and green hills below it.

2. Maintain - Products



Linear Economy

Responsibility and ownership transferred from producer to consumer at the point of purchase.

Buy → Throw

Circular Economy

- Custodians of resources – not owners
- Resource flow and information flow of product/component/materials go together

Leads to access over ownership



Selling light as a service

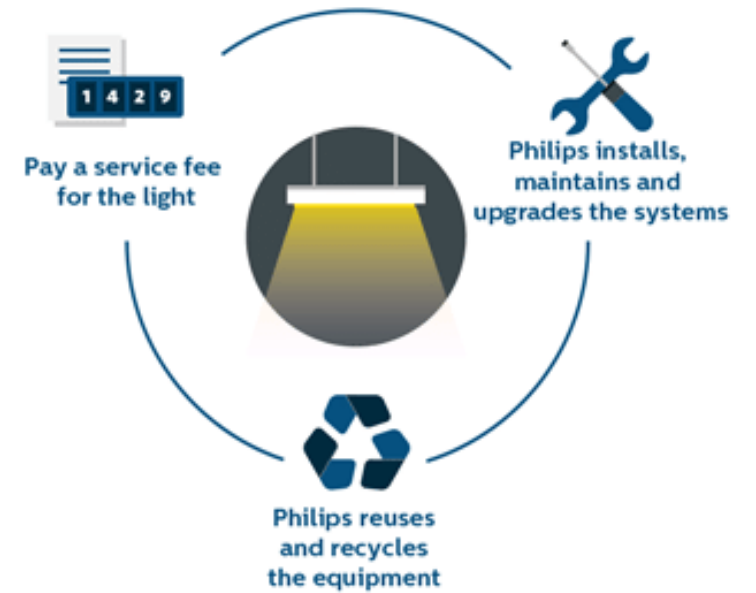
I told Philips, 'Listen, I need so many hours of light in my premises every year. If you think you need a lamp, or electricity, or whatever – that's fine. But I want nothing to do with it. I'm not interested in the product, just the performance. I want to buy light, and nothing else.'

- Thomas Rau



Business Model Innovation

Selling light as a service instead of bulbs

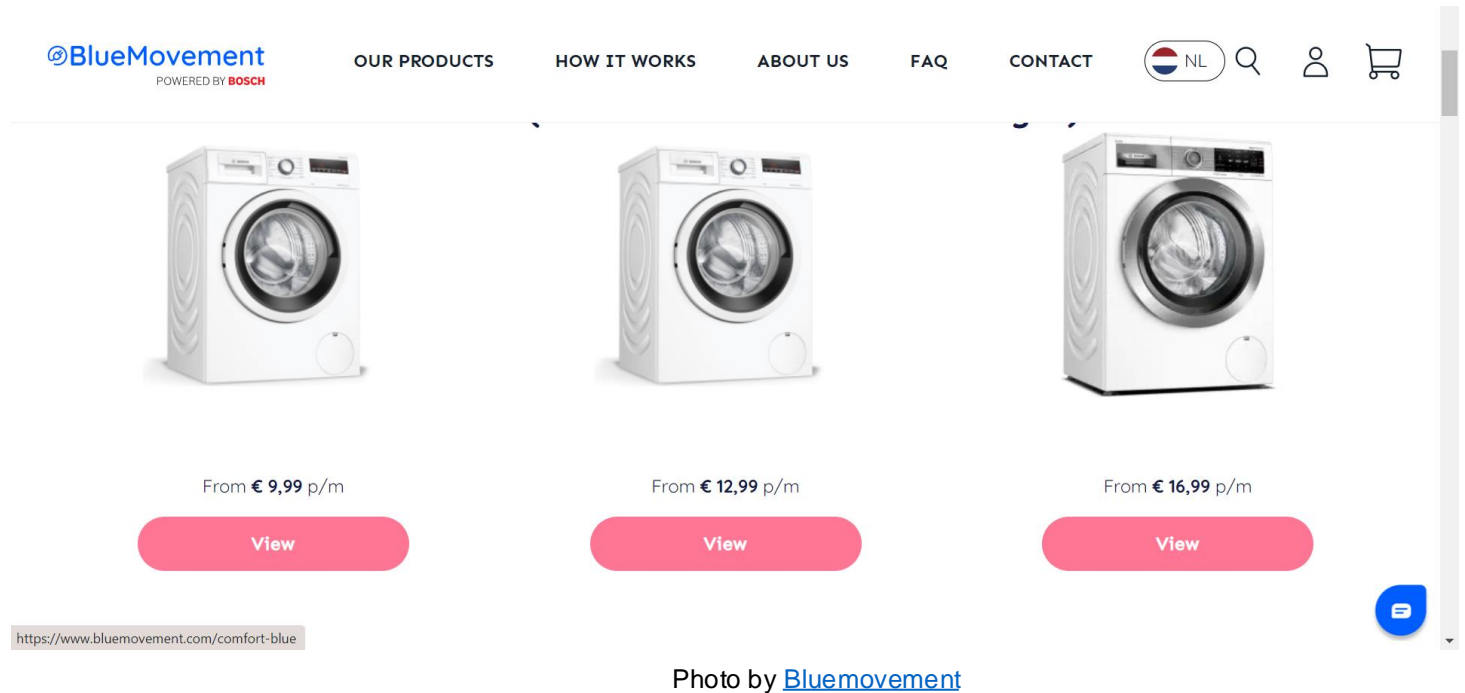


Product service systems rather than products

Performance model	Ownership	Aspect sold as the service	Example
Result-oriented	Seller	Performance provided by the product	Area illuminated
Utility-oriented	Seller	Cycle of use of a product (Use cycles) OR Length of use of a product (Utility) OR Length of use of a product (Period)	Switch on-off cycles used No of hours used No of period hired

Use-oriented model

- Bluemovement – A subsidiary of Bosch
 - Product ownership is retained with the seller mostly
 - Access to product paid based on a functional unit



The screenshot displays the Bluemovement website interface. At the top, the logo reads '@BlueMovement POWERED BY BOSCH'. The navigation menu includes 'OUR PRODUCTS', 'HOW IT WORKS', 'ABOUT US', 'FAQ', and 'CONTACT'. On the right, there are icons for language selection (NL), search, user profile, and a shopping cart. The main content area features three white front-loading washing machines. Below each machine, the starting price is listed: 'From € 9,99 p/m', 'From € 12,99 p/m', and 'From € 16,99 p/m'. Each price is accompanied by a pink 'View' button. A URL bar at the bottom left shows 'https://www.bluemovement.com/comfort-blue'. A photo credit 'Photo by Bluemovement' is visible at the bottom right. A vertical scrollbar is on the right side, and a blue chat icon is at the bottom right corner.

Photo by [Bluemovement](#)





Workshop Activity

Module 1, Lesson2

1. What is the fundamental human need associated with the product?
 2. What can the functional unit of performance for these products in a product-service system (PSS)?
 3. What are possible ways to fulfil the need?
- A mirror
 - A bicycle
 - A bread toaster

Strategies for a circular economy

Current Linear Economy

Purchase

Use

Dispose

Circular Economy

1. Share

Through communal access/ subscription

2. Maintain

By providing access over ownership

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By selling second-hand & pre-used

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By selectively repairing the worn out

6. Remanufacture

By selectively replacing some components

7. Upcycle

By processing materials to high value, specific uses

8. Recycle

By recycling materials as a commodity

3. Reuse products

1. Sold to the same seller – Buy and return option
2. Sold in the open market for reuse



Photo by [Bluemovement](#)



4. Repair - Products

WASHING MACHINE REPAIR



Performance model

Ownership

Aspect sold as the service

Product-oriented

User

Repair services, Faulty product replacements, Warranty

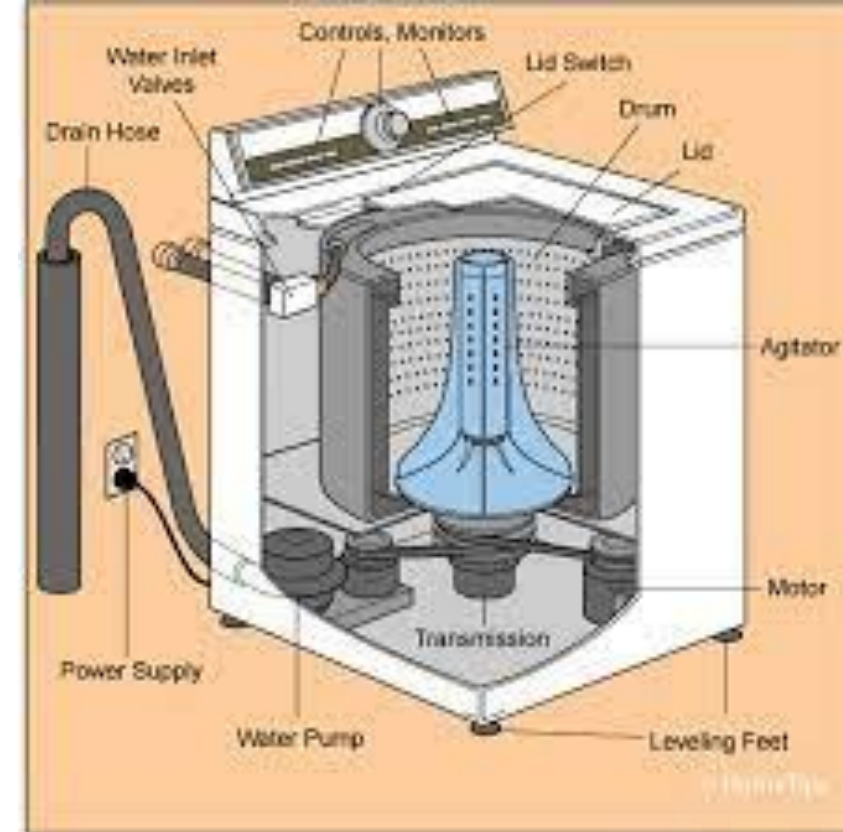


5. Refurbish – Components

6. Remanufacture - Components

Photos by [Hometips](#)

- Prerequisites
 - Design with the end in mind - for disassembly (and refurbishing / remanufacturing)
 - Product collected with product, component and material information to track to the source



5. Refurbish – Components

6. Remanufacture - Components

Photos by [OceanProd](#) & [cuartoderecha](#)

Furniture from wooden pallets



7. Upcycle materials



Photos by [Study.com](https://www.study.com), [Rubicon.com](https://www.rubicon.com) & [Nutriv.com](https://www.nutriv.com)

NutriV – Conversion of vegetables to shelf-stable fibre powders





Workshop Activity

Module 1, Lesson2

What are the differences between upcycling and recycling?

7 Upcycle



- Conserves the environment
- Reforms a product into a **new product**
- **Unlimited** available usage of raw materials

8 Recycle



- Conserves the environment
- Reforms a product into a **material**
- **Limited** available usage of raw materials
 - ✓ Requires processes to breakdown the original material



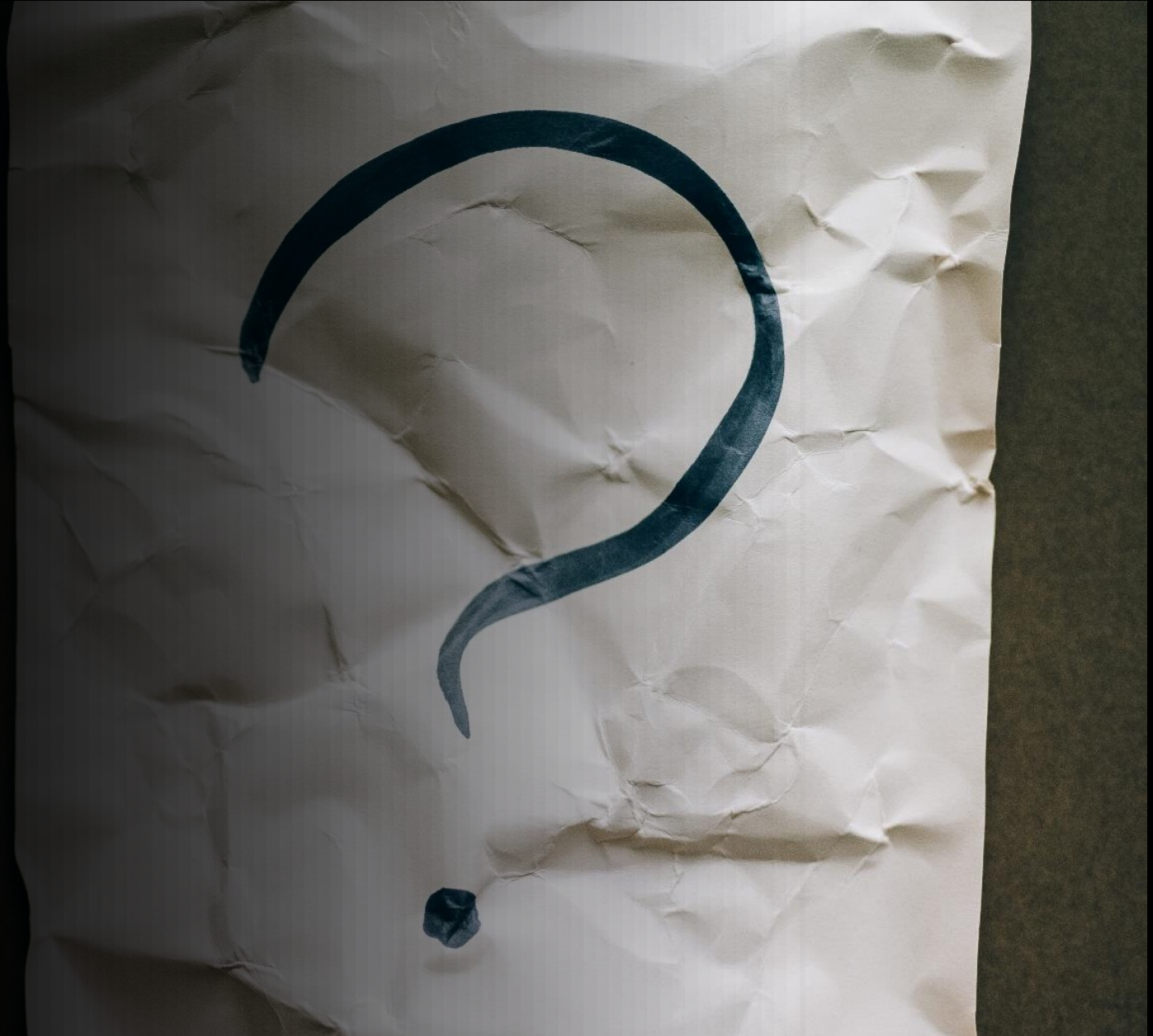
Upcycling	Recycling
Designed for value-added recovery (e.g. sorting)	Recovery is often non-value adding/ value-destroying (e.g. crushing)
Value chain designed for retrieval at pure state	Value chain collects materials mostly in mixed form
Materials have predictable and consistent quality	Mixed materials with uncertain and variable quality
Displaces a high-value material in the market, close to or higher than the original value	Displaces a low-value material in the market, often less than the original value

- 7. Upcycle materials
- 8. Recycle materials cont..



Let's see what you
think now...

What words would you use to
describe a circular economy?



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Module I

Lesson 3

Procurement for a circular economy



Procurement for a circular economy

In this lesson we will discuss

..

Setting goals to be regenerative, rather than sustainable

Different sustainable procurement concepts

Conceptual differences between those concepts

Procurement towards a circular economy

Fundamental differences in procurement in circular economy Vs linear economy



Setting goals to be regenerative, rather than sustainable

Conventional practice

Compliant to avoid legal actions



Green

Relative improvements



Sustainable

Neutral point of not doing any more damage



Restorative

Human doing things to nature



Reconciliatory

Reintegrating humans as integral parts of nature

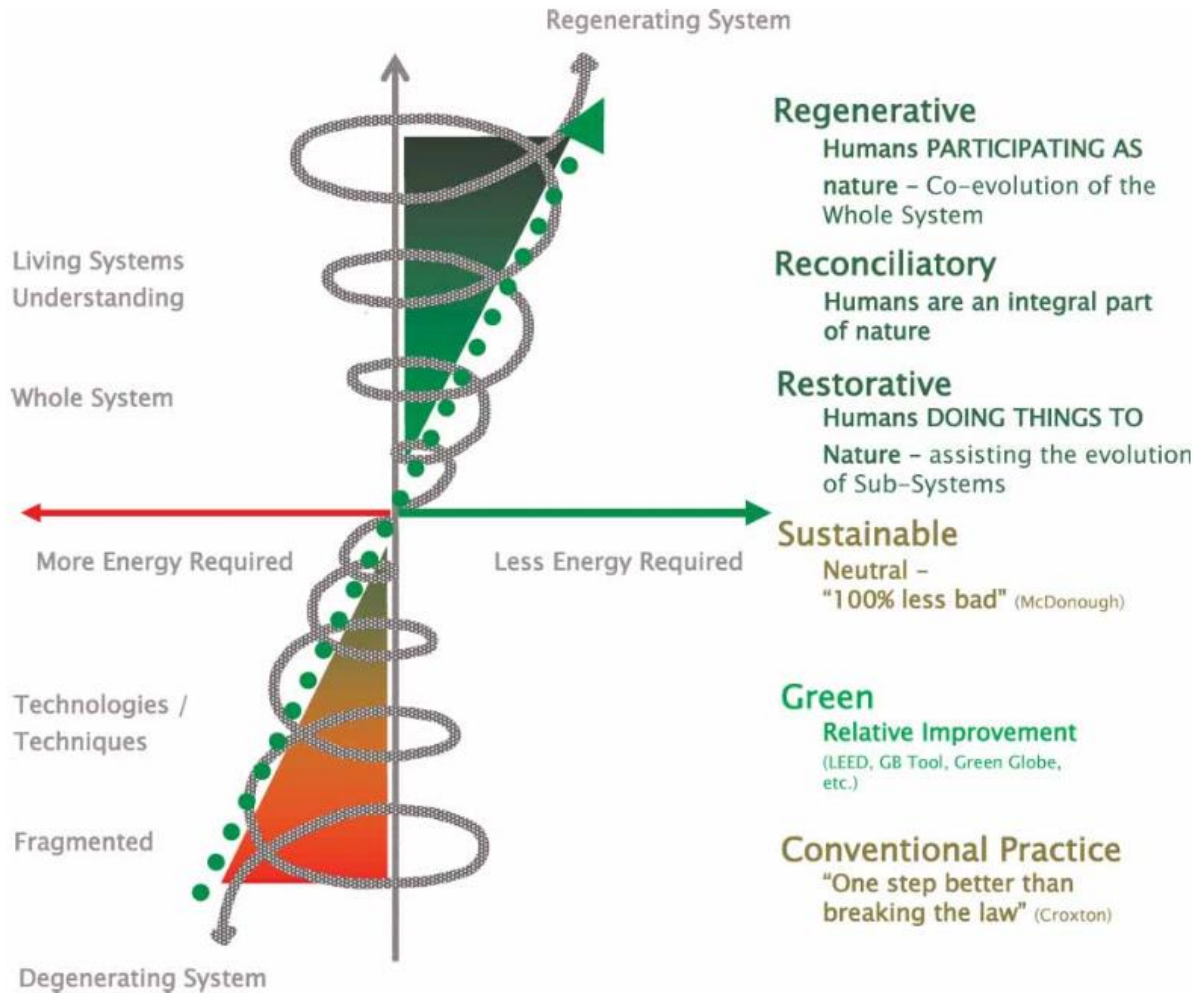


Regenerative

Appropriate participation and design as nature



Setting goals to be regenerative, rather than sustainable cont...



Procurement for a circular economy

In this lesson we will discuss

Setting goals to be regenerative, rather than sustainable

Different sustainable procurement concepts

..

Conceptual differences between those concepts

Procurement towards a circular economy

Fundamental differences in procurement in circular economy Vs linear economy



Sustainable procurement concepts

Green Procurement



Environmental Protection Department

The Government of the Hong Kong Special Administrative Region



Sustainable Procurement

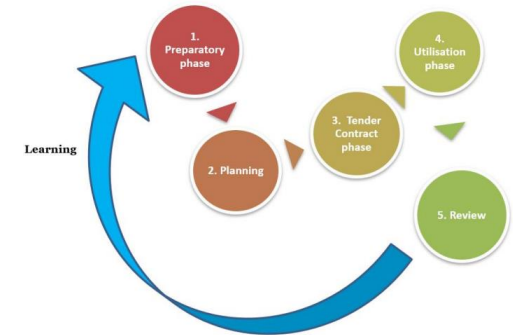
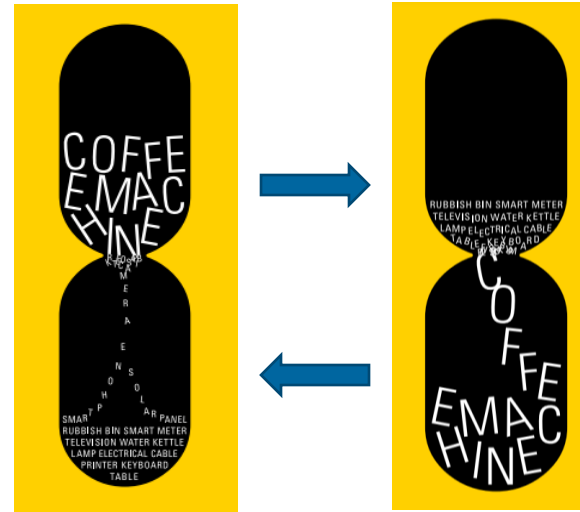
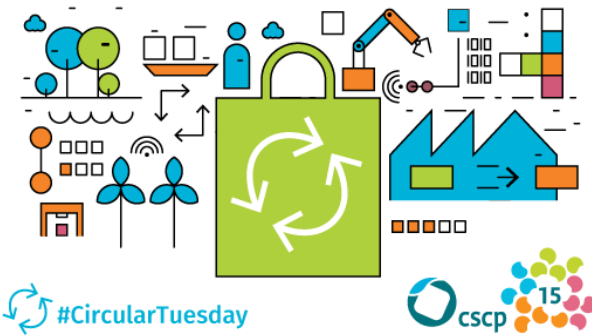


European Commission

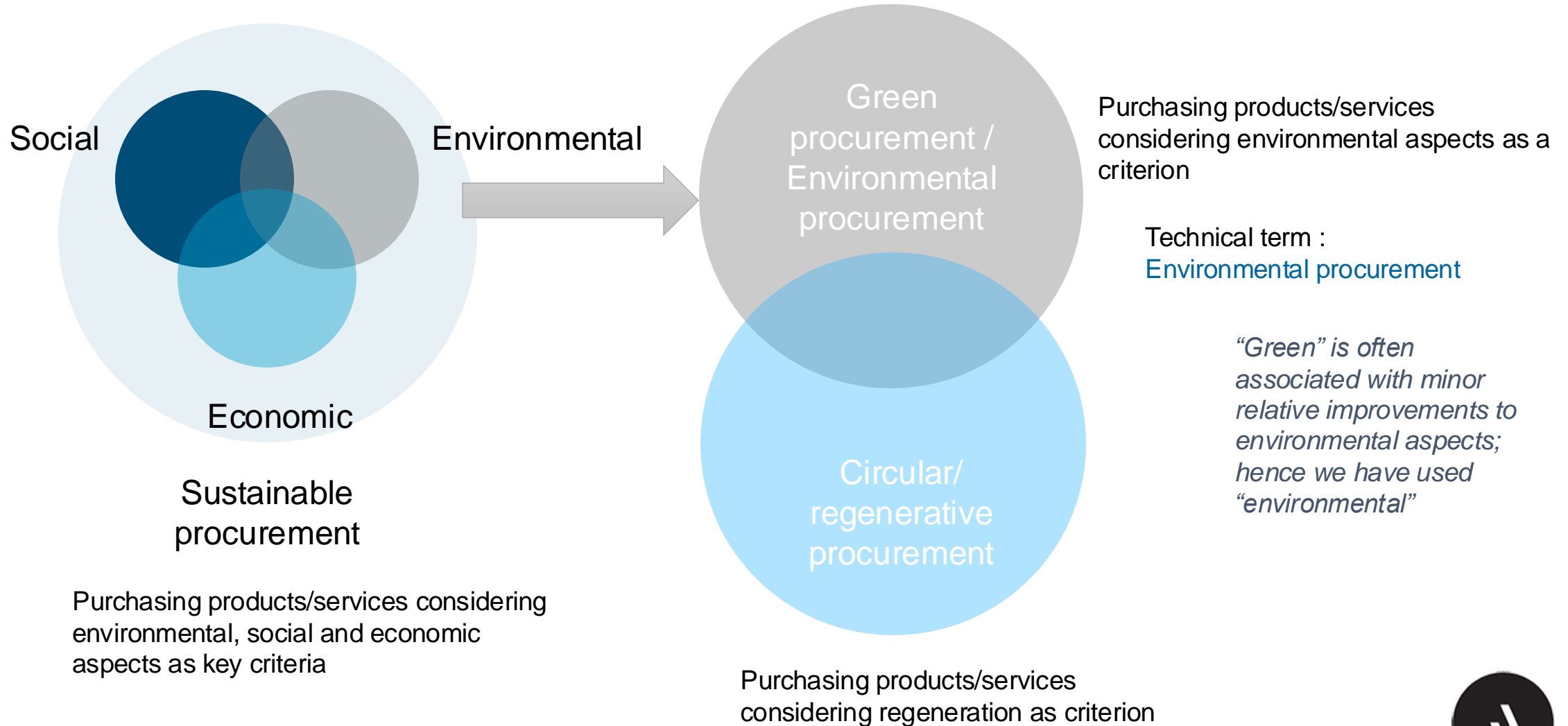
Circular Procurement



European Commission



Different sustainable procurement concepts

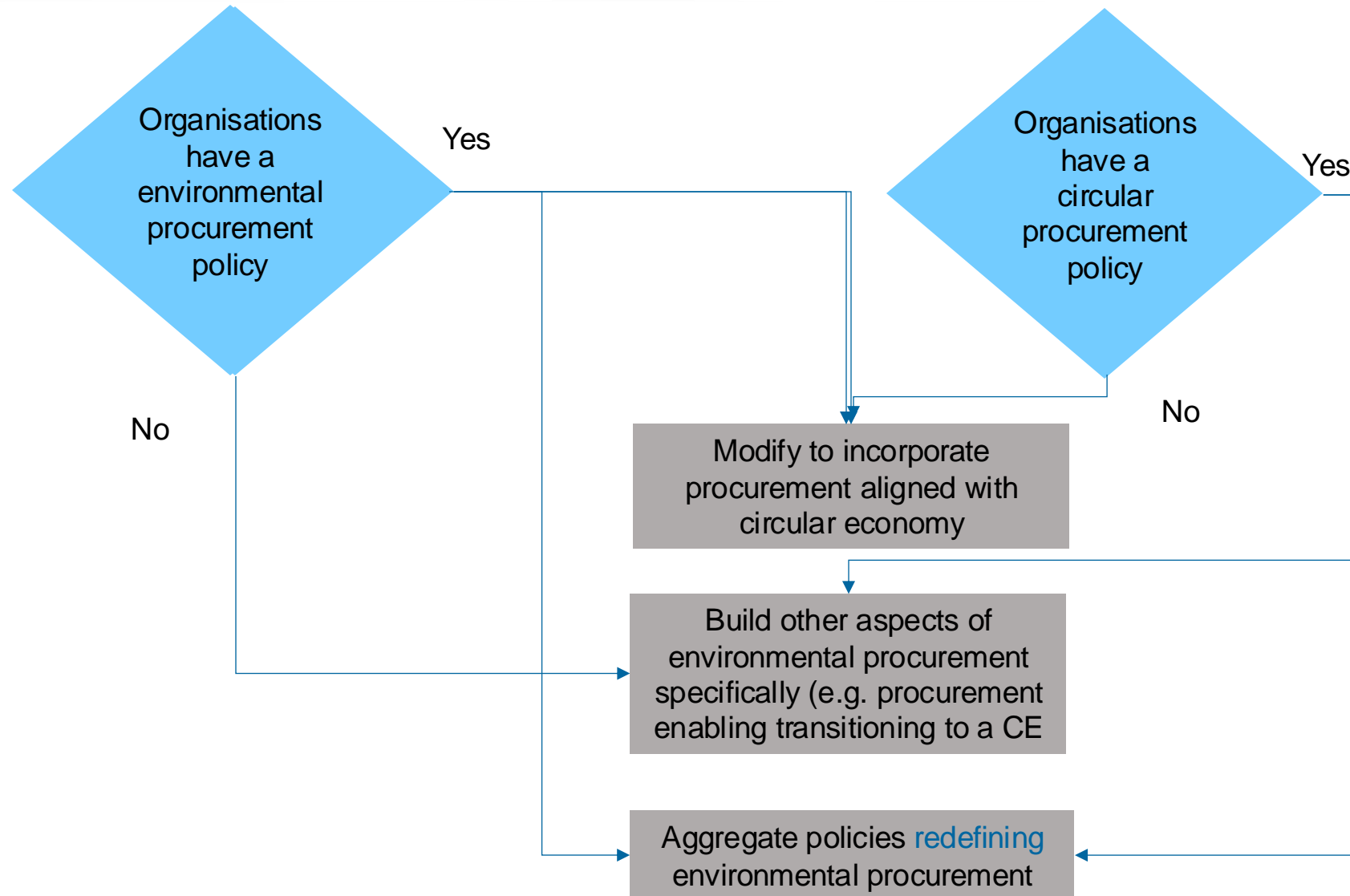


How do they differ? - General use of terminology

	Sustainable Procurement	Environmental Procurement - Traditional terminology	Circular Procurement
Goal	Meet current needs without compromising the ability of future generations to meet their own needs.	Minimize the negative impact of consumption on the environment.	Create a regenerative system, in which resources value is conserved through longer use and design for regeneration.
Entails	Considering options that produce better social, environmental and economic outcomes.	Consideration of factors such as the energy efficiency of products, the use of renewable materials, reduction of waste and pollution throughout the product life cycle.	Selecting options that encourage and are designed for regeneration of products, components and materials.
Criteria	Having focus on environment, society and economy as a criteria	Having environmental impact as a criteria.	Having regeneration and increased utility as criteria




What are the options?



How do they differ? - General use of terminology

	Sustainable Procurement	Environmental Procurement - Traditional terminology	Circular Procurement	Environmental procurement - New terminology
Goal	Meet current needs without compromising the ability of future generations to meet their own needs.	Minimize the negative impact of consumption on the environment.	Create a regenerative system, in which resources value is conserved through longer use and design for regeneration.	Create positive environmental impact through economic activities
Entails	Considering options that produce better social, environmental and economic outcomes.	Consideration of factors such as the energy efficiency of products, the use of renewable materials, reduction of waste and pollution throughout the product life cycle.	Selecting options that encourage and are designed for regeneration of products, components and materials.	Considering options that encourage regeneration, while reducing negative impact and maximising positive impact
Criteria	Having focus on environment, society and economy as a criteria	Having environmental impact as a criteria.	Having regeneration and increased utility as criteria	Having regeneration, resource performance, dematerialisation and environmental impact as a criteria





Let's take a moment to discuss...

Does your organisation have a sustainable / environmental/green/ circular procurement policy?

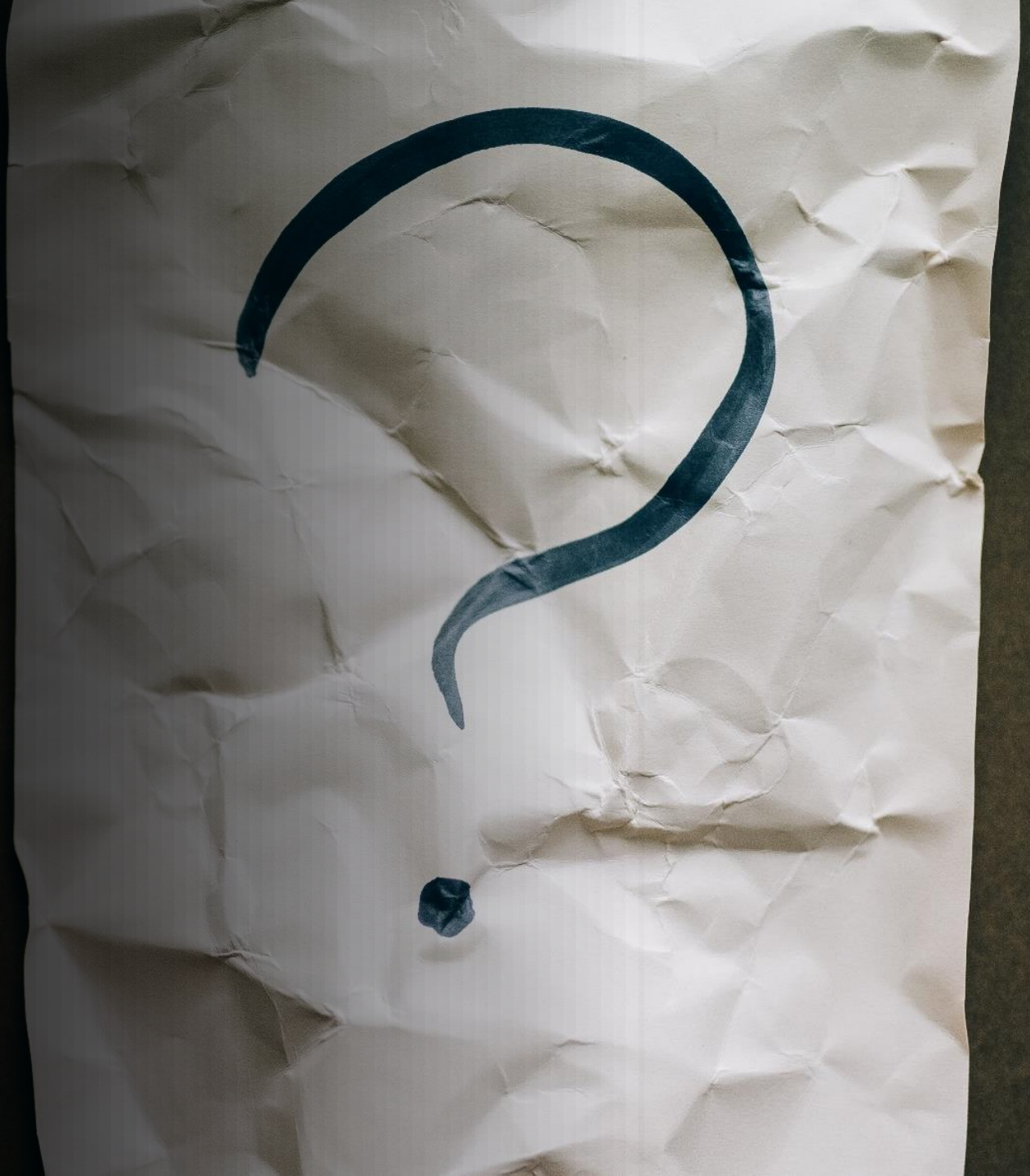
If you do, what does it cover currently?

If you are to have a circular procurement policy, what do you expect it to have ?

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Procurement for a circular economy

In this lesson we will discuss

Setting goals to be regenerative, rather than sustainable

Different sustainable procurement concepts

.. Conceptual differences between those concepts

Procurement towards a circular economy

Fundamental differences in procurement in circular economy Vs linear economy



Circular (regenerative) procurement

Our key focus area today

B2B/ Organisational procurement

Consumer procurement

Industries and businesses

Consumers

Linear economy

Extraction

Production

Distribution

Consumption

Recovery and/or disposal

Consumption by industries and businesses for production and distribution

Consumption of consumers to fulfil human needs

Circular economy

Products and services that are made aligned with principles of circular economy

Designed to regenerate

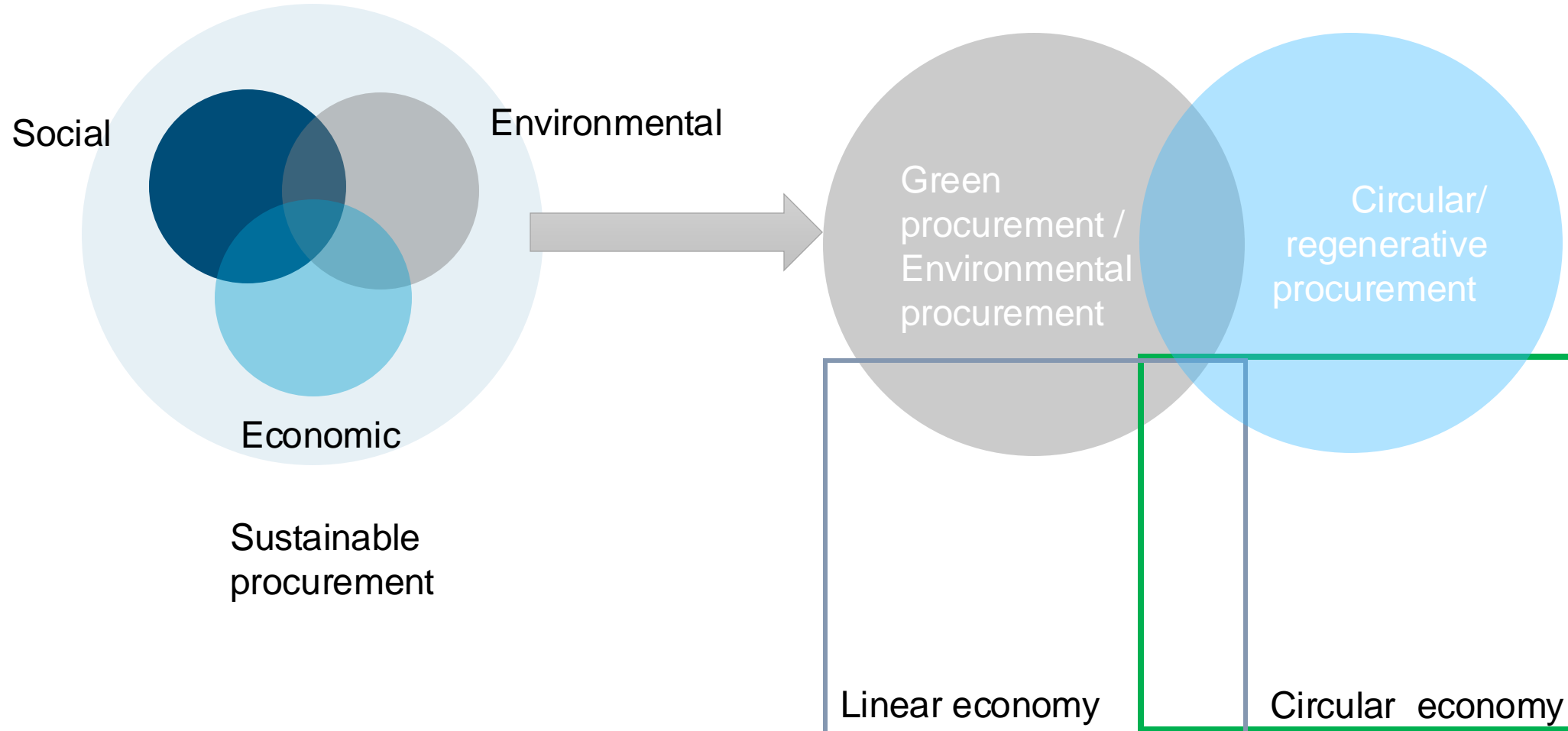
Designed to regenerate

Designed to regenerate

Designed to regenerate



Procurement in circular economy vs linear economy



How does the economic system differ in circular economy

Business perspective



Photo by [Madison Kaminski](#) on [Unsplash](#)

Consumer perspective



Photo by [Mathias Reding](#) on [Unsplash](#)

Policy perspective



Photo by [Marcus Reubenstein](#) on [Unsplash](#)



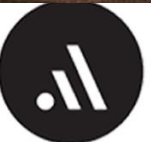
Linear vs circular thinking-Business perspective

Linear economy	Circular economy
Product as value creation source	Functionality/performance as a source of value creation
Economies of scale in global production chains	Location of production and use tend to be more linked
Steer consumer needs towards product offer	User needs/wants drive the role of a product
Tendency to disregard end-of-life phase	Internal incentive to incorporate end-of-life phase in business model



Linear Vs circular thinking-Consumer perspective

Linear economy	Circular economy
Consumerism (product purchase) follows marketing	Customer satisfaction (fulfilling the need) is the important driver
Competitiveness through global value chains used for cost reduction	Local, customised production attitude
Ownership is the norm	Accessibility is the norm
Low/no residual value of products	Incentives for regeneration at end-of-use



Linear Vs circular thinking-Policy perspective

Linear economy	Circular economy
Dependence on existing production system	More focus on facilitating skilled workforce for services
Global playing field - competitiveness through globalisation	Diversified communities in a system creating co-dependency, local focus
Balance consumer protection with economic stakes	Safe and healthy services with regulation is a key focus
Waste management is cost for the government	End-of-life management is a way of regenerating resources for the economy



Circular procurement discourages...

- Protection of intellectual property rights in a way that hinders information flow regarding the resources in a product,
- Non allowance of economic incentives for product life extension
- New “fad” products that keep pace with fashion and technological advances
- Considering end-of-life products (broken or obsolete) as a burden, to be disposed of as cheaply as possible
- Technological innovation that make old products obsolete and urge consumers to buy new products

Difficult competitors

- Products with short lifespans that are cheaper to make and support a market for new products that replace old ones
- The cheapest version of a product on international market, with a focus on mass production and global sourcing





Let's take a moment to discuss

What are the challenges in procuring products aligned with circular economy with globalization and global value chains?

How do you overcome some of those challenges to source locally?

Module 1

Lesson 4

Promoting a new way of thinking with circular procurement



Promoting a new way of thinking with circular procurement

In this lesson we will discuss ..

Encouraging life cycle thinking - Case study

Consideration on systems thinking/ whole of system thinking in design

Facilitating co-design - Case study

Facilitating collaboration



Principles that a circular procurement approach encourage

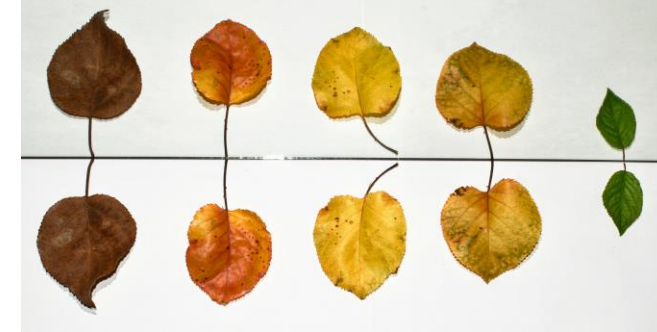
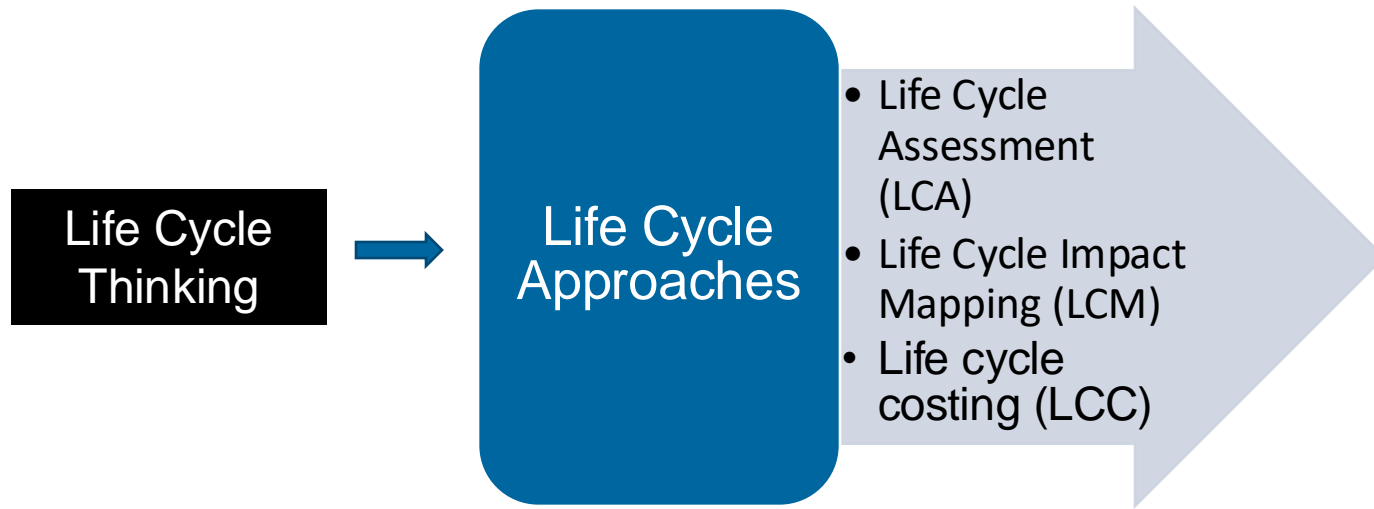


Photo by [Tolga Ulkan](#) on [Unsplash](#)

In LCA,

Cradle to grave

considers from raw material extraction to using it

Cradle to gate

From raw extraction to being converted to/use as another material



Case Study

**Prioritizing circular actions
through Life-Cycle Impact
Mapping**



Prioritizing circular actions through Life-Cycle Mapping

A case study in Scotland

Background

In 2016, Scottish Procurement established new framework agreements for the supply of ICT devices.

The need

The department conducted market engagement and completed a Life-Cycle Impact Mapping exercise

Circularity aspect

Key areas to focus on in the final tender, included technical specifications on energy efficiency, product life cycle, management of delivery fleet, innovative packaging, and end-of-life management

Impact

As a result of prioritizing circular actions through Life-Cycle Impact Mapping, Scottish Procurement was able to establish new framework agreements that were more environmentally and socially sustainable..

Outcome

Prioritizing circular actions through Life-Cycle Impact Mapping in procurement can play a critical role in advancing circular economy practices.



<https://knowledge-hub.circle-lab.com/>



<https://www.oecd-ilibrary.org/>

Life Cycle Impact Mapping

Life Cycle thinking:

Employing a Life Cycle Approach helps clarify relevant **risks and opportunities** and actions to manage sustainability at relevant stages of the procurement process.

<p>Impacts of obtaining raw materials/resource needed for service</p> <p><i>Focus on specification, suppliers' own procurement</i></p>	<p>Impacts of manufacturing & logistics/set up of service</p> <p><i>Focus on supplier selection stage</i></p>
<p>Impacts during use of product/delivery of service</p> <p><i>Focus on specification and end user awareness</i></p>	<p>Impacts at end-of-life / disposal</p> <p><i>Focus on supplier responsibility and end user awareness</i></p>



Life Cycle Impact Mapping

Example

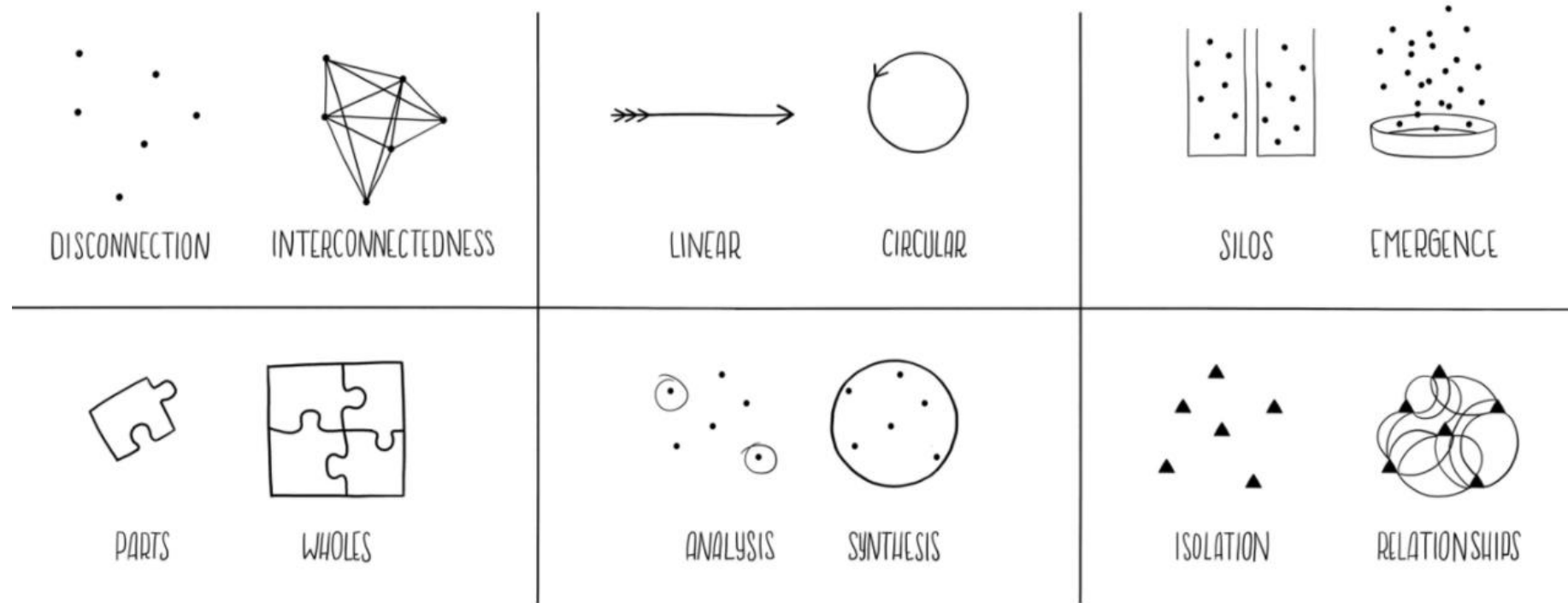
Biomass energy	
<p>Impacts of obtaining raw materials</p> <p>Sourcing overseas if demand outstrips supply– impact on carbon emissions Wood should be sourced not just from legal but also sustainable forests/woodlands – forest management critical Potential impact on biodiversity of forests / woodlands if focus is only on economic viability Support development of an immature supply chain through aggregated demand Opportunities for community woodland schemes to be integral to supply chain</p>	<p>Impacts of manufacturing and logistics</p> <p>Carbon emissions from transportation, particularly if local supply chains are inadequate Production of chips / pellet – is renewable energy used Sourcing overseas if demand outstrips supply – impact on carbon emissions Competition for raw materials e.g. chipboard manufacturers Waste products from pellet manufacturing process</p>
<p>Impacts during use of product/service</p> <p>Emissions particularly in 'Air Quality Management Areas' Shortage of qualified engineers / installers; through aggregated demand an opportunity to influence recruitment and training Disposal of waste products e.g. ash</p>	<p>Impacts at end of life / disposal</p> <p>Disposal of ash – use as a fertiliser Disposal of boilers</p>



Principles that a circular procurement approach encourage

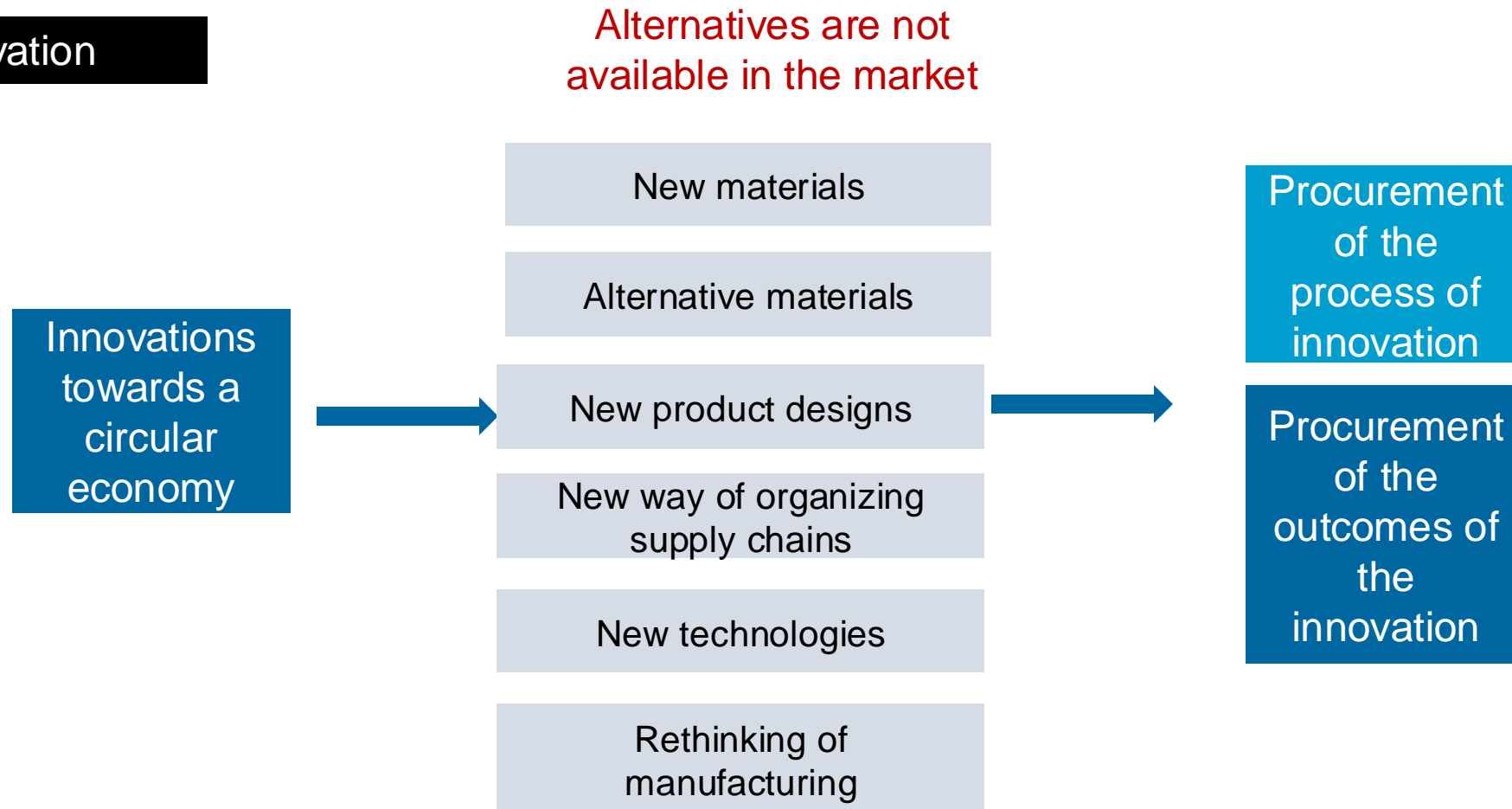
Systems Thinking

TOOLS OF A SYSTEM THINKER



Principles that a circular procurement approach encourage

Innovation



Principles that a circular procurement approach encourage

Co-design



Collaboration

Co - design



Collaboration



- Change across a large boundary
- System change than change in one part
- Multiple stakeholder involvement
- Multiple expertise involvement
- Need for system-wide data and information exchange
- Need for innovation

Need for co-design and collaboration



New innovative alternatives facilitating change ready for procurement





Workshop Activity

Module 1, Lesson 4

Let's talk about **co-design**

Let's watch a video on an
Australian good practice on
design for recycling

Prepdesign



Workshop Activity

Module 1, Lesson 4

How does Prepdesign facilitate co-design?

What stakeholders does it bring together via the platform?



Workshop Activity

Module 1, Lesson 4

Co-design

What other industries relevant to your areas can this be applied to?

Module 1

Lesson 5

Rethinking the existing procurement systems for new alternatives



Changes to the traditional procurement system

In this lesson we will discuss

..

Models of procurement in the traditional procurement systems

Changes to consider in a traditional procurement system

Environmental products/services from a linear/recycling economy

Typical procurement evaluations

Evaluation techniques that can be applied

Developing a solid evaluation criteria with fundamentals



Traditional procurement models

Open Tendering

Restricted Tendering

Request for Proposals (RFP)

Request for Quotations (RFQ)

Single-Source Procurement

Framework Agreements

Public-Private Partnerships (PPP)



PPP Modalities

PPP Modalities

Service Contract

Operation and maintenance contract (O&M)

Build Transfer/ or Annuity Type

Build Operate Transfer (BOT)

Build Own Operate Transfer (BOOT)

Rehabilitate Own Operate Transfer (ROOT)

Build /Rehabilitate own operate (BOO/ROO)

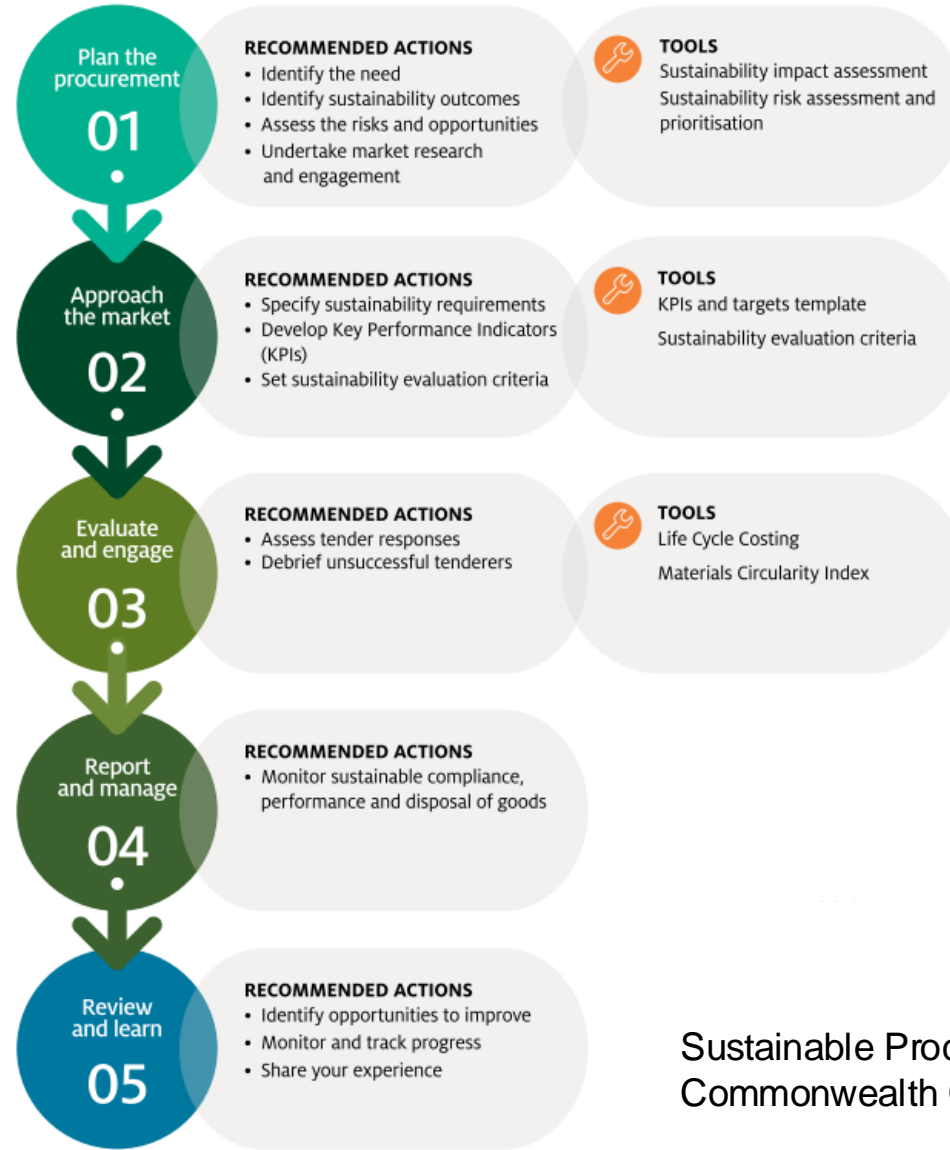
Privatization



BOOT
BUILD
OWN
OPERATE
TRANSFER



Where should we introduce changes



Environmental products/services from a linear/recycling economy



<https://www.kirbybuilt.com/>



<https://www.philippine-resources.com/>



<https://www.conserve-energy-future.com/>



<https://www.conserve-energy-future.com/>



<https://www.conserve-energy-future.com/>



<https://www.conserve-energy-future.com/>



Photo by [Nuno Marques](#) on [Unsplash](#)



<https://www.architectureanddesign.com.au/>



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.. Environmental products/services from a linear/recycling economy

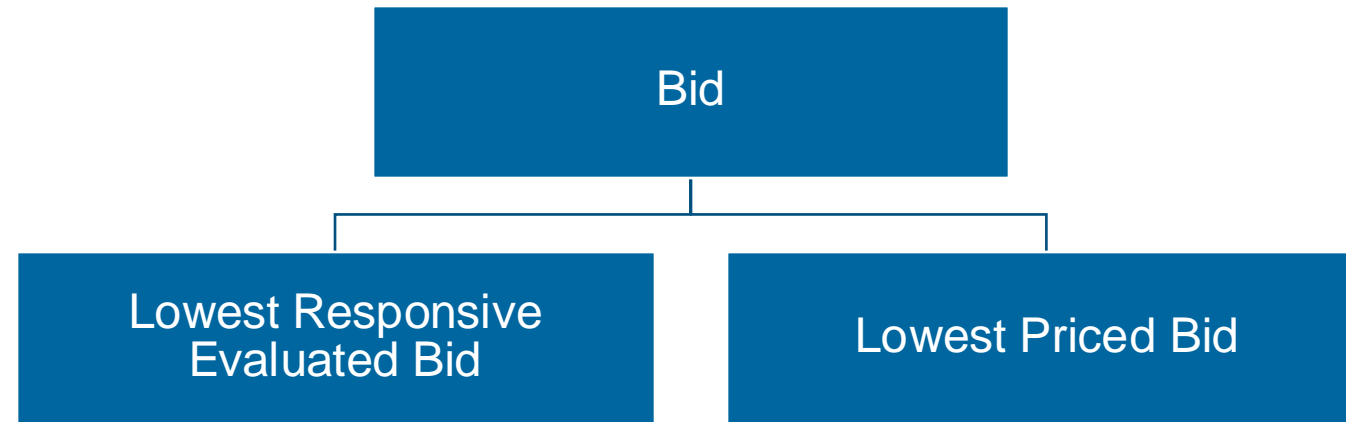
Typical procurement evaluations

Evaluation techniques that can be applied

Developing a solid evaluation criteria with fundamentals



Traditional bid evaluation



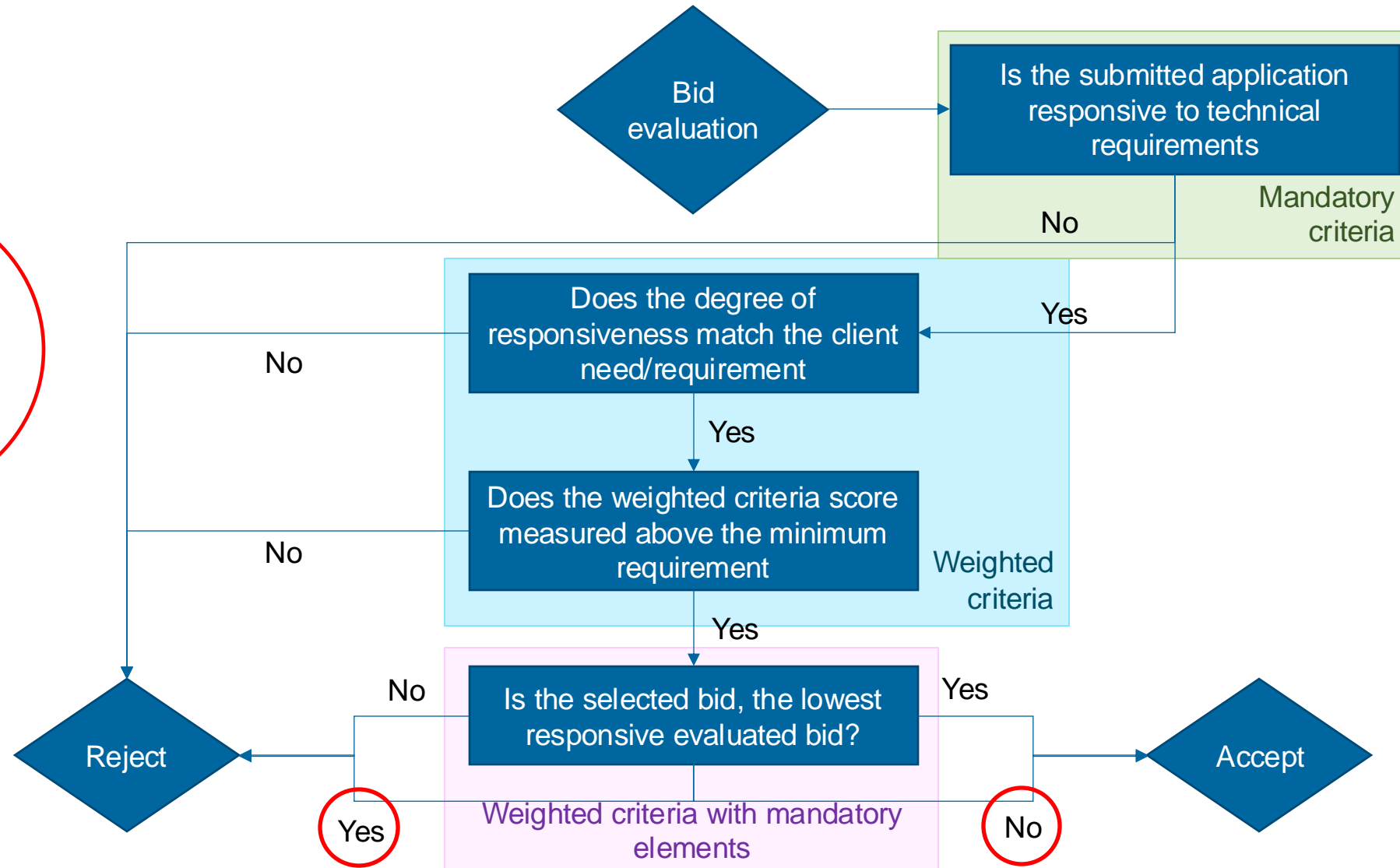
The bid that has been

- examined and determined to be responsive to formal qualification requirements
- found to be compliant with pre-defined evaluation criteria
- found to have the lowest price after price evaluation and comparison

The bid with the lowest price read-out at the public bid opening event without being evaluated



Traditional bid evaluation framework



Traditional procurement evaluation criteria

- Generally, evaluation criteria can be categorized into three categories including

Mandatory criteria



Rated as pass/fail, responsive/non-responsive or comply/non-comply

Photo by [mondayblog](#)

Weighted criteria



Measured in terms of degree of responsiveness

Photo by [Candra Huff](#) on [Investopedia](#)

Weighted criteria with mandatory elements



Have mandatory minimum requirements defined and are measured above that minimum requirement

Photo by [Education leaves](#)




Procuring other products with other environmental attributes

Should this be always promoted aligned with principles of circular economy?

Why are they not always an obvious choice to promote them ?





Let's take a moment to discuss...

Do you think traditional evaluation in procurement can be used to promote a circular economy?

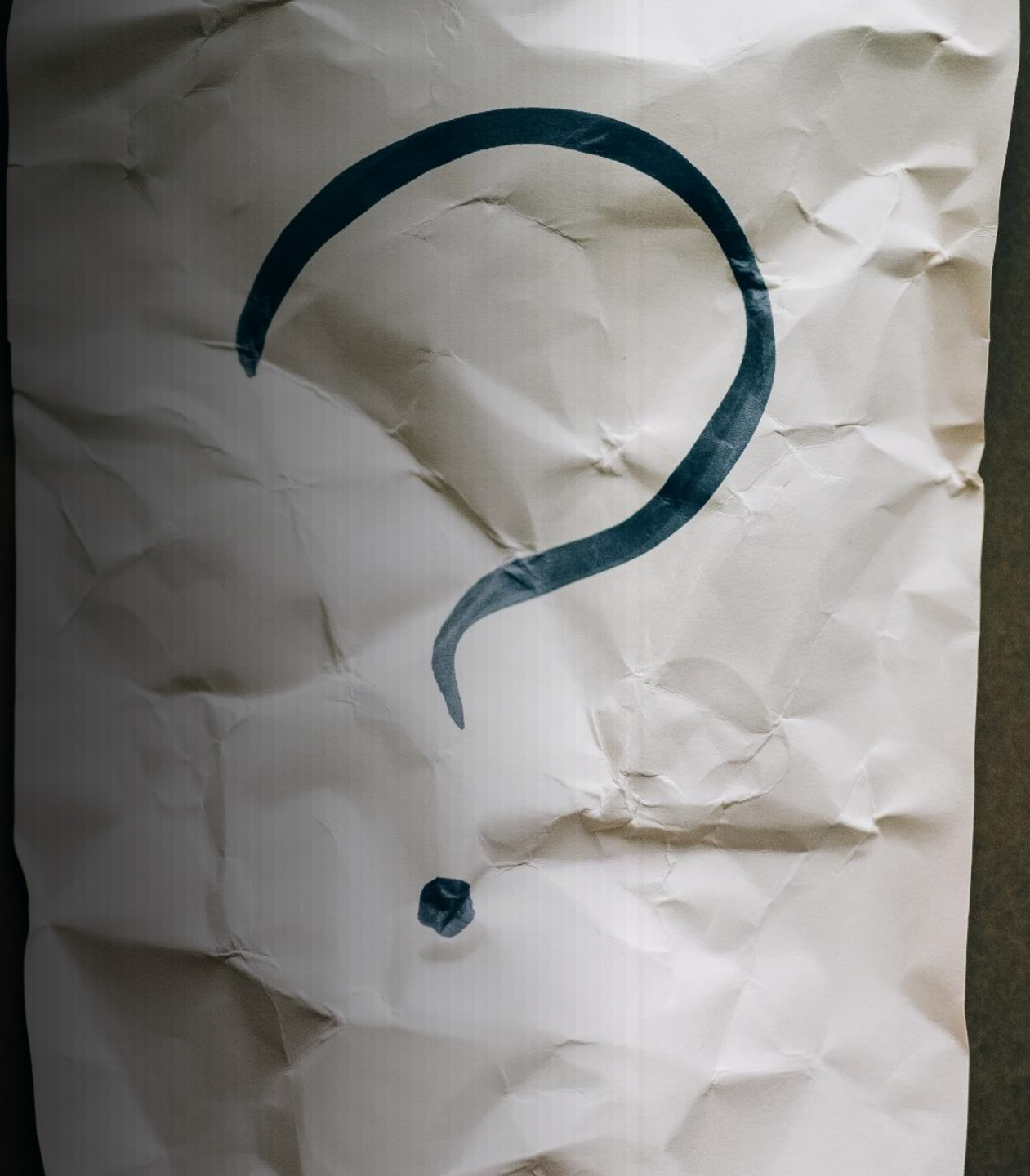
What can be used?

What new things need to be incorporated?

Join at

slido.com

#2320 411



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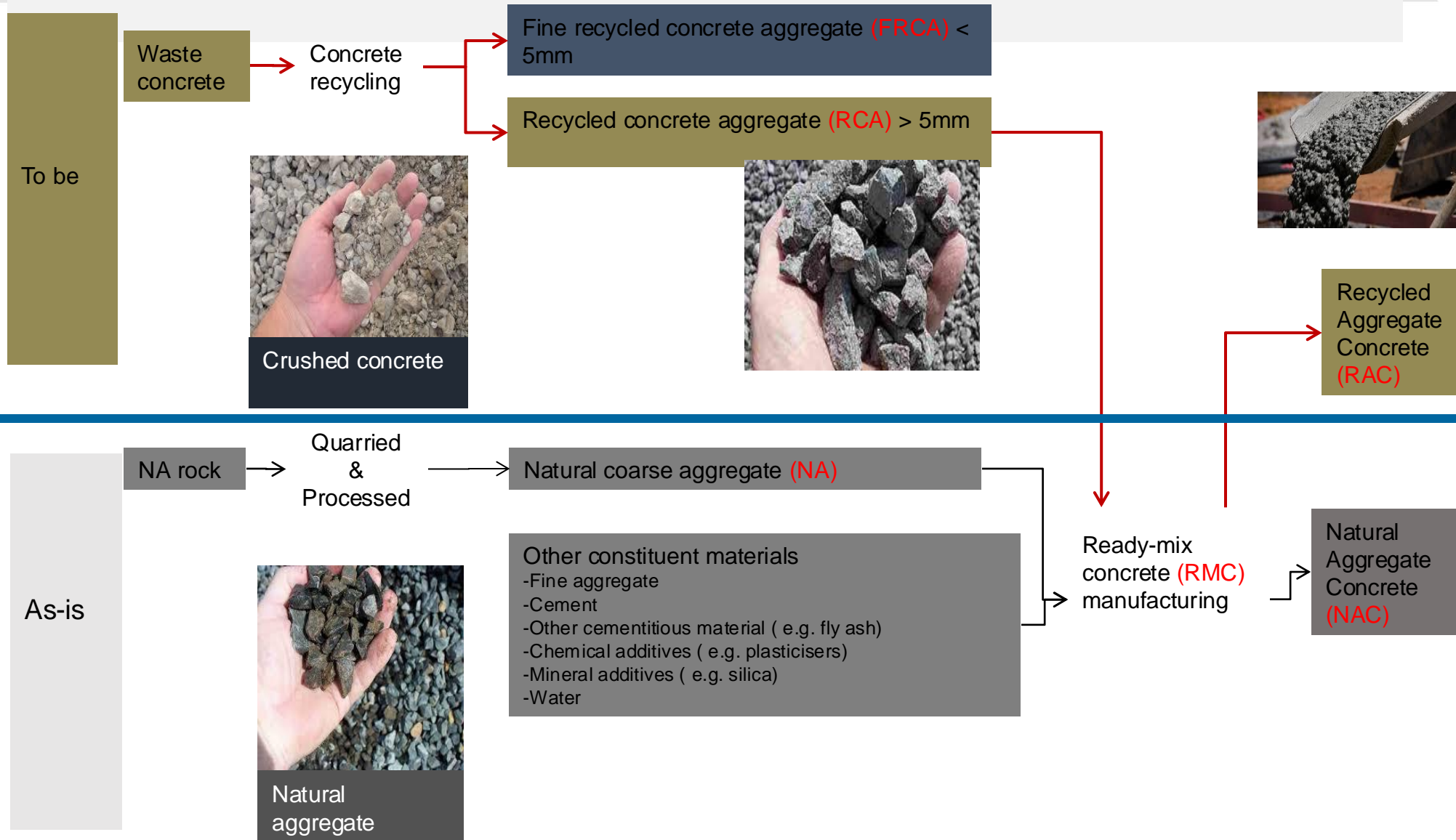
Typical procurement evaluations

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Evaluating alternatives



Complex decisions, dynamic systems



Do we have a strong case about use of RCA in concrete ?

Low industry uptake for production

Environmentally sound ?

More expensive ?

Cost and energy for compensating techniques

Material performance ?

Production energy of RCA and NA are not significantly different

RCA considered to have weaker qualities than NA

RAC is not considered a material with superior performance compared to NAC



Problem

Complex problem

Requiring multiple criteria for evaluation

Criteria : Based on principles of sustainability and financial viability of the end product

Framework integrating all dimensions

Methodology: Cost-benefit analysis (CBA)

Representative result to compare

\$ - Monetary value – NPV (Net Present Value)



Needing integrated decisions



Extending cost-benefit analysis

NPV

- An economic indicator not a pure financial indicator



- Absolute indicator
- Considers time value of money

Economic analysis

- Net benefit = Benefits – costs
- Principle stakeholder: Society / Public
- Captures externalities (e.g. pollution due to CO₂ emissions)

Externalities: consequences that affect third parties

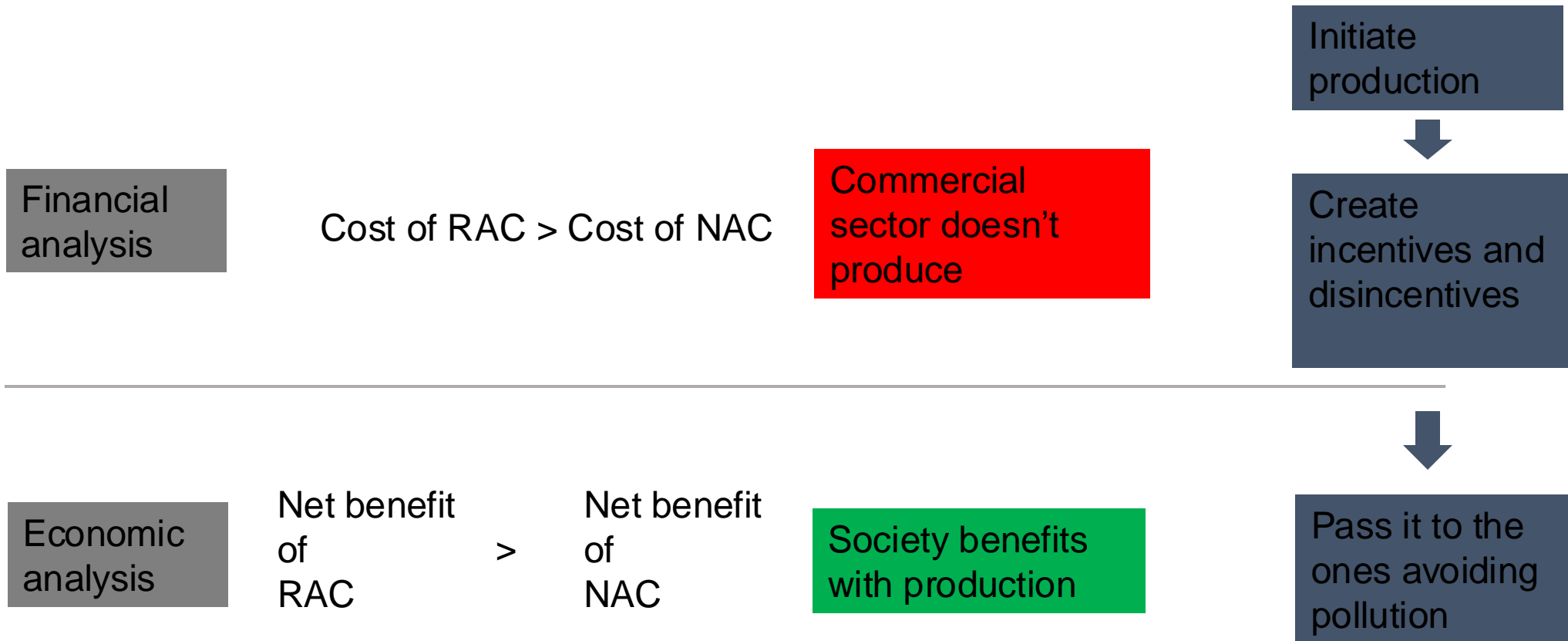
Financial analysis

- Profit = Revenue – costs
- Stakeholder : A single party (e.g. construction contractor)
- Captures only internalised items (e.g. cost increase resulting in price increase)

NPV = financial cost/ cost saving + total external cost/benefit to society
The cost to the contractor if the external cost is recognised and internalised using a pricing mechanism



Public sector intervention



Value for Money

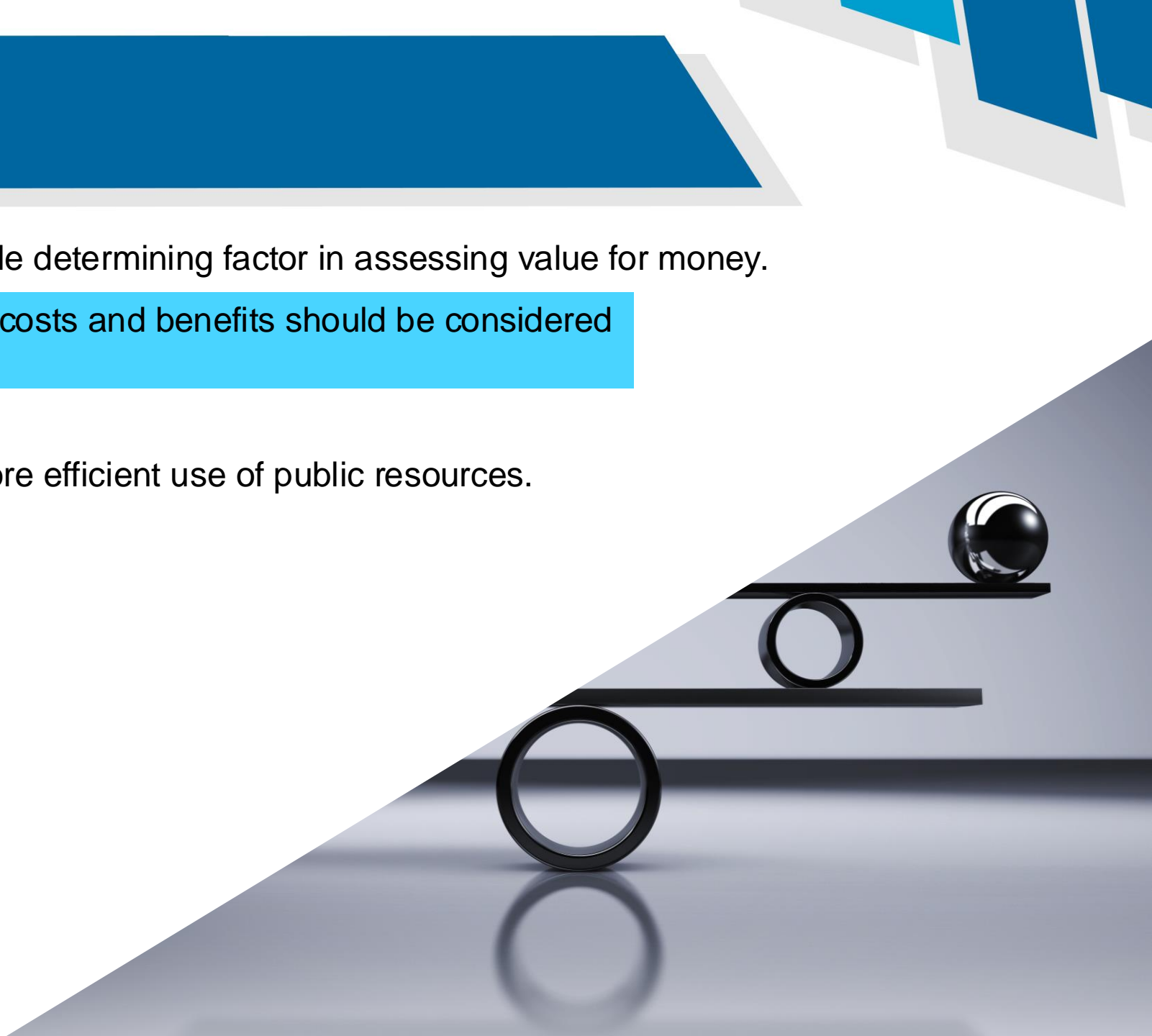
Price of a good or service is not the sole determining factor in assessing value for money.

All relevant financial and non-financial costs and benefits should be considered over the entire life of the procurement

Value for money helps to achieve a more efficient use of public resources.

The focus is on:

- *Considering value for money*
- *Achieving value for money*



When it comes to assessing value for money, relevant costs and benefits should not be limited to,

- a) quality of the goods and services
- b) fitness for purpose of the proposal
- c) potential supplier's relevant experience and performance history
- d) flexibility of the proposal
- e) environmental sustainability of the proposed goods and services
- f) **whole of life costs**



the initial purchase price of the goods and services



maintenance and operating costs



transition out costs



licensing costs



the cost of additional features procured after the initial procurement



consumable costs, including the environmental sustainability of consumables



decommissioning, remediation and disposal costs



Whole-of-life costing

Acquisition costs

Example acquisition costs:

- Purchase cost
- Delivery charge
- Insurance and taxes
- Installation and commissioning
- Training and support
- Internal costs associated with changing from the incumbent supplier (which should be identified prior to tenders being received)

Maintenance costs

Example maintenance costs:

- Specialist labour
- Specialist tooling
- Spare and replacement parts
- Reduced output with age
- Frequency of maintenance and recommended downtime
- Servicing and inspection regimes
- Costs associated with equipment downtime

Operating costs

Example operating costs:

- Labour
- Materials
- Consumables
- Energy supply and consumption
- Contract and supplier management
- Transaction costs
- Environmental costs
- Cost of change (E.g. a decision to use alternative materials)

End-of-life costs

Example end-of-life costs:

- Safe disposal
- Resale
- Ongoing liabilities
- Decommissioning
- Removal for sale of scrap
- Reinstatement of land or buildings for alternative use



Life cycle cost accounting



- For an economic assessment, addressing all the costs and benefits in each stage of the product's life-cycle are accountable. This investigation of economic impact is called Life-Cycle Costing (LCC).
- The different cost factors (such as capital, labor, material, energy, and disposal) are investigated on the basis of current and/or future costs.



Different methods for evaluation

Method 1 (Price):

Focuses on the lowest costs (price) and is the easiest and most commonly used method, but is not always the most cost effective.

Method 2 (Total cost of ownership/Direct costs):

this method only calculates the costs borne directly by the contracting authority over the period of ownership.

Method 3 (Life Cycle Costs - LCC):

LCC including externalities. This requires allocating a monetary value to environmental externalities such as carbon emissions, resource use or local air pollutants.

Aligning to CPR, In many government procurements referring to Method 2 or Method 3

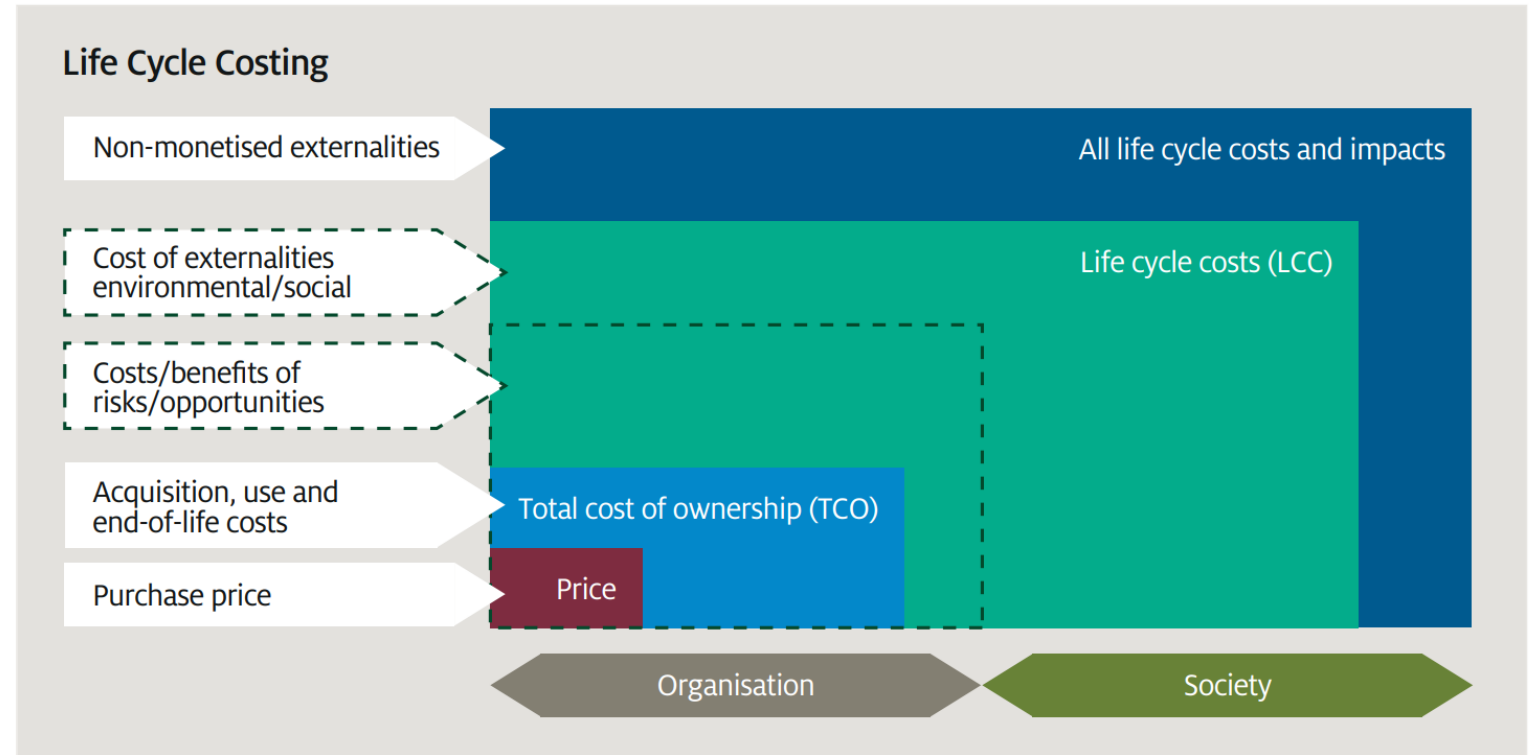
Method 3 should be used for procurements with significant opportunity to procure recycled content or achieve environmental sustainability outcomes.



Different methods for evaluation

Image credits: Department of Agriculture, Water and the Environment
Sustainable Procurement Guide—A practical guide for Commonwealth entities

The International Standard ISO 20400:2017 Sustainable Procurement – Guidance identifies Life Cycle Costing (LCC) as the preferred method (tool) for calculating whole-of-life costs in sustainable public procurement.



The external costs and realised or unrealised risks and opportunities are often more significant than the original purchase cost.



Product costing – Multi-criteria decision analysis

Decisions involving
multiple criteria

Decisions covering a
single dimension

Multi-criteria
assessment

Cost-benefit
analysis

Choice modelling

Product
performance

Environmental

Carbon accounting
Life cycle assessment

Material Flow Cost
Accounting

Financial

-New dimensions
-Integrated assessments



Integrated assessments involving multiple criteria

Cost-benefit analysis



$$\text{Result} = x + y + z$$

Multi-criteria decision analysis (e.g. Analytical Hierarchy Process)



Result is based on what is relatively important and by what magnitude = x OR y OR z

	x	y	z
x	1	a	b
y	c	1	d
z	e	f	1



Multi-criteria decision analysis

- Glass bottles

1

Environmental factors

- Global warming potential
- Water consumption
- Regenerative potential

2

Financial/cost factors

- Material cost
- Cost of manufacturing
- Cost of recovery

3

Product performance

- CO₂ permeability
- Rancidification
- Chemical stability
- Aesthetics
- Durability
- Mechanical performance



Choice of packaging material for carbonated beverages using multi-criteria decision analysis

Wijesinghe C., Shakkiath S, Shakkiath C, Wijayasundara M. – Publication in progress

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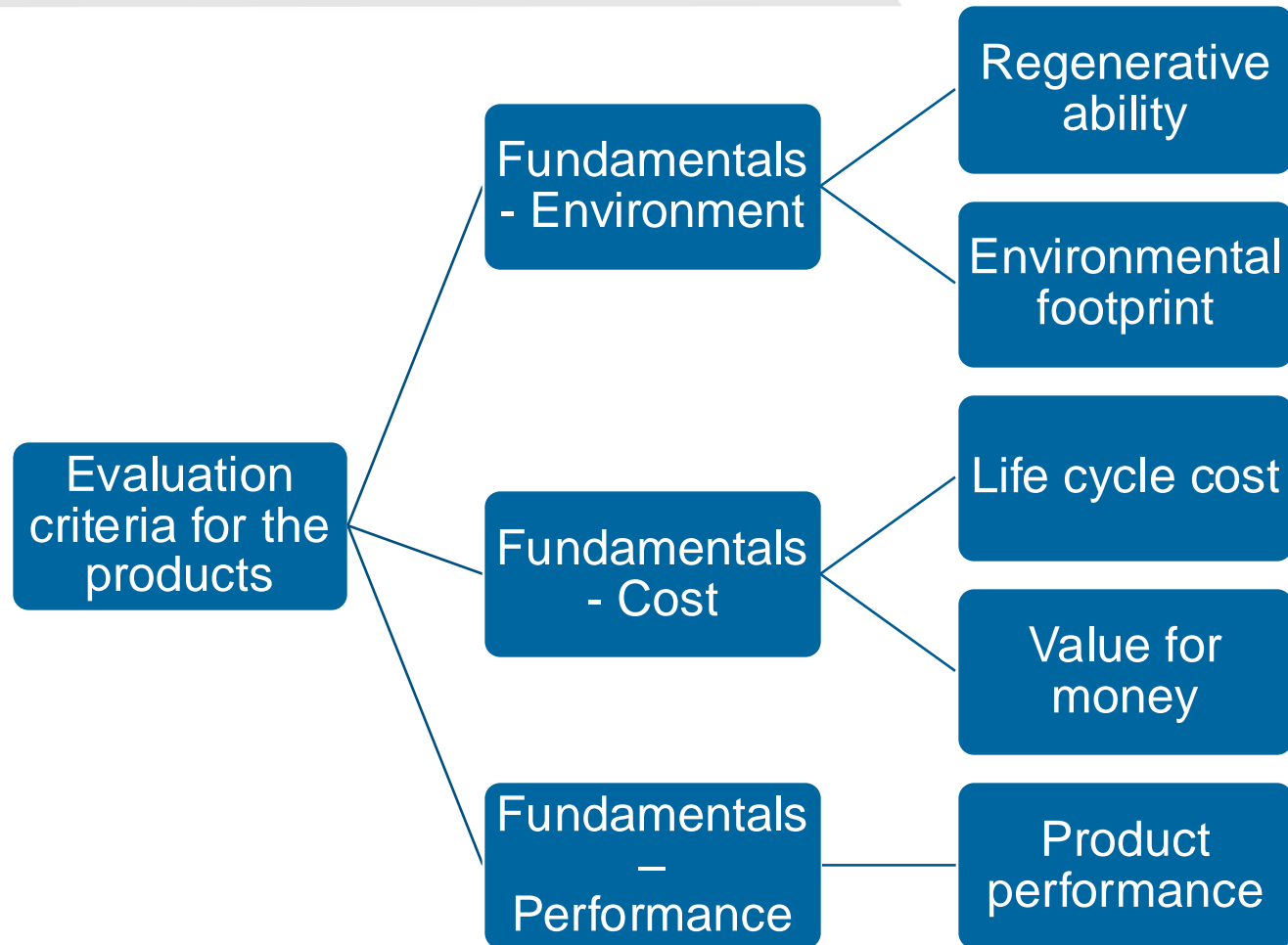
Typical procurement evaluations

Evaluation techniques that can be applied

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What should we consider in evaluating products ?



When selecting a product with recycled content...

Product

Recyclability of the product

System established to ensure recycling of the product

Individual constituent components are replaceable, repairable etc.

Environment footprint

Environment impact at extraction of material

Environment impact at manufacturing of product

Environment impact during use/operation phase

Environment impact of end-of-life management



Further trade-offs we need to analyse...

Addition of materials makes the material cycle complex or makes composites which are difficult to recycle

Tracking and tracing is difficult thus causing loss of resource value

The product is used to hide waste instead of addressing the waste problem at it's root cause

Conformance to standards regarding products with recycled content

Quality and other standard verification by certification authorities

Known or potential risks to health and safety of living beings

Recycled product is harmful for use or harmful to collect, handle and preprocess



Examples

Construction blocks from plastic waste by Arena recycling industry - Tanzania



Aggregate made from mixed plastic waste called RESIN8 - USA



Plastic used as filler, composite, chemically integrated?





Workshop Activity

Module 1, Lesson 5

You have been given the task to qualify a waste material in a construction application ?



Recycled concrete , with residue mortar on the surface, >5mm



Concrete road application



Workshop Activity

Module 1, Lesson 5

What questions would you ask?

What expertise would you seek?

To qualify

- Regenerative ability

- Environmental impact

- Performance

- Cost

Module I

Lesson 6

Designing a system of circular procurement



Designing a new system of procurement

In this lesson we will discuss..

Organisational policy for circular procurement

Strategic thinking

Market engagement

Circular procurement requirements

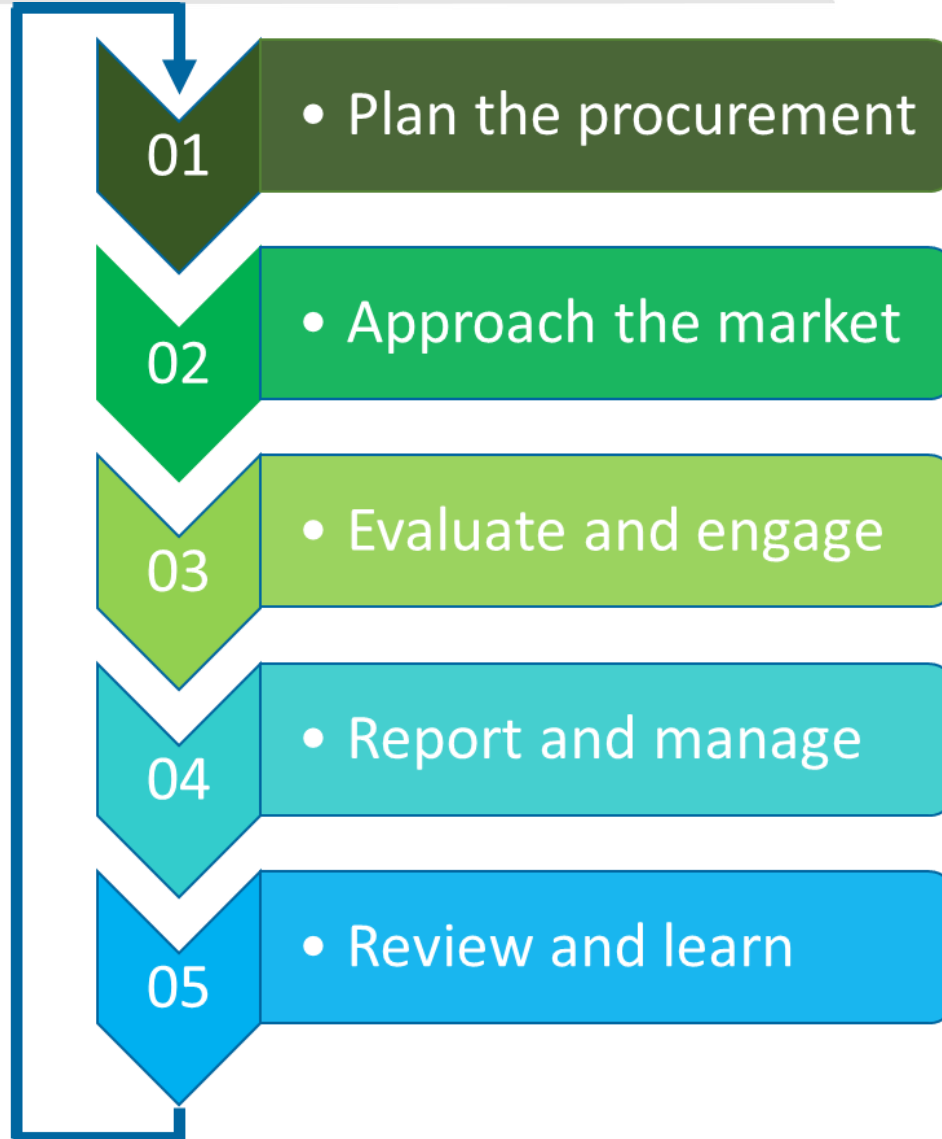
Evaluation

In-use phase and contract management



Changing to a new system

Typical procurement system



How to incorporate circular economy into procurement and enable circular procurement in practice?



Circular procurement in practice



Organisational policy for circular procurement



Strategic thinking



Market engagement



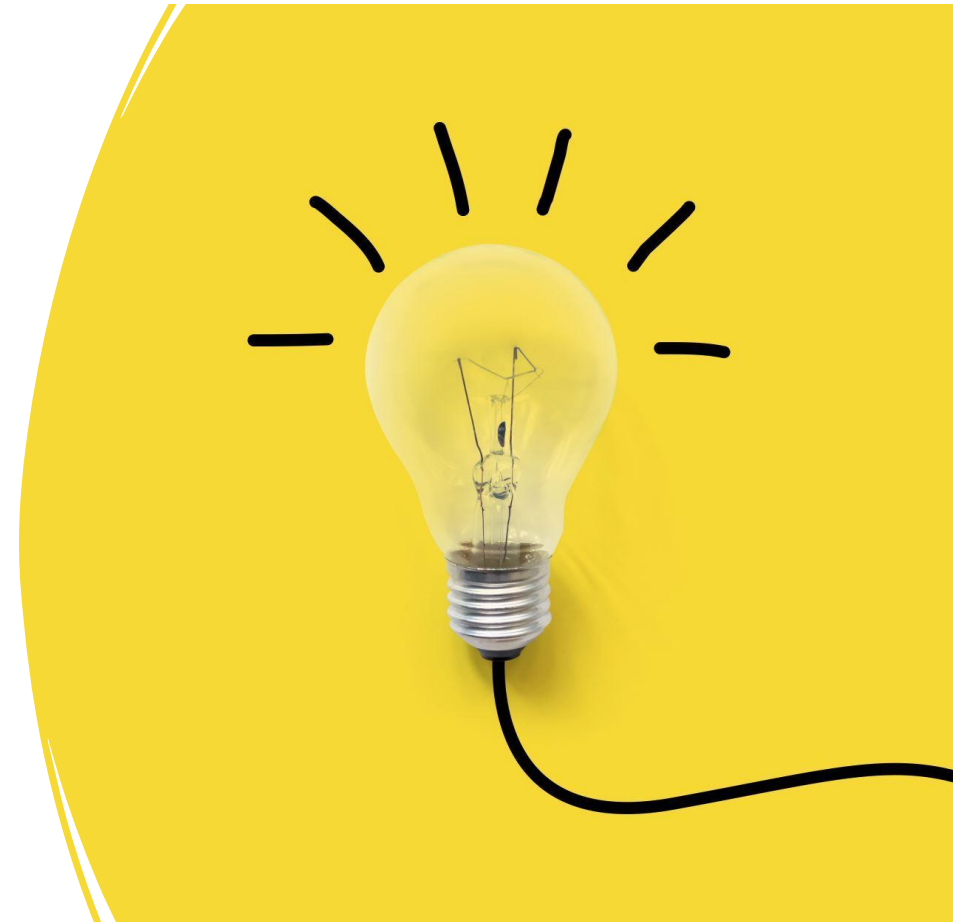
Circular procurement requirements



Evaluation



In-use phase and contract management



1. Organisational policy for circular procurement

Two options for organisations

- Creating a CE policy
- Incorporating CE principles to existing green/sustainable procurement policy

Things to be considered in defining such policies

- What circular procurement means within the context of your organisation
- What products, services or departments it applies to
- What targets, priorities and timeframes are in place, and how these are monitored
- What other activities, such as training, support, and communication strategies, are or will be put in place
- Who is responsible for implementing the policy



Photo by [Blue Planet Studio](#) on [Unsplash](#)

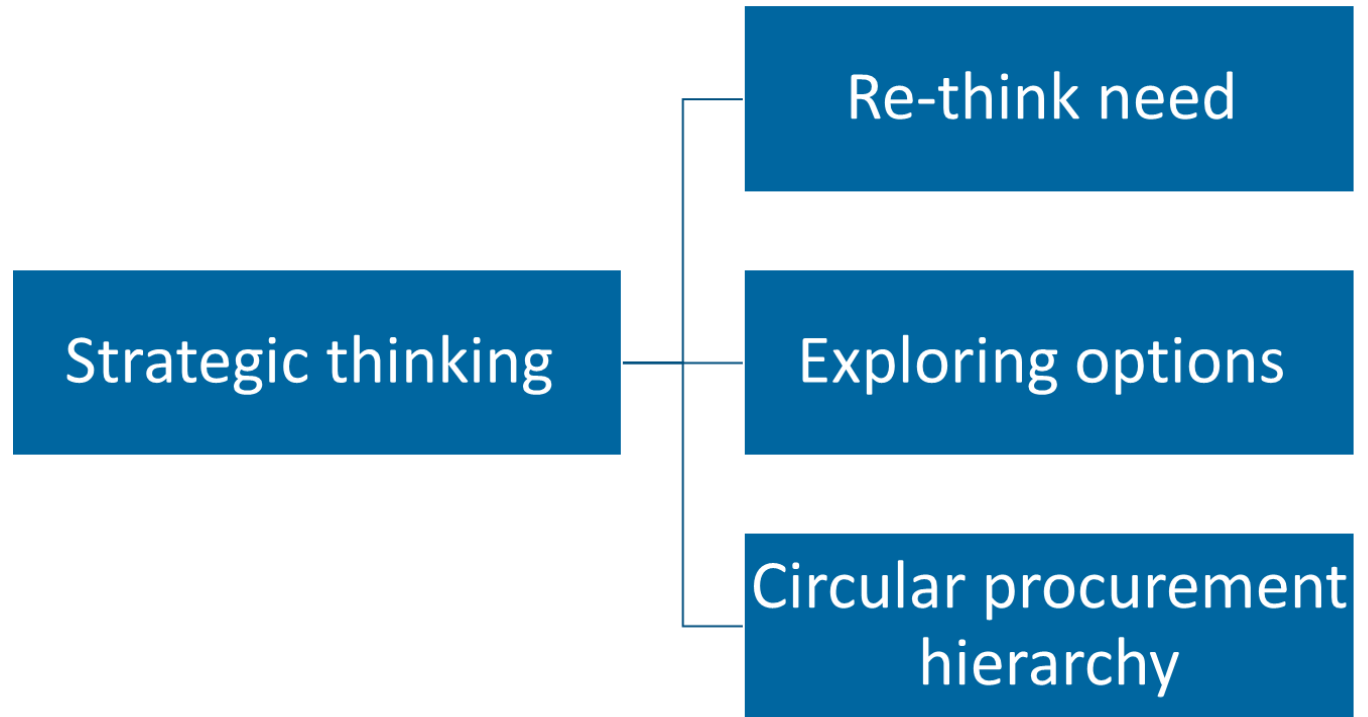


2. Strategic thinking

"How can circular economy can be integrated into existing procurement practices and systems?"

This can be analysed considering;

- Which are the critical points within a typical procurement process?
- What kind of circular procurement principles and practices make the most sense?
- What role do procurement practitioners have in adopting circular practices ?
- What influence does the public authority have on bidders?
- What is the scope of the circular procurement criteria and specifications?



2.1. Re-think need

- What is actually needed?
- Does this require a purchase of a product, or can it be provided as a service?
- Is sole ownership or access necessary, or can ownership be shared?



Photo by [EG Trade](#) on [Unsplash](#)

Elements of procurement practices that require a change of thinking

- Considering a service instead of buying a product
- Focus on product design, its use phase and end-of life (using buy-sell back, buy-resell and Product Service Systems)
- Engaging with suppliers and the wider market to identify circular solutions



Case Study

Cooling hospital wards
during summer months in
Sucha Beskidzka, Poland



Challenge

- The impact of elevated room temperatures in the hospital of Sucha Beskidzka was an increasing concern.
- sun-blocking equipment as well as air-conditioning systems are to be installed in rooms

Re-think the need

- Rather than buying a new air-conditioned systems, the building's façade was equipped with solar panels to provide shade without darkening the rooms and the solar panels also produce electricity for the hospital.
- This is a more circular solution through re-thinking the need

Lessons learnt

- Employing holistic and systems thinking
Thinking beyond the specific need on how it can benefit a larger system to be environmentally friendly



Photo by [Ambient System](#)

Strategic thinking

- Long-term thinking/futuristic thinking/high-level thinking / thinking with an inward and outward focus
- Benefits which may need upfront investment but increases value for a long time
- Purchasing of a solution (outcome solves the problem) Rather than buying or repairing the air-conditioning



Photo by [Ambient System](#)

2.2. Exploring options

"How do we identify the places where the environmental impacts can be improved via procurement considering the life-cycle impacts of a particular product /service?"



Photo by [ME3d](#) on [Unsplash](#)

This can be analysed considering;

- Is it made from an unsustainable resource?
- Does its production or its transportation lead to pollution?
- Does it use a high amount of energy or water when in use, and can this be more efficient?
- Is it possible to reuse it at the end of its life?
- Can its design be influenced to reduce its sustainability impacts?
- Is there potential to support a broader circular economy ecosystem?



2.3. Circular procurement of hierarchy

"How to prioritize potential actions to decide how the required improvement will be made?"

 Reduce

 Reuse

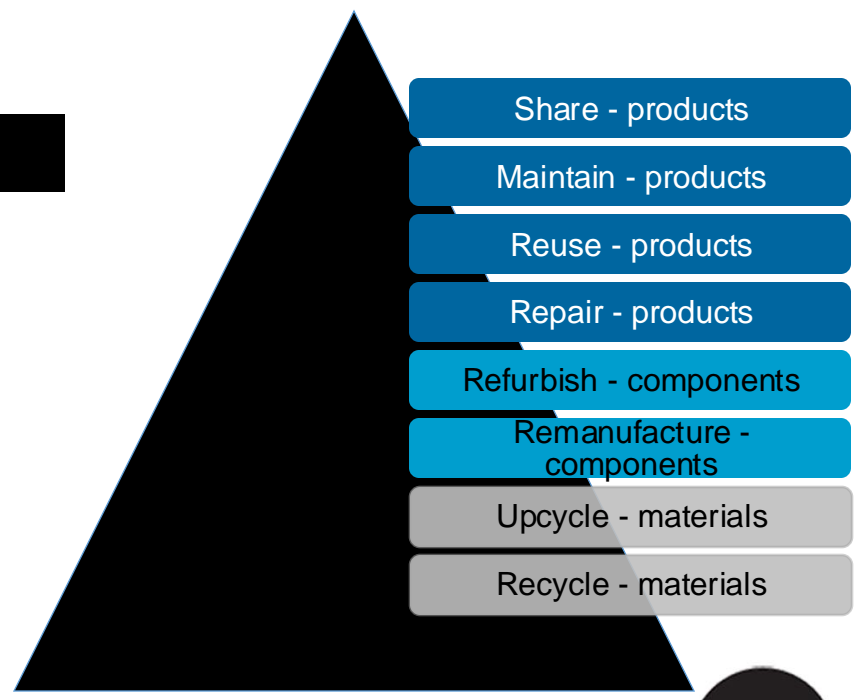
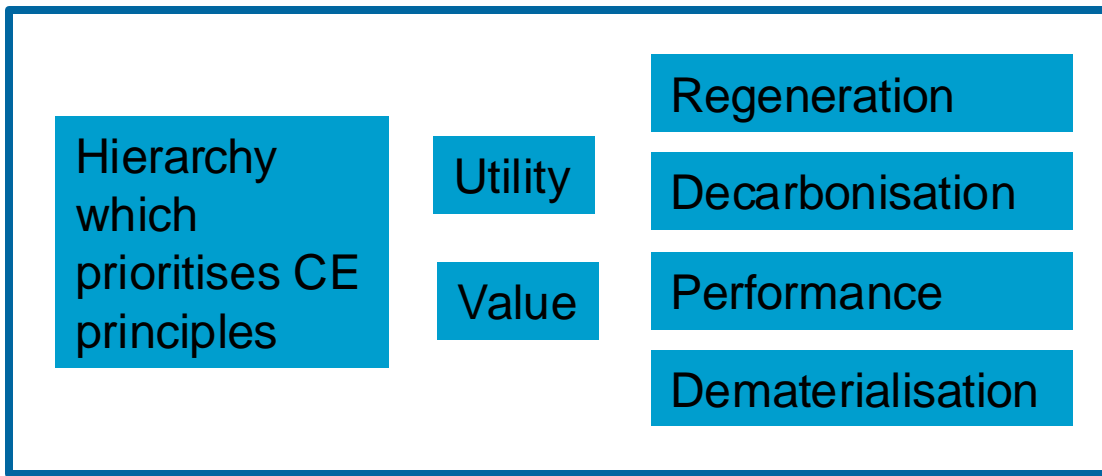
 Recycle

 Recover

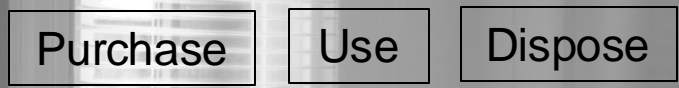
Waste management hierarchy



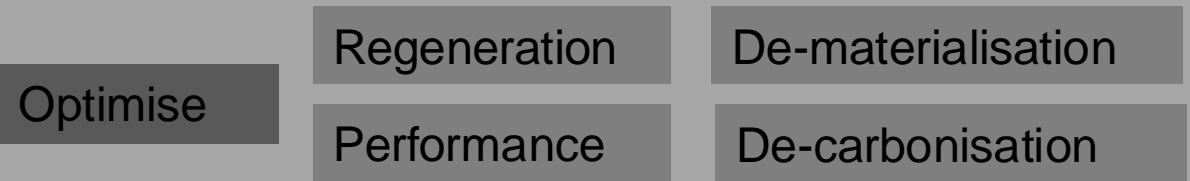
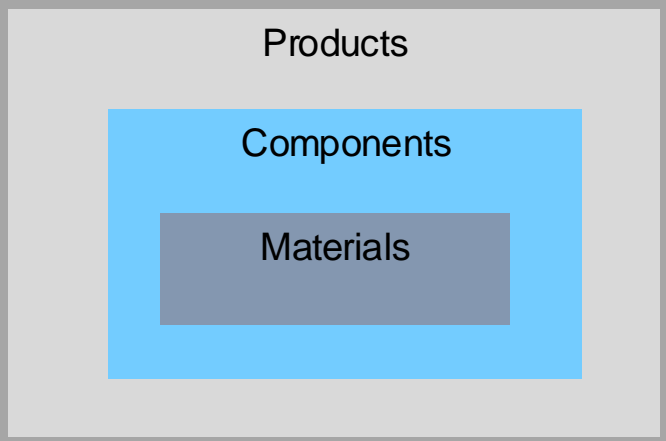
New thinking



Current Linear Economy



What is the fundamental human need the product fulfils?



3. Market engagement

- Importance of market engagement
 - To get to know the market - products, suppliers, manufacturers, service providers, etc.
 - To understanding of what is already available and what is possible.



Photo by [courtneyk](#) on [Unsplash](#)

- Market engagement facilitates for;
 - Exploration and promotion of new business concepts
 - Identifying the feasibility of new models
 - Providing opportunity to communicate needs, gather information on goods and services available
 - Testing the viability of the technical specifications and award criteria
 - Innovation partnerships



Case Study

Alliander's safety work wear – integrating safety and circularity aspects



Challenge

Integration of both safety and circularity aspects was challenging, especially to create a product that consumers are happy to wear. A massive change in the entire existing value chain was required – a circular value chain.

Market engagement

Five goals were identified to communicate with the market for the tender – safety, ease of use, circularity, supply chain management and IT.

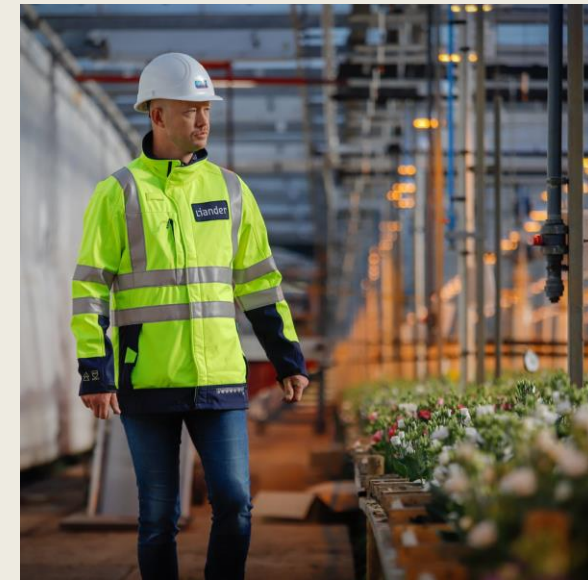
Due to the complexity, discussion held for the value chain cooperation and promoted throughout the selection phase. Tender process was ended in 2019 and contract was awarded considering circularity of the product and process - "Circle-A"

Outcomes

With quality material and better washing techniques, circularity of the product is prolonging the lifespan of the garment. Packages are tailored in a quality manner. Return option was established for the old items

Lessons learnt

Market engagement through circularity makes the products/services better in quality because of the better view of what the employees need and the possibility to order what is needed



4. Circular procurement requirements

5.1. Specification

What is more appropriate?

- Technical approach
 - Describes the contract to the market and provide measurable requirements against which tenders can be evaluated, including minimum compliance criteria

or

- Functional approach
 - Functional (output/ performance-based) criteria will describe the desired result and which outputs (for example, in terms of quality, quantity, and reliability) are expected.

5.2. Award criteria

- Promoting product eco-design
- Design for recyclability,
- Extended producer responsibility
- Waste prevention
- Packaging material
- Sharing
- Collaborative economy
- Reuse and refurbishment

e.g: Using Cradle 2 Cradle (C2C) certification for cleaning products in Ghent



Case Study

Furniture design for
municipalities in Denmark





Photo by [Triodos Investment Management](#)

Challenge

- Denmark's central procurement agency established a four-year framework for sustainable office furniture for over 60 municipalities

Market engagement

- Environmental requirements of the Nordic Swan eco-label.
- Requirements on the chemicals used in manufacturing, treatment, coating, or dyes used, and the possibility of separation and recovery of materials at the end-of-life
- Wood and wood-based materials had to come from legally harvested timber, with at least 70% of it is either recycled or verified as sustainable timber

Outcomes

- The procurement achieved savings of up to 26% compared to market prices

Lessons learnt

- Incorporating circular procurement requirements in the tender specifications can achieve savings compared to the market prices



Photo by [Etsy](#)

5. Evaluation

- Going beyond the lowest price
- Consider most economically advantageous tender (MEAT)
- Compare factors beyond price such as quality, sustainability and circularity
- Taking account of life-cycle costs makes good economic sense and can encourage circularity.



Photo by [anyaberkut](#) on [Unsplash](#)



6. In-use phase and contract management

- Establish what the projected service life of the product
- What the supplies can offer in terms of maintenance and repair.
- Suppliers can be encouraged to take responsibility for keeping a product or material in the supply chain after use

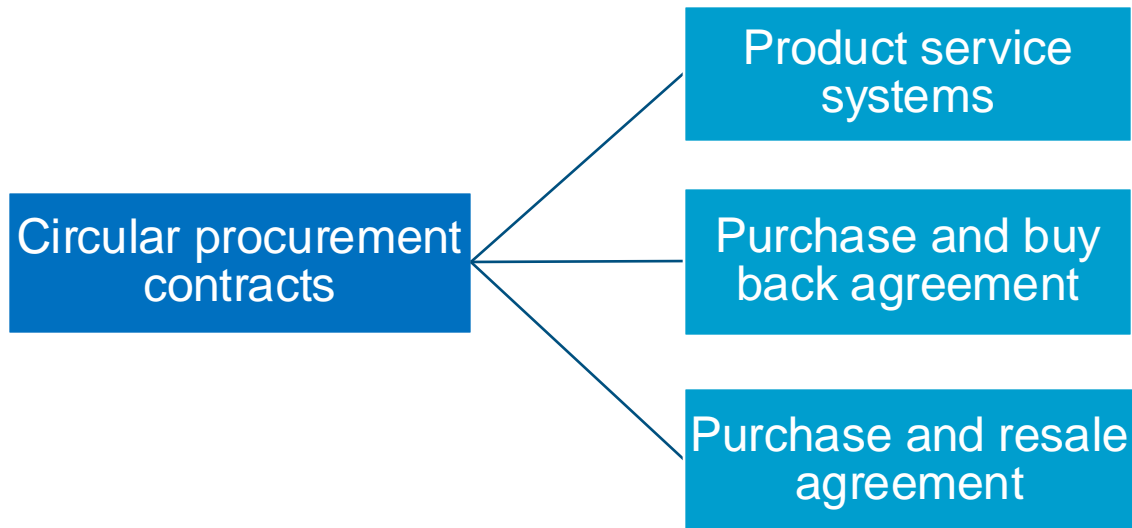


Photo by [Getty Images](#) on [Unsplash](#)



Module I

Lesson 7

Implementing circular
procurement -
Product-service
systems



Implementing circular procurement - Product-service systems

In this lesson we will discuss..

Product service systems

Product

Having a hierarchy to inform our thinking

Essential aspects in qualifying suppliers

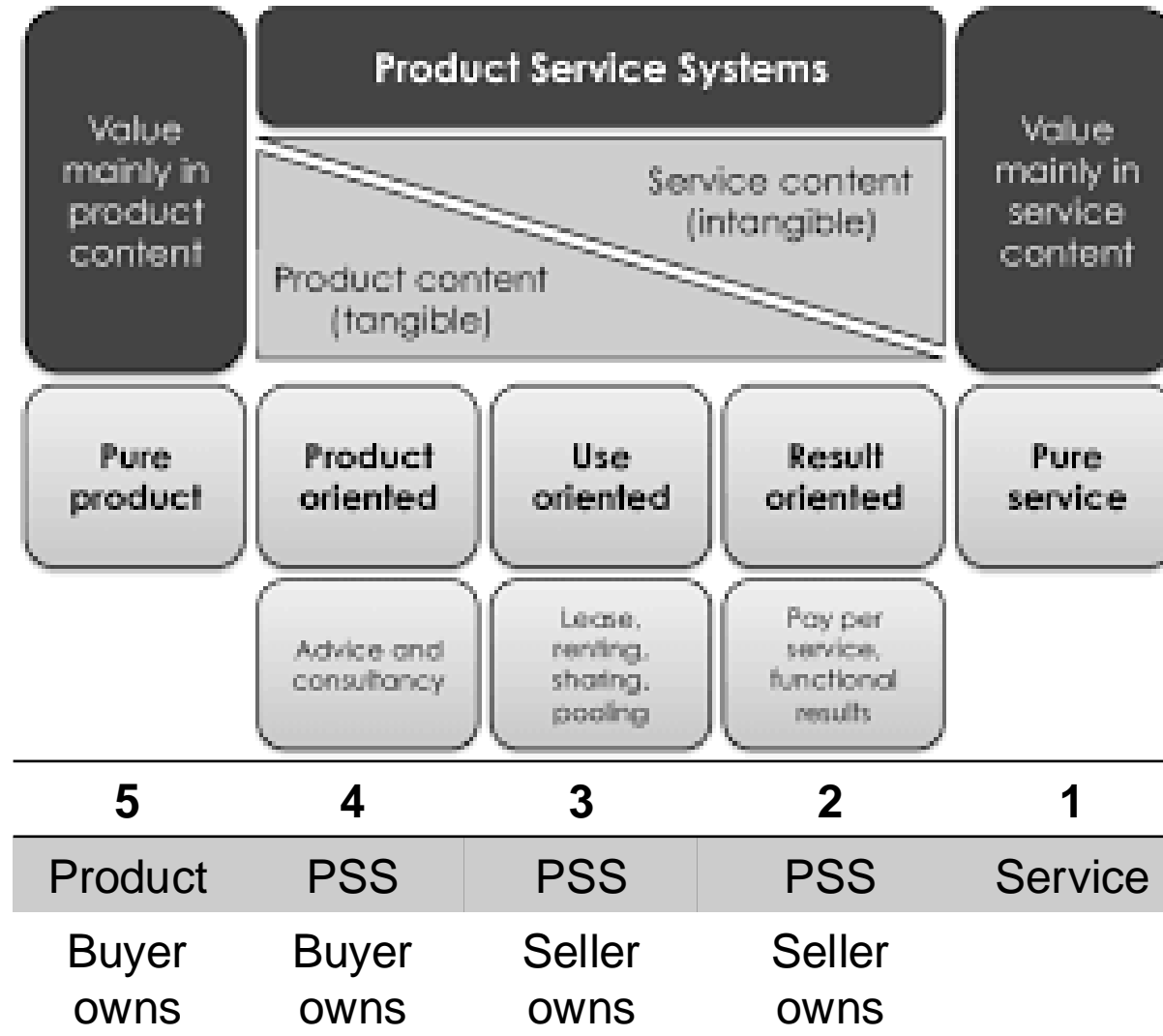
Products and value chain



Product service systems

Five business models, in which

- ownership
- access to product
- resource management of the product differs



Tukker, A. (2004). [Eight types of product-service system: Eight ways to sustainability](#)



1. Service

- E.g., you go to a salon for a hair cut
- Hairdresser owns/pays for the hair care products
- Hairdresser owns/pays for the cutting equipment
- Hairdresser owns/pays for the salon infrastructure
- You pay for service
- The costs of all the above is charged to you via service



2. Result-oriented PSS - Pay for performance

You pay for performance of a product instead of the product

Paying for copies printed instead of printer



Pleasant climate than heating or cooling

Pay per service unit

Functional result

Outsourcing gardening instead of buying garden tools



Activity management/
Outsourcing



Switching to a performance-based model

Chemical leasing

Before

- Chemical seller – To sell more chemicals
- Chemical buyer – To have better performance, To purchase less chemicals



Functional unit of sale

Litres of chemicals sold > Area / Parts lubricated

Now

Both the chemical seller and buyer – Enhanced performance from a litre of chemicals



Case Study

Rethinking printing needs in Zurich, Switzerland

Background

- The city has approximately 400,000 inhabitants and an annual public procurement budget of over €1.6 billion.
- In 2008, the City's Sustainable Public Procurement (SPP) policy was introduced and has successfully carried out many SPP procedures.
- In 2012 the City of Zurich decided to switch from buying (or renting) machines to procuring an optimised Output Management Service from an external provider.
- As part of this procurement procedure, the devices were no longer the focus but rather the services (i.e. printing, copying, scanning, etc.).



Technical specifications included

- Paper consumption
- FollowMe-Printing
- Toner
- Energy saving
- Reuse of equipment
- Reduction of printers
- Maintenance.

Measurement criteria

- Declarations/labelling regarding the energy consumption of the equipment
- Quality labelling
- Certifications for environmental and social/labour standards (ISO 14001, SA 8000)
- Eco-labels (Blue Angel, Energy Star, etc.)

Award criteria

- 35% weight given to technical criteria of the total award criteria, even higher than total cost



Photo by [Print4you](#)

Impact

- The City now only pays per printed page and no longer invests in hardware.
- Reduced hardware units from 5500 to 3600
- 25% reduction of prints (120 mil/annum to 90 mil/annum)
- Close to 30% on paper savings
- 34% energy reduction
- Saved 340MWh/year, equivalent of the energy consumption of 75 households.
- Improved employee health from absence of dust, volatile organic compounds and ozone emissions.

Lessons Learned

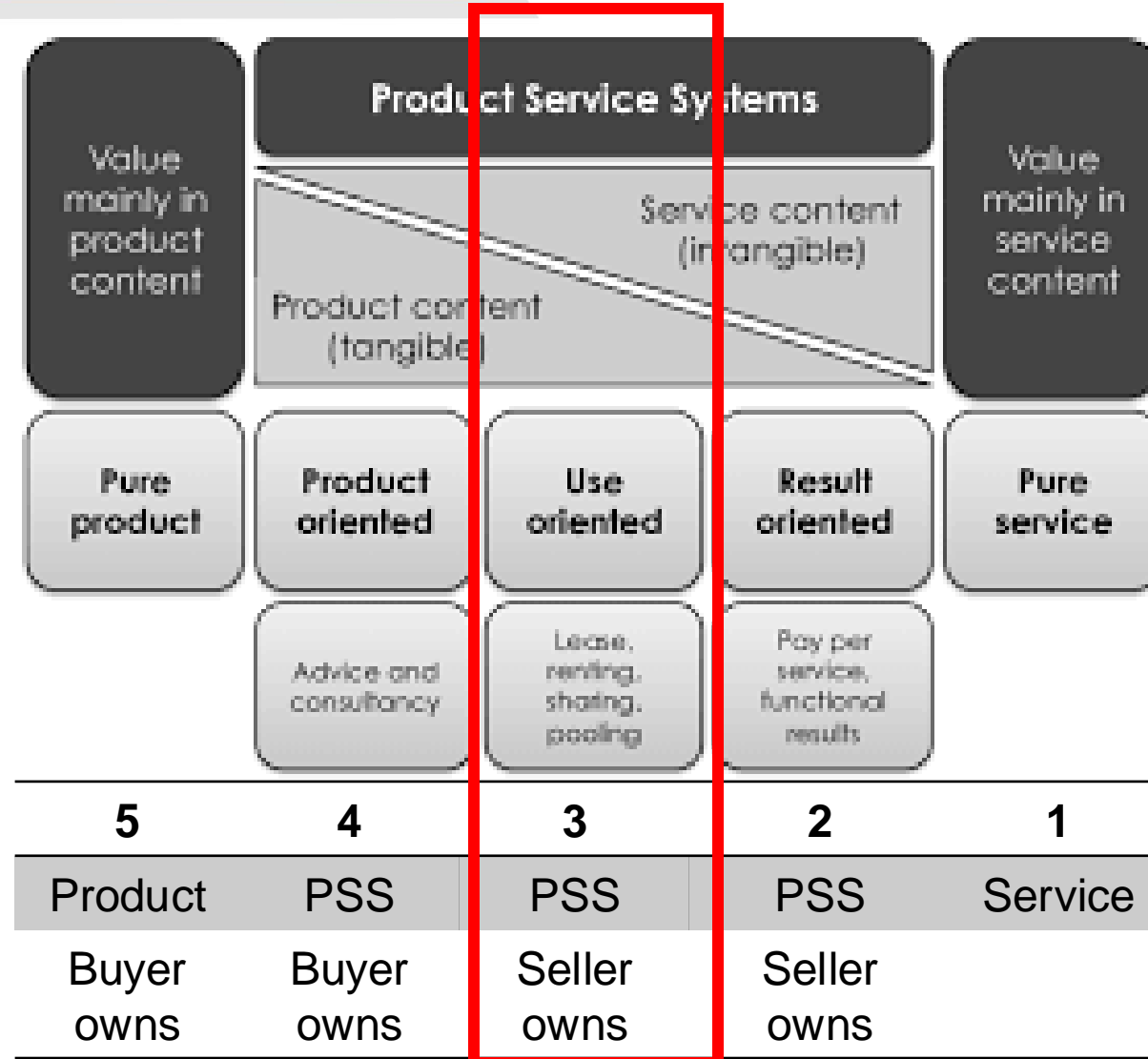
- Include clear requirements concerning environment and health in the tender specifications
- Engagement of stakeholders to go for a unified objective - Optimum service levels and conserving resources



Photo by [Print4you](#)

Product service systems

Use-oriented model

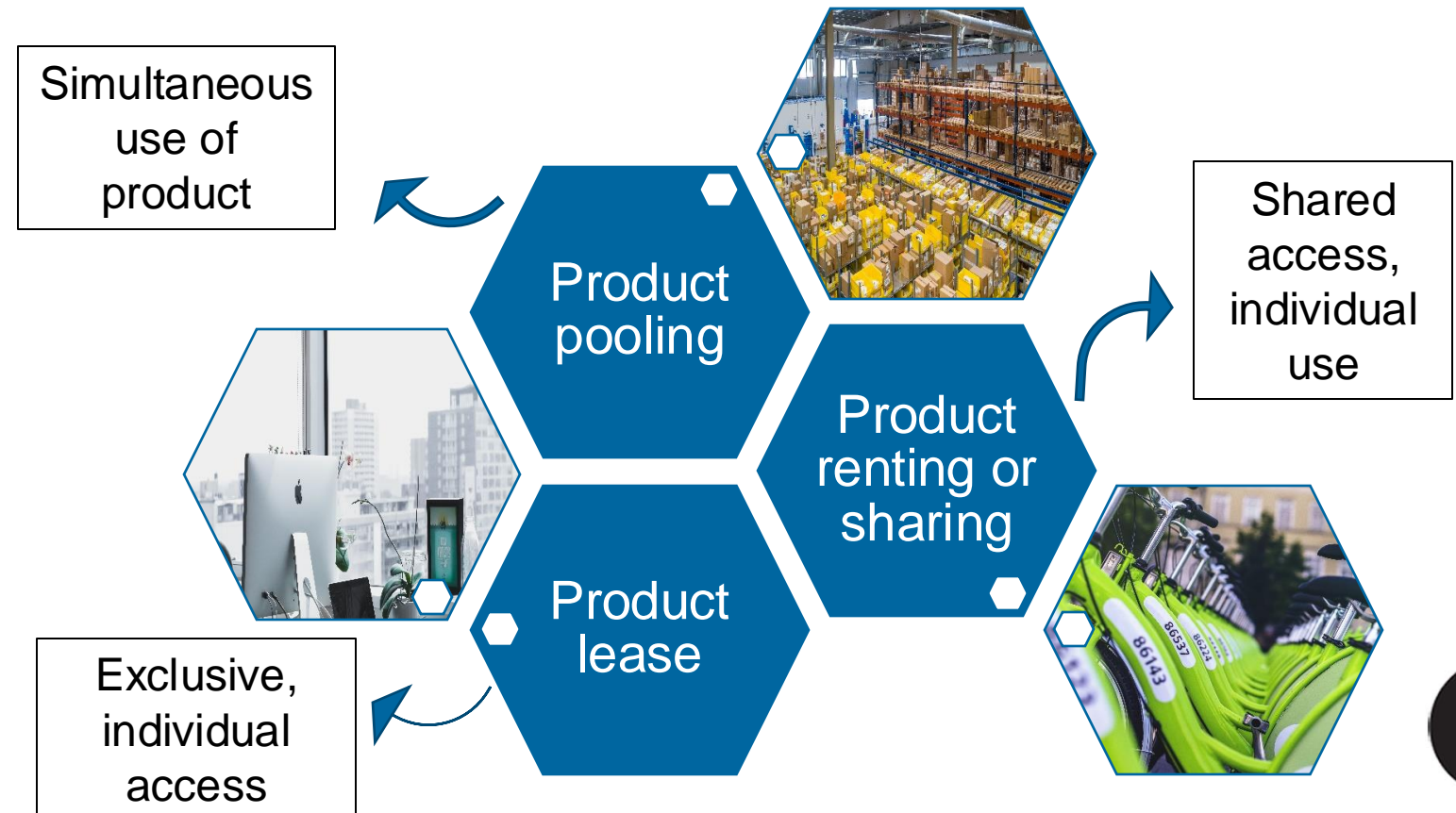


Tukker, A. (2004). [Eight types of product-service system: Eight ways to sustainability](#)



3. Use-oriented PSS - Pay for utility

- The traditional product still plays a central role, but the business model is not geared towards selling products.
- The product stays in ownership with the provider, and is made available in a different form, and sometimes shared by a number of users



Case Study

Replacing vehicle fleets with a car sharing service in Bremen, Germany

Background

- The city had too many cars and caused emissions, air quality deterioration, nuisance factor due to ill parked vehicles etc.
- Car-sharing in Bremen began in 1990 as a tiny private club, then morphed into a small, and eventually mid-sized, business.
- By the late 1990s, the city included a car-sharing option in its seasonal transit pass.
- In 2003 the city built its first on-street car-sharing station, which required changing the local law.



The Principles for Urban Development presented to the Committees and to the Parliament of Bremen emphasise the role of Car-Sharing in the further development of attractive urban neighbourhoods in Bremen. The Principles set a target of at least 20,000 Car-Sharing users in Bremen by the year 2020, bringing with it an associated relief of the pressure on urban street space. This target means quadrupling the current number of Car-Sharing users in Bremen. In 2009, Bremen was the first city in the world to create a **municipal car-sharing action plan**;



Stations on public street space



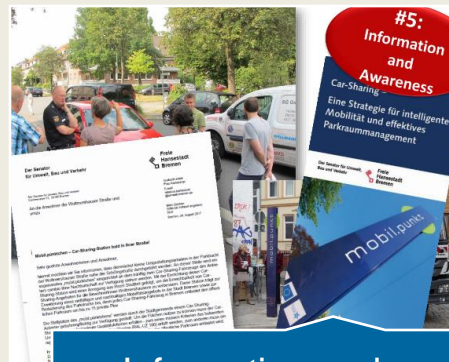
Integration in new housing developments



Integration with public transport



Integration into fleet management



Information and awareness

The Action Plan supports Car-Sharing development by:

- Allowing further Car-Sharing stations in public street space in the city centre and in residential and mixed-use areas
- Improving the level of public awareness of Car-Sharing. (e.g., materials for schools' curricula)
- Expanding “package deals” with Public Transport and related public relations.
- Reducing the demand for parking in new developments.
- Recognising Car-Sharing as a valuable component of environmentally friendly, efficient mobility management for the city.

Impact

- Relief of the pressure on the urban environment.
- Every Car-Sharing car replaces 4-8 privately-owned cars which reduces parking pressure in urban neighbourhoods
- Regain street space
- Reduced emissions
- Fewer car trips - more use of public transport, rail, cycling and walking
- Appropriate cars for purpose of journey - downsizing of cars
- Better cars available with above-average emission standards



Photo by [SHARE NOW](#) on [Unsplash](#)

4. Product-oriented PSS - Pay for value added services

Product is owned by buyer and the business model is still mainly geared towards sales of products, but some extra services are added.

Services for optimising and integrating to the rest of the operation/organisation

Services in the use phase - Repair, maintenance

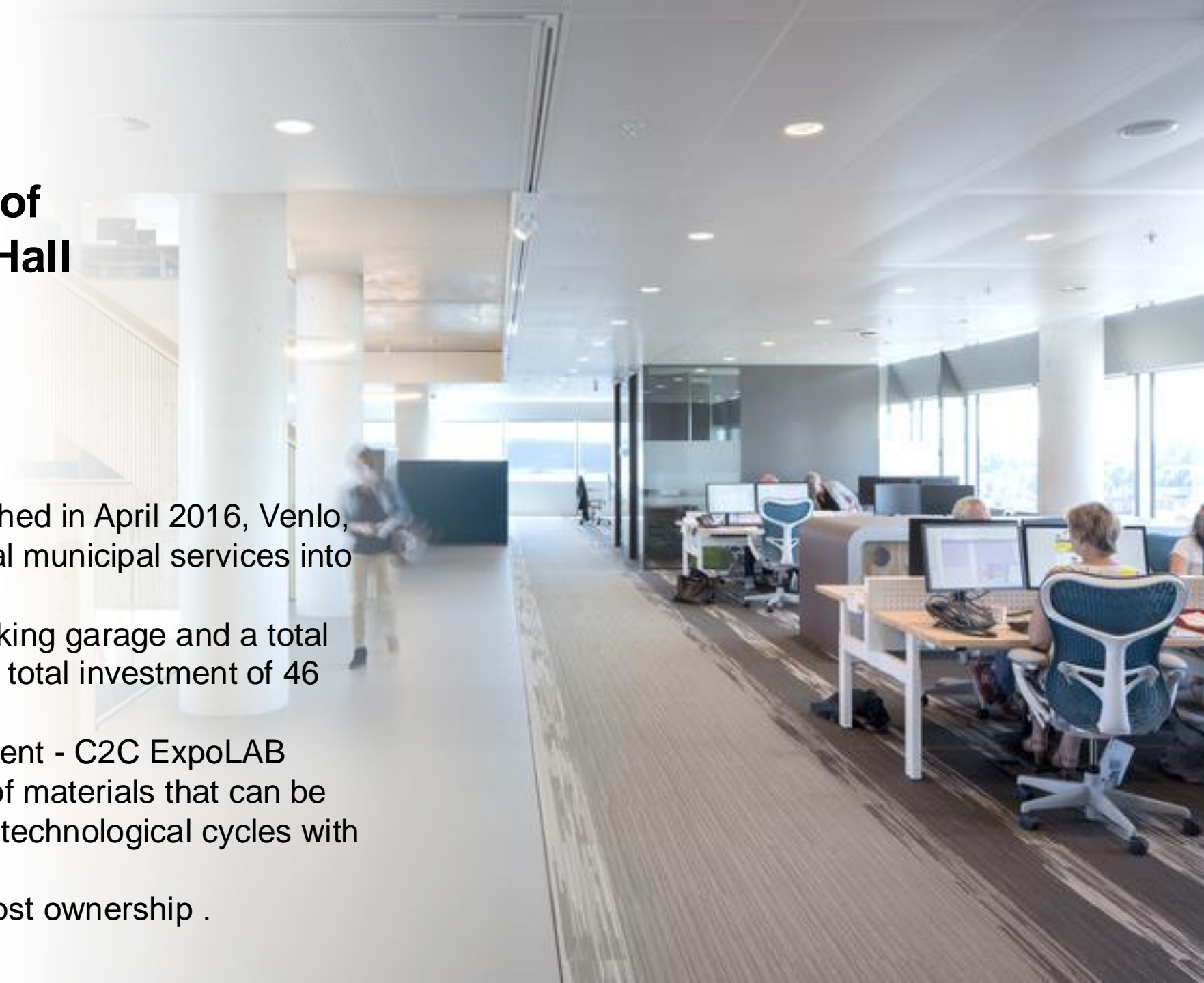


Case Study

Circular Procurement of Furniture for the City Hall of Venlo

Background

- The new city hall building finished in April 2016, Venlo, Netherlands, combines several municipal services into one complex
- It consists of a three-story parking garage and a total floor space of 13,500m² and a total investment of 46 million euro.
- Technical advice for procurement - C2C ExpoLAB
- To create a continuous cycle of materials that can be incorporated into biological or technological cycles with no loss of quality
- New business model – total cost ownership .



The 2009 design and build competition key aspects

- Use of appropriate safe & healthy materials which can be recycled after their lifetime
- Enhance air and climate quality
- Produce and use only renewable energy
- Enhance water quality

Technical specifications

- Technical life – minimum 10 years
- Refurbishment and end of life
- No harmful substances



Photo by [Kraaijvanger](#)

Award criteria

- Quality - 10%
- Cradle to Cradle (C2C) - 30%, with a minimum requirement: at least 60% of the highest scoring bidder
- Total Cost of Ownership - 30%, calculated based on the price minus residual cost of products after a period of ten years
- Aesthetics - 30%, with a minimum requirement: at least 60% of the highest scoring bidder

100% of the scoring for C2C was delivered when a product had a C2C or equivalent certification..

C2C criteria

The extent to which;

- chemical composition of the product is known
- components can be separated, without additional substances or materials
- materials can be recycled at the end life, without losing the original quality or being biological compostable
- materials are quickly renewable or recycled materials.



Photo by [Kraaijvanger](#)

Contract performance clauses

- Preventive maintenance plan from supplier
- Repair is responsibility of supplier
- Take back for refurbishment after 10 years

Impact

- High number of C2C certified product and materials
- Only 18% residual value from the original budget of 1.6m at the end of life
- Easy material circulation
- Less uncontrolled harvest of timber

Lessons learned

- System thinking / whole process analysis before procurement
- Early market engagement – to understand the requirement
- Capacity building and awareness at all levels of value chain
- Total cost of ownership concept can reduce potential risks



Photo by [Kraaijvanger](#)

5. Product

- That is what we do in typical procurement.
- The value is mainly in the product and the product specification is predetermined.



Photo by [Tim Gouw](#) on [Unsplash](#)

Photo by [Michael Warf](#) on [Unsplash](#)



Photo by [Adolfo Félix](#) on [Unsplash](#)

Photo by [Dinh Ng](#) on [Unsplash](#)



Having a hierarchy to inform our thinking

Product in tact, used and reused multiple times

↓

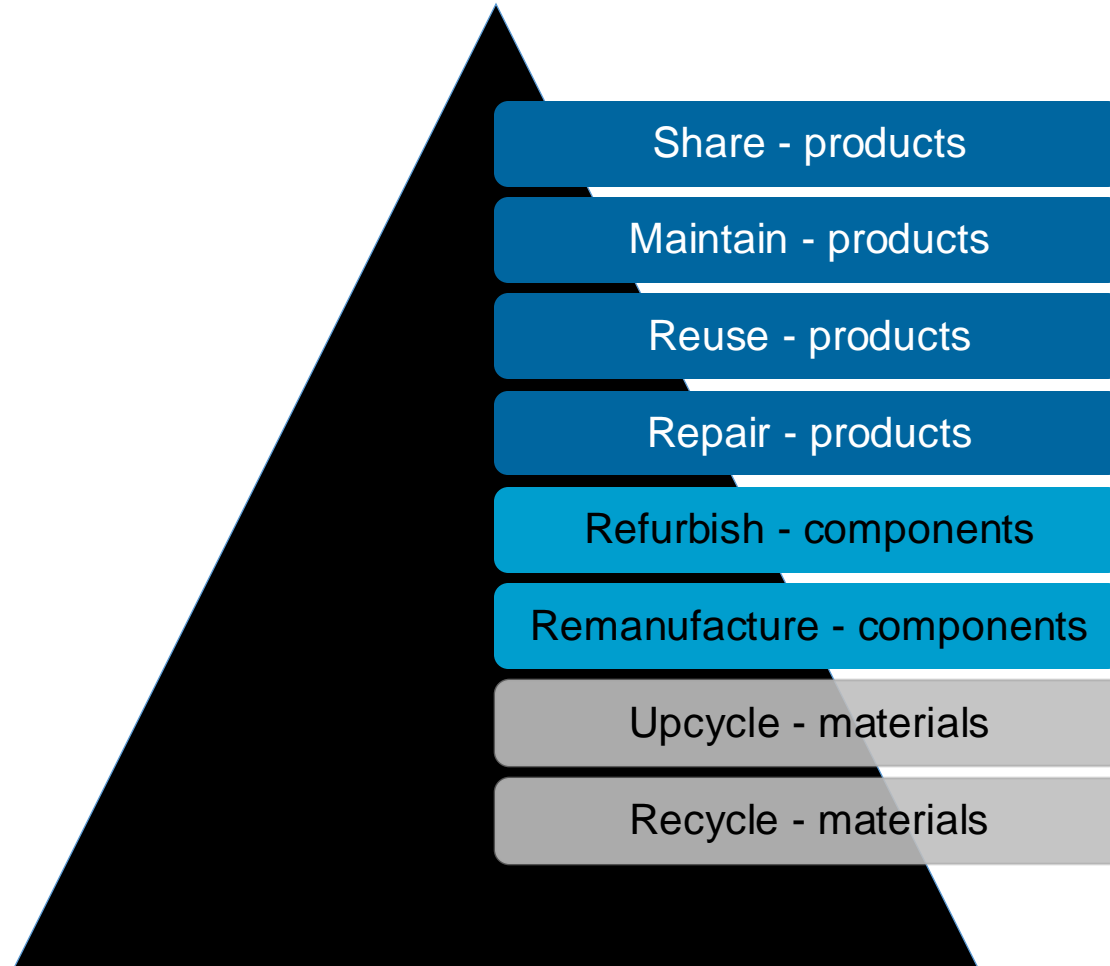
Components, repaired, refurbished and remanufactured and used multiple times

↓

Material modifications

↓

Upcycle, if not possible recycle



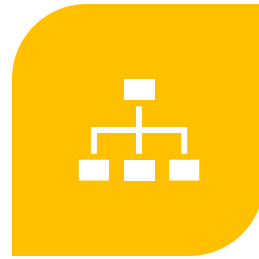
Essential aspects in qualifying suppliers



TECHNICAL
ASPECTS



FINANCIAL
ASPECTS
(ECONOMIC)



ORGANIZATIONAL
ASPECTS
(PROCESS)



Essential aspects in qualifying suppliers

Technical aspect

- The origin of the raw material resources
- The ability to regenerate

Financial aspect

- Lifetime optimization strategy
 - By the same user
 - By a different user
 - Repairing or revising
 - Disassembling
 - Change in purpose
 - Waste recovery

Organizational aspect

- Incentivizing circular use
- Promote the impact of circularity



Products and value chain need to work together

A product needs to be enabled with design and a system of regeneration.

Product enabled with product design for regeneration

Design for disassembly

Design for recycling

Value chain enables regeneration through incentives to return to custodians

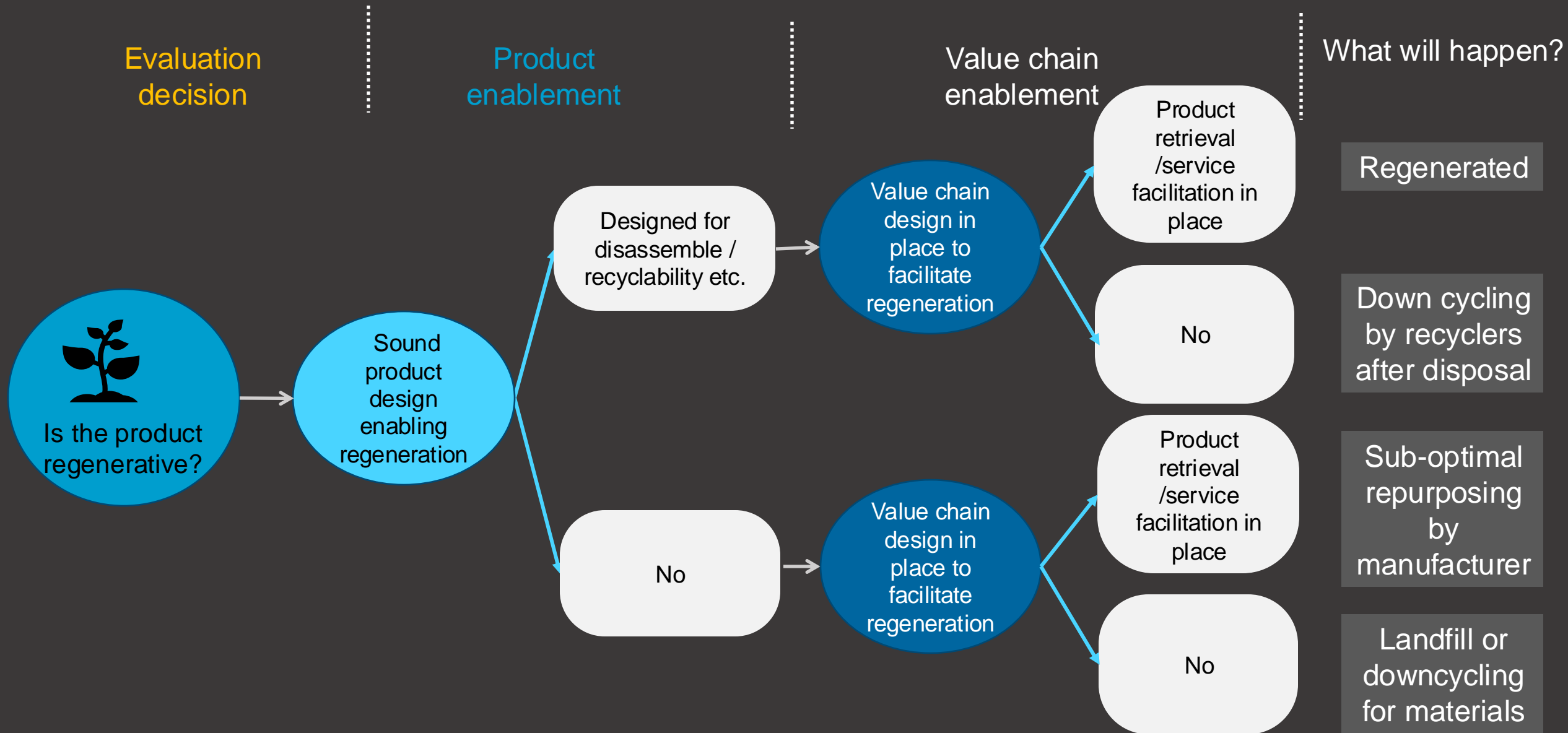
The seller owns the product and takes it away to service it

The buyer of the product is incentivised to return after use and organisation buys or takes back

The company provides repair as a part of guarantee period and afterwards



Enabling product and the value chain for retrieval



Module 1

Lesson 8

Implementing circular procurement - New procurement approaches



Implementing circular procurement - New procurement approaches

In this lesson we will discuss..

Demand for innovation


Procurement for innovation

Pre – Commercial Procurement (PCP)

Innovation Partnerships

Tendering process





“Innovation happens when
people are free to think,
experiment and speculate.”

MATT RIDLEY

Procurement for innovation

Procurement for innovation

Buying the process of innovation

Buying the outcomes of innovation

Pre-Commercial Procurement (PCP)

Purchase of R&D services as a solution to a problem, prior to the production

Innovation partnerships

Long-term partnership with collaborative firm across R&D and production of the innovation

Public Procurement of Innovation (PPI)

Use of public sector's purchasing power as an act of early adoption for the products not yet available in the market - large scale, commercially



Operationalizing procurement for innovation



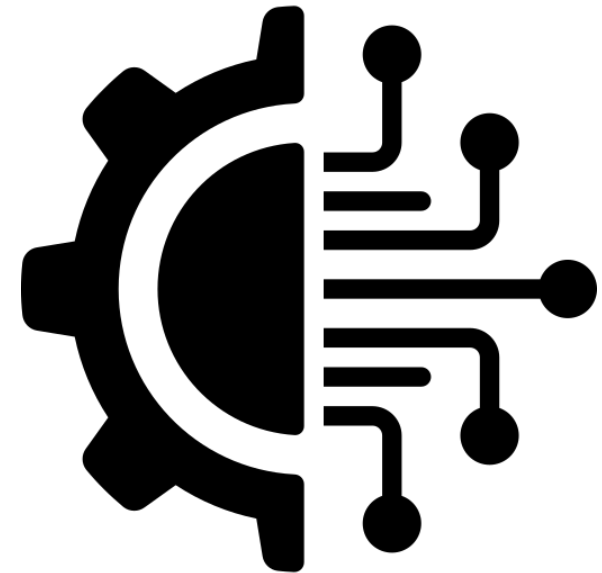
<https://www.interregeurope.eu/>

Pre –
Commercialized
Procurement
(PCP)



Procurement for
Innovation

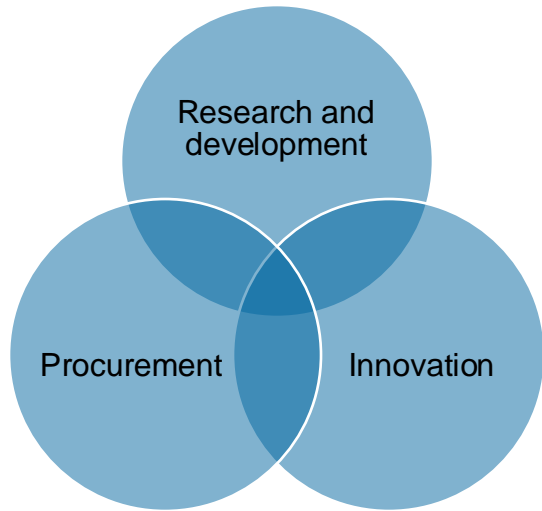
Operationalizing
Innovative
Procurement



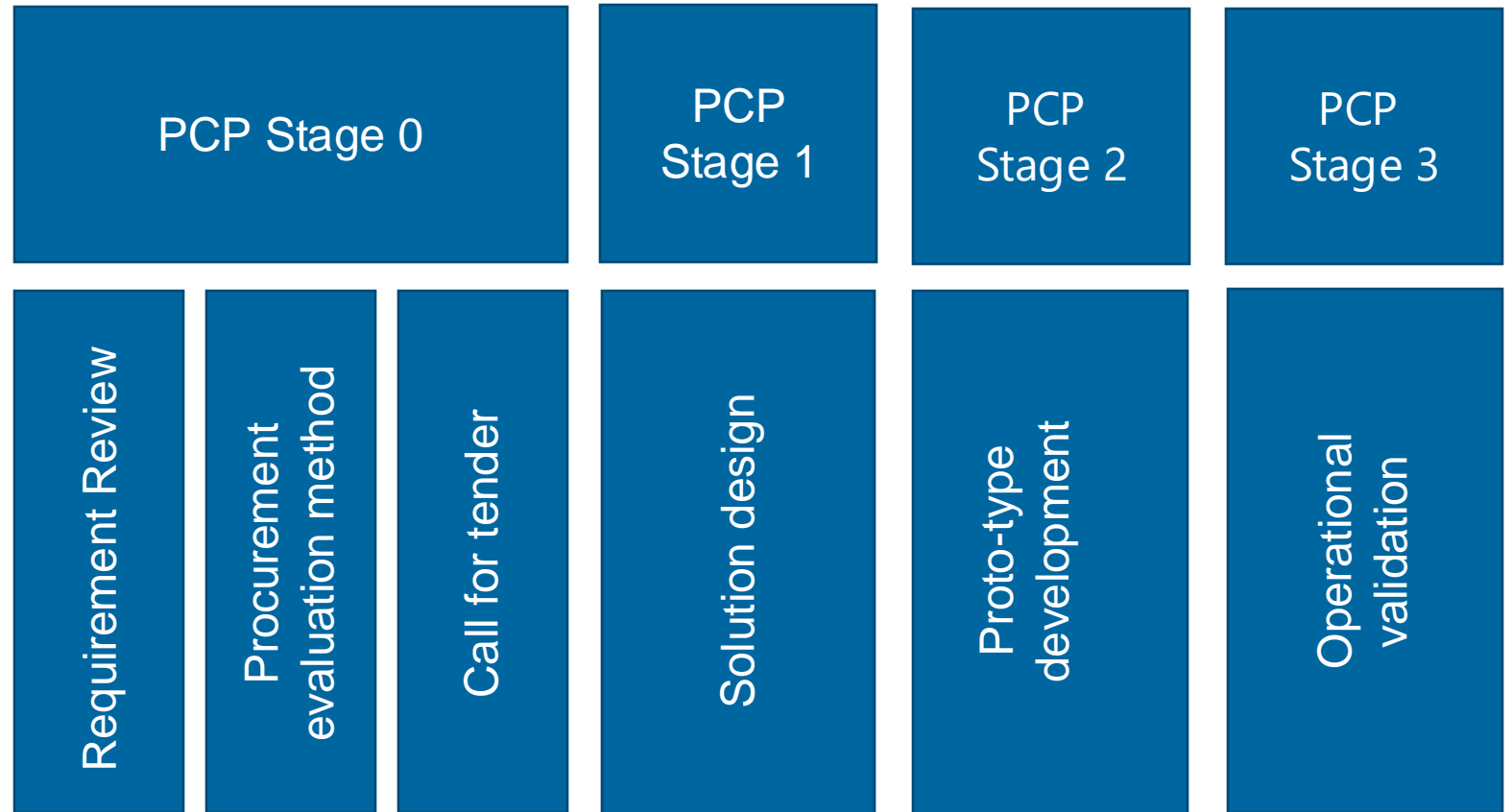
<https://blog.procureport.com/>



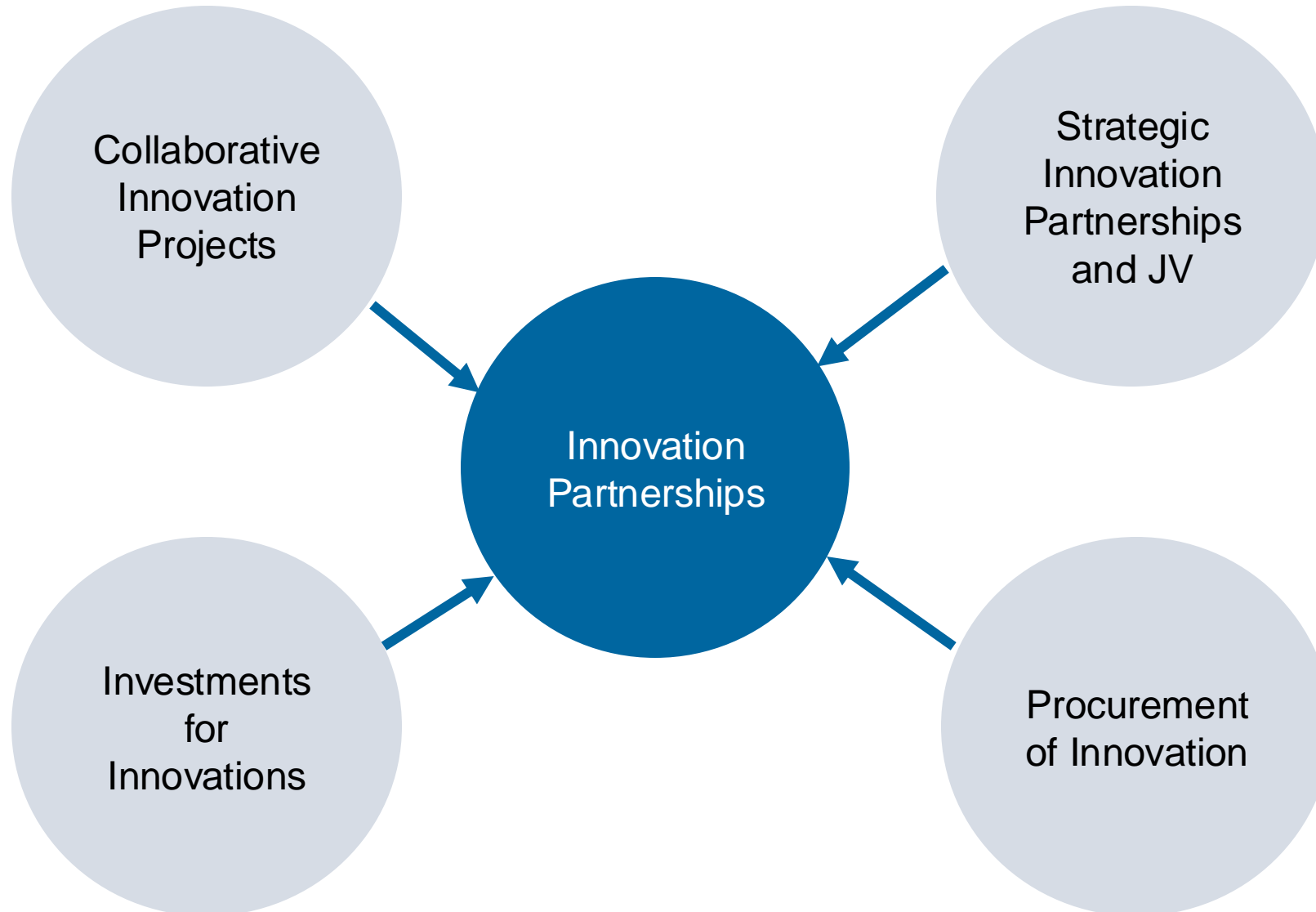
Pre – Commercial Procurement (PCP)



Pre-commercial procurement



Innovation Partnerships

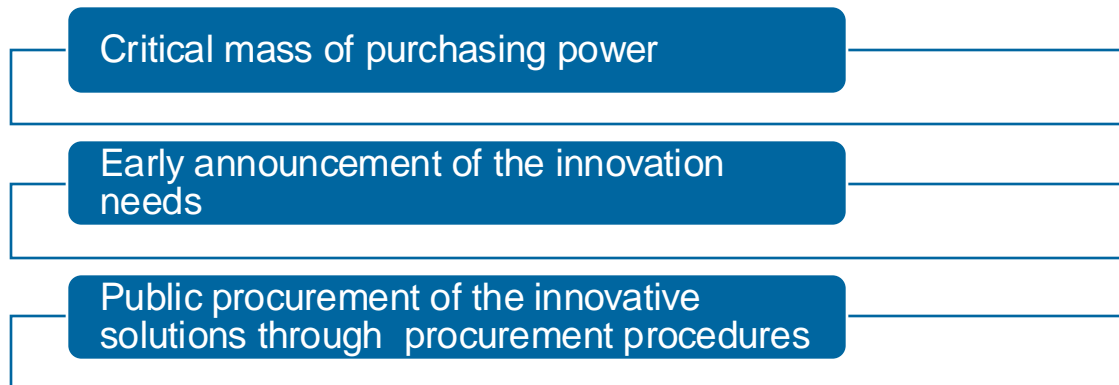


Public procurement for innovation

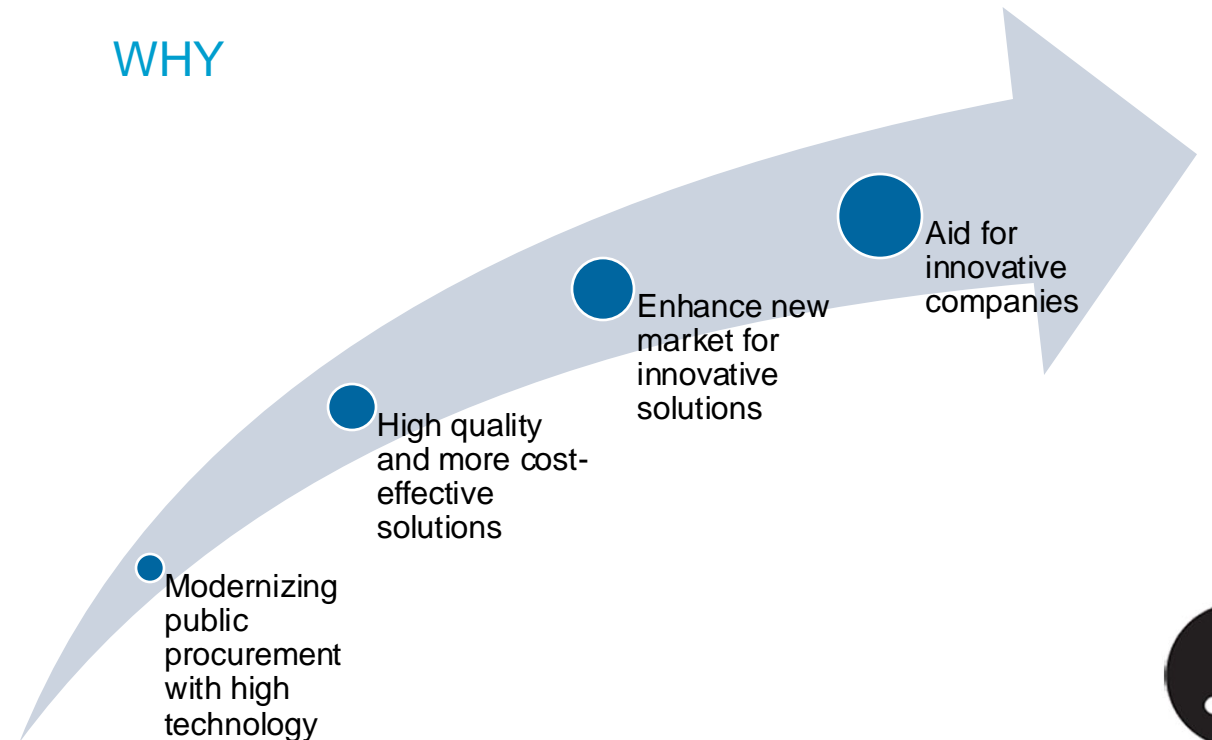
WHAT


Innovation in public procurement generally refers to innovative solutions in the design and delivery of public services, the procurement of innovative products and services and innovative procurement processes and models
(Office of Government Commerce, 2009)

HOW



WHY





Let's take a moment to discuss...

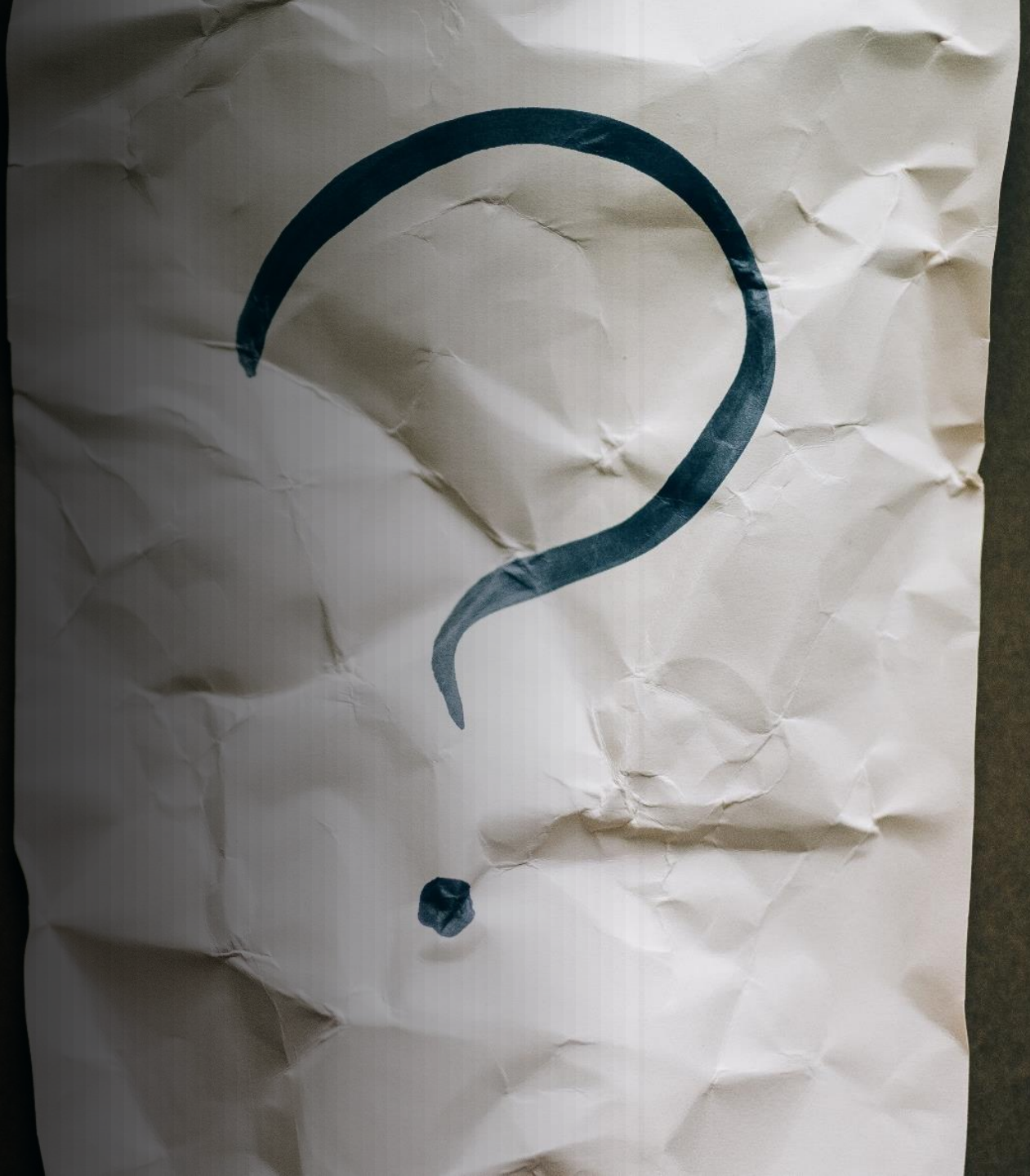
What are the advantages and disadvantages of being a public sector procurer in purchasing an innovation ?

How is innovation procurement different procurement?

What do you need to check in innovation supplier?

Join at

slido.com
#3264 175



Why procurement for innovation?

- Get aligned with market shifts
- Alignment with technological advances in a highly dynamic environment
- Hasten and assist start – ups to launch and grow
- Attain new demands/needs which are not fulfilled by current solutions on the market
- Quality product/service in a cost-effective manner
- Boost the economic recovery and transition to digital and green change



Source – Guidance on Innovative Procurement – European Commission (2021/c 264/01)

Photo by [Evan Dennis](#) on [Unsplash](#)



Case Study

**PVC-free catheters
for City of Örebro, Sweden**



Get aligned with market shifts

PVC-free catheters for City of Örebro, Sweden

Product to procure with traditional procurement

Catheters with PVC based materials which gave harmful effects to the patients.

The need

The city of Örebro recognized the cruciality of using catheters with harmful PVC substances for the patients.

Intended outcome

Innovation was expected as catheters free from harmful PVC substances

Market response

One supplier responded to the call with an innovation as a solution as no market was established for the innovation nor the legal framework

Outcome

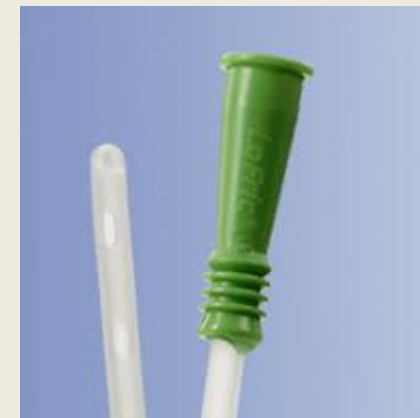
"More safe, risk-free and healthy patient care in City of Örebro, Sweden" - PVC-free catheters

Eight years down the line, all suppliers offered this innovative PVC-free product and it helps raise standard to be the industry norm.

Urethral Catheter Self-Cath®
Straight Tip Uncoated PVC
10 Fr. 16 Inch - 410



<https://healthcaredme.com/>



<https://healthcaredme.com/>

Case Study

**Upgrading lighting system
– City of Eindhoven,
Netherlands**



Hasten and assist start – ups to launch and grow

Making room for start-ups in a large project

Product in traditional procurement

Public lighting system with a typical grid

Need

The City of Eindhoven decided to upgrade its public lighting system while seeking to drive smart city innovations by demonstrating solutions that are smart, sustainable and inclusive



"Eindhoven's development of a new smart lighting grid will not only allow the Lichtstad to redefine the way we use urban lighting, it will also form the basis of its future smart city sensor network, enabling big data collection and facilitating new smart city solutions"

Bart Gorynski, Managing Director of bee smart city



Hasten and assist start – ups to launch and grow

Making room for start-ups in a large project

Market response

Concepts were developed by a collaboration between Technische Universiteit Eindhoven and Philips Lighting .

Outcome

Adaptive lighting, which would adjust lighting levels to,

- current conditions,
- on-demand urban lighting,

which could respond to the presence of the people.

A smart lighting grid



Hasten and assist start – ups to launch and grow

Making room for start-ups in a large project

Uniqueness of the project

- The city wanted to use this procurement project to create an innovation ecosystem that also supports start-ups and innovative SMEs.
- The city decided not to award a standard contract for lighting the streets, but to create cooperation between a service provider.
- This cooperation aims at developing need-driven innovations in a 'living lab' setting, making use of large and small providers of illumination and smart city solutions.



Operationalizing procurement for innovation

Identification of challenges or needs

Translation of the identified challenges
into functional specifications

Tendering process

Assessment of tenders and awarding
contracts

Delivery process



Identification of challenges or needs

• Who/what is responsible to perform the function?

• How is it performed?

• Is it done through some formal, open, participatory process – through technology foresight, road mapping, public consultation, and so forth?

• How far into the future should one look?



Photo by [Patrick Perkins](#) on [Unsplash](#)



Translation of the identified challenge into functional specifications

- For which sectors of production are the identified needs/problems relevant?
- For which kinds of firms are they relevant?
- What 'visionary' products, produced by the firms in these sectors, can contribute to satisfying the needs and solving the problems?



Let's take a moment to discuss...

- What are some of the key differences in the **Procurement for Innovation** method compared to traditional procurement?

- Outcome setting
- Market engagement
- Supplier evaluation





Geelong City Council – Forward Commitment Procurement

The background

The City owns and manage over 160 bridges in recreational spaces. Many of these are timber, concrete and steel pedestrian bridges which are in various conditions and present an ongoing maintenance liability

The problem

The annual waste and cost caused by repairing and maintaining bridges in recreational spaces

The procurement approach

City procurement team and economic development team worked together to run a tender

This procurement exercise were supported by Cleantech Innovations Geelong to research and develop a solution to the unmet need - zero maintenance bridges with a 100+ year design life

"One of the game-changing services provided through the City of Greater Geelong, is Procurement for Innovation, also known as forward commitment procurement"

City of Greater Geelong



Geelong City Council – Forward Commitment Procurement

The procurement approach

- Links were also made with Geelong based engineers, designers and manufacturers to stimulate economic growth through this procurement exercise.
- To encourage sustainable innovation in line with its community-led clever and creative vision, the City of Greater Geelong tendered for 100+ year maintenance free pedestrian bridges in 201 - **'Age-defying bridges'**
- The tender invited companies to come up with solutions to the costly maintenance and waste problem associated with traditional bridges – usually made of timber, steel or concrete - which cost around \$500,000 to inspect, repair, maintain and replace each year

The market response

Eight suppliers expressed interests and supported by Cleantech Innovations Geelong

"One of the game-changing services provided through the City of Greater Geelong, is Procurement for Innovation, also known as forward commitment procurement"

City of Greater Geelong





Made in Geelong, the fiber reinforced geopolymer bridges, are the first of their kind. The bridges were developed through the first Procurement for Innovation project to be successfully tendered in Australia.

Geelong City Council – Forward Commitment Procurement

In this project GCC used the Procurement for Innovation process to encourage the development and viability of clean technologies – economically viable products that harness renewable materials and energy sources while reducing emissions and waste – using the substantial buying power of public sector procurement.



INCONMAT AUSTRALIA
INNOVATIVE CONSTRUCTION MATERIALS



<https://www.minesuppiersonline.com.au/>
<https://sustainableprocurement.eu>
<https://en.wikipedia.org>
<https://www.advancedfibrecluster.org.au/>



Geelong City Council – Forward Commitment Procurement

- **The winning submission came from a consortium**
 - local manufacturer **Austeng** and included **Deakin University’s cutting-edge researchers**, who conducted structural testing of the geopolymer material;
 - leading-edge glass fibre reinforcing rods from **Inconmat**; and Australian engineering company **Rocla**.
- The consortium undertook research and then developed an innovative new combination of materials. The novel building product, made from **geopolymer (comprising partly recycled materials) and reinforced with glass fibre rods**, is stronger and significantly longer lasting than existing products.
- The **first two bridges replaced** with the new design were timber structures over **Cowies Creek in Deppeler Park (Seagull Paddock)**.
- The testing showed the **geopolymer, glass fibre reinforced beams are 15% stronger than concrete**. **Construction** was completed and a site tour was hosted, at Seagull Paddock, as part of Geelong Design Week 2021.
- The tender was the **first in Australia to be offered using a Procurement for Innovation process**. The process can be applied to **solve any problems** and **achieve positive social, environmental and economic outcomes**.





Workshop Activity

Module 1, Lesson 8

What would you have found challenging in the process taken by GCC with your experience with public sector organizations?

What measures would you have taken to overcome them?

Where are we in the course?

Completed

Module I: Introduction -Procurement for environmental products towards a circular economy

- Gain a broad understanding of principles of circular economy and how it applies to products/services.
- Understand different types of environmental products and basis of classifications.
- Understand basic principles on procurement for regenerative products/product service systems.
- Understand application of environmental procurement for other types of environmental products.
- Develop basic understanding of setting up criteria for evaluation of products and creating hierarchies.
- Understand different approaches adopted for environmental procurement by public sector organisations.

On 11th May 2023

8.30am to 5.00pm @RMIT Activator

Module II: Evaluation and decision making on alternatives (Category II – Products with recycled content)

- Understand methods for evaluating different product/service performance criteria.
- Understand approaches for multi-criteria and integrated evaluations.
- Analyse different performance results and interpret them for decisions

Module III: Understanding barriers and drivers within public sector organisations

- Understand the drivers and barriers that influence procurement in public sector organisations.
- Analyse different interventions that help address factors that influence adopting environmental procurement.
- Develop high-level goals, strategies/programs for your organisation.



Courses releasing soon...

Introduction to principles of circular economy (CE)

About

Principles of CE and how it is shaping the production, distribution and consumption of the future world
Includes

Outlines

- Fundamentals of principles of CE.
- The business/economic proposition of CE.
- How to communicate the value of CE to your stakeholders.
- Application of principles of CE for a typical product and product-service system (with examples on 8 strategies).

For

- Councils and businesses looking to create awareness among stakeholders
- Anyone who is interested in circular economy

Transitioning to a circular economy (CE)

About

How to apply principles of CE in your industry/industry sector and how it can transcend and sustain your growth

Outlines

Understand the industry/sector as a system of production, distribution, and consumption.
Application of CE principles to unlock growth potential in relation to a specific sector.
Alternative practices for a specific industry/sector in moving towards implementing a circular economy.

For

- C-suite professionals
- Strategy planners
- Councils looking to promote CE among the businesses
- Operations and sustainability professionals

Courses currently in the pipeline...



Circular economy for
finance professionals



Circular economy for
supply chain
management
professionals



Circular economy for
executive
management



Circular economy for
sustainability
professionals





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<https://anvarta.com/>

THANK YOU

Let's meet again on 11th May 2023!