CIRCULAR ECONOMY

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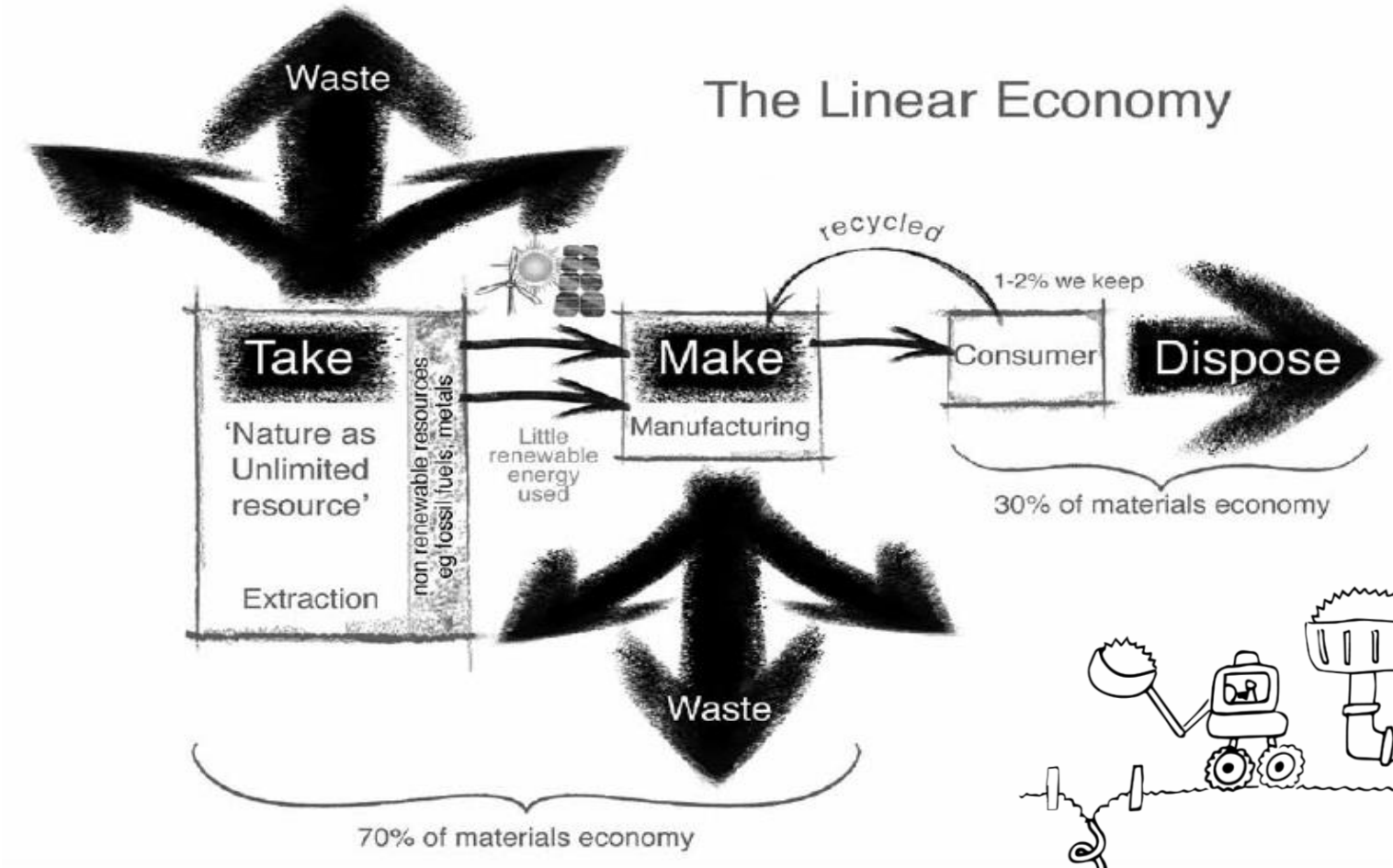
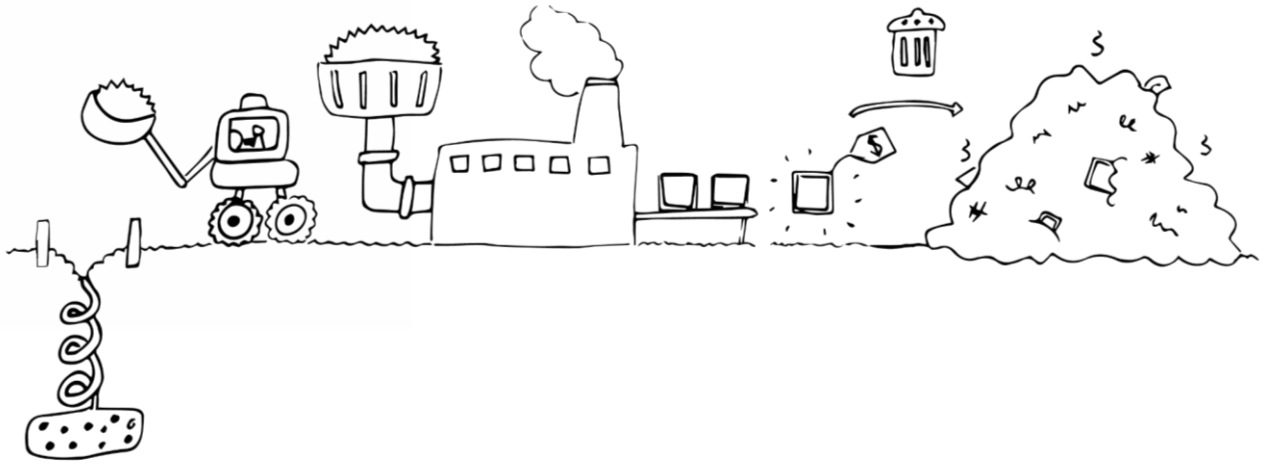
What are we doing?

The Linear Economy



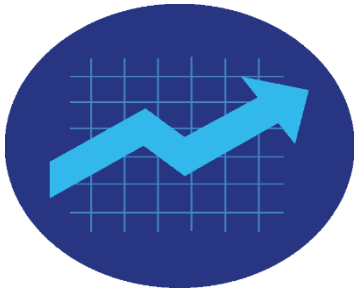
- Current economic model of 'Take-Make-Dispose'
- World as unlimited resource and waste bin;



DRIVERS FOR CHANGE

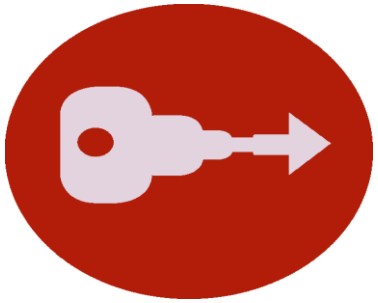
ECONOMIC AND STRUCTURAL LOSSES

PRICE VOLATILITY



DEMOGRAPHIC TRENDS

URBANISATION



ACCEPTANCE OF NEW BUSINESS MODELS

TECHNOLOGICAL ADVANCES

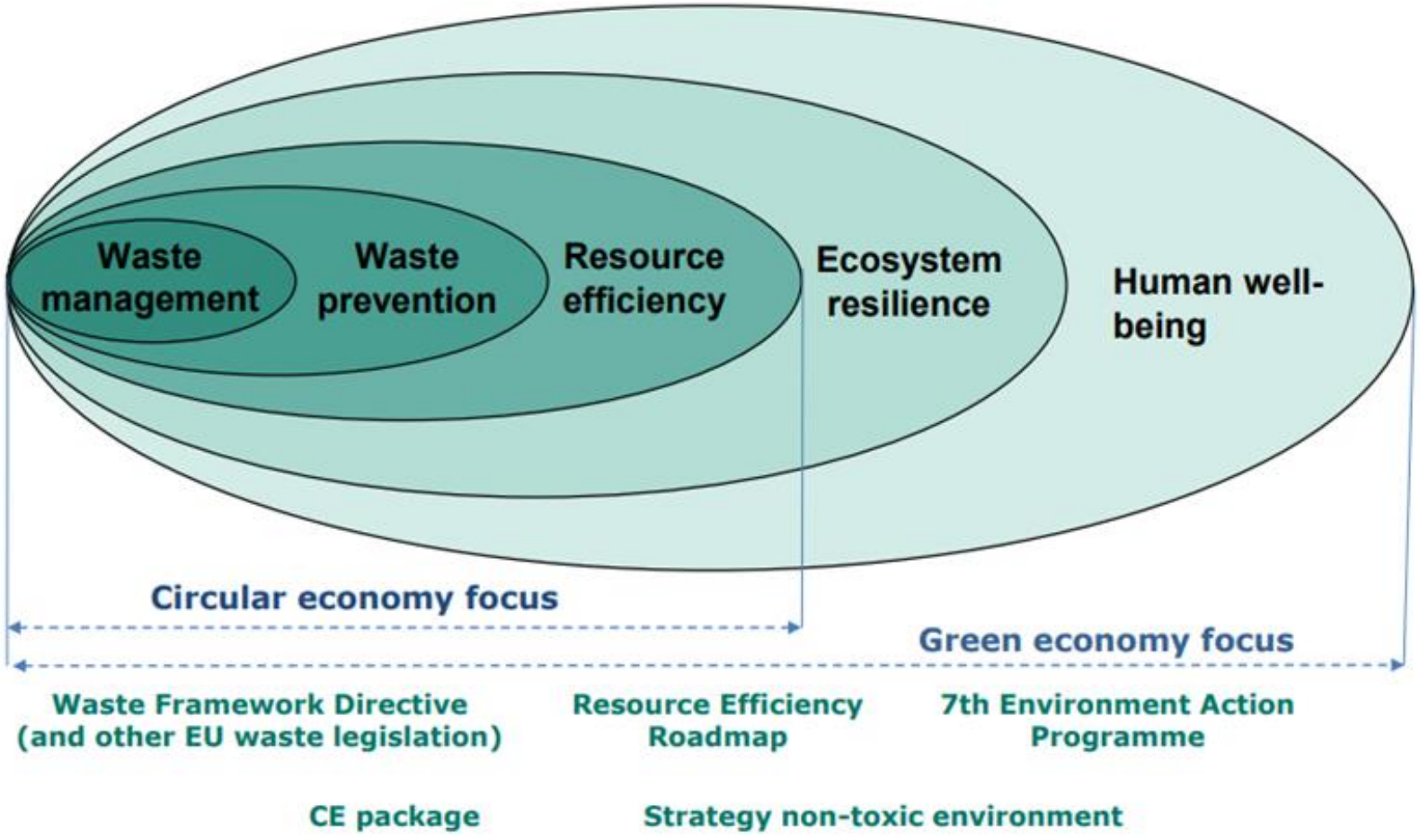
ns,

CE and Sustainable development

«Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.»

(World Commission on Environment and Development, 1987, p.41)

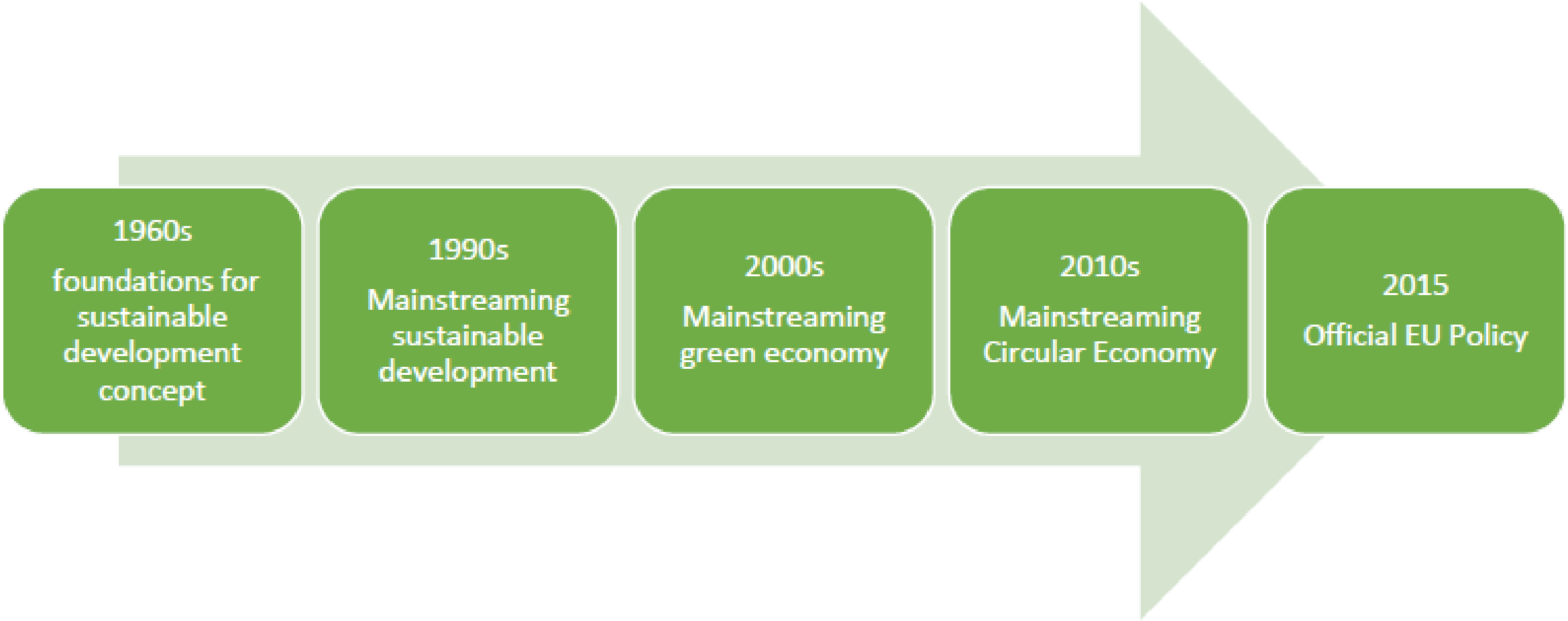
CE and Green Economy



(European Environment Agency, 2016, p. 31)

According to the European Environmental Agency (2015), the **circular economy is a relevant part of the green economy**, which deals also with the **human welfare** (i.e. lifestyles and consumption models for an extensive and inclusive well-being) and the **ecosystems resilience** (i.e. natural capital and ecosystem services preservation).

Main milestones towards the Circular Economy policy in the EU



What is Circular Economy?

Recycling?

Natural Capitalism?

Resource Efficiency?

Sustainable Production & Consumption?

Performance Economy?

Internet of Things?

Lean Production?

Non-toxic materials?

Blue Economy?

Biomimicry?

Green Growth?

Bioeconomy?

Eco Design?

Disruptive Innovation?

Regenerative Design?

Reduction?

Industrial Ecology?

Reuse?

Green Economy?

Eco-Efficiency?

Cradle to Cradle?

Cleaner Production?

Recovery?

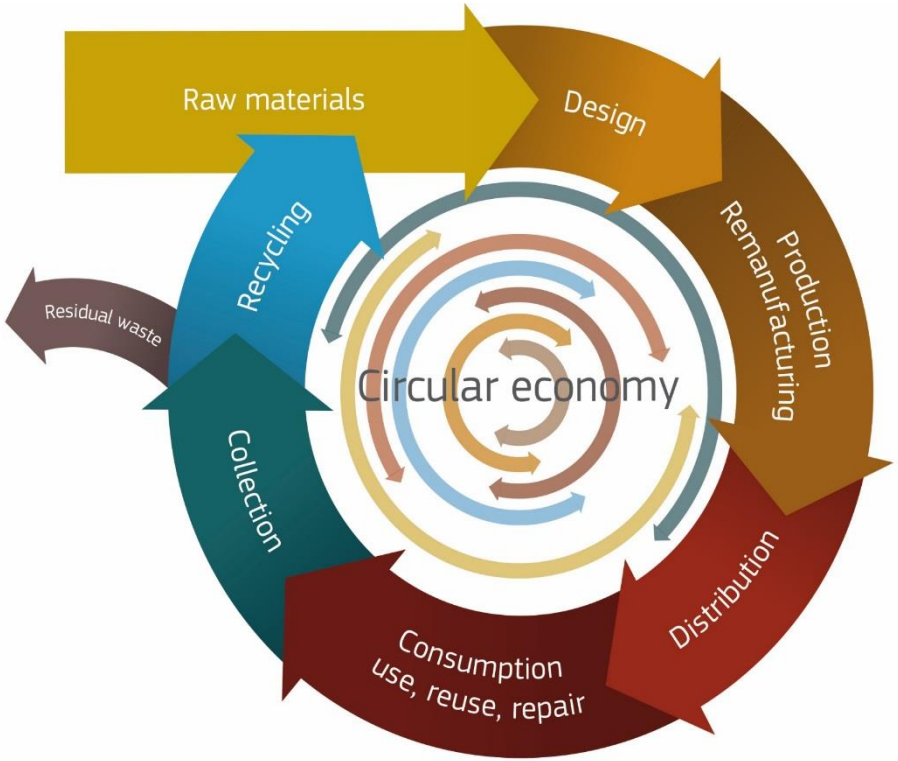
Closing Loops?

Produst as Service?

Eco-innovation?

From a linear economy …

… to a circular economy



"**A circular economy** is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, *extract the maximum value from them* whilst in use, then **recover and regenerate products and materials** at the end of each service life."

~ Waste & Resource Action Programme – UK (WRAP)

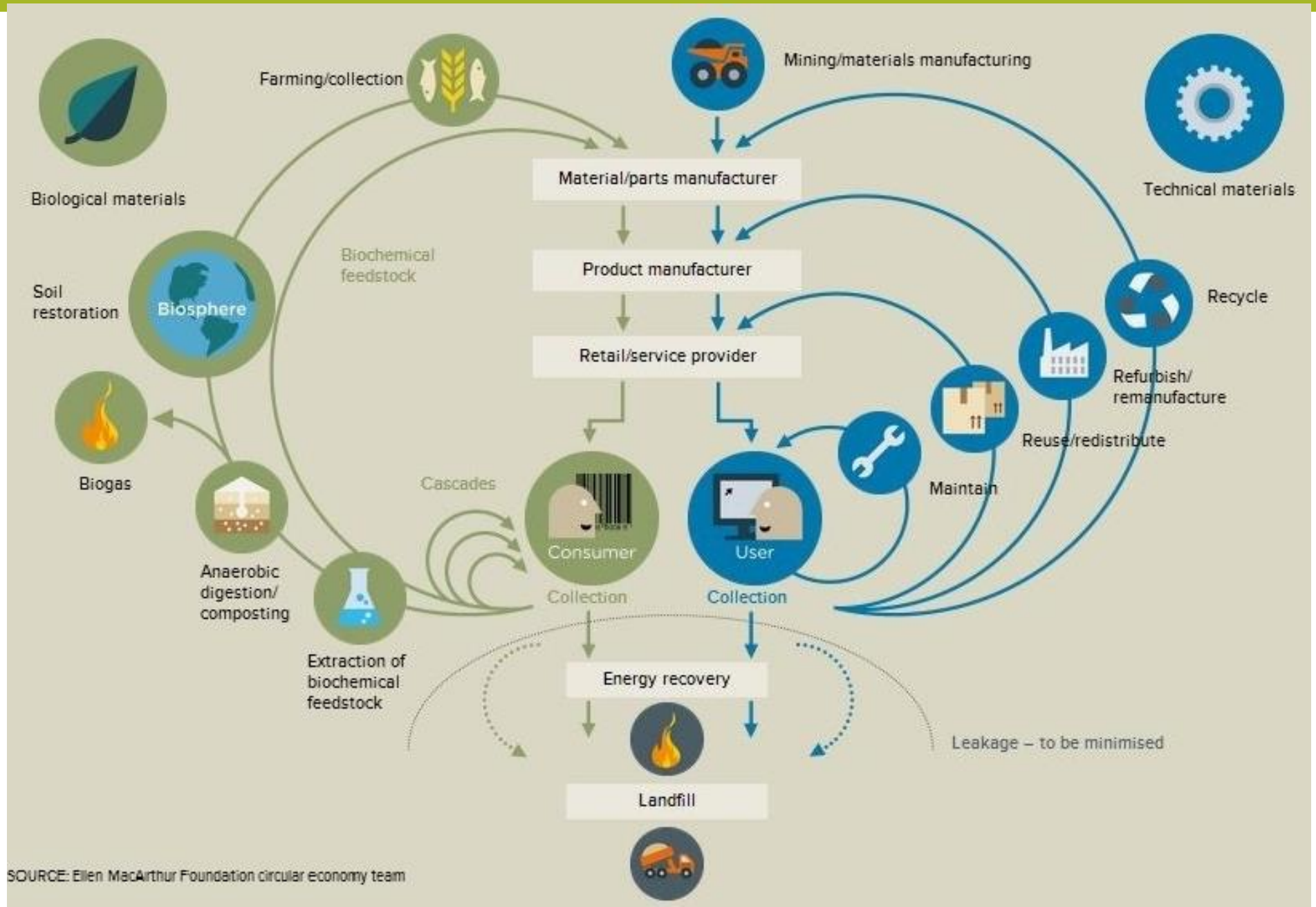
What is the Circular Economy?

What is Circular Economy?

Current definition:

"Circular Economy" is 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**"

Source: ***Ellen MacArthur Foundation****, 2016*

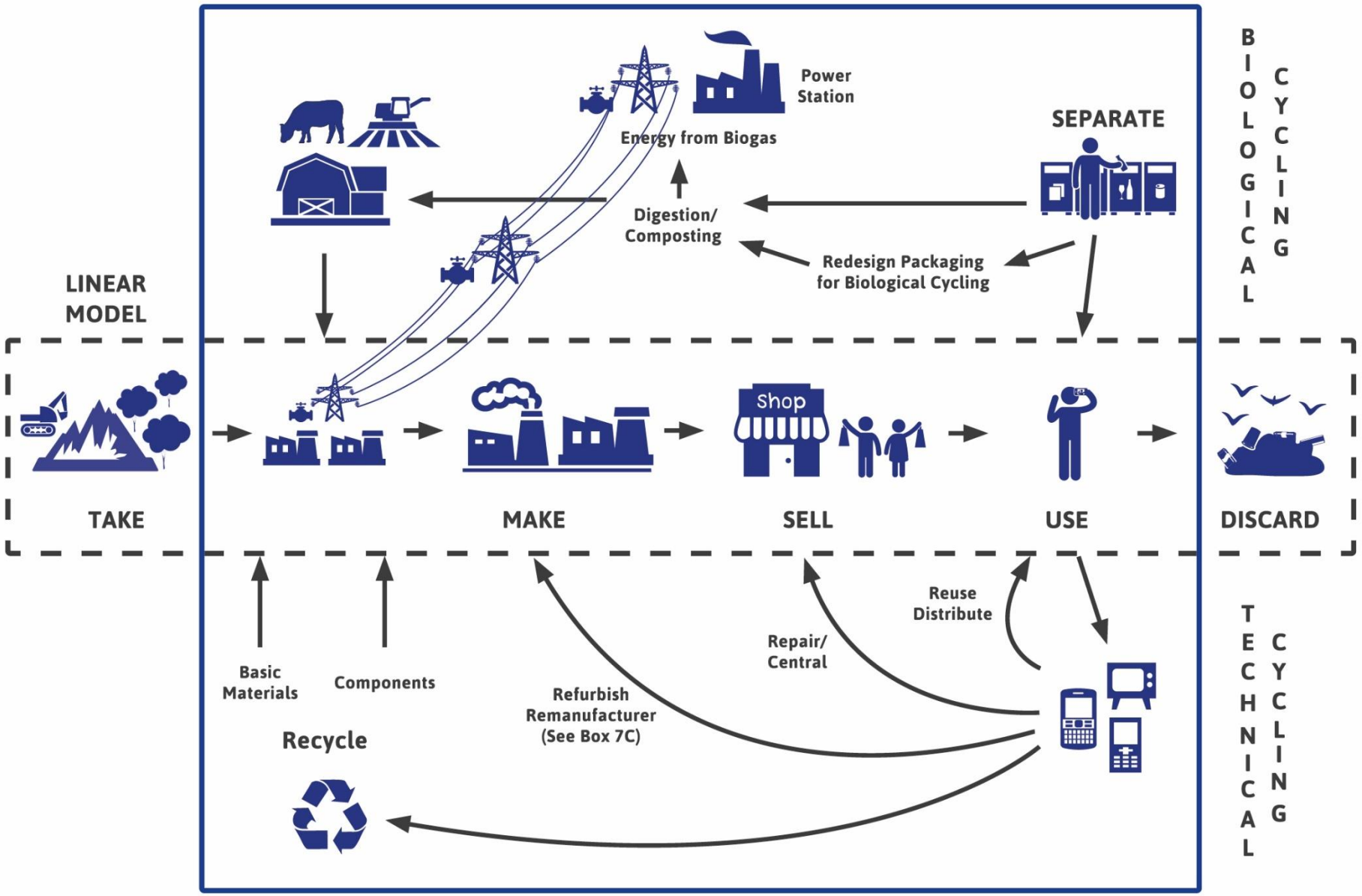

Farming/collection
Mining/materials manufacturing
Biological materials
Technical materials
Material/parts manufacturer
Biochemical feedstock
Product manufacturer
Soil restoration
Biosphere
Recycle
Retail/service provider
Refurbish/ remanufacture
Biogas
Reuse/redistribute
Maintain
Cascades
Consumer
User
Anaerobic digestion/ composting
Collection
Collection
Extraction of biochemical feedstock
Energy recovery
Leakage – to be minimised
Landfill
SOURCE: Ellen MacArthur Foundation circular economy team

HERE IS A QUOTE WE RATHER LIKE:

“The goods of today are the resources of tomorrow at the resource prices of yesterday”

- WALTER STAHEL

CIRCULAR ECONOMY MODEL

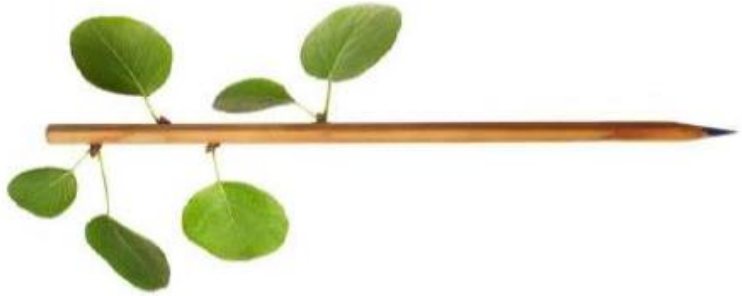


Focus on 7 issues for the development of a circular economy

1. Develop eco-design

New engineering, or re-engineering, of production processes, goods, services and value chains according to the eco-design criteria by:

- **boosting** resource and energy efficiency;
- **eliminating** toxic and dangerous chemicals;
- **reducing** environmental impacts in production, consumption and end-of-life management;
- **increasing** products re-use, regeneration and material recycling;
- **preventing** waste production and disposal.



2. Analyse and modify existing products and production processes

- Verify and improve the current scientific and management models (Life Cycle Assessment algorithms, environmental management systems – ISO 14001, EMAS-, certification of products) to **make the circular economy criteria more effective**;
- Adopt very specific models to **maximize resource efficiency** towards zero waste.

3. Develop research and eco-innovation

Scientific **research and innovation** applied to the fields of new materials, of product design and of supply chain optimization, can help to **multiply the opportunities for resource efficiency** through reuse, regeneration, duration and recyclability of products, components and materials.

4. Develop production and use of renewable energy and materials

Circular economy models require to **move away from fossil fuels** – which are limited, not renewable and with high climate impact**- in favour of renewable energy sources** only.

Though most of them, if properly managed, can be recycled with limited environmental impacts, more complex is to **move away from use of non renewable materials**. However, a more consistent way towards circular economy models requires the **adoption of renewable materials**, provided that their production **should not compete** with food production and the preservation of natural capital and ecosystem services.

5. Zero waste to dispose

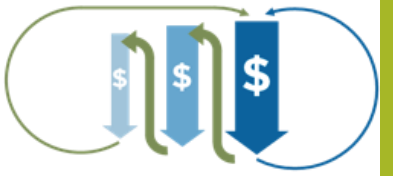
- In a circular economy model waste are not disposed, but re-used as resources.
- In this respect, it is necessary to make **waste prevention policies** more effective and efficient as well as to identify and **remove barriers** that prevent the maximization of recycling of all type of waste.
- Energy recovery from waste should be minimized and has to be addressed according to the **best available technologies** in terms of efficiency and reduced environmental impacts.

6. Address inner, multiples and cascade circles

- The power of **inner circles** refers to minimizing material usage by addressing the recovery of end-of-life products in the value chain close to the consumption phase. Within this approach, very little has to be changed in products (i.e. refurbishment and remanufacturing) prior to return to use.

- The power of **multiple circles** refers to maximizing the number of consecutive cycles - be it reuse, remanufacturing, or recycling- and/or the time in each cycle.

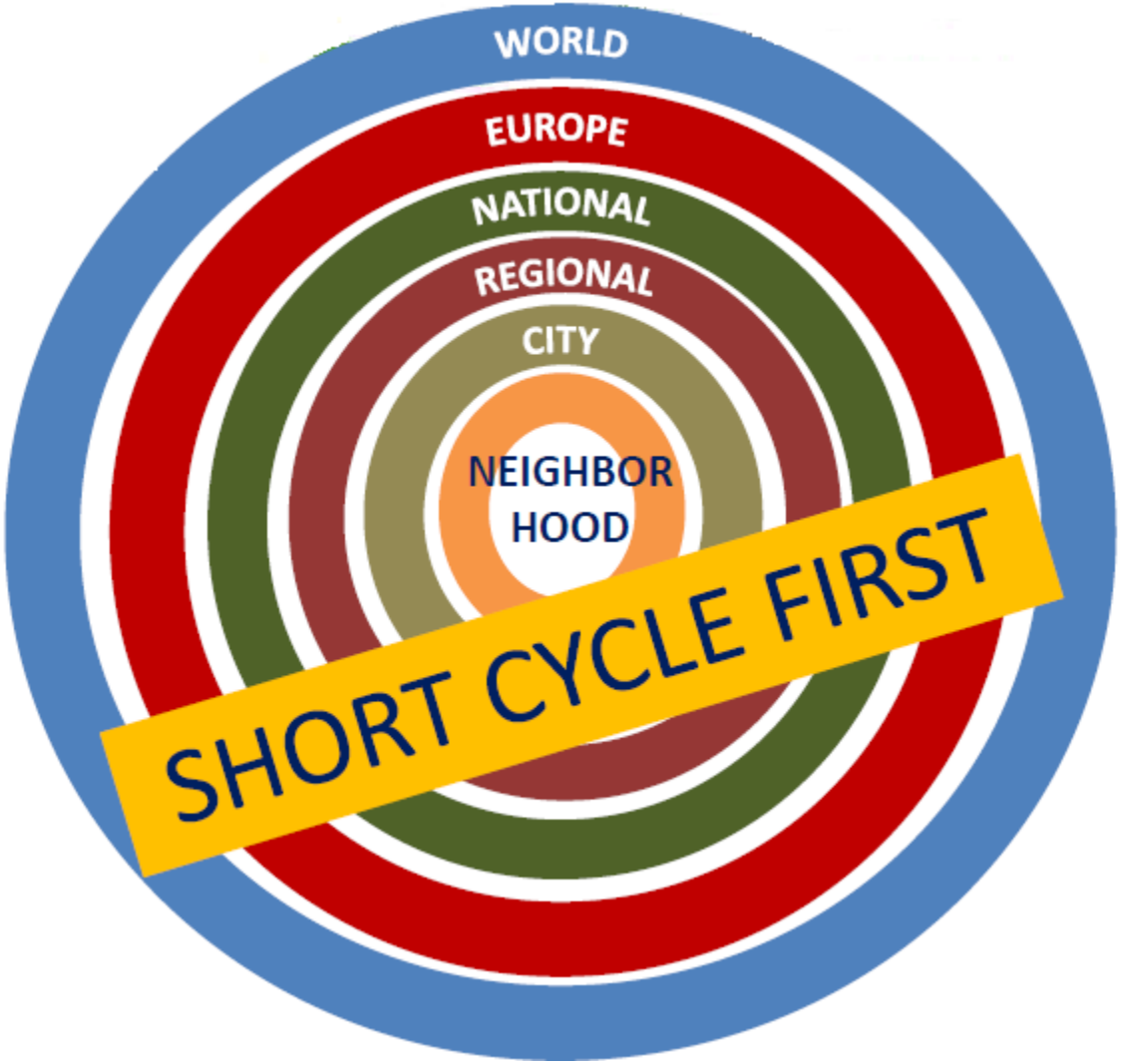
- The power of **cascade circles** refers to diversifying reuse across the value chain allowing that waste of one consumption phase, easily become a raw material for producing other goods.



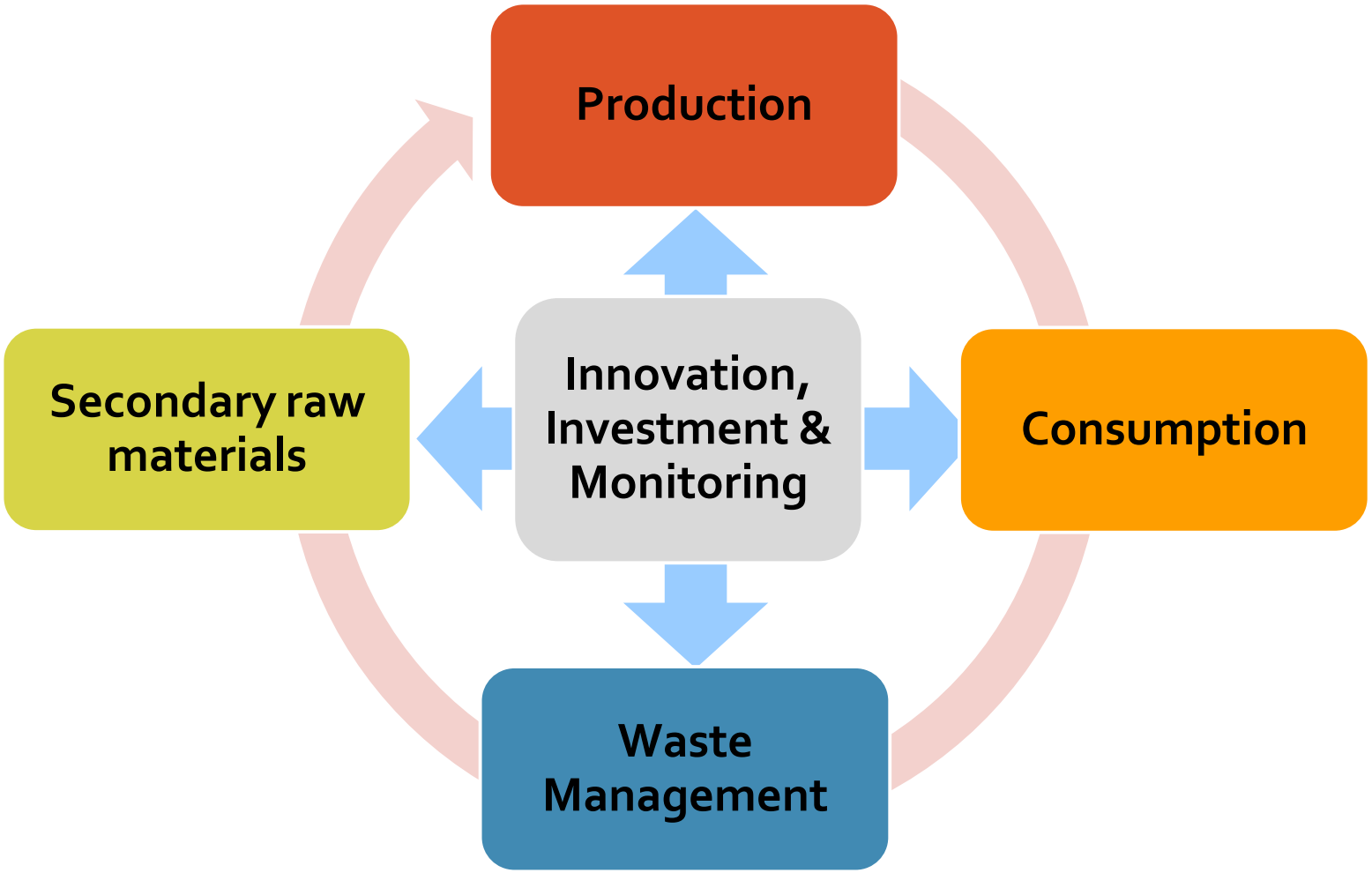
7. Targets and national action plans

With reference to already existing consolidated experiences (such as that of the People's Republic of China that integrates a circular economy program in the five-year action plan for the development of the national economy), while waiting for the circular economy package of measures announced by the EU Commission by end 2015, it might be useful to start defining a **National Action Plan,** according to well defined measures and targets.

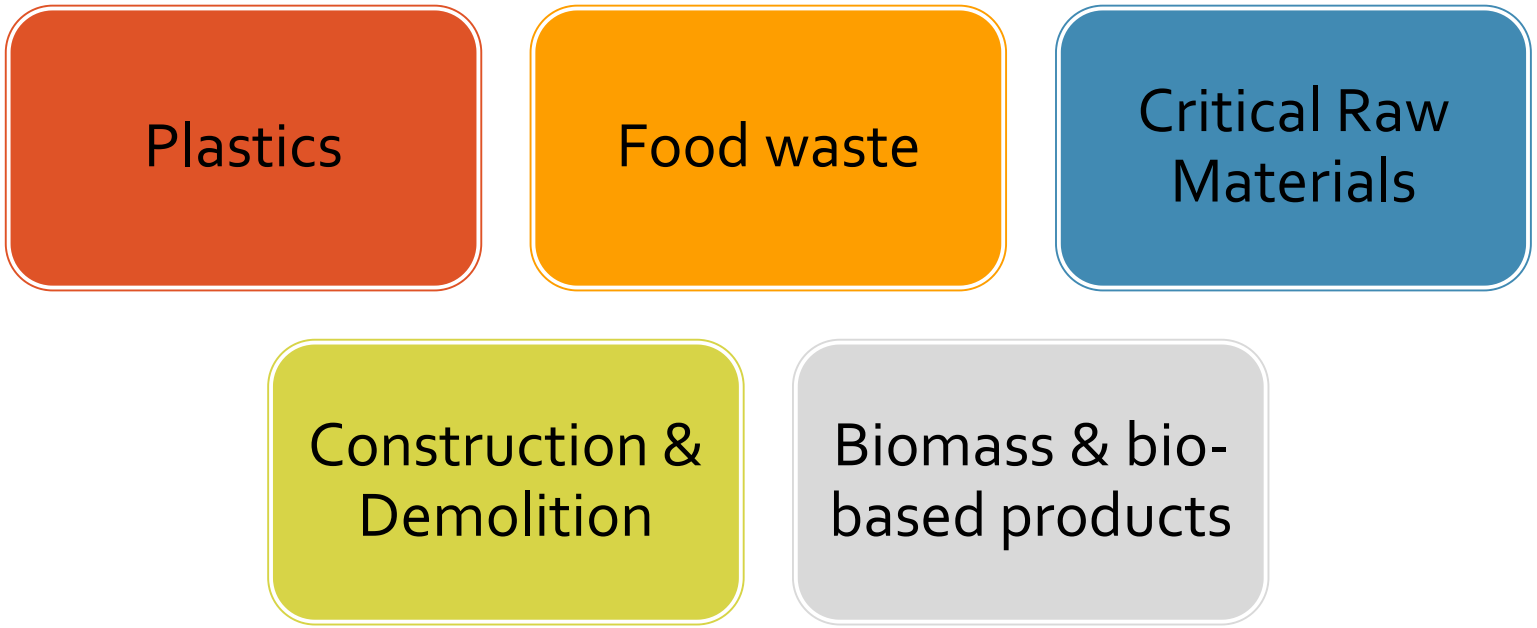
Circular economy & territorial hierarchy



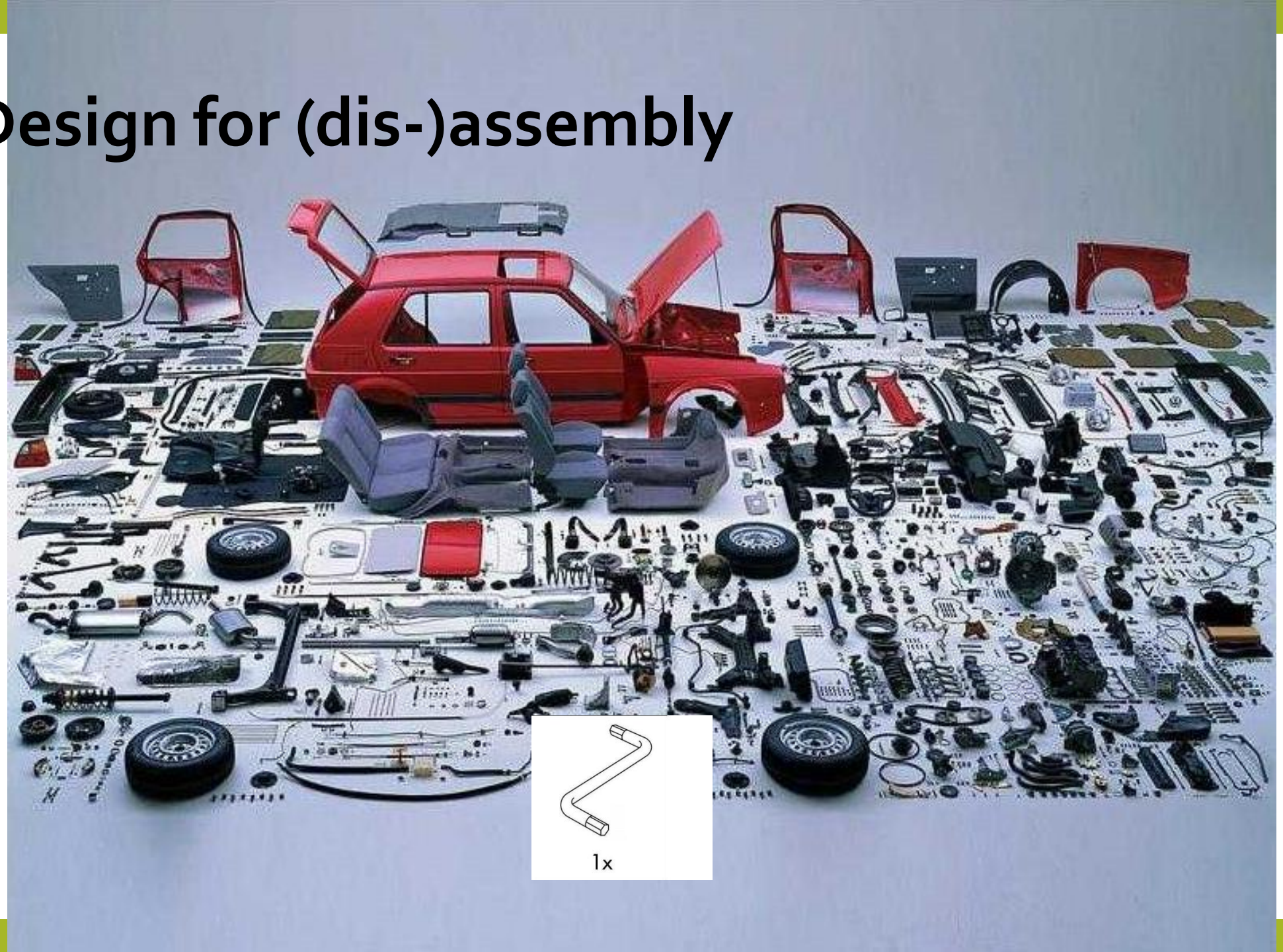
Key action areas



Priority sectors



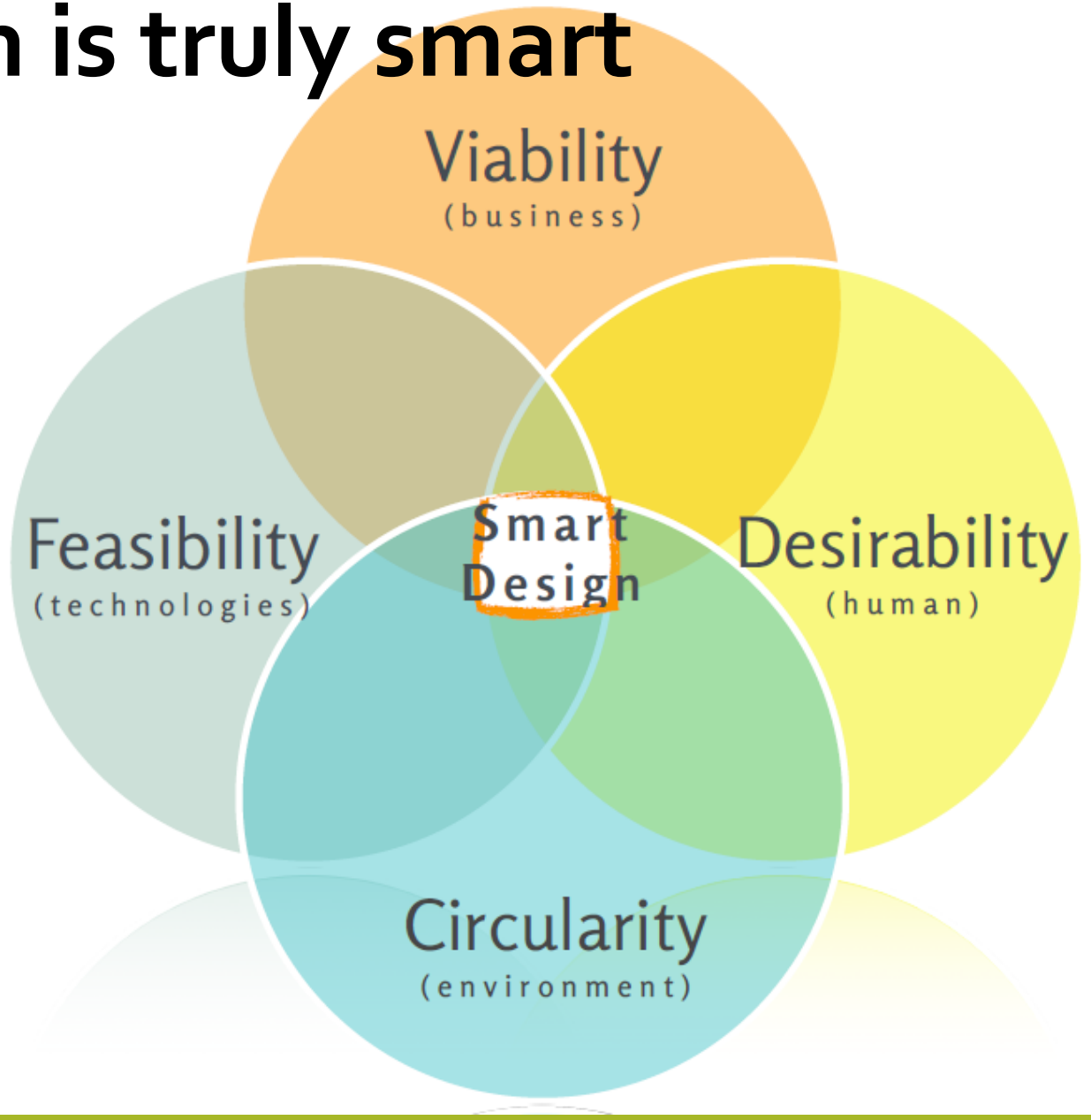
Design for (dis-)assembly



SOME POINTS TO CONSIDER

- Who will use it? Why will they use it?
- If you are making a product, how does the design of your product consider a flow of materials?
- If you are designing a service, how does it fit within a circular economy?
- Describe the relationship you will require with your customers/users.

Innovation is truly smart



The circular economy is based around three areas of action and seven pillars:

Source: French Environment and Energy Management Agency (Ademe):

5 business models of the circular economy

1) ***Circular Suppliers*** - Circular value chains are a model in which limited resources are replaced by fully renewable sources.
2) ***Resource Recovery*** - A model that uses technological innovation and the ability to recover and reuse resources. Examples include a closed recycling cycle that involves recycling waste into new resources.
3) ***Product Life Extension*** - a model that allows, through the restoration, repair, modernization or remarketing of a product, to maintain economic benefits for as long as possible. This model also involves the transition from selling things to selling services for their use.
4) ***Sharing Platforms / collaborative consumption*** - (sharing economy) – a model that is based on the exchange of goods or assets with a low utilization rate.
5) ***Product as a Service*** - a model in which customers use products through a "lease" with payment upon use.

What circular economy means for business?

Skills to make the Circular Economy work: Systems thinking is central

Design

Design products for modularity, upgradability, reparability, disassembly

Business Models

Managed service
After service & repair
Buy back and re-use
Pay-per-use
Software

Collaboration

Cross-chain and cross-sector collaboration,
IT tools

Reverse Logistics

Reverse supply chain for Remanufacturing
Upgrade
Parts harvesting
Materials recovery

What are the amendments required? (I)

- **Reuse and recycling** of municipal **waste** in **2025 - 60%** by weight, **2030 - 65%** (for Latvia - 2025. -50%, 2030.-60%).
- Quantity of **landfilled household waste** in **2030 - 10%** (for Latvia - 2030 - 20%)

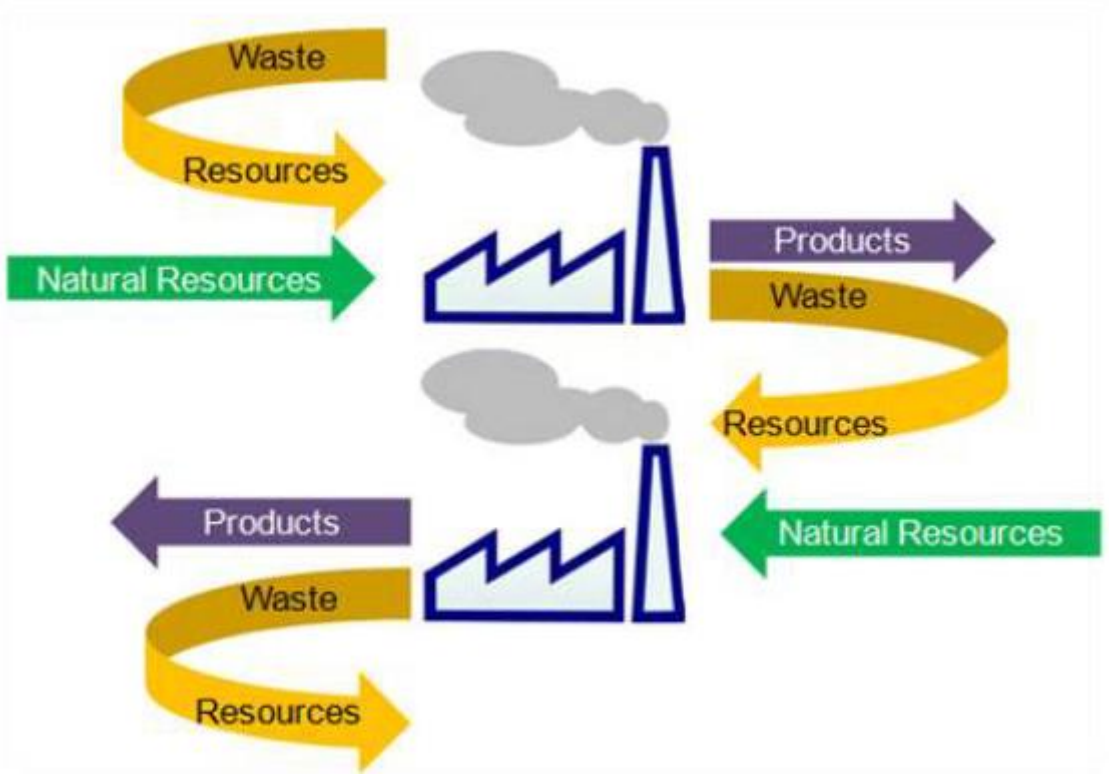
What are the amendments required? (I)

- The overall objective of **reuse and recycling of packaging waste** in **2025 - 65%** by weight, **2030 - 75%** e.g.

	2015	2025	2030
Plastics	*22,5*	55	55
Wood	*15*	60	75
Metal	*50*	75	85
Glass	*60*	75	85

Industrial symbiosis

Industrial symbiosis is the collaboration of two or more manufacturing enterprises / plants, as a result of which the waste and / or by-products of one company become the raw materials of another company

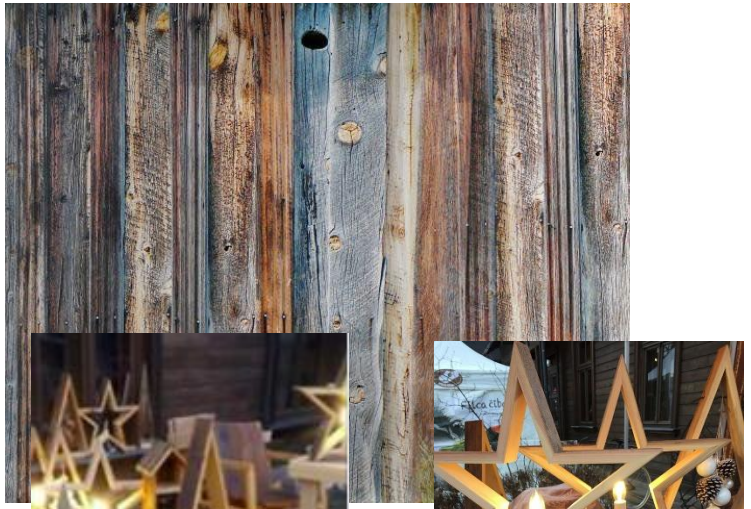


Landfill as a basis for industrial symbiosis

Industrial symbiosis possible in following fields:

- Wood processing,
- Agriculture, greengouses;
- Greening – low quality compost production;
- Domestic heating;
- Construction materials;
- Fish and pig farms.

Rida.lv



Valmiermuiža+Liepkalni

Circular economy – a shift to sharing economy

- From owning to using;
- Libraries of things;
- Repair cafes, etc.

FASHION FORWARD / ONEINDIGE KLEDINGKAST / START AL VANAF € 19,95 PER MAAND
/ EINDELOOS EXPERIMENTEREN EN COMBINEREN / TRY BEFORE YOU BUY

Sharing economy examples

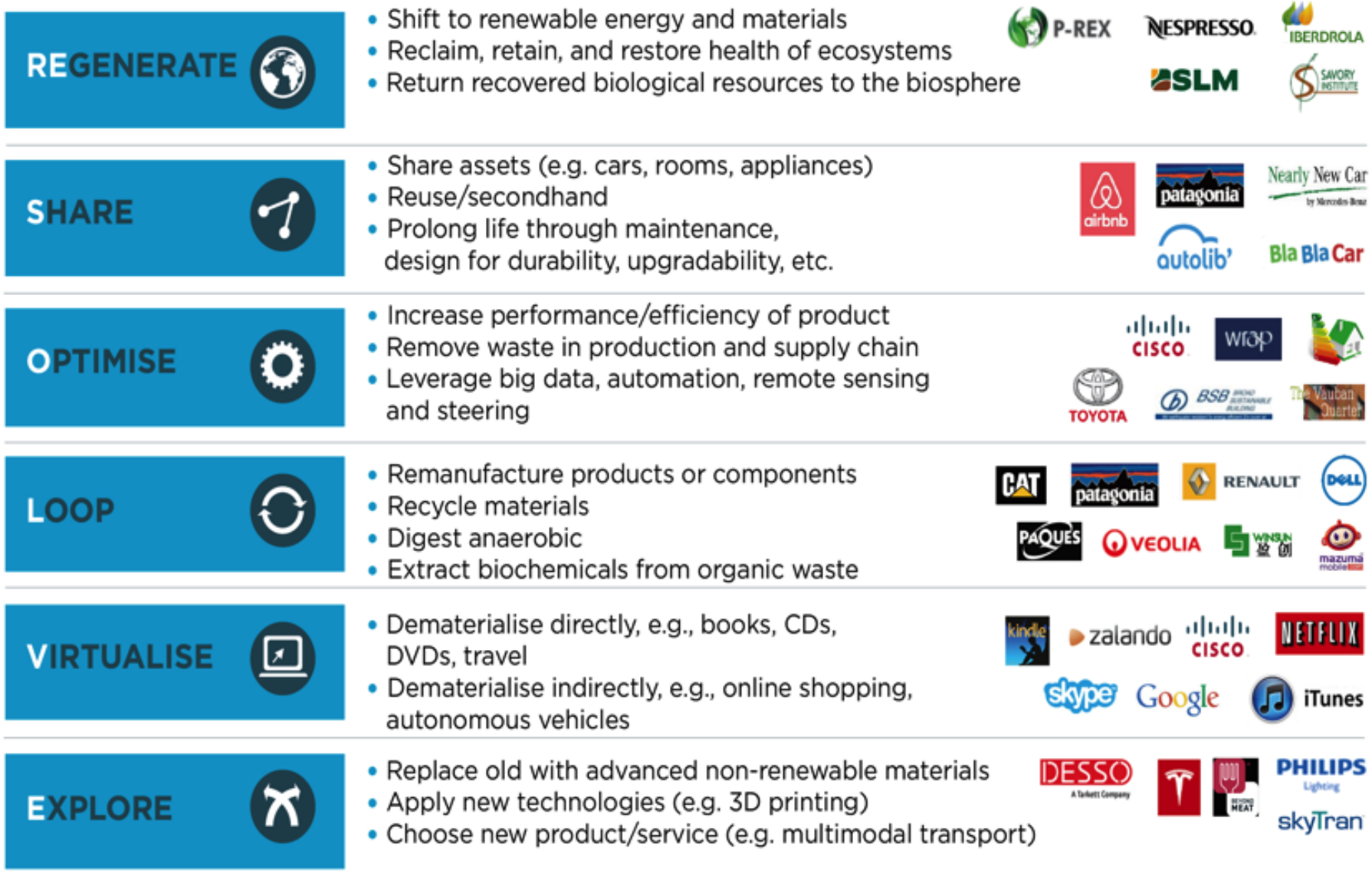
- **Rental or use of durable goods**

commercial projects

non-profit (social) projects

- **Sale / gift of goods**

CIRCULAR ECONOMY - VALUE & BENEFIT LEVERS



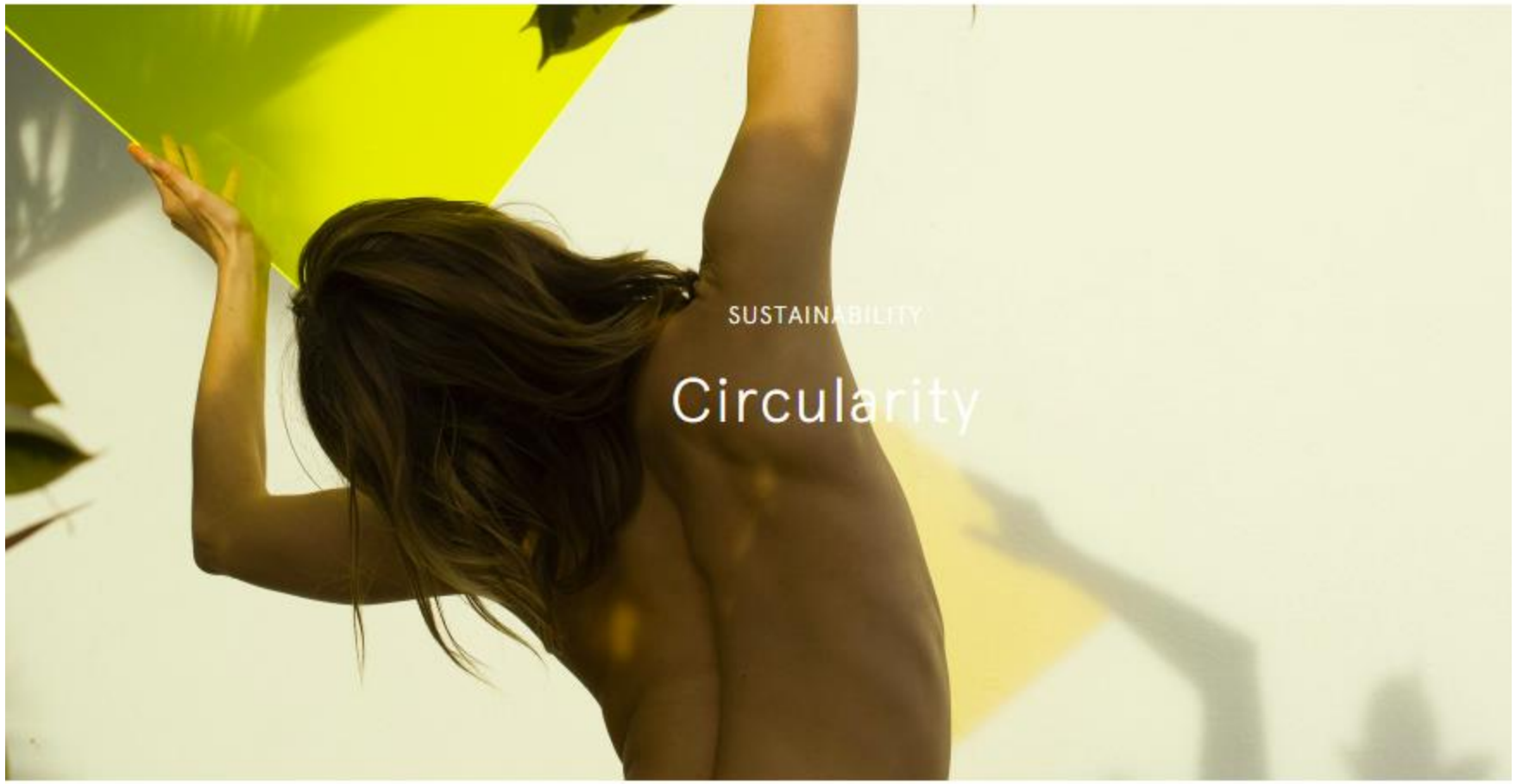
Efficient or effective?

- Patagonia – ‘the footprint chronicles’
- Kuyichi – ‘as sustainable as possible’
- H&M – ‘manufactured under good conditions’
- Louis Vuitton – ‘environment’
- Adidas – ‘the green line’
- Zeeman – ‘think idealisticly, do pragmaticly’
- Primark – ‘ethical trading’

Spedizione Standard Gratuita su tutti gli ordini

STELLA McCARTNEY

Regali Donna Borse Scarpe adidas Kids Uomo Stella's World



Sustainability > Circularity

CIRCULAR JEWELLERY: AN APPROACH TO DOING BETTER BUSINESS

Remade entirely using materials from the owner's collection of old family jewellery, this beautiful embrace-style ring features a Queensland sapphire set in (recycled) white gold.

Recycle | Re-make | Repair | Re-use — Jewellery and the Circular Economy

https://medium.com/@bennhw/recycle-re-make-repair-re-use-jewellery-and-the-circular-economy-aafb3a6db2

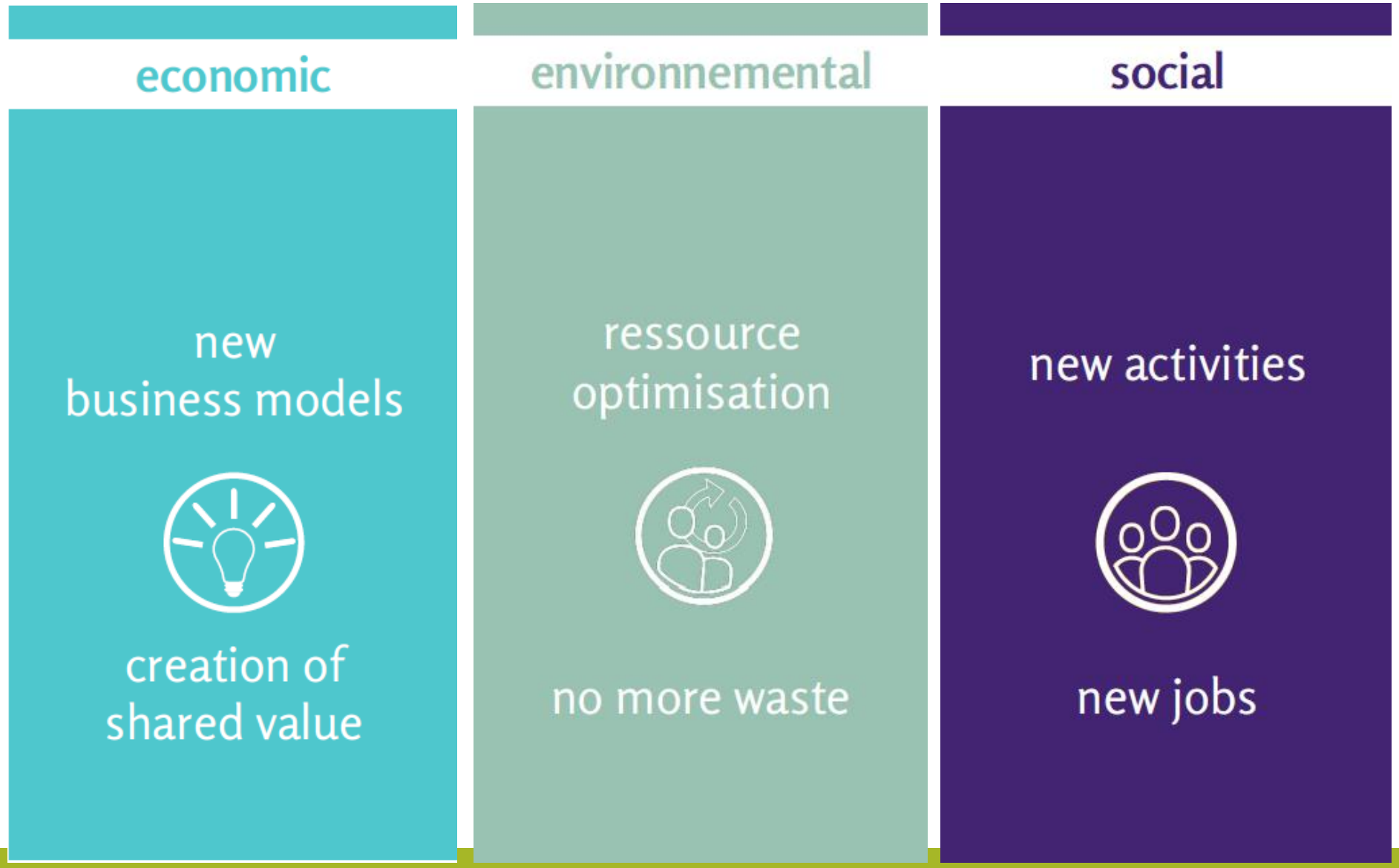
http://www.levinsources.com/blog/how-can-jewellery-be-circular

REPORT ON CIRCULAR ECONOMY IN ITALY 2019

https://circulareconomynetwork.it/wp-content/uploads/2019/04/Proposals-and-Research-Summary-Report-on-circular-economy-in-Italy-2019.pdf

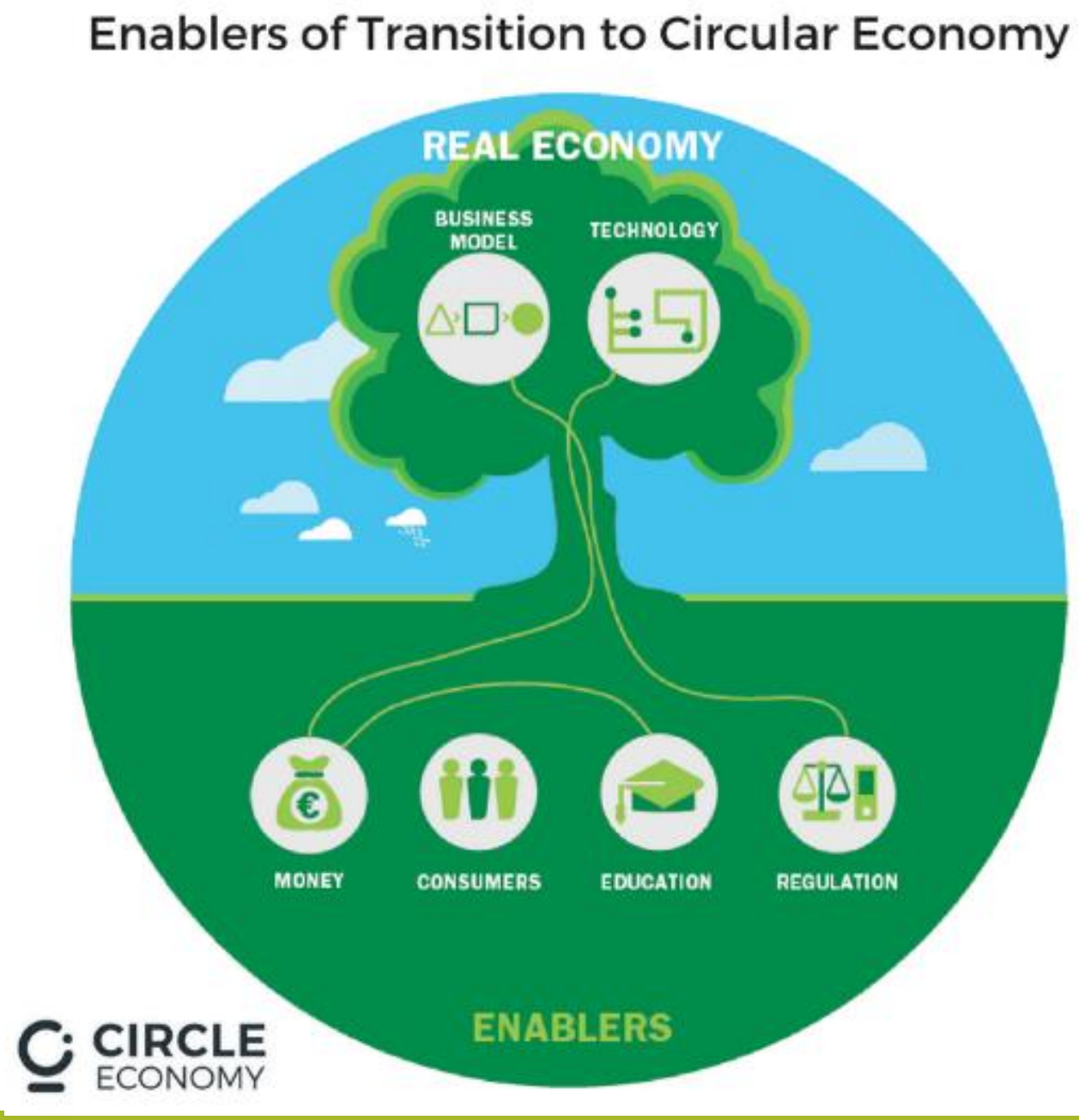

The circular economy offers a great opportunity window.

The circular economy opportunities



The Circular economy offers an opportunity to reinvent our economy, making it more sustainable and competitive:

- Legal framework
- Administrative conditions
- Economic instruments
- Public education and awareness.
- Change in consumer behavior.



CONCLUSION

The transition to the circular economy ***has at least three undeniable advantages:***

- reduction of negative environmental impact due to a reduction in the use of resources in production and, as a result, a cleaner and safer environment;

- reduction in production costs due to a decrease in the amount of primary resources used;

- the emergence of new markets, which means the creation of new jobs and an increase in the general level of welfare.

CONCLUSION

It is necessary to rethink the concept of "circular economy" through the prism of its relevance to many stakeholders:

- public and private entities;
- mature and developing industries;
- cities and regions
- small and medium enterprises and multisectoral corporations.

A circular economy can help governments, enterprises, and consumers focus on policies, practices, and ways to achieve sustainable development goals. The economy must adapt to the finite natural resources of our planet!

Take your mobile phones and go to the

Kahoot.it

THE CIRCULAR ECONOMY

The circular economy offers the opportunity to move away from our "take - make - dispose" model, by ensuring, through careful design and innovative business models, that *technical and biological materials continuously flow*, safeguarding valuable resources and restoring natural capital.

Thank you for your attention!

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