

CIRCULAR ECONOMY AND ITS DEVELOPMENT IN LATVIA

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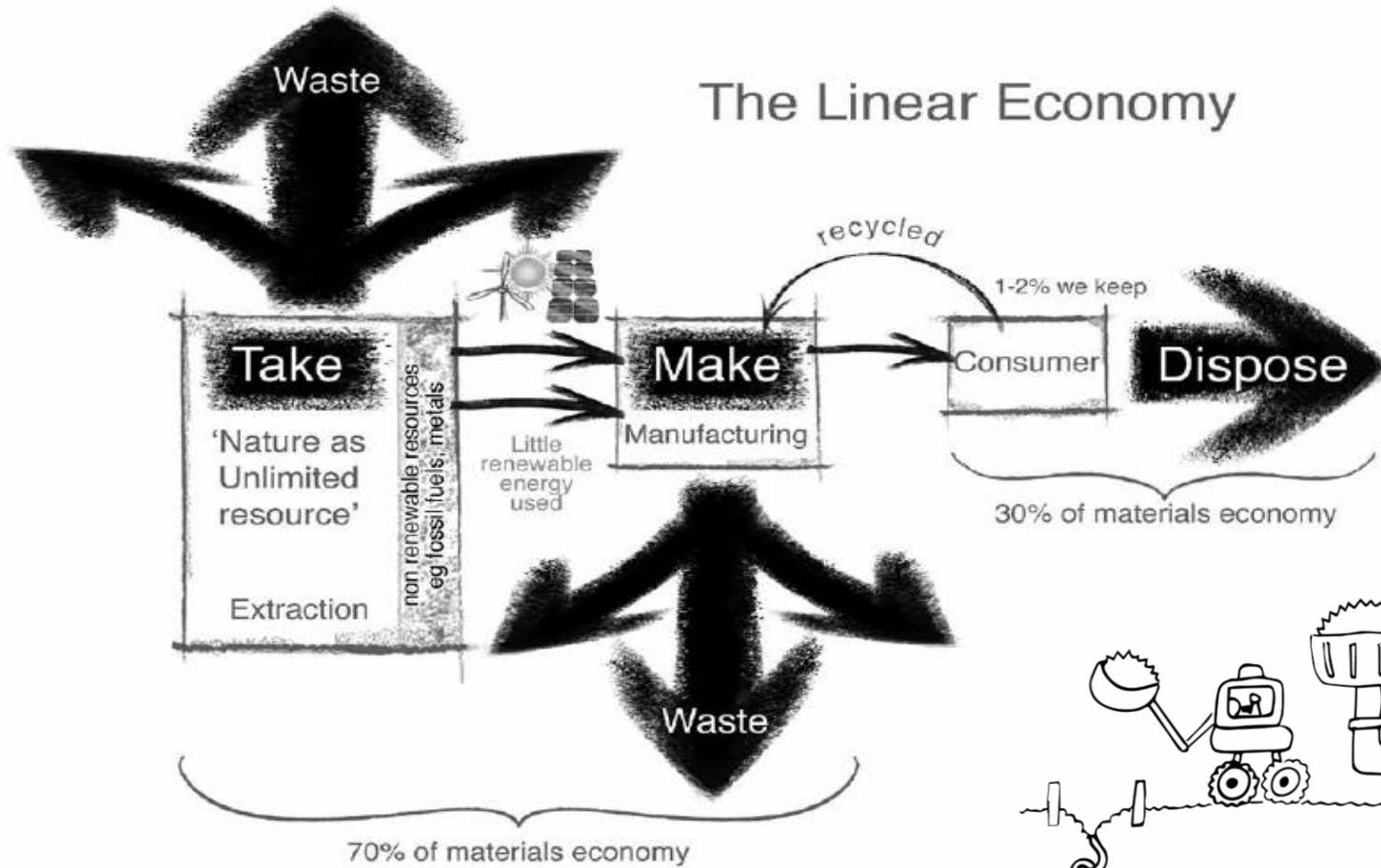
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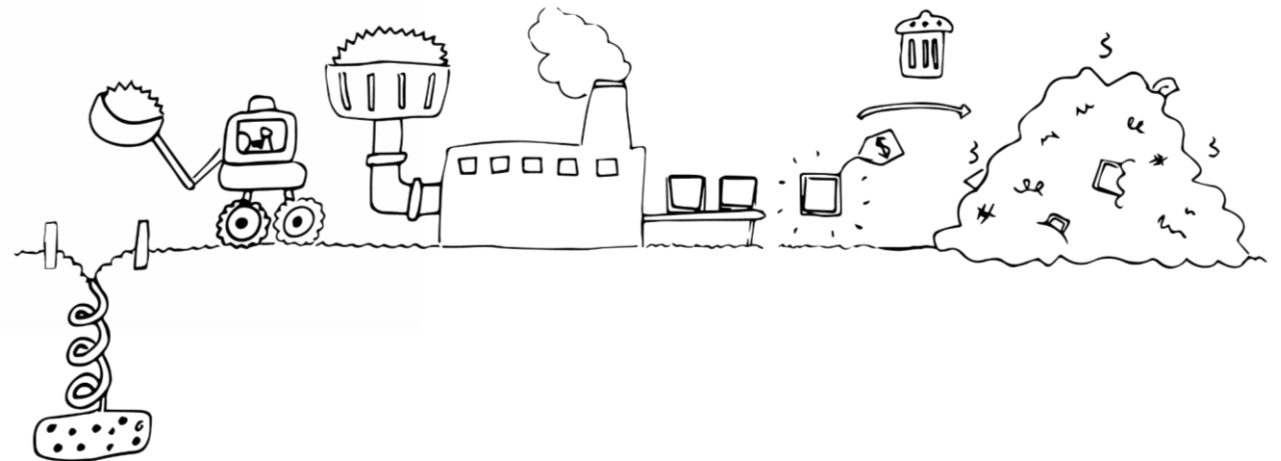
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The Linear Economy



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



Disadvantages of Linear economy



Resources like fossil fuels, food and water are increasingly hard to get.



Biodiversity is in decline worldwide. Still, we seem to take the ecological services provided by the natural world for granted.



The financial system almost crashed the entire economy.



Dependency on cheap energy, cheap materials, cheap credit

DRIVERS FOR CHANGE



**ECONOMIC AND
STRUCTURAL
LOSSES**



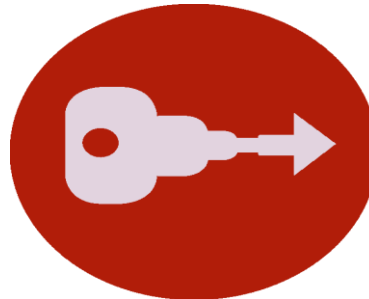
**PRICE
VOLATILITY**



**DEMOGRAPHIC
TRENDS**



URBANISATION



**ACCEPTANCE OF
NEW BUSINESS
MODELS**



**TECHNOLOGICAL
ADVANCES**

Sustainable development goals

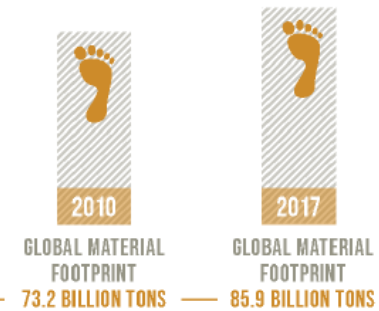


12. Responsible consumption

- Sustainability management of natural resources.
- Reduction of waste.
- Environmentally sound management of chemical and all types of waste throughout their life cycle.
- Food efficiency and food waste prevention.
- Sustainable production.
- Sustainable living – consumption patterns of households and individuals.

BEFORE COVID-19

THE WORLD CONTINUES TO USE NATURAL RESOURCES **UNSUSTAINABLY**



COVID-19 IMPLICATIONS

THE PANDEMIC OFFERS AN OPPORTUNITY TO **DEVELOP RECOVERY PLANS** THAT BUILD A MORE SUSTAINABLE FUTURE



FROM 2017 TO 2019, 79 COUNTRIES AND THE EUROPEAN UNION REPORTED AT LEAST ONE POLICY TO PROMOTE SUSTAINABLE CONSUMPTION AND PRODUCTION



ELECTRONIC WASTE GREW BY 38%

BUT LESS THAN 20% IS RECYCLED (2010-2019)



RISING FOSSIL FUEL SUBSIDIES ARE CONTRIBUTING TO THE CLIMATE CRISIS

\$318 BILLION (2015)

\$427 BILLION (2018)



HARVESTING



TRANSPORT



STORAGE

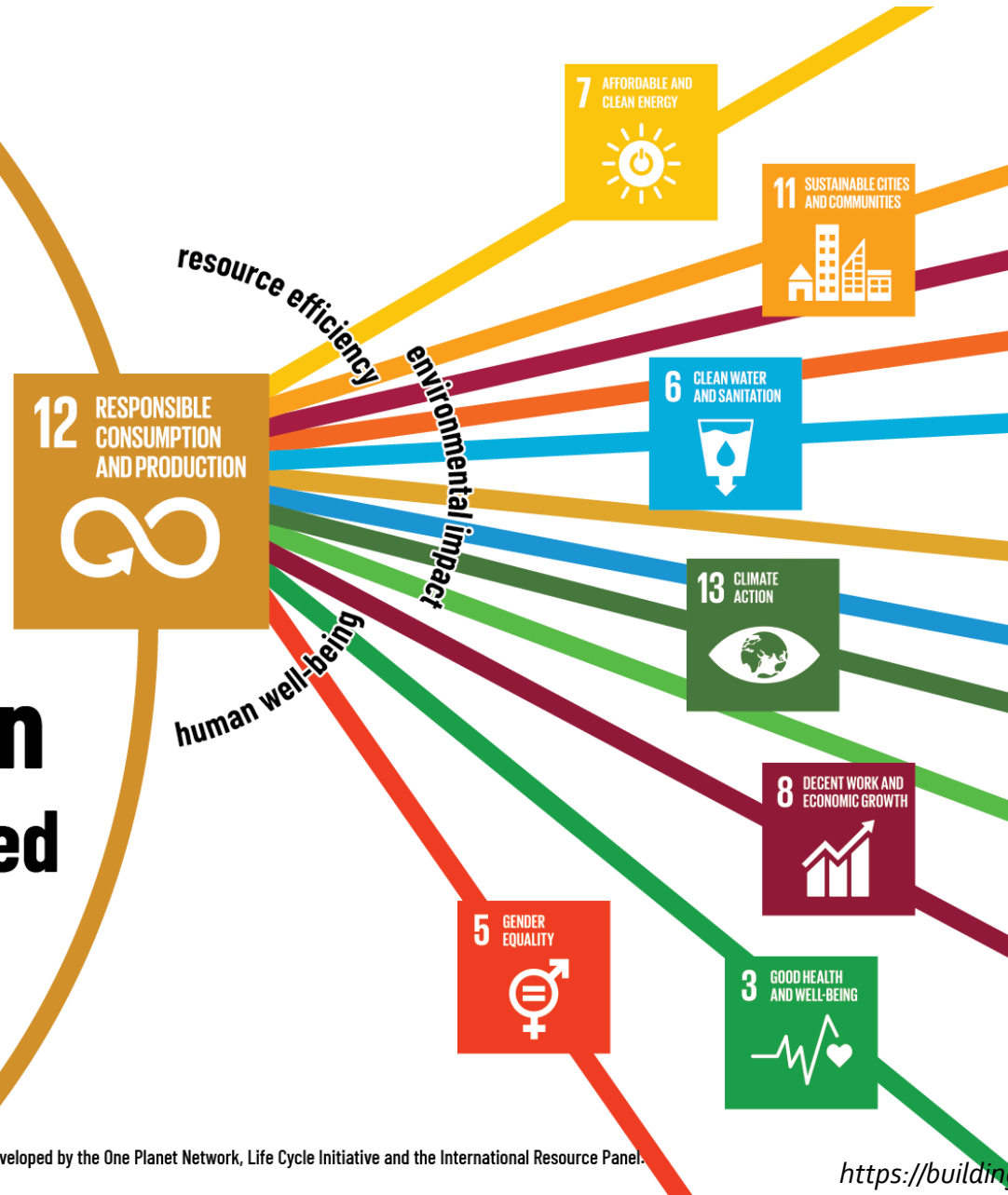


PROCESSING

13.8%

OF FOOD IS LOST IN SUPPLY CHAINS (2016)

Circularity is a way to achieve sustainable consumption and production and other interlinked SDG goals



Based on the One Planet Network Indicators of Success and the SCP impact indicators as developed by the One Planet Network, Life Cycle Initiative and the International Resource Panel.

<https://buildingcircularity.org/>

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?

Cleaner Production?

Eco-Efficiency?

Cradle to Cradle?

Product as Service?

Recovery?

Closing Loops?

Eco-innovation?

Circular economy in nature – look for biomimicry

- In nature, there is practically no such concept as “waste”;
- Waste of one creature – often is a nutrient for another;
- Human pose technogenic risks are generate a large amount of waste in a linear economy.

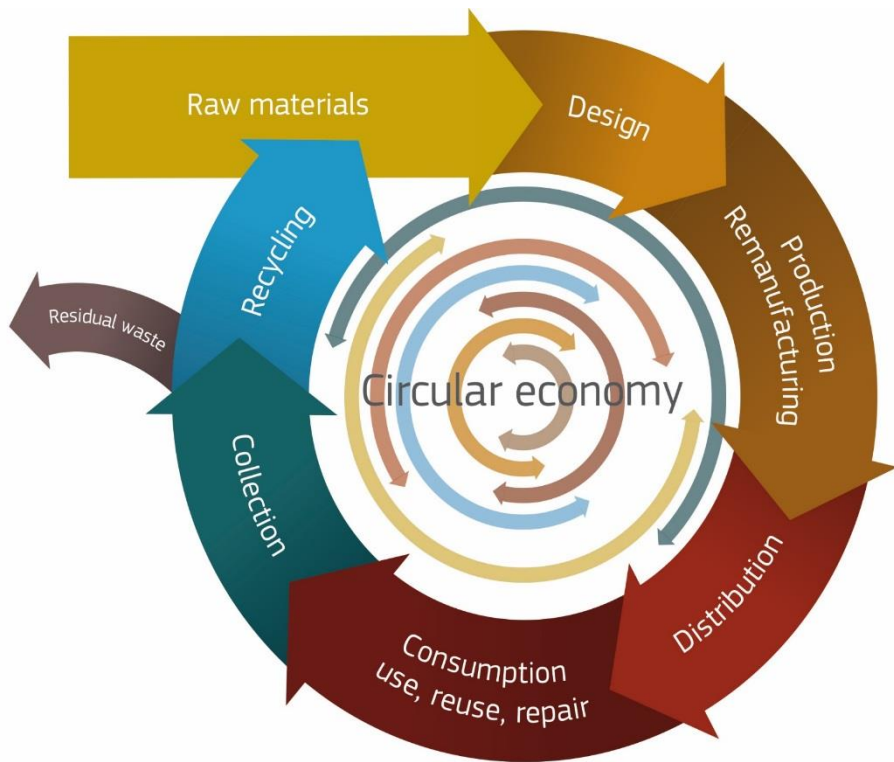
How can waste build capital rather than reduce it?



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?

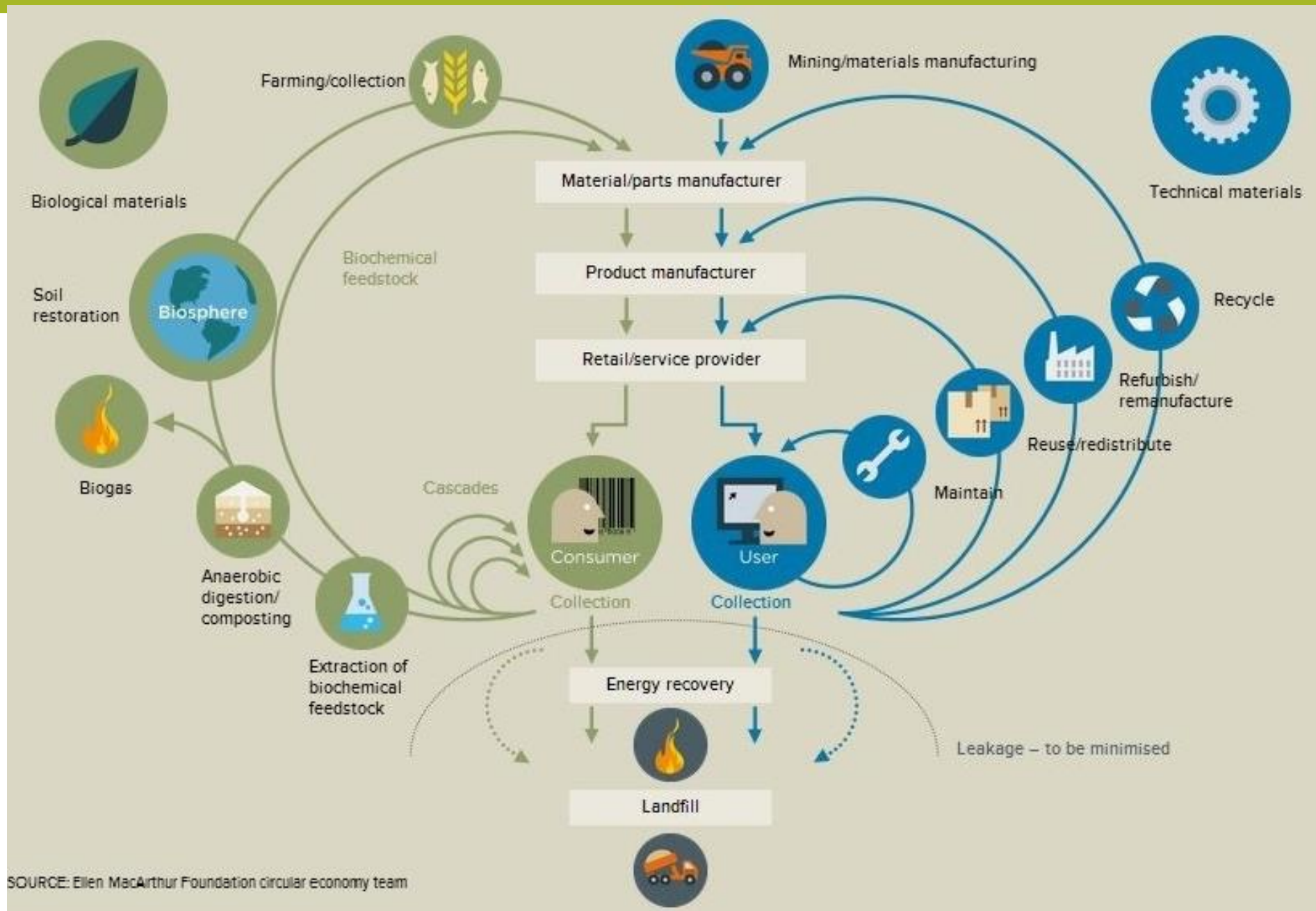


ELLEN
MACARTHUR
FOUNDATION

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

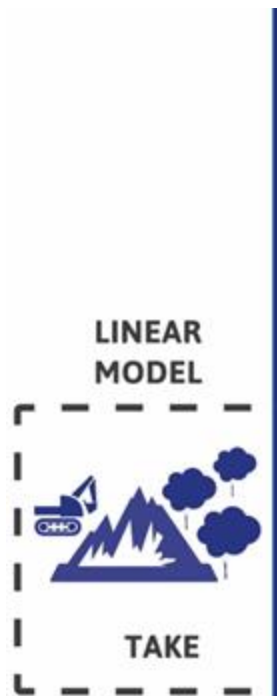


HERE IS A QUOTE WE RATHER LIKE:

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

- WALTER
STAHEL

Environmental benefits of circular economy



Possibility to decrease:

- Emissions;
- Use of primary resources;
- Negative external factors.

Possibility to optimise:

- Agricultural productivity;
- Supply chain;
- Resource consumption.

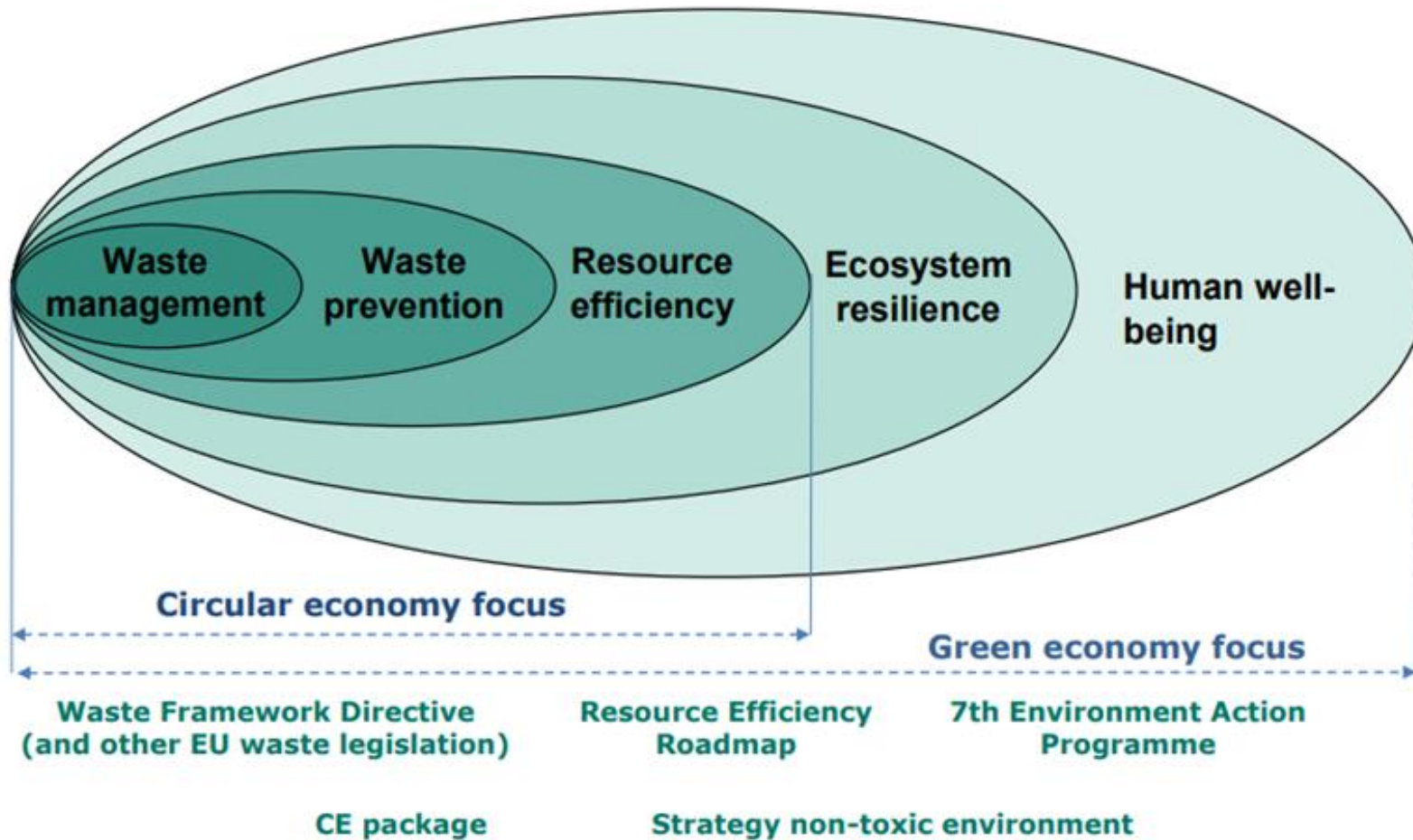


Circular economy



- The circular economy is a new way of creating value, and ultimately prosperity.

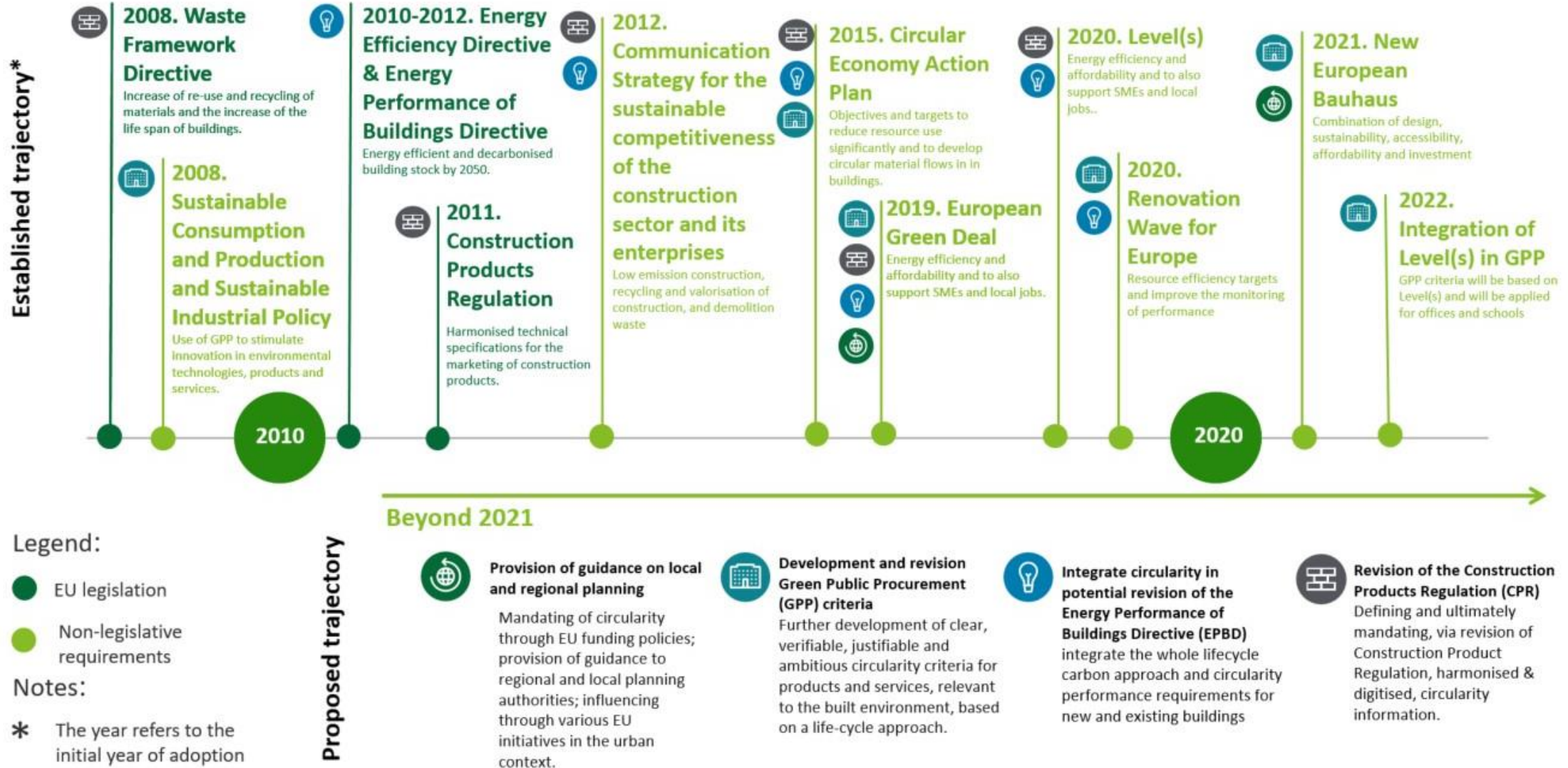
CE and Green Economy

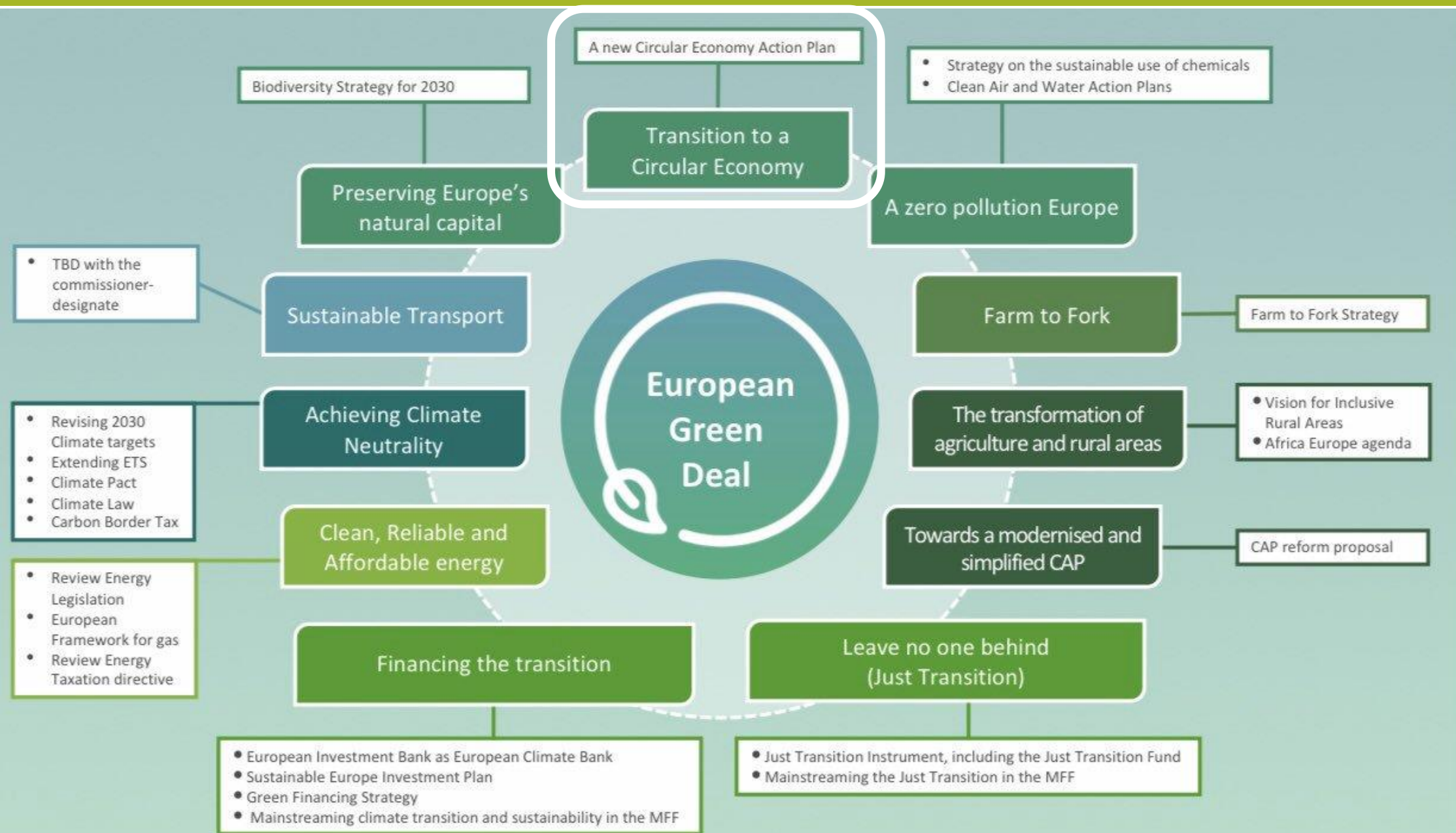


(European Environment Agency, 2016, p. 31)

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





Source: https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf

EU wants to achieve climate neutrality by 2050

How to get it on track?

- investing in new environmentally friendly technologies,
- supporting industrial innovation,
- introducing cleaner, cheaper and healthier modes of private and public transport,
- decarbonising the energy sector,
- increasing the energy efficiency of buildings,
- working with international partners to improve global environmental standards.

The benefits of the European Green Deal



fresh air, clean water,
healthy soil and
biodiversity



renovated, energy
efficient buildings



healthy and affordable
food



more public transport



cleaner energy and
cutting-edge clean
technological
innovation



longer lasting
products that can be
repaired, recycled and
re-used



future-proof jobs and
skills training for the
transition



globally competitive
and resilient industry

Circular Economy & Circular Business

- Increased scholars' attention in last 5 years
- Yet, a small, but an increasing share in the economy

Macro level



Circular economy -
environmental and
climate change
solutions on
country/ global level

Meso level



Circular economy
minimise waste
and consumption
on industry/
region level

Micro level



engage
customers to
use products
longer and
reduce waste

Circular Business Models

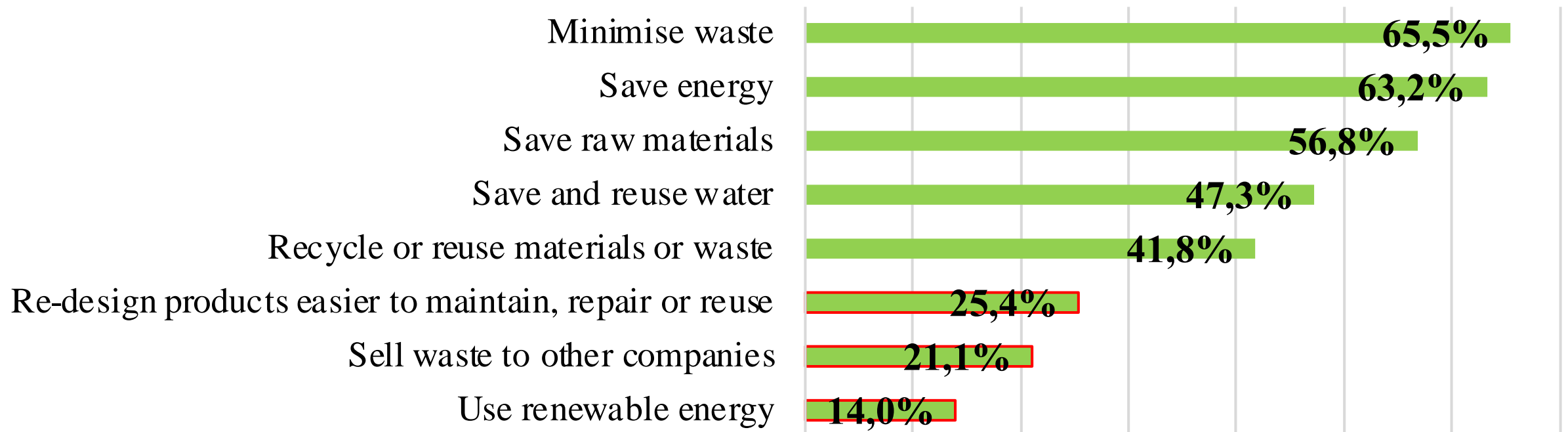


reduce costs &
waste, recycle
resources into new
products with
added value

On the company level

GREEN DIET in European SMEs

Implementation of CE principles within European SMEs



3R Circular Economy Principles

NARROW DOWN
the material flow



More efficient use of
raw materials and other
resources



#R1 - Reduce

SLOW DOWN
the material flow



During the product design
stage, the product is
expected to have a longer
service life



**#R2 – Reuse or use
longer**

CLOSE
the material flow



Recycling or reuse of
materials after processing



#R3 – Recycle





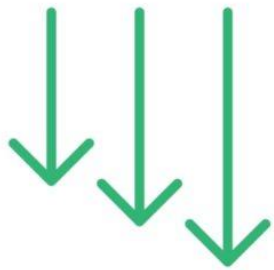
RETHINK



REFUSE



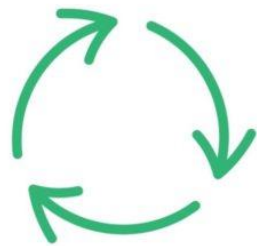
REPAIR



REDUCE



REUSE



RECYCLE



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

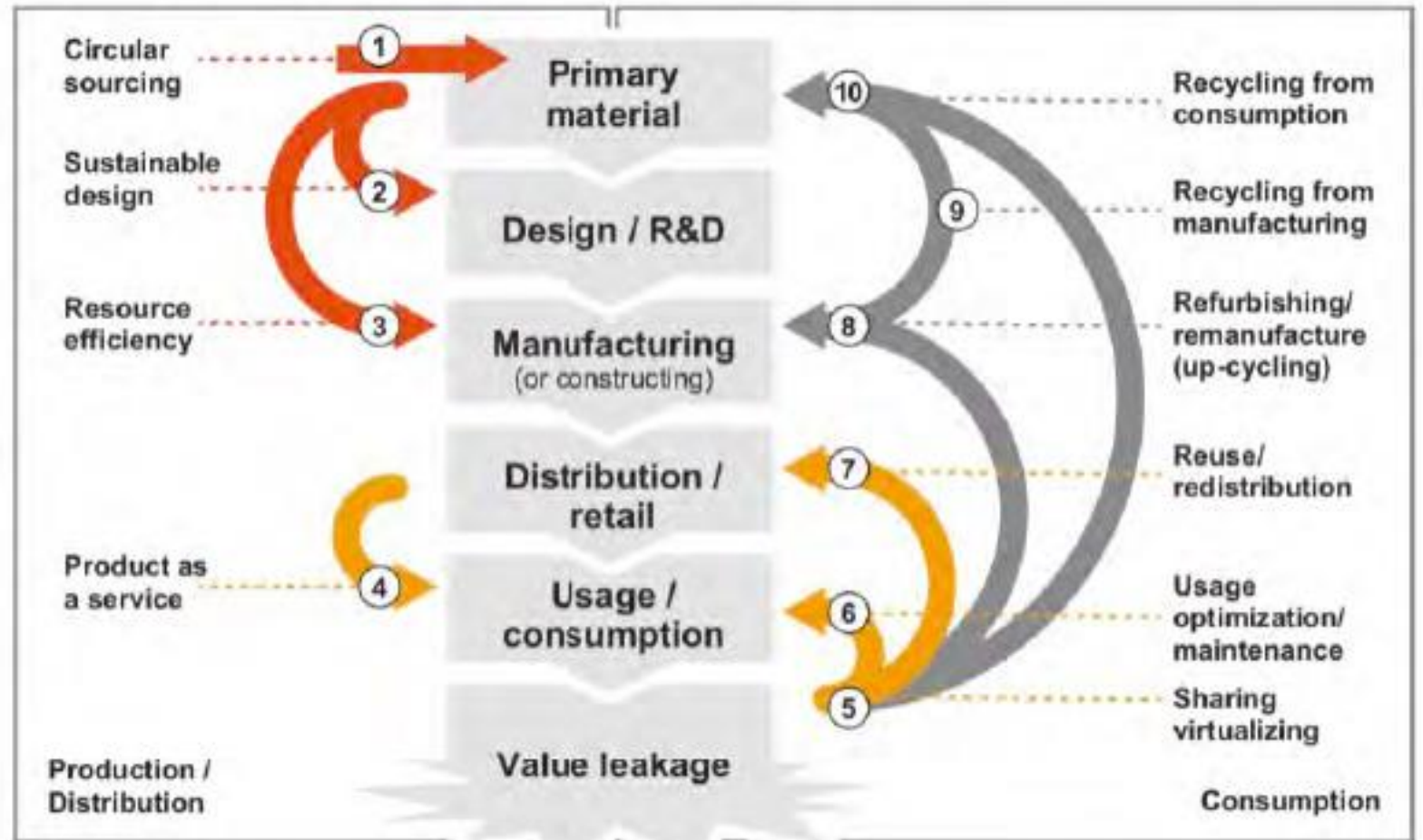


Source: French Environment and Energy Management Agency (Ademe):

Circular economy implementation

3 Principles

& 10 Corresponding Strategies



CE initiatives		Definitions
Prioritise renewable inputs	① Circular sourcing	Replace finite resources / materials with renewable, bio-based, or recycled materials in the production process
	② Sustainable design	Design products - and select raw materials - such that they can be effectively disassembled, reused, repaired and up-cycled
	③ Resource efficiency	Optimise usage of raw materials / resources – minimise waste – in the production process
Maximise product use	④ Product as a service	Provide a service in areas that were traditionally sold as products; increases the product lifecycle through repurposing at the end of usage
	⑤ Sharing/ virtualising	Share durable assets such as cars, rooms, appliances, and digitise products to increase their lifetime (e.g., books, music, shopping, autonomous vehicles etc.)
	⑥ Usage optimisation/ maintenance	Increase performance / efficiency of a product and prolong life through maintenance
	⑦ Reuse/ redistribution	Purchase and sell second-hand and previously owned products to increase product lifecycle
Recover by-products and waste	⑧ Refurbishing/ remanufacture	Remanufacture products or components for a new usage, instead of down-recycling
	⑨ Industrial symbiosis Recycling from manufacturing	Waste or by-products from manufacturing become the inputs for another product
	⑩ Recycling from consumption	Recycle discarded materials after the end of consumption

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.

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

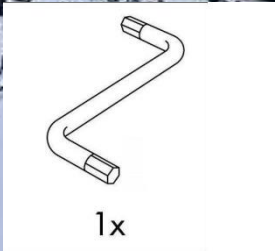
Cross-chain and cross-sector collaboration, IT tools



Reverse Logistics

Reverse supply chain for Remanufacturing
Upgrade
Parts harvesting
Materials recovery

Design for (dis-)assembly



CIRCULAR ECONOMY - VALUE & BENEFIT LEVERS

REGENERATE

- Shift to renewable energy and materials
- Reclaim, retain, and restore health of ecosystems
- Return recovered biological resources to the biosphere



SHARE

- Share assets (e.g. cars, rooms, appliances)
- Reuse/secondhand
- Prolong life through maintenance, design for durability, upgradability, etc.



OPTIMISE

- Increase performance/efficiency of product
- Remove waste in production and supply chain
- Leverage big data, automation, remote sensing and steering



LOOP

- Remanufacture products or components
- Recycle materials
- Digest anaerobic
- Extract biochemicals from organic waste



VIRTUALISE

- Dematerialise directly, e.g., books, CDs, DVDs, travel
- Dematerialise indirectly, e.g., online shopping, autonomous vehicles



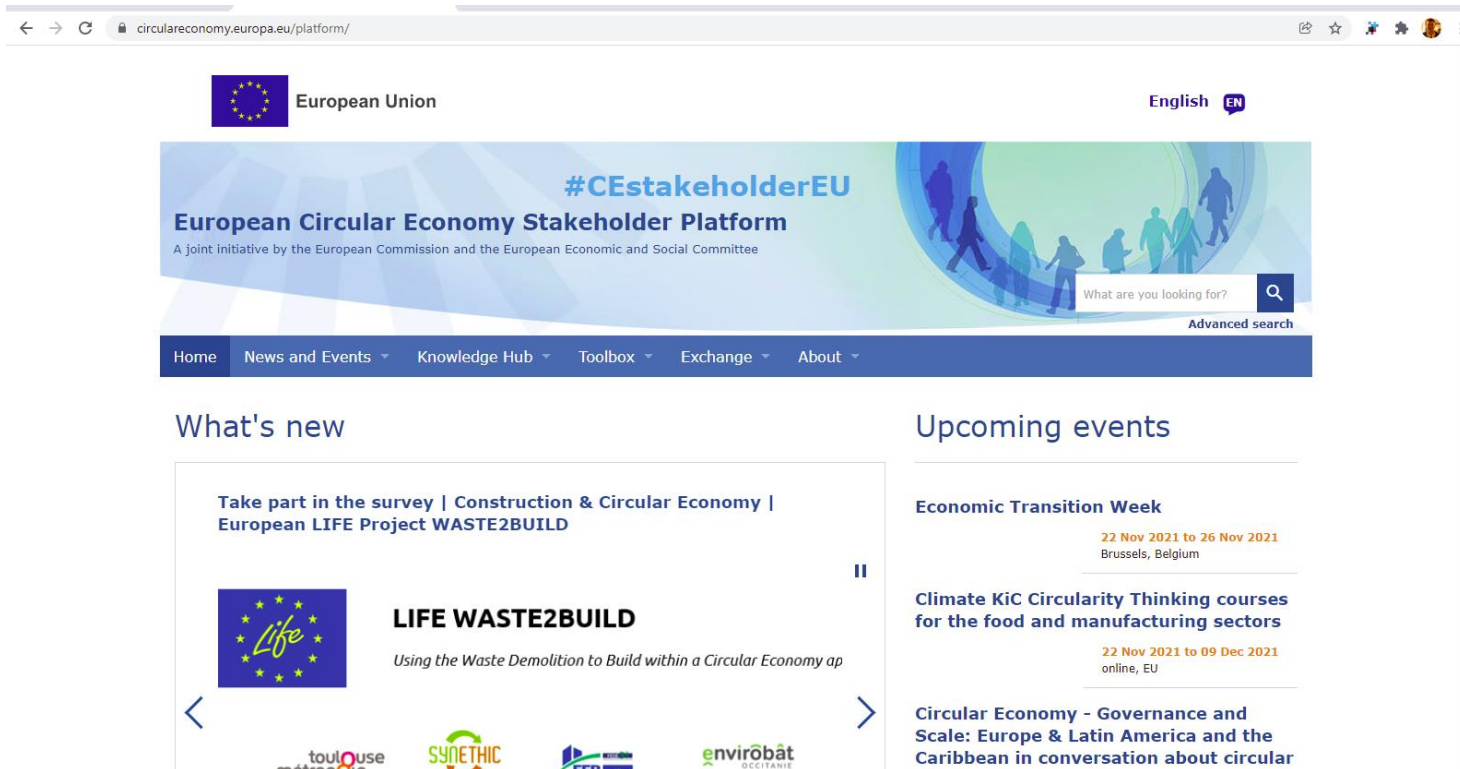
EXPLORE

- Replace old with advanced non-renewable materials
- Apply new technologies (e.g. 3D printing)
- Choose new product/service (e.g. multimodal transport)



A platform for stakeholders in the circular economy

- The website is available from 10.11.2017. It brings together best practices, commitments, policy statements, strategies, reports and research.



<https://circulareconomy.europa.eu/platform/>

The annual World Circular Economy Forum (WCEF)

ABOUT

PROGRAMME

SPEAKERS

PARTNERS

LATEST

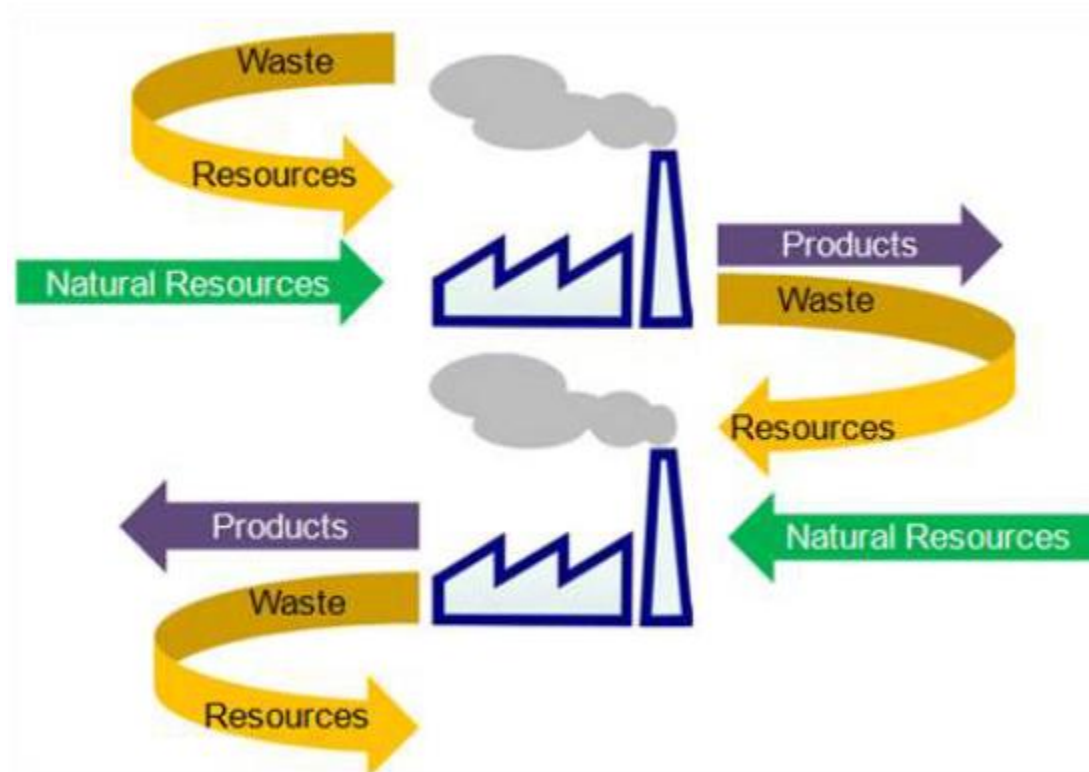
MEDIA



<https://www.wcef2021.com/about/>

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, greenhouses;
- Greening – low quality compost production;
- Domestic heating;
- Construction materials;
- Fish and pig farms.



Downcycling vs Upcycling

Woodprocessing



Woodchip as a heating material



Briquettes, granules

Downcycling vs Upcycling



WHEY

Leftovers from
cheese and cottage
cheese production



Produce:

- Protein Smoothy
- Lactose for icecream
- Cosmetics

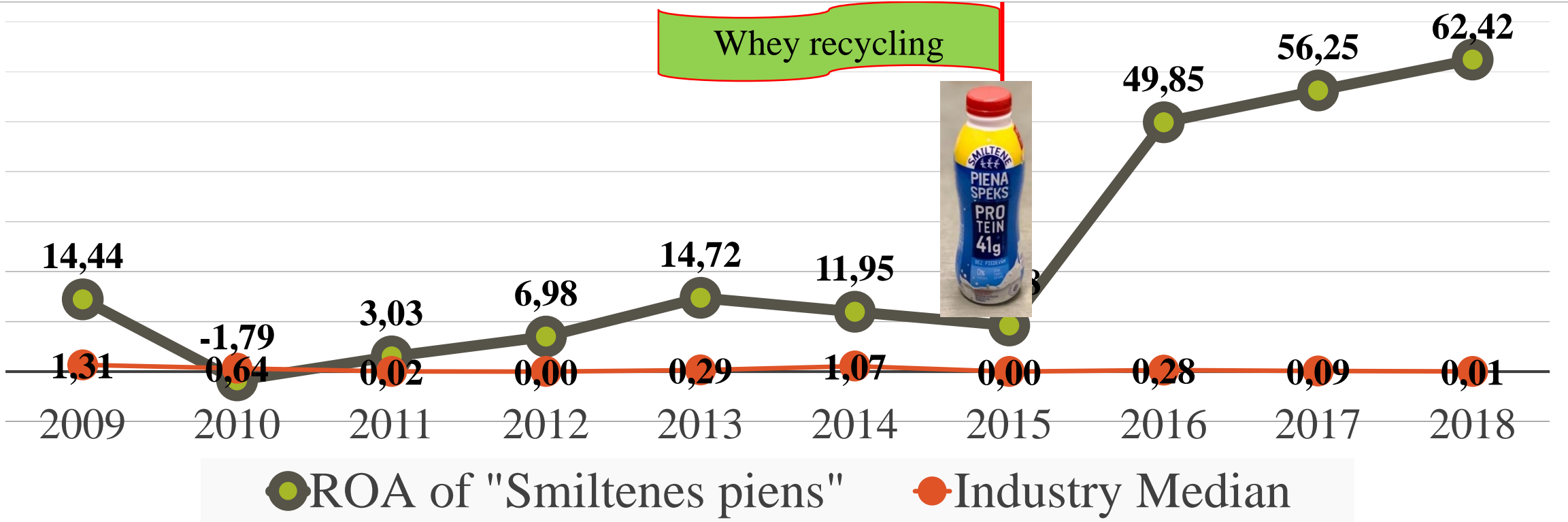


**Feeding
animals**

Financial benefits

ROA of company "Smiltenes Piens" significantly increased since the adoption of whey recycling, exceeding 3 times the industry

Whey recycling



Upcycling end-of-life tyres

Construction, interior, exterior

- Elastic rubber blocks and bricks
- Composite panels
- Cement composite
- Roadway (asphalt) material
- Rubber floor material: tiles, plates
- Athletic, golf-course, tennis and playground surfaces
- Artificial lawn materials and turf

Car and transport industry

- Car mud flaps and mats
- Ballast mat for high-speed trains

Other consumables

- Animal mats
- Carpet backing material
- Inferior shoes bottom and heels



High quality, natural and longer lasting

Transforms, changes design and application

Natural hemp fiber



The clothes grow with the child



www.punainennorsu.com

Reuse – repurpose - redesign



- ✓ New offer for customers
- ✓ Customer satisfaction is increasing
- ✓ Higher product quality

Not standardised tomatoes are produced in juice



Benefits

- ✓ Efficient use of resources and waste
- ✓ Waste creates added value and income
- ✓ New products

Rida.lv



Valmiermuiža+Liepkalni

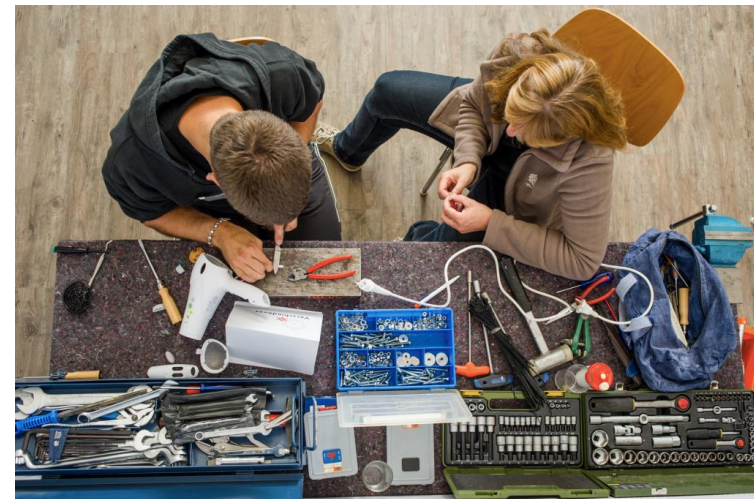


Circular economy – a shift to sharing economy

- 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



AUTOLEVI



non-profit (social) projects

- Sale / gift of goods



Sharing of cars/ ride

Sell solution insted of product



Take back used and reuse (reverse logistics)



Social effect on
human well-being

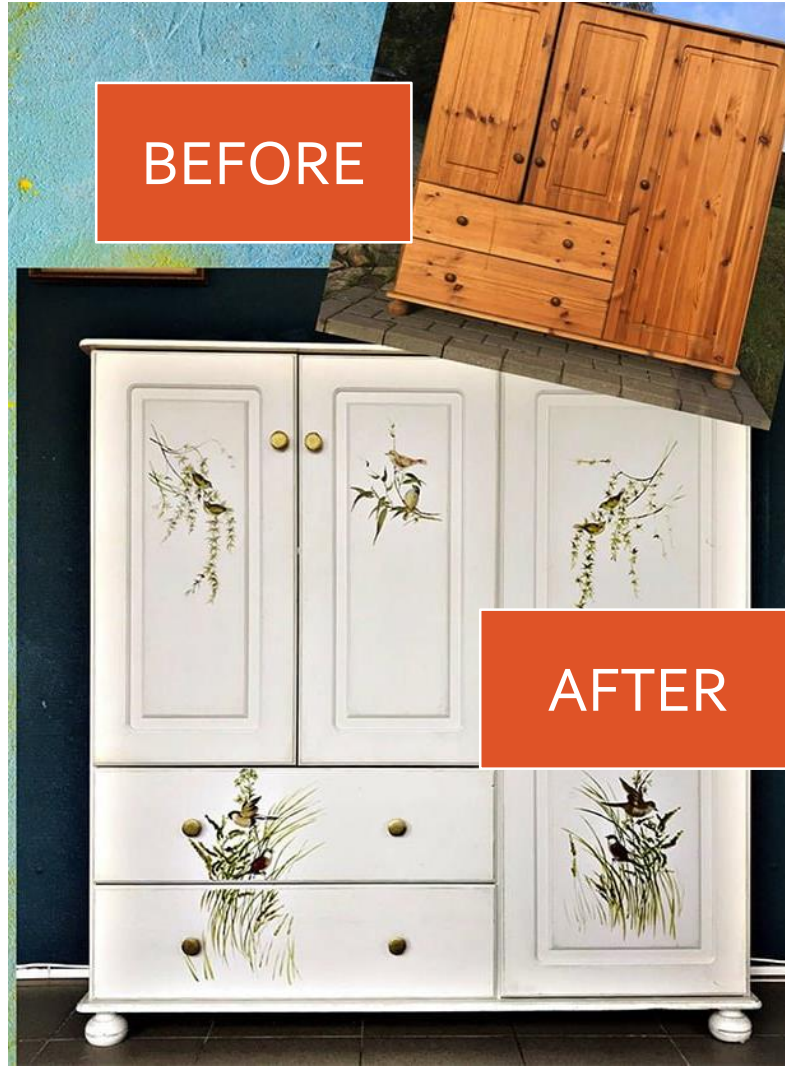
REPAIR, REFURBISH



BEFORE

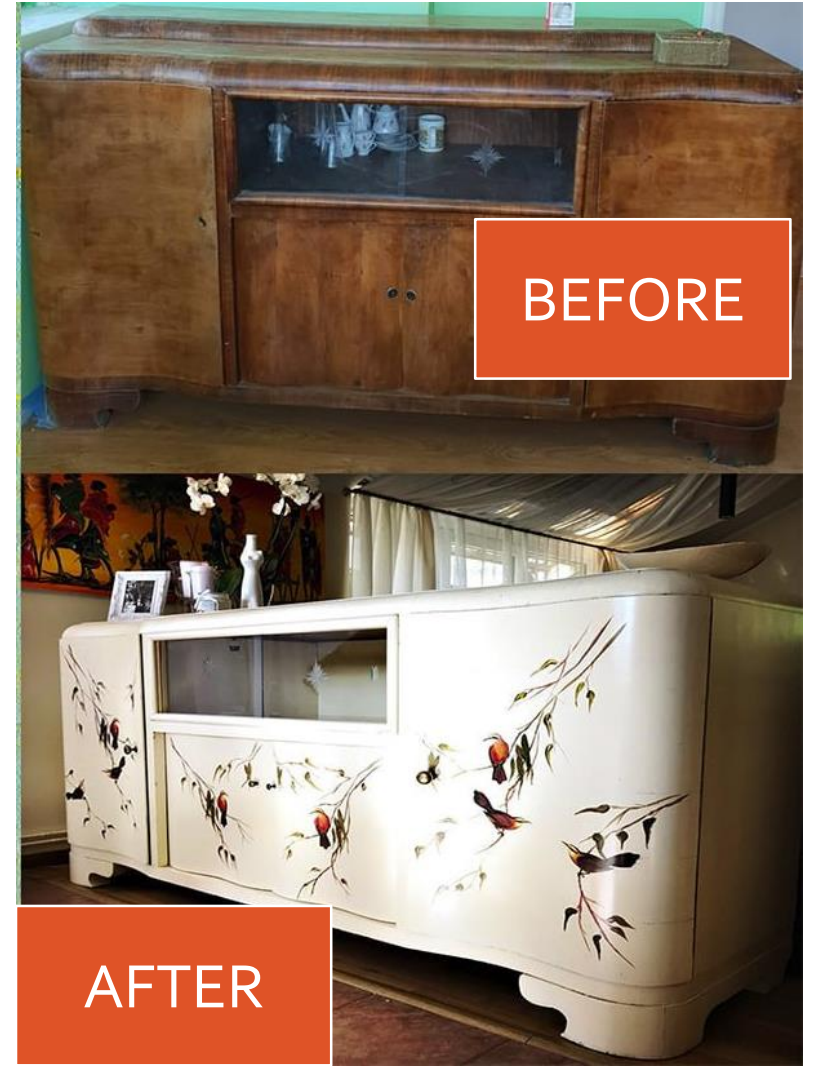


AFTER



BEFORE

AFTER



BEFORE

AFTER

“Zero waste” shops

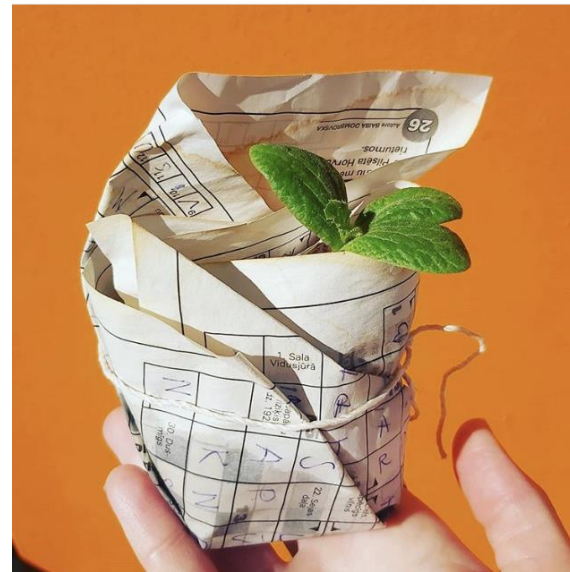
veikalsturza



beziepakojuma_burka



bodnica_zero_waste
Riga, Latvia



bioteka.lv
BIO.LV



growing trend...

Buy fewer products but ... spend less on healthy recreation and adventure



www.flowpark.eu

Active adventure trails near supermarkets and shopping centers

Benefits

- ✓ New offer for customers
- ✓ New sources of income
- ✓ Green reputation



Less chemicals, natural and local food

The flour is so white that it sells itself

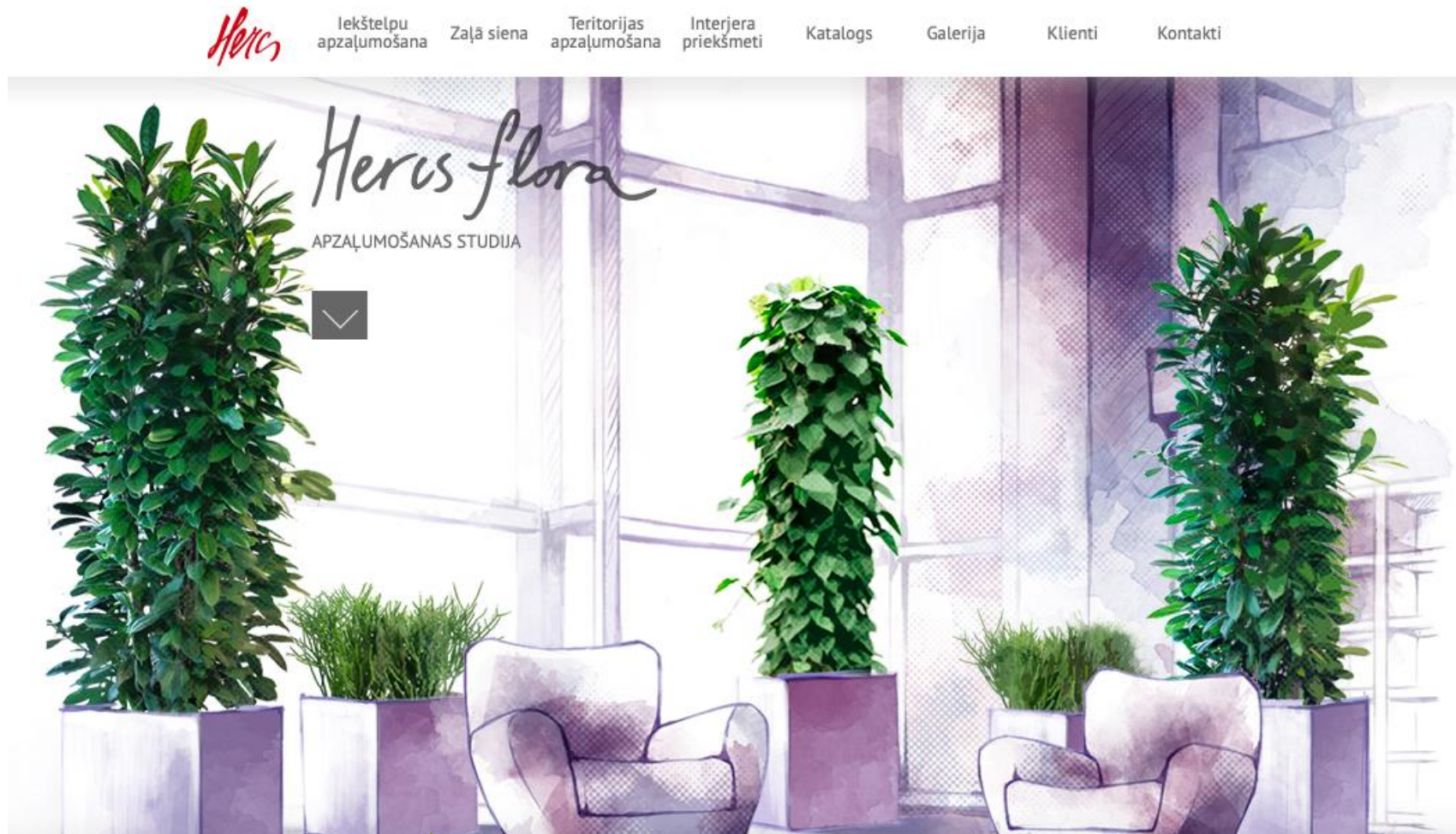


<https://kotinuveikals.lv>

Benefits

- ✓ Risks are reduced
- ✓ Logistics, sales and packaging costs are reduced
- ✓ Green reputation

Sell a service, not a product



Benefits

- ✓ New business model
- ✓ Stable cash flow in the long run
- ✓ Loyal corporate customers

"If everyone...is the network"

What is E-Waste?

Electronic Waste

(E-Waste)

or called 'WEEE'
(Waste from Electrical and Electronic Equipments)

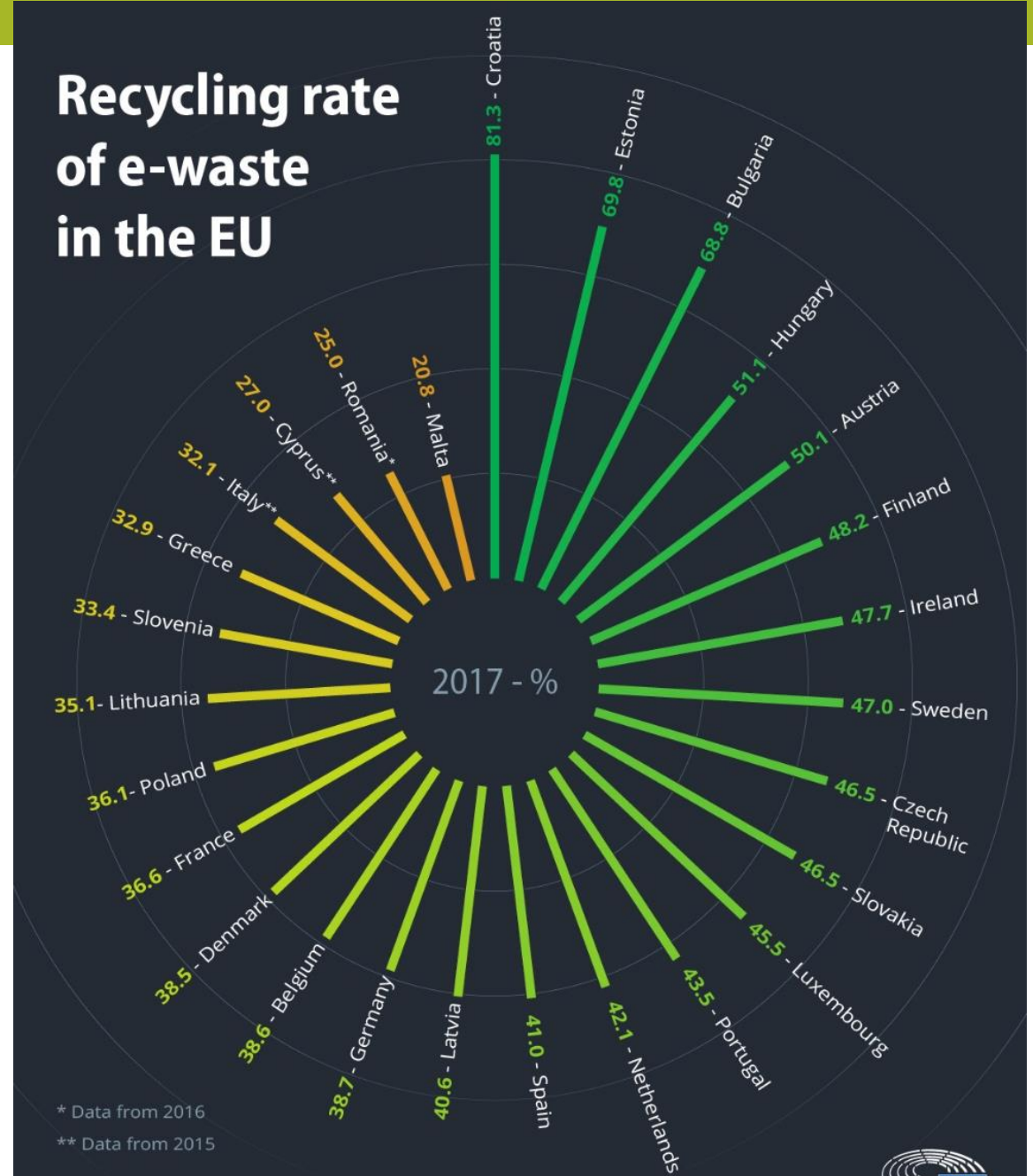
Is Waste from Electrical and Electronic Equipment which uses electricity or magnetic fields to non-standard work (Off-spec) or expired to use or outdated.

Types of Electronic Waste

Products	Average Lifetime
Television	18 years
Refrigerator	14 years
Washing Machine	12 years
Air Conditioner	10 years
Computer	7 years
Computer Monitor (CRT)	9 years
Mobile Phone	2 years
Mobile Phone Battery	1 year
Fluorescent Lamp	1 year
Dry Battery	2 months

Refer: Pollution Control Department,
Ministry of Natural Resource and Environment

Recycling rate of e-waste in the EU



* Data from 2016

** Data from 2015

Business model with «return» and «resell» strategies



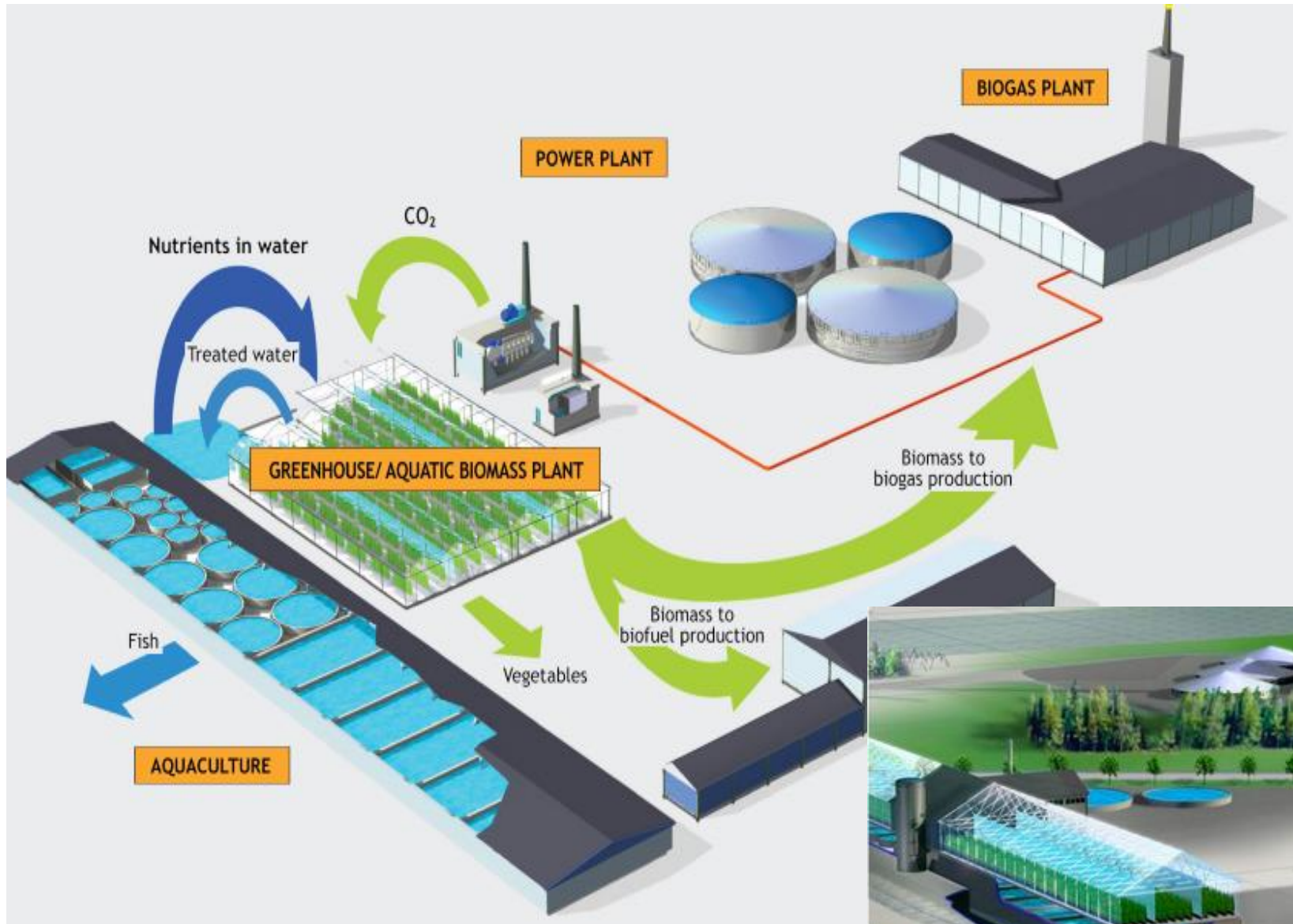
Open rent
agreement of
electronic
devices

Take back used
phones and resell

If too used –
properly
dispose for
recycling



Waste-free management



Collaborate and combine multiple business models



Sybimar, Finland

The circular economy offers a
great opportunity window.



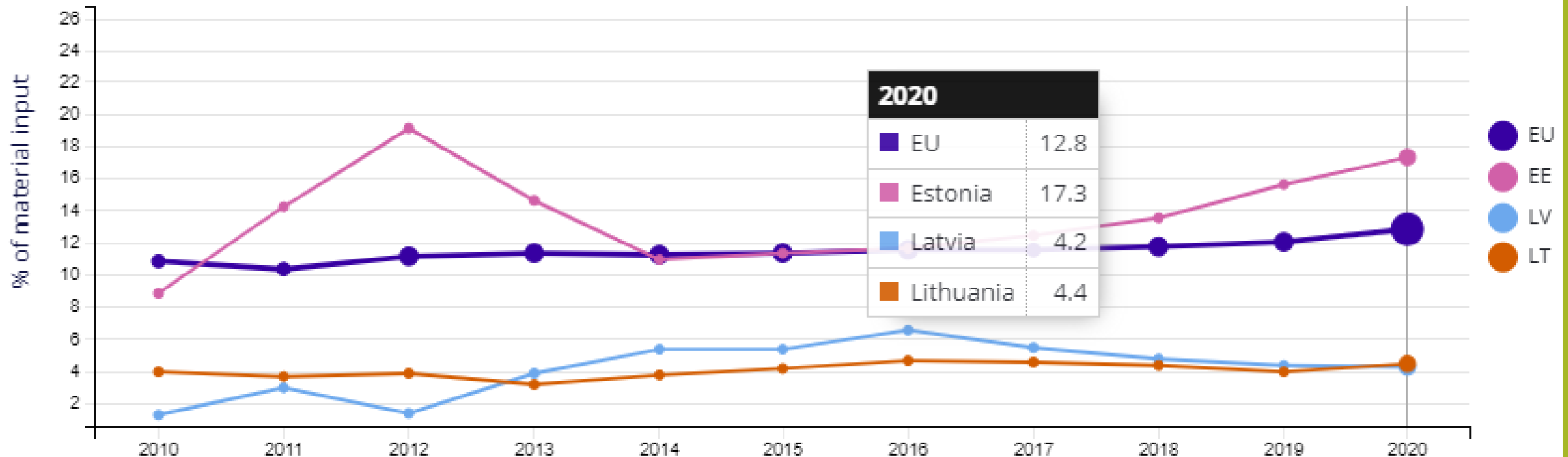
- NATIONAL DEVELOPMENT PLAN OF LATVIA FOR 2021-2027 was approved on 2 July 2020 by decision of the Saeima of the Republic of Latvia No. 418/Lm13

https://www.pkc.gov.lv/sites/default/files/inline-files/NAP2027__ENG.pdf

- On the Action Plan for the Transition to a Circular Economy 2020-2027 year was approved on 4 September 2020 by the Cabinet of Ministers order No. 489

<https://likumi.lv/ta/id/317168-par-ricibas-planu-parejai-uz-aprites-ekonomiku-20202027-gadam> (in Latvian)

Circularity rate / Circular material use rate (% of material input)

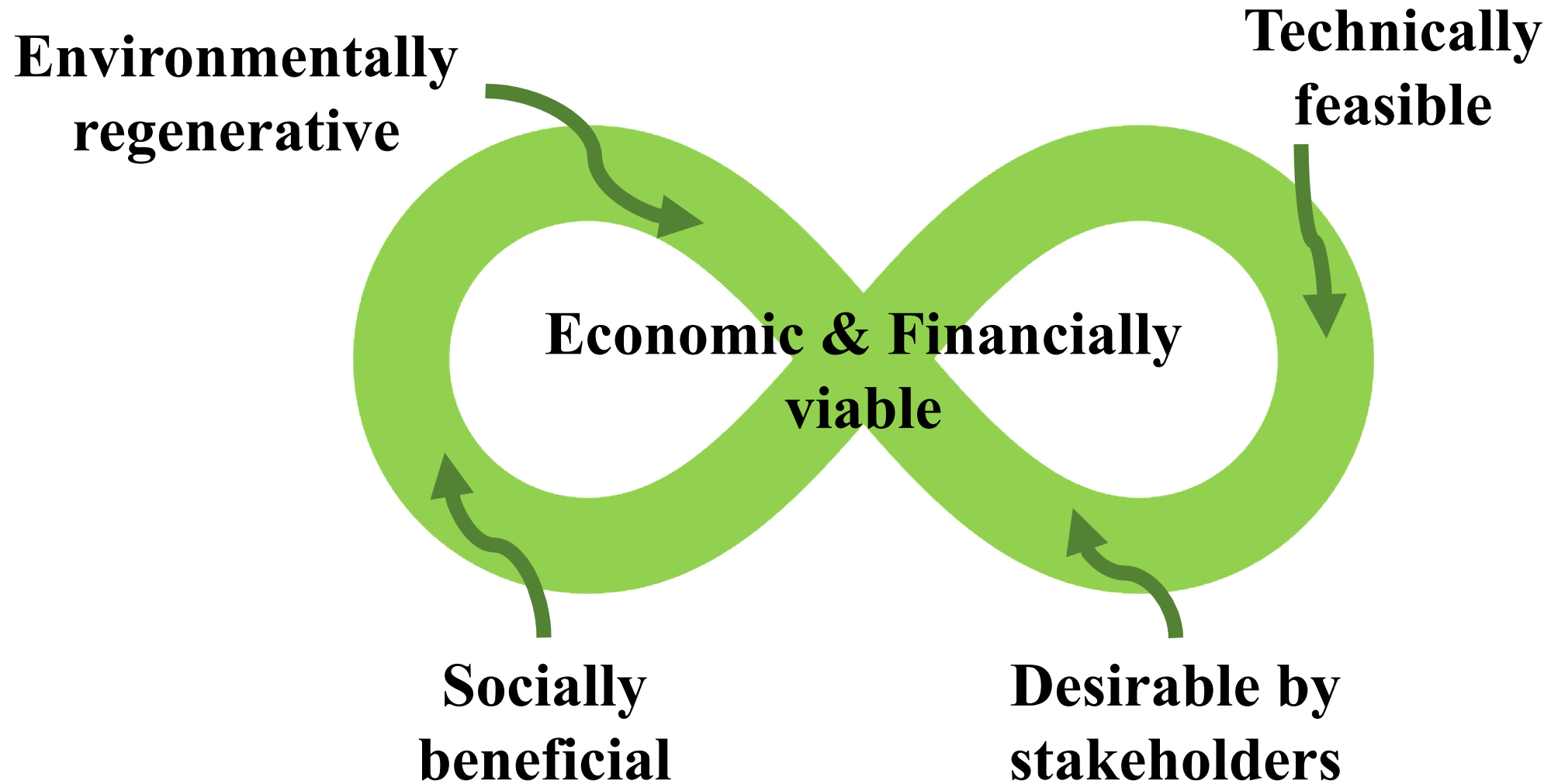


REPORT ON CIRCULAR ECONOMY IN ITALY



[CIRCULAR ECONOMY IN ITALY \(rvo.nl\)](https://www.rvo.nl)

Infinity of Circular Economy Principles



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

- Waste is no longer a waste, but a valuable resource.
- European Green Deal is an ambitious step towards a circular economy without the possibility of operating within the business as usual model.
- Circular economy is a solution to create more green jobs.
- Green finance determines the need to include social and environmental components in the company's price.

Take your mobile phones and go to the
Kahoot.it

Reading

- [What is circular economy](#)
- [Videos about circular economy](#)
- [Circular Economy | World Economic Forum \(weforum.org\)](#)
- [The World Circular Economy Forum 2021 - WCEF2021](#)
- [CIRCULAR ECONOMY IN ITALY \(rvo.nl\)](#)
- <https://ellenmacarthurfoundation.org/>

Thank you for your attention!



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