CIRCULAR ECONOMY
EUROPEAN GREEN DEAL
SUSTAINABLE DEVELOPMENT GOALS: THREE CONCEPT AT INFANT STAGE. HOW CAN THEY LIVE TOGETHER? HOW ARE THEY PART OF ECONOMIC DEVELOPMENT?

"Doubts can only be removed by actions".

J. W. Goethe

"We received this world as an inheritance from past generation, but also as loan from future generations"

Pope Francesco

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Maggio 2022

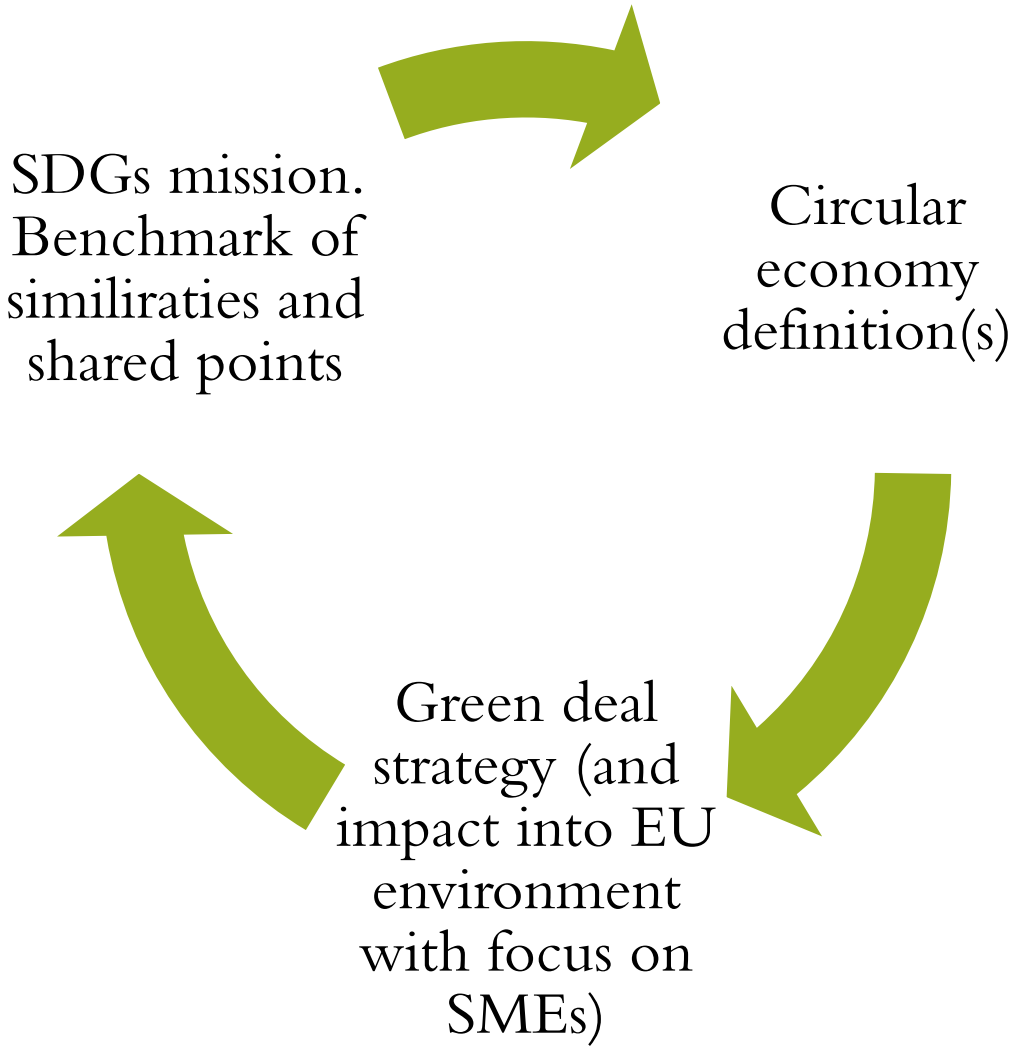
The next 15' will induce several doubts, hopefully also at least one action.

From:

Take-Make-Use-Dispose (LE)

to

Reduce, Reuse, Recycle, Recover (CE)



Circular Economy (CE) definitions (114 retrieved, 95 are different, but I am not going to present all) ★ (J. Kirker et al. 2017)

Which is the understanding of "Circular Economy"? Today perceived as a COMBINATION of "Reduce", "Reuse" and "Recycle"★; but CE is a "systemic shift"★

CE is intimately connected with "Sustainable Development"★

Ellen MacArthur foundation 2012 is the seminal definition

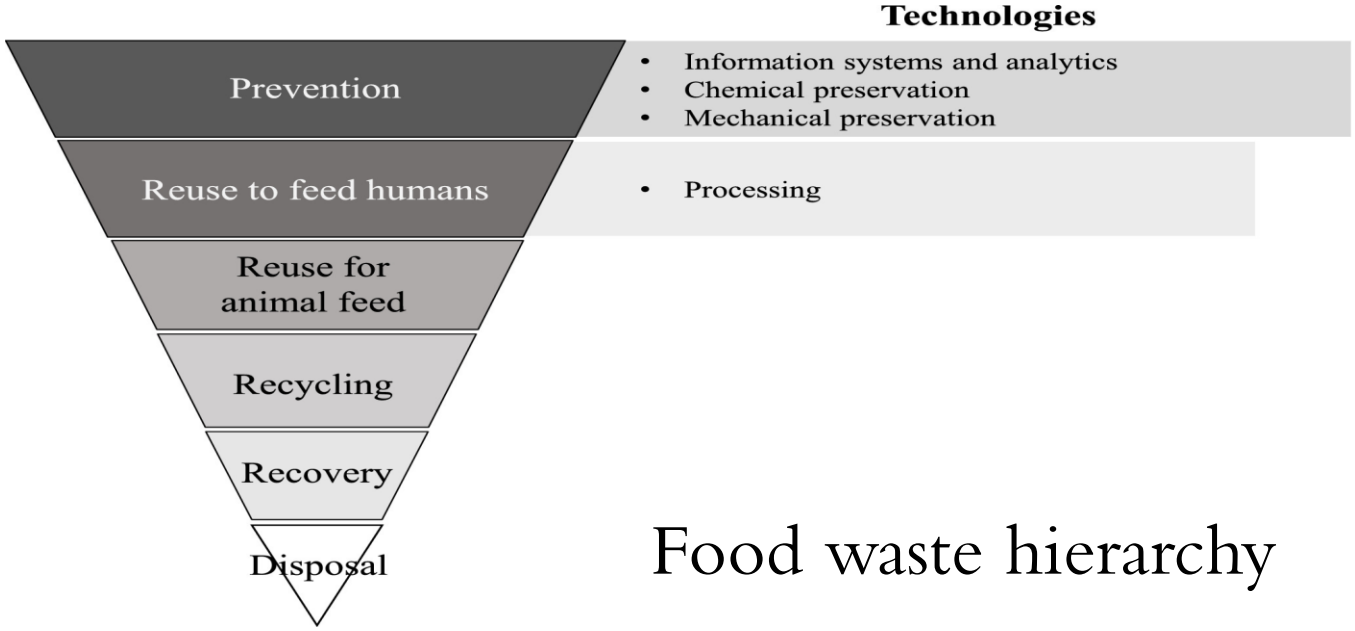
The official EU document on CE is based on the: 4R (present in 4% of definitions) -> Reduce, Reuse, Recycle, Recover

Recycling is the most adopted dimension (79% of definition), Reuse: 74-75%, Reduce: 54-55%: a 3r system seems to be passed through

Only 12% of definitions include the Sustainable Development Concept

Most frequents critics to CE: neglecting Social Equity (18-20% of definitions)

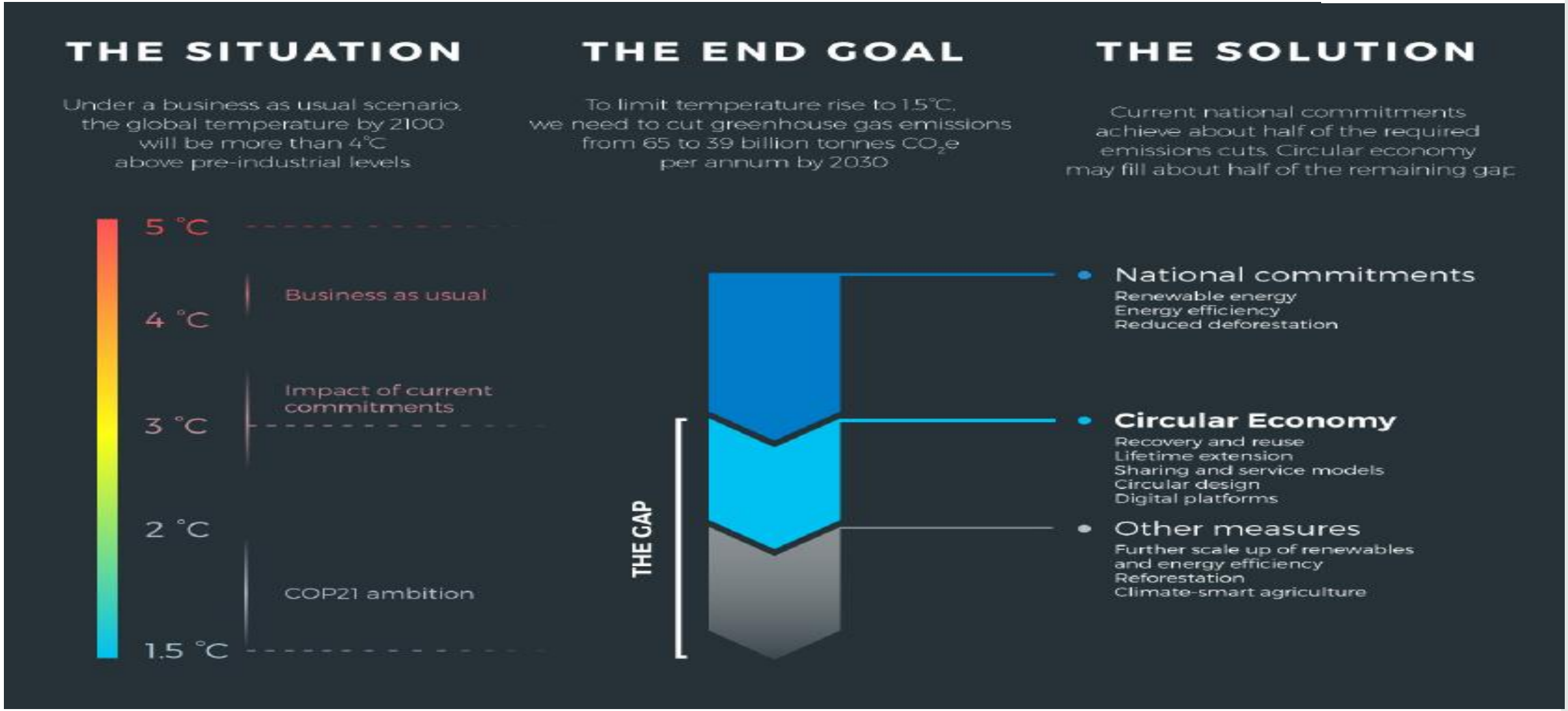
(i) Reverse supply chain activities and higher degree of cooperation with the actors of the supply chain	(ii) Transition from a "pay-per-own" to a "pay-per-use" approach	(iii) Higher degree of cooperation between companies and customers	(iv) Payment for use-oriented or result-oriented services
Value network	**Customer value proposition & interface**		



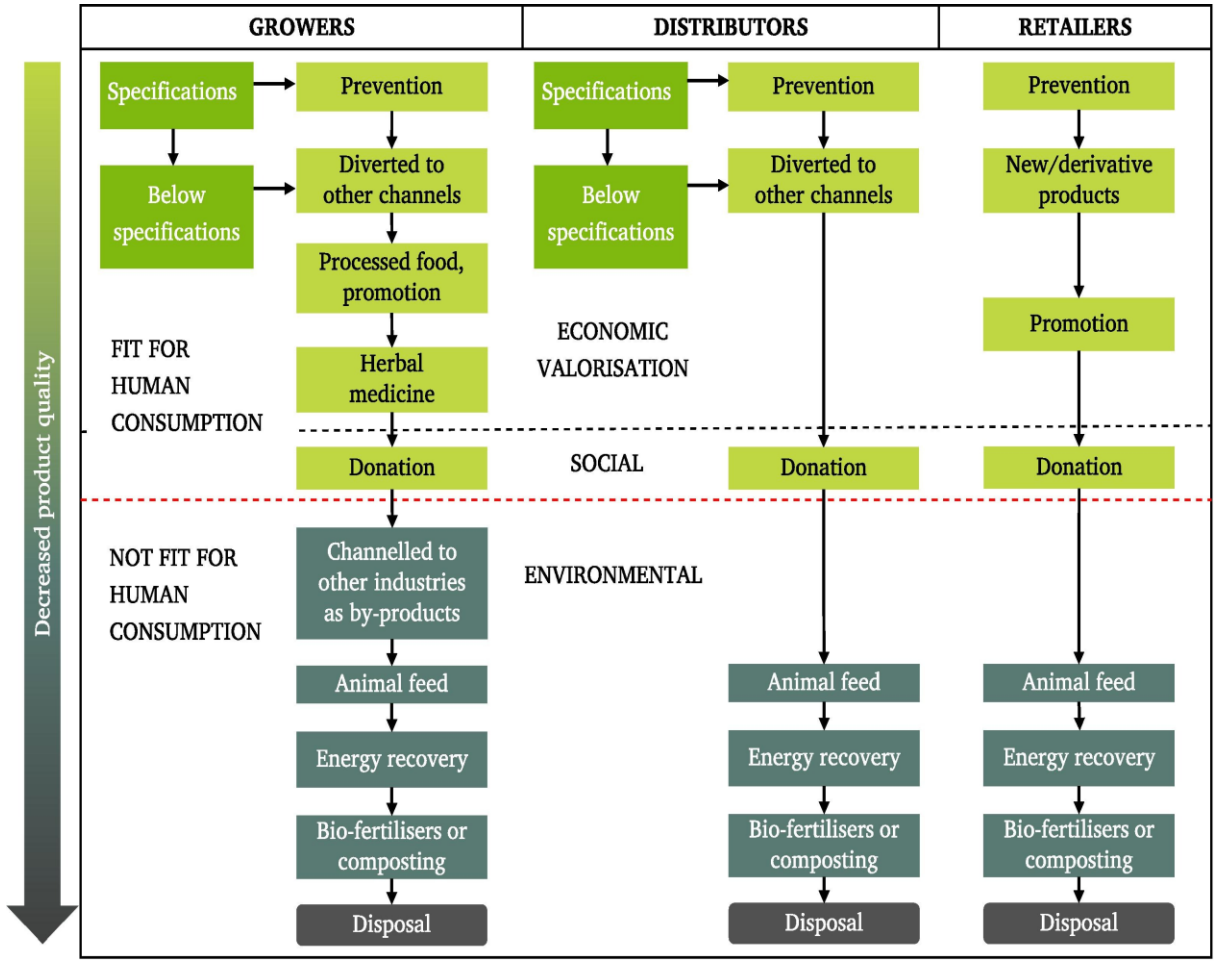
Food waste hierarchy

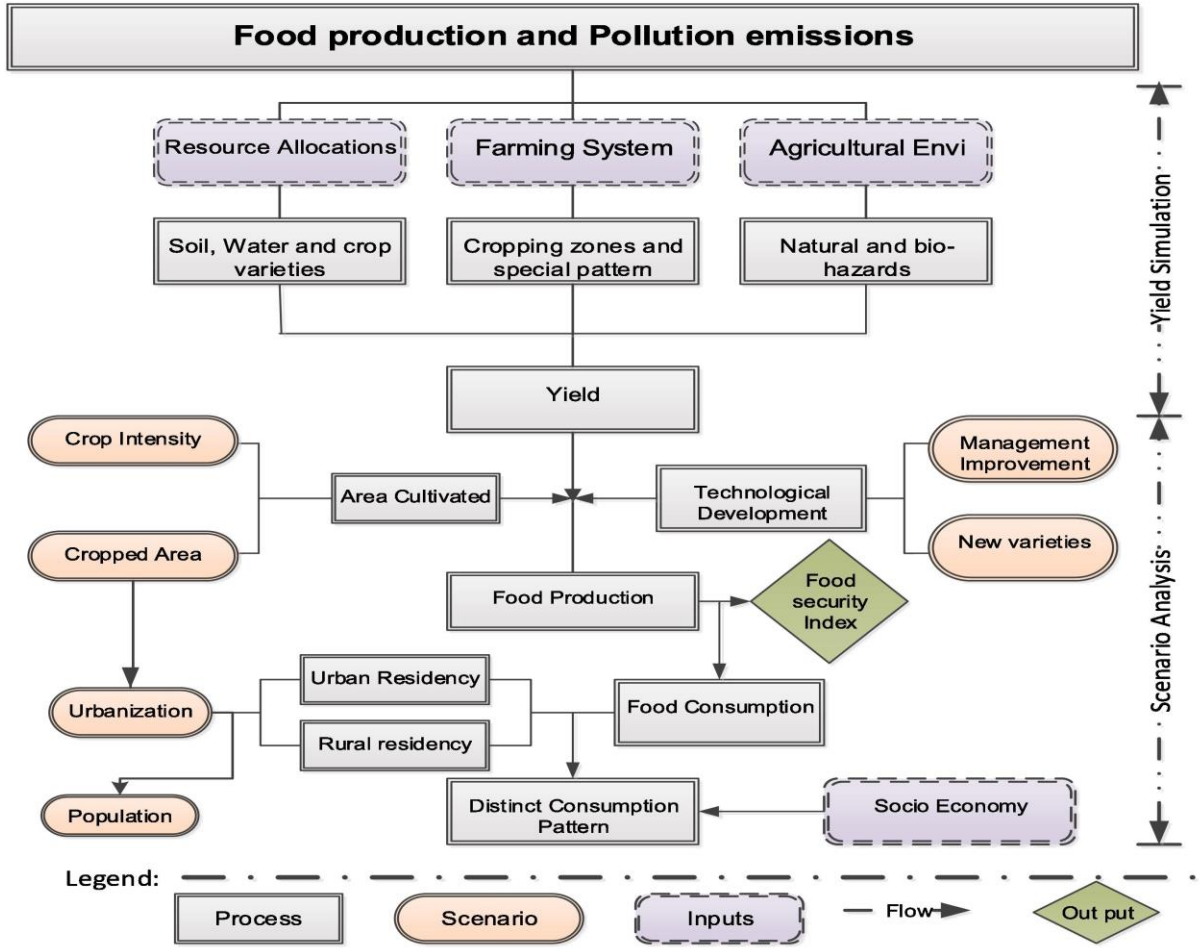
REPORTED LEVEL OF ADOPTION OF CE IN DIFFERENT INDUSTRY SEGMENTS

The discussed elements of the no delay approach



Agri food waste hierarchy and ratio between production and pollution





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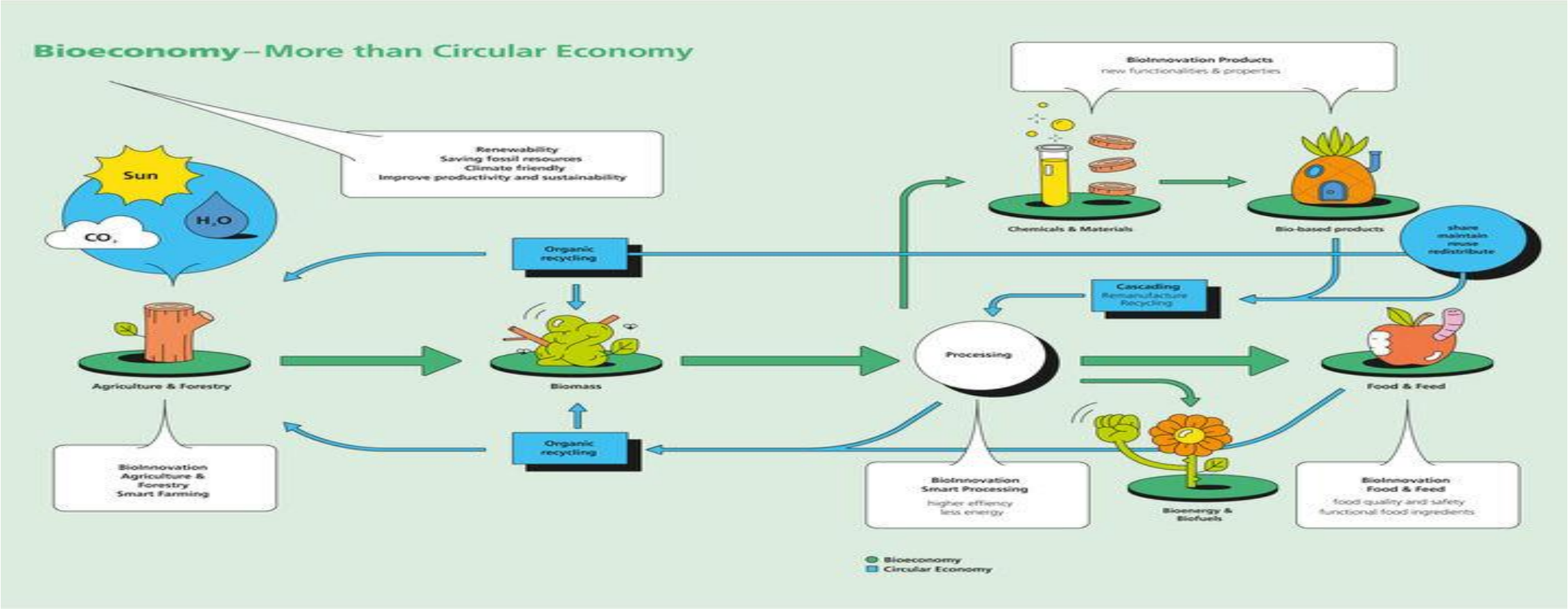

Bioeconomy – More than Circular Economy
Renewability
Saving fossil resources
Climate friendly
Improve productivity and sustainability
Sun
H_2O
CO_2
Bioinnovation Products
new functionalities & properties
Chemicals & Materials
Bio-based products
share
maintain
reuse
redistribute
Organic recycling
Cascading
Remanufacture
Recycling
Agriculture & Forestry
Biomass
Processing
Food & Feed
Organic recycling
Bioinnovation
Agriculture &
Forestry
Smart Farming
Bioinnovation
Smart Processing
higher effiency
less energy
Bioenergy &
Biofuels
Bioinnovation
Food & Feed
food quality and safety
functional food ingredients
Bioeconomy
Circular Economy

Is Bioeconomy the answer?
The opportunities

CIBUS

- The European Commission notes that the EU bioeconomy (not restricted to waste feedstocks) already has a turnover of nearly €2 trillion and employs more than 22 million people, 9% of total employment in the EU. In addition, each euro invested in EU-funded bioeconomy research and innovation is estimated to trigger €10 of value added in bioeconomy sectors by 2025.
- Rate (CAGR) trend in turnover of 11% and in employment of 5% over the period 2009-2013
- It is important that waste resources are managed in accordance with moving up the resource (waste) hierarchy, i.e. energy-from-waste only deals with waste that cannot be reused or recycled or valorised by other treatment options
- Market for renewable chemicals, already estimated $57 billion worldwide and forecast to rise to $83 billion by 2018. The UK chemical industry currently has sales of over £60 billion per annum. The inquiry heard that around £6 billion of this might be replaced with renewable chemicals produced from waste materials.'

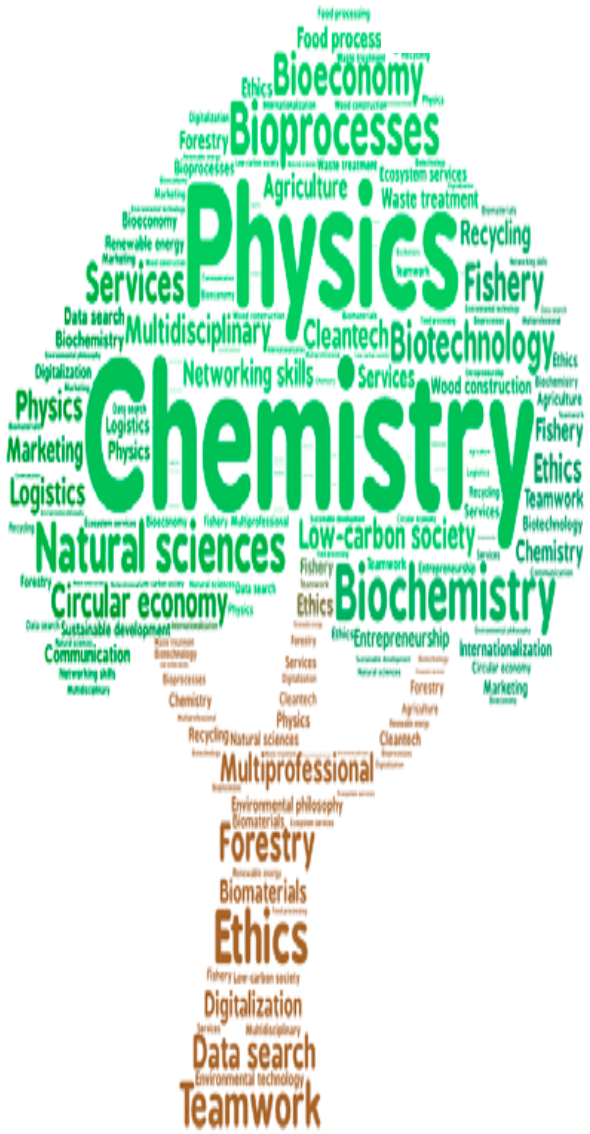
CIBUS

Skills for an Integrated Bioeconomy

JÜLICH

- Multidisciplinary and cross-sectorial education
- Education at all skill levels and in all levels of education and lifelong- learning
- International and global perspective
  - International training
  - Encourage mobility
  - International recognition of qualification
- Soft skills
  - Management
  - Communication and media

WHICH SKILLS ARE NEED FOR CE & RELATED BIOECONOMY? ARE WE DOING AT OUR BEST?



Agriculture and Bioeconomy

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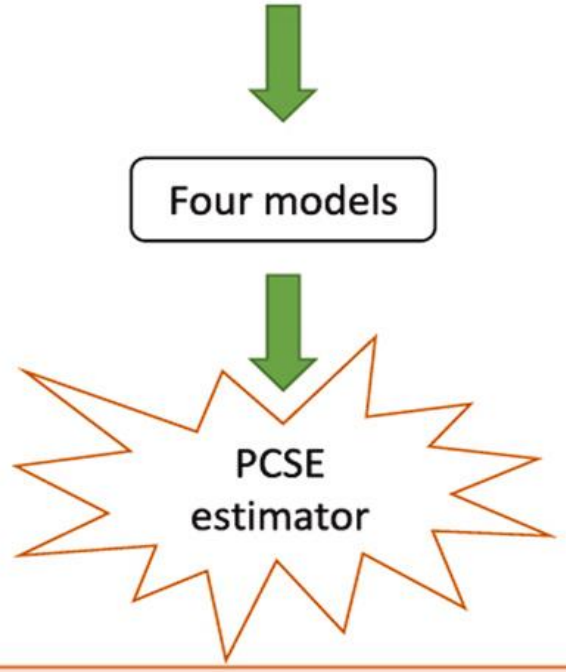
What are the main drivers of the reutilization and reincorporation of materials into the economy?

Data and methods

Annual data from 2019 to 2019 to 19 EU countries



Findings

DRIVERS

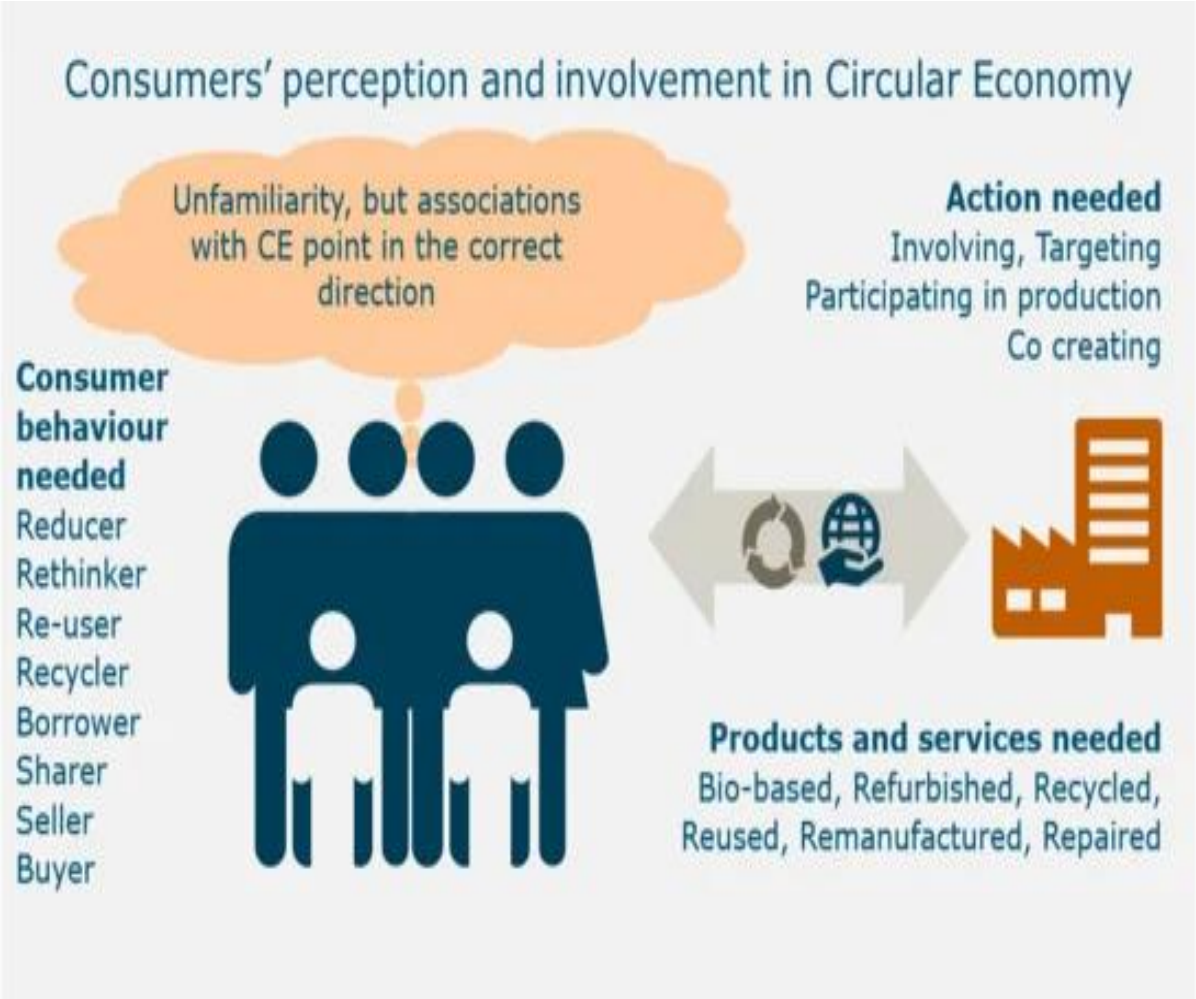
- Recycling rate of municipal waste
- Young-age dependency ratio
- Proportion of population with tertiary education
- CO2 emission from energy combustion
- Total environmental revenue tax
- Distribution of income by quantiles, Quantile 2

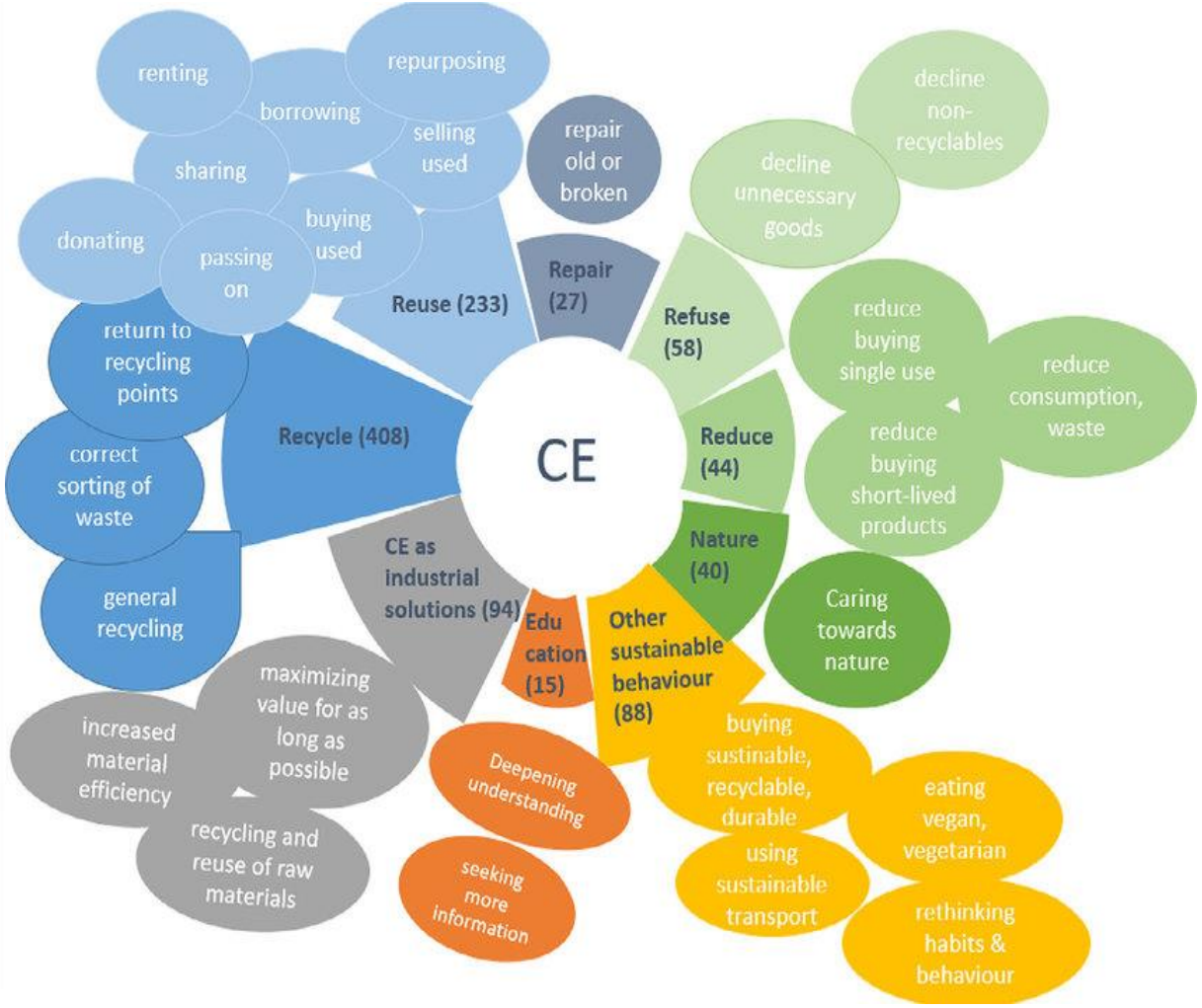
BARRIERS

- Old-age dependency rate
- Gross domestic product per capita
- People at risk of poverty or social exclusion
- Primary energy consumption
- GINI index
- Distribution of income by quantiles, Quantile 4

https://doi.org/10.1016/j.jclepro.2022.130865

How consumers accept the high value waste derived products: the consumers' dilemma





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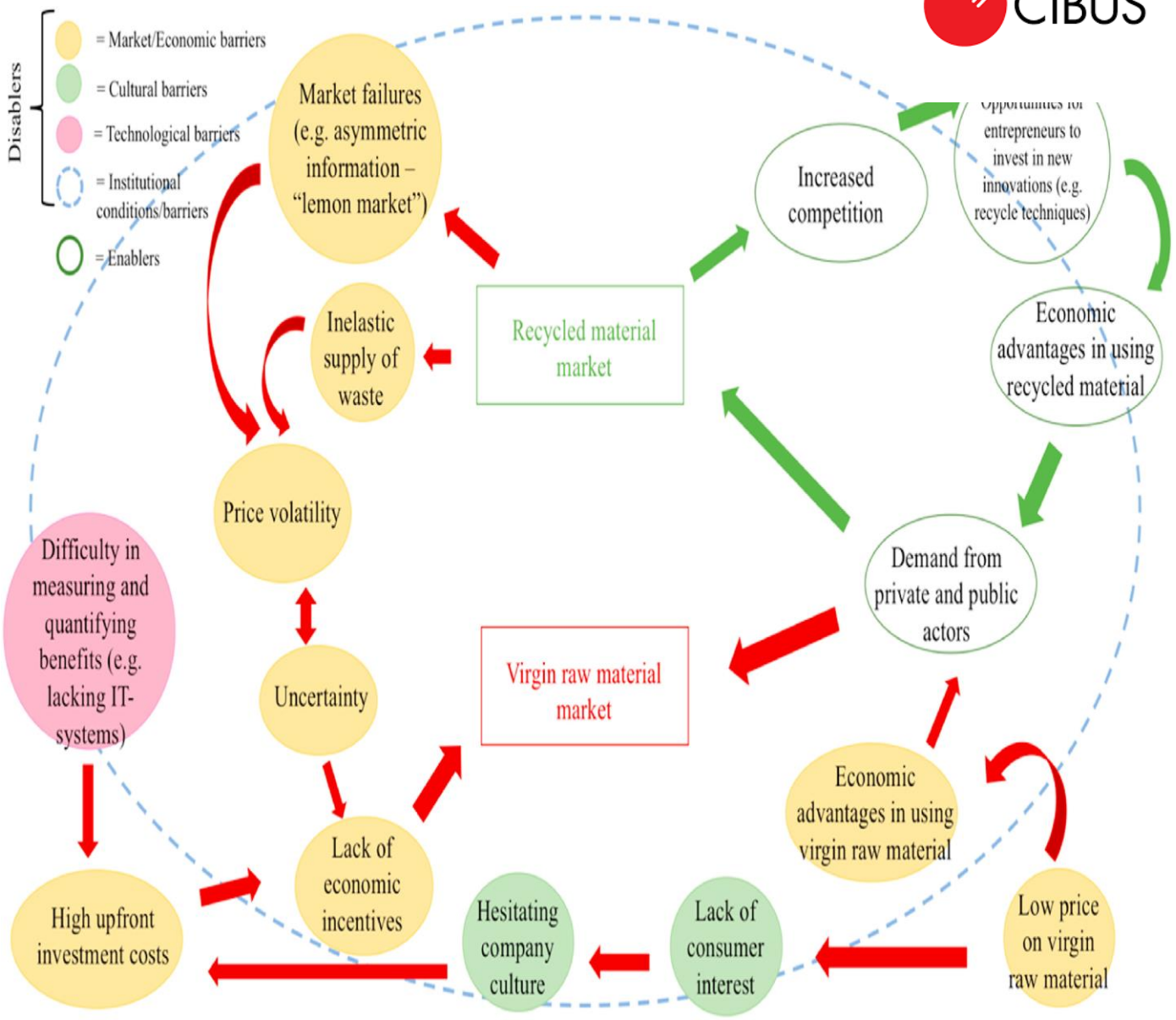
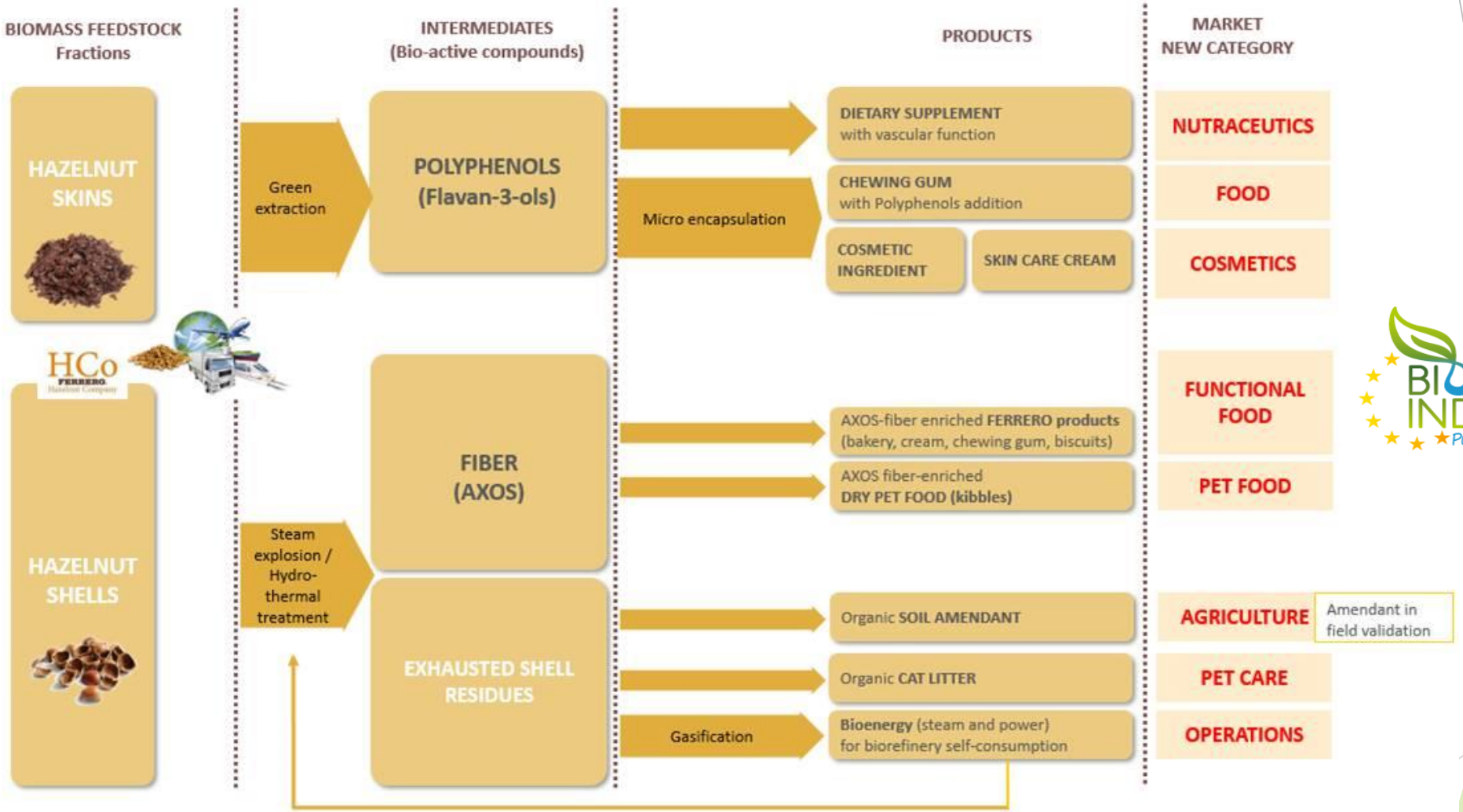
A possible unifying definition

CE is an economic system that goes beyond the historical concept of "end-of-life" concept supporting ALTERNATIVELY Reusing, Recycling, recovering focusing any further industrial processes on production/distribution and Consumption process.



Nutwave project



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Awards

2019 Research & Innovation Days (R&I Days)

2020 online Synergy Label Award Ceremony open event

BBI JU

Bio-based Industries Joint Undertaking

SYNERGY LABEL

Certificate delivered by the

Bio-based Industries Joint Undertaking

The proposal

NutWAVE

submitted to the BBI JU Call for proposals 2019

has been assessed by independent evaluators based on the Horizon 2020 evaluation criteria and determined to be an innovative and impactful proposal.

This proposal is awarded the quality certification of 'BBI JU Synergy Label' and thus highly recommended for support through the European Bank for Reconstruction and Development (EBRD), InnovFin Thematic Investment Platforms of the European Investment Bank (EIB), the European Circular Bioeconomy Fund (ECBF) and other funding sources of competent national/regional authorities.

Brussels, 06 October 2020

Philippe Mengal
Executive Director

Bio-based Industries Consortium

www.bbi-europe.eu

The **Nutwave** project has been awarded twice with a **BBI JU Synergy Label** for the **value** and **excellence of Innovation**


THANK YOU FOR YOUR ATTENTION!