



**EU GREEN WEEK**

# **NEW CIRCULAR BUSINESS MODELS**

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The HOOP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°101000836

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## PRESENTER

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Evgenia Vogiatzidaki is a chemical engineer, holding an MSc degree in environmental engineering and an MBA. After working for several consulting companies, she joined DRAXIS Environmental S.A. in 2019. Her expertise lays in the environmental management and impact assessment mainly focused on solid waste and circular economy.

*HOOP Partner, WP Leader in WP4 “PDA Circular Bio-based Business Models”.*



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DRAXIS  
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# DRAXIS in a nutshell

- Type: **SME**
- Year of Establishment: **2000**
- Average Annual Turnover: **~1,5 M €**
- Location: **Thessaloniki, Athens**
- Main Areas of Expertise: **Environmental Technology & Software, ICT for Agriculture, Climate Services, Energy, Industrial Applications, Waste and e-Government**
- Experience: **Coordination and Partnerships in more than 20 FP7 & H2020 projects. Consultation for Public & Private organizations**



# Content of the presentation...

- ✓ The evolution of the Business Model concept
- ✓ CBM categorization
- ✓ CBMs for the biowaste management
- ✓ Challenges for adopting CBMs in biowaste sector
- ✓ CBM Tools
- ✓ CBM Canvas – Case study Phenix Company

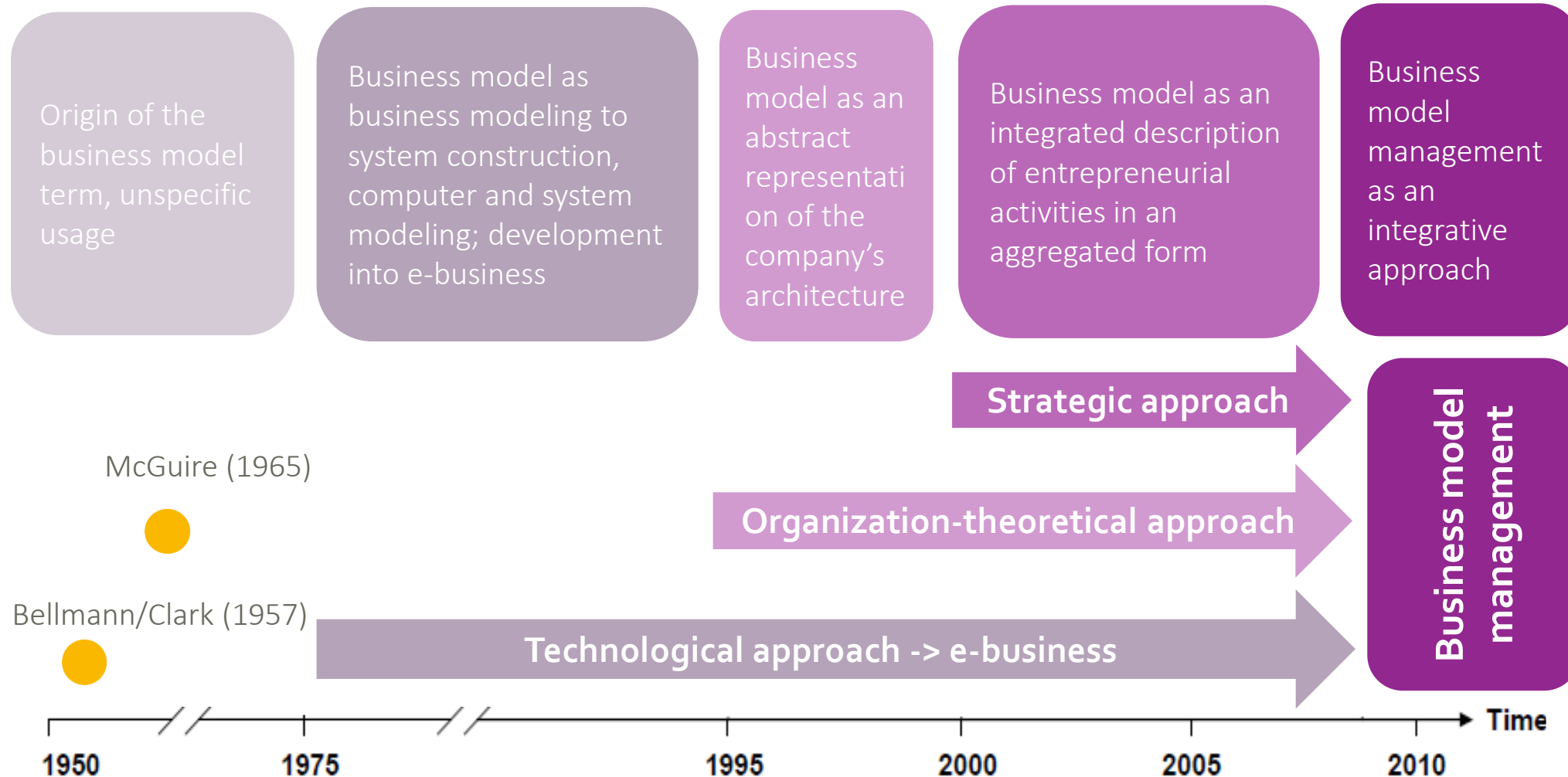


From the early 1990s several authors tried to formulate a definition Timmers (1998), Linder & Cantrell (2000), Eriksson & Penker (2000), Magretta (2002), Afuah & Tucci (2003), Afuah (2004), Osterwalder et *al.* (2005), Al-Debei et *al.* (2008)

Based on Wirtz (2011) the concept of the BM has evolved through time and in academia can be supported through three basic approaches i.e.:

- ✓ information technology
- ✓ strategy
- ✓ organizational theory

# The evolution of the Business Model concept



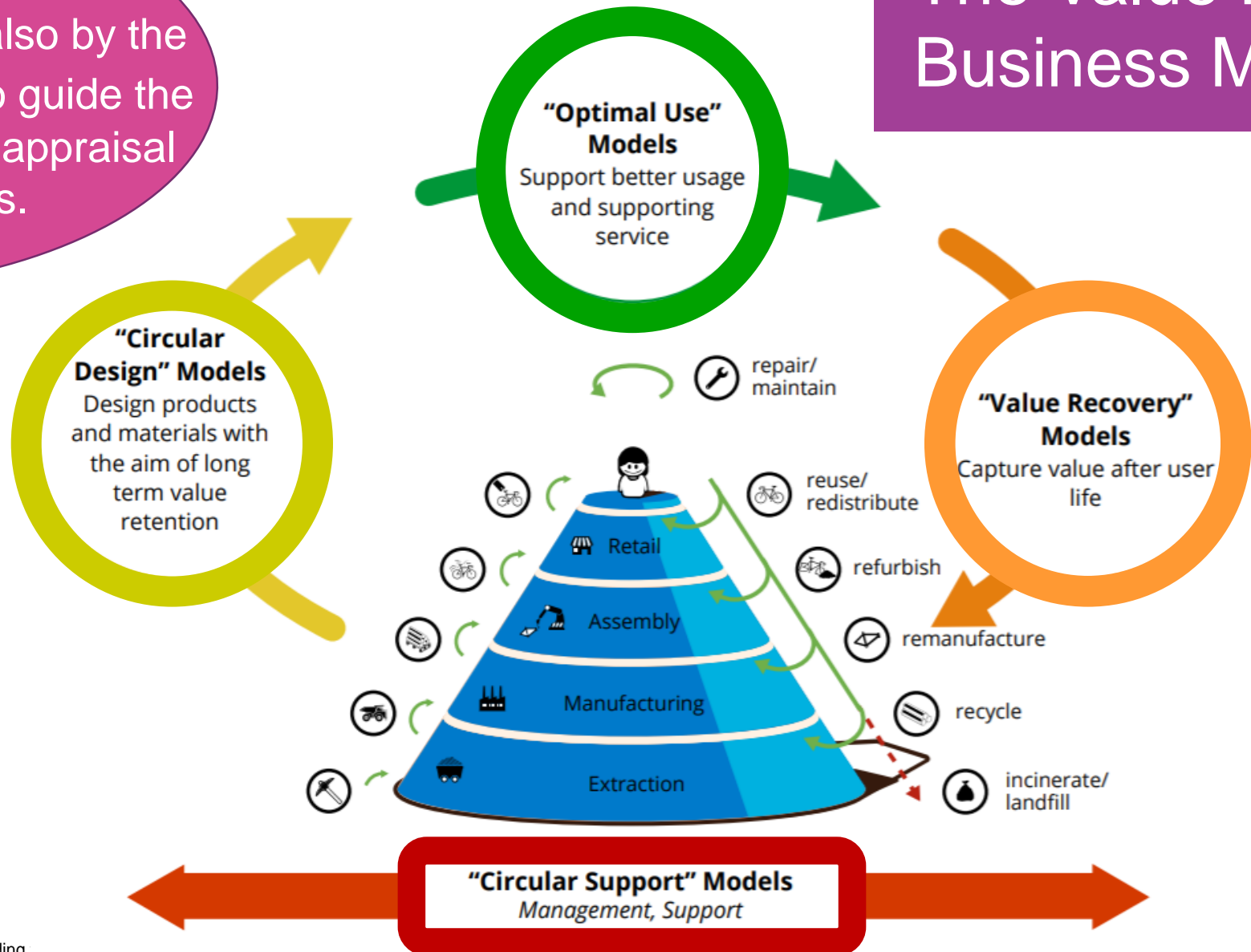
Based on these, a more specific categorization is provided also by the **EIB** and is used in order to guide the Bank in the origination and appraisal of circular economy projects.



# CBM Categories mapped on the Value Hill

Achterberg et al., 2010

## The Value Hill Business Model



# CBMs categorisation

The diagram illustrates the Product Life Cycle as a circular process with the following stages and associated loops:

- PRODUCT DEVELOPMENT** (Gear icon): Includes loops for **REGENERATE SUPPLIES** (green) and **BUILD TO LAST** (red).
- SOURCING** (List icon): Includes a **RETURN** loop (grey).
- MANUFACTURING** (Factory icon): Includes a **REMANUFACTURE** loop (red).
- MARKETING & SALES** (Tag icon): Includes a **RETURN** loop (grey).
- PRODUCT USE** (Stack of blocks icon): Includes loops for **REFILL/REPAIR/UPGRADE** (red), **REUSE** (grey), and **CO-USE/EXCHANGE** (grey).
- DISPOSAL** (Trash can icon): Includes a **RETRADE** loop (grey).
- START** (Up arrow icon): Marks the beginning of the cycle.

Additional loops shown include **RECYCLE/UP CYCLE** (grey) and **REFURBISH/REMARKET/RESELL** (red).

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# The 5 CBMs by OECD (2019)

	Circular supply	Resource recovery	Product life extension	Sharing	Product service system
<b>Key characteristic</b>	Replace traditional material inputs with renewable, bio-based, recovered ones	Produce secondary raw materials from waste	Extent product lives	Increase utilization of existing products and assets	Provision of services rather than products. Product ownership remains with supplier
<b>Recourse efficiency driver</b>	Close material loops	Close material loops	Slow material loops	Narrow resource flows	Narrow resource flows
<b>Business model subtypes</b>	Cradle to Cradle	Industrial symbiosis Recycling Upcycling Downcycling	Classic long life Direct reuse Repair Refurbishment Remanufacture	Co-ownership  Co-access	Product oriented User oriented Result oriented
<b>Main sector currently applied in</b>	Diverse consumer product sector	Metals Paper and pulp Plastics	Automotive Heavy machinery Electronics	Transport Machinery Consumer products	Transport Chemicals Energy

## 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 anaerobically
- Extract biochemicals from organic waste

## VIRTUALISE



- Dematerialise directly (e.g. books, CDs, DVDs, travel)
- Dematerialise indirectly (e.g. online shopping)

## EXCHANGE



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

# The ReSOLVE framework

Ellen MacArthur Foundation  
(2015)

# CBMs for bio-waste management practices



*Achterberg et al. (2016)*  
'after-use' phase of product

*Lacy & Rutqvist (2015)*  
'Recovery & Recycling' model

*ReSOLVE framework (2015)*  
'Loop'

*OECD (2019)*  
the 'Resource recovery'



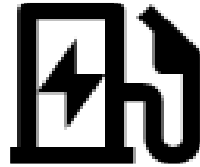
*The market share held by circular business models is limited.....*

Business model	Sector	Market penetration
PSS: result-oriented (chemicals)	Automotive	50 - 80%
PSS: result oriented (digital content)	Music	50%
Waste as value: recycling	Pulp and paper	38%
PSS: result oriented (digital content)	Books	25 - 35%
Waste as value: recycling	Steel	25%
PSS: result-oriented (chemicals)	Aerospace	5 - 15%
Waste as value: recycling	Plastics	13%
Product life extension: refurbishment	Smartphones	4 - 8%
PSS: result-oriented (lighting & heating)	Various	4 - 8%
Product life extension: remanufacturing	Machinery	3 - 4%
Product life extension: refurbishment	Various	2 - 3%
Product life extension: remanufacturing	Aerospace	2 - 12%
Idle Capacity: co-access	Lodging	1% - 6%
Product life extension: remanufacturing	Automotive	1%
Product life extension: remanufacturing	Consumer and electrical and electronic equipment (EEE)	0 - 1%
Was as value: recycling	Rare earth element (REE) metals	<1%
PSS: user-oriented (car sharing)	Transport	<1%



Related to the lack of an effective, stable and supportive EU regulatory framework

Existing policies are often inflexible and unable to support the transition into circularity



Lack of developed markets and insufficient demand biobased outputs and products (largely affected by regulation)

Often high initial investment costs required in order to move to new business models



Feedstock diversity and supply security can become a significant challenge for the development of viable new business models





Lack of awareness and demand of customers. Customers feel wary about products and materials that come from biowaste management

Established linear way of thinking. Need for behavioral change.

Integration throughout the value chain is a challenge for biobased industries. Different stakeholders should collaborate successfully.



Need for additional innovation/technologies for biowaste management.

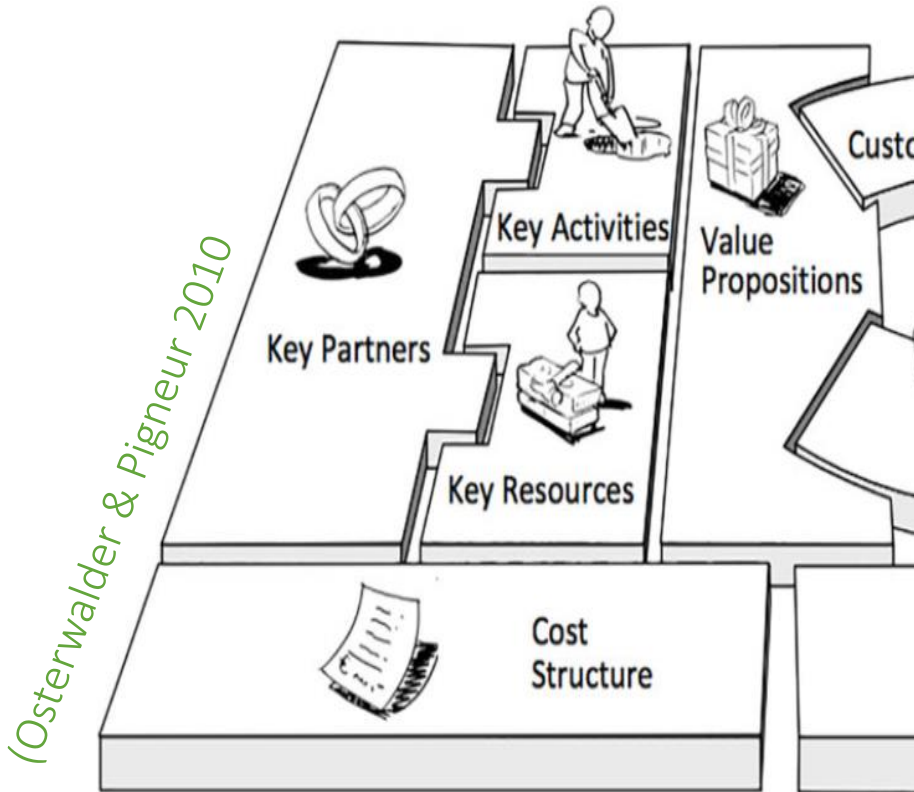
Massive developments is needed in the biobased economy in order to promote the transition away from fossil resources (highly connected with supportive investment conditions)

# CBM Tools: Business Canvas and its 9 building blocks

a. company is in its infancy (a startup)

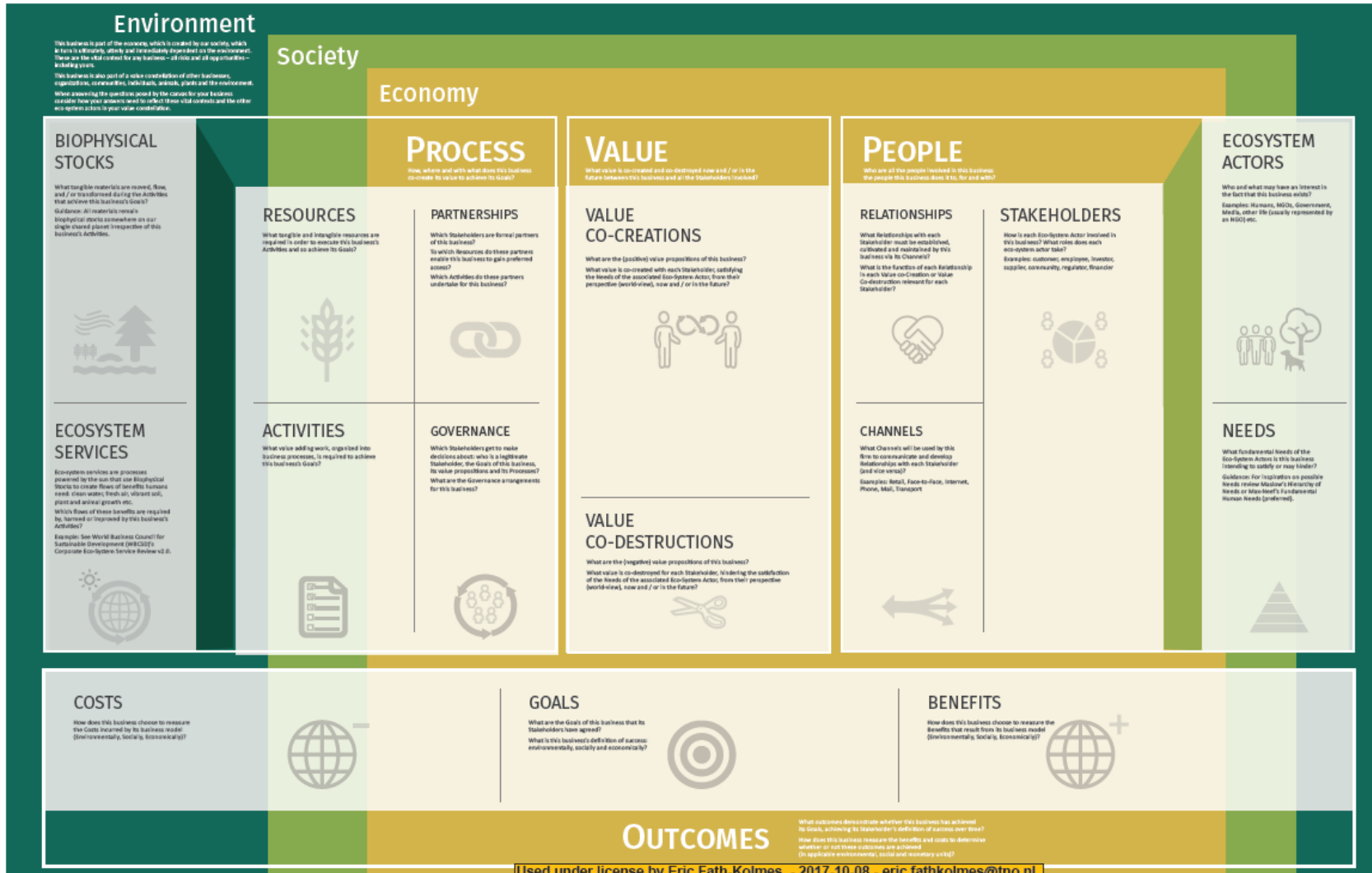
## Lean Canvas vs Business Model Canvas

KEY PARTNERS	KEY ACTIVITIES	UNIQUE VALUE PROPOSITION	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
PROBLEM	SOLUTION		UNFAIR ADVANTAGE	
EXISTING ALTERNATIVES	KEY RESOURCES		CHANNELS	
	KEY METRICS			
COST STRUCTURE		REVENUE STREAMS		



(Osterwalder & Pigneur 2010)

# CBM Tools: Sustainable Business Canvas



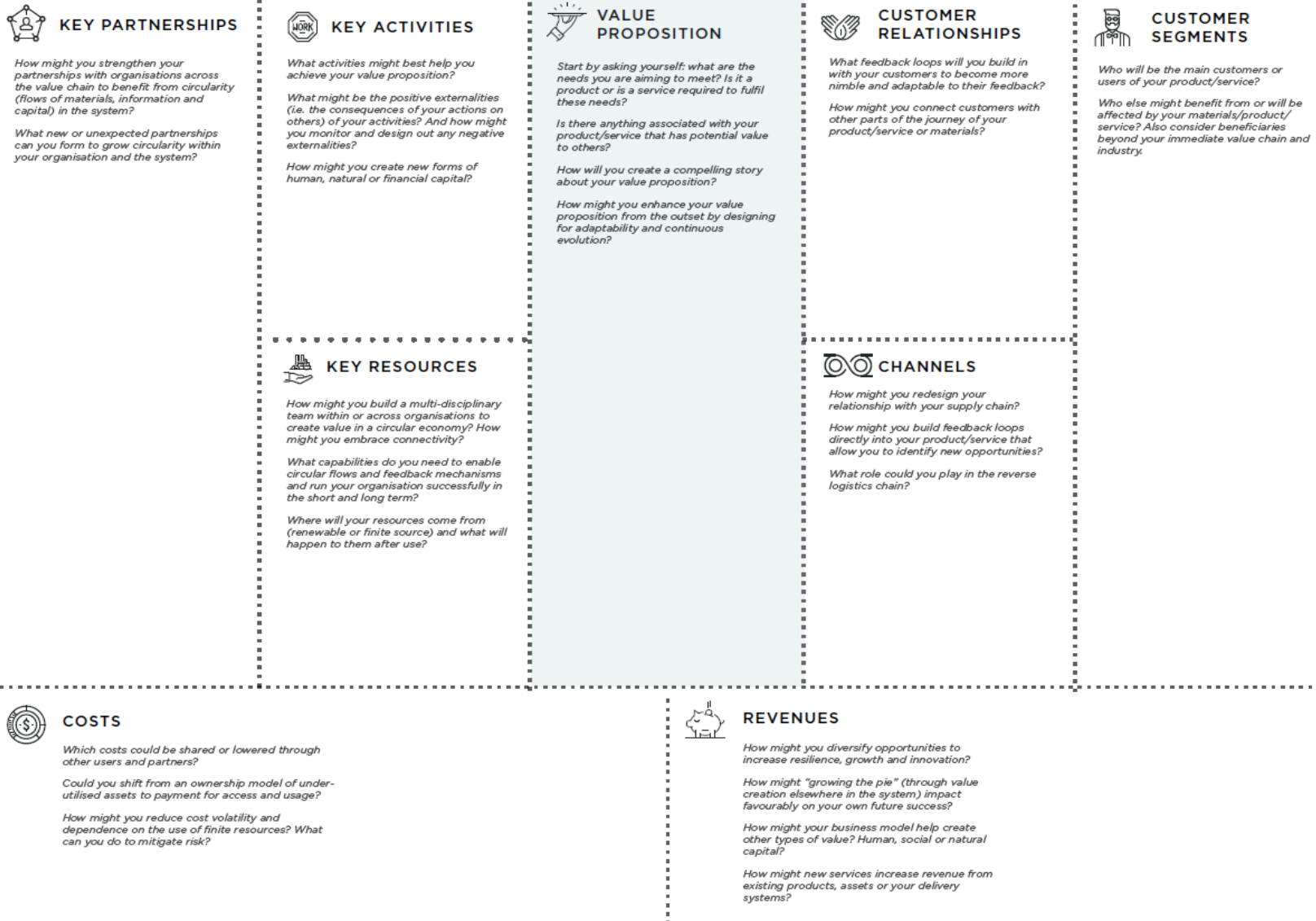
Used under license by Eric Fath-Kolmes - 2017-10-08 - eric.fathkolmes@tno.nl

16 new building blocks of the Flourishing Business Model Canvas takes respect of the economy, society and environment.

Source: Eric Fath-Kolmes, 2018



# CBM Tools: Circular Business Canvas



Source: Ellen MacArthur Foundation and IDEO 2016



What other types of value a business may promote e.g human, social or natural capital...



Partnerships with organisations across the value chain to benefit from circularity (flows of materials, information and capital)



Feedback loops and reverse logistics



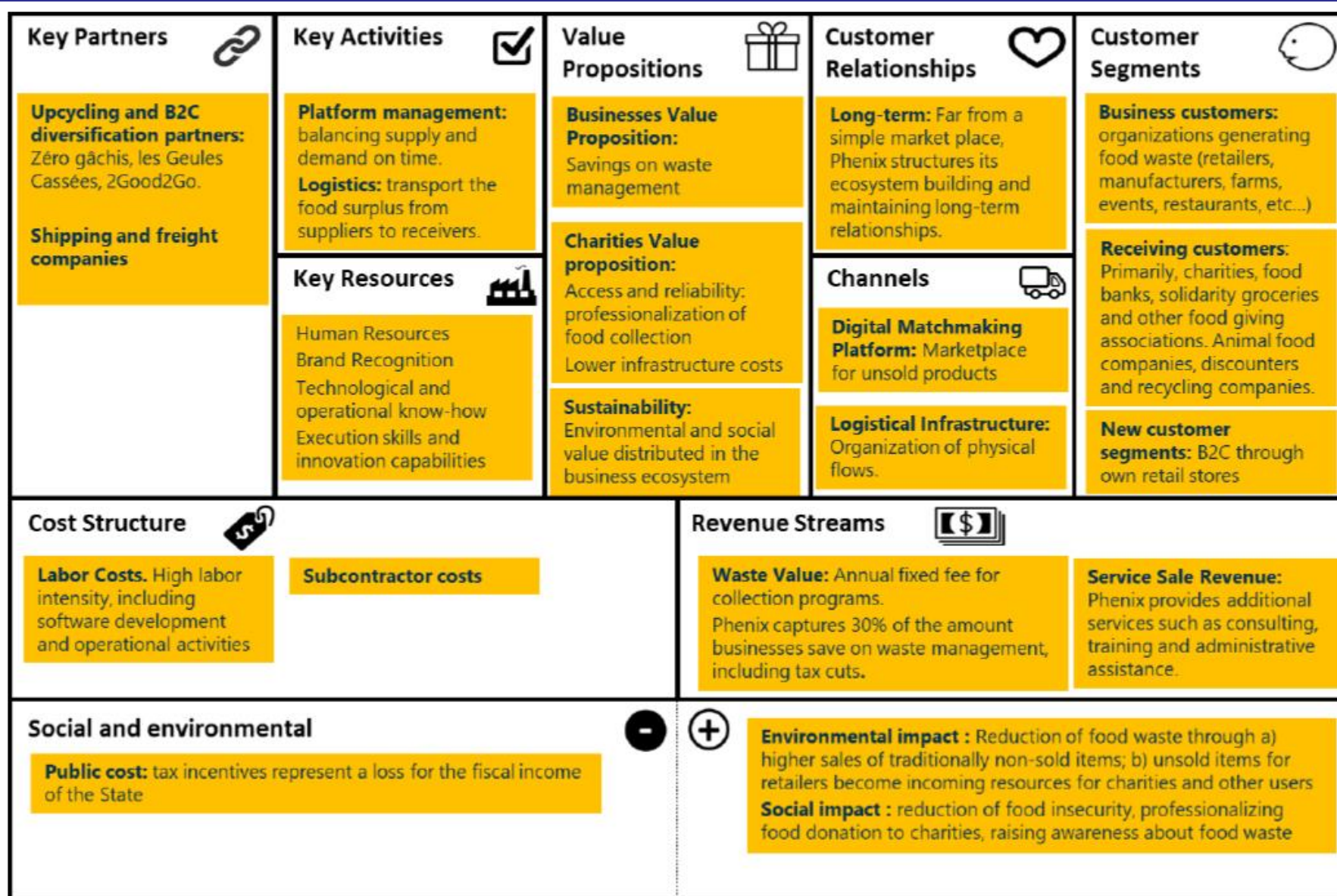
Reduce dependence on the use of finite resources



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# CBM Tools: Business Canvas – Case study Phenix company

Source: R2π H2020 project  
(<http://www.r2piproject.eu/>)



The company's global mission is to “unleash the potential of waste” (food waste).

- *Digital platform that works as an intermediary connecting waste suppliers” (mainly retailers) and waste receivers (mostly charities)*
- *Environmental and social value*
- *Environmental and social cost/impact*



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**Thank you for your attention!**



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