

UNIVERSITY OF DEBRECEN
VUA GENERAL MEETING
Sept 3, 2018



**THE IMPLEMENTATION OF
CIRCULAR ECONOMY CONCEPT IN
THE CURRICULA**

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Szent Istvan University
Climate Change Economics
Research Centre





INTRODUCTION - OPPORTUNITY TO TRANSFORM

The transition to a more sustainable or circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised, is an essential contribution to the **EU's efforts to develop a sustainable, low carbon, resource efficient and COMPETITIVE economy.**

The circular economy will **BOOST the EU's competitiveness** by protecting businesses against scarcity of resources and volatile prices, **helping to create NEW BUSINESS opportunities** and innovative, more efficient ways of producing and consuming.

BOOST

EUR 1 billion from Horizon 2020 = CE

ACTIONS AT EU LEVEL

The action plan focusses on action at EU level **with high added value**. Making the circular economy a reality will however **require long-term involvement** at all levels, from **Member States**, regions and cities, to businesses and citizens.

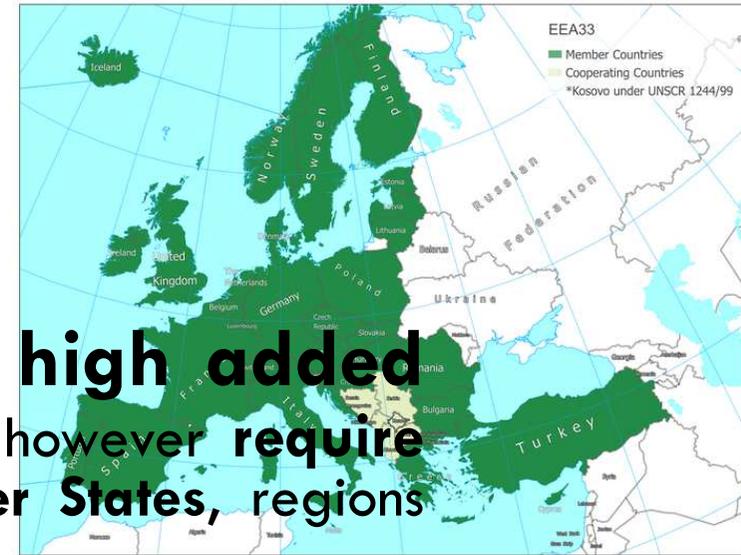
with high added value
require

Member States, regions

Member States are invited to play their FULL PART IN EU ACTION, integrating and complementing it with national action.

A circular economy starts at the very beginning of a product's life. Both the **design** phase and **PRODUCTION PROCESSES** have an impact on sourcing, resource use and waste generation throughout a product's life.

ON The NEXT AREA: consumption, waste management, transportation, construction, energy production.



PART OF THE SUMMER COURSE OF SUSTAINABLE ENERGY IN ICELAND 2017/2018

Summer School, 6 ECTS | Sum... Google Fordító

https://en.ru.is/ise/programmes/summer-school/#tab1

Legtöbbször látogatott Kahoot! - Created by ... google fordító - Googl... Neptun.Net SZIE_WEB... Levelezés :: Beérkezett CMH Webmail :: Érke... MTA - Fájkezelő - tar... Webmail :: Fogarassy.hu

Programmes

- Sustainable Energy
- Sustainable Energy Engineering
- Electrical Power Engineering
- Electric Power Science
- PhD
- Summer School**
- Professional Development Courses

Summer School, 6 ECTS

A three week, intensive course that provides students with an overview of sustainable technologies, the main issues that drive the demand for sustainable energy, and the factors that may impede or promote meeting that demand.

The course is delivered through a combination of lectures and site visits, and students have opportunity to see working systems that utilise sustainable energy.

Overview Structure Cost Admission



Dates: 23 July - 10 August 2018

The course gives an overview of the state of energy matters worldwide using Iceland as an example. Topics include (but are not limited to):

- Characteristics of energy use

CIRRCULAR ECONOY

CIRCULAR ECONOMY PHD COURSE FROM 2016

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BOOST

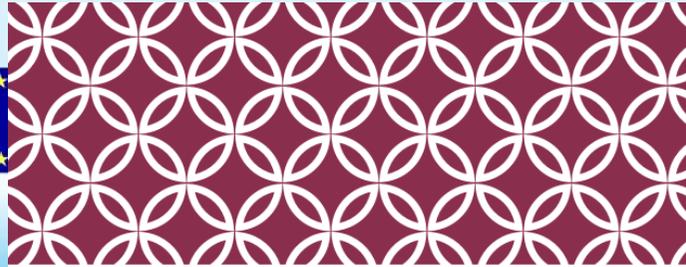
Csaba Fogarassy PhD

Circular Economy
PhD Course Part 2

Szent Istvan University
Circular Economy - Part
2017 PhD Course

Transition thinking and transition management
applications in the practice

SZENT ISTVAN UNIVERSITY



CIRCULAR ECONOMY BP 2024

BUDAPEST OLIMPIC
GAMES PRECONCEPT
CARBON MANAGEMENT HUNGARY LTD.

THE SOURCE OF PRESENTATION SLIDES:

THE CIRCULAR DAIRY ECONOMY

EXPLORING THE BUSINESS
CASE FOR A FARMER
LED, 'NET-POSITIVE'
CIRCULAR DAIRY SECTOR

Published in October of 2016



CIRCULAR VS. LINEAR REDUCED EXTERNALITIES IN THE AGRICULTURE

- MULTIFUNCTIONALITY AS THE TOOL OF INTERNALISATION OF EXTERNAL EFFECTS -

Csaba Fogarassy PhD
senior lecturer
Szent Istvan University Gödöllő

BUSINESS MODEL STRATEGIES TO SLOW

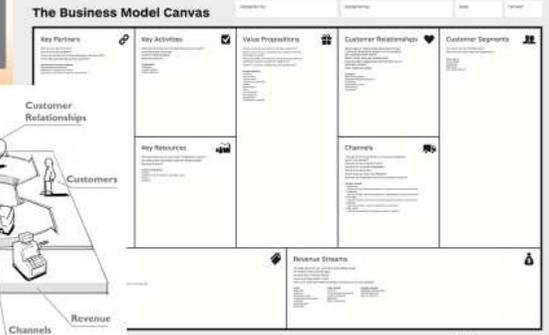
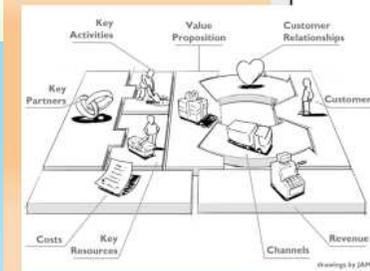
1	Functionality not ownership
2	Extending product value: bike and car sharing, renting
3	Classic long life model: refurbish or remanufacturing (second hand shops „HÁDA”)
4	Encourage sufficiency: energy service companies, that focus on EE with consumers
5	Extending resource value: reusing of wasted materials (old brick reuse)
6	Industrial symbiosis: Klaundborg Eco Industrial Park
7	Maximise material and energy efficiency: Zero waste business model

Business model innovations to slow and close resource loops.

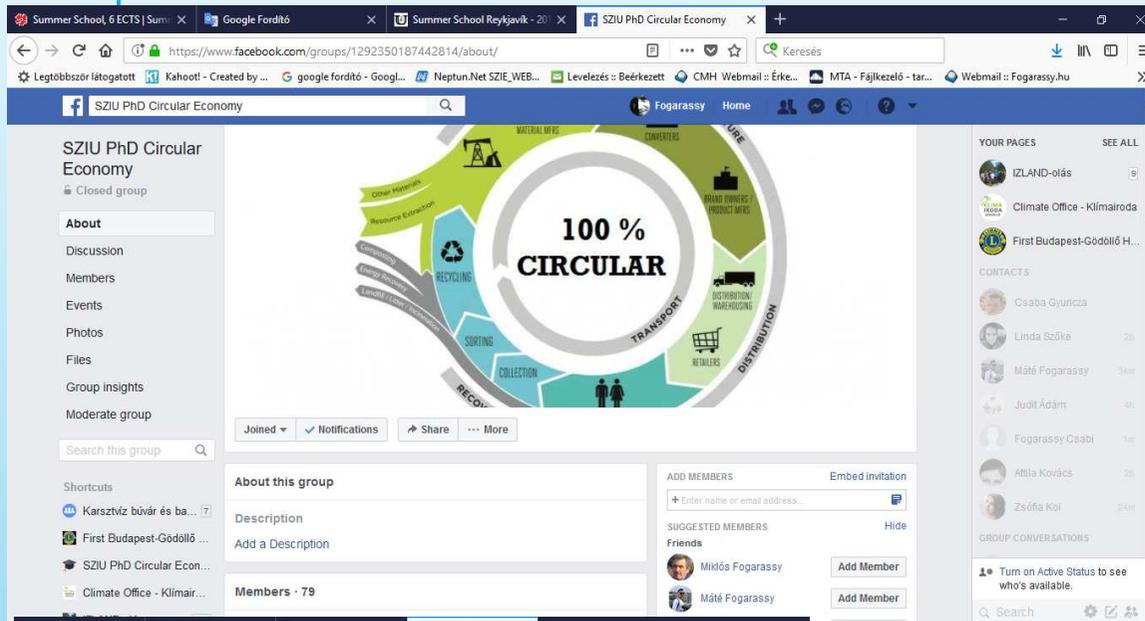
THE BUSINESS MODEL CANVAS

Alex Osterwalder

- ✓ INFRASTRUCTURE
- ✓ VALUE PROPOSITION
- ✓ CUSTOMERS
- ✓ COST STRUCTURE



SUPPORTING MATERIALS (FACEBOOK, JOURNALS)



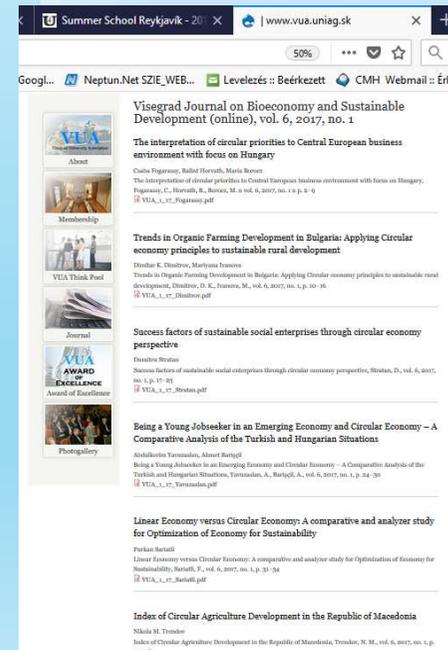
Special issue of VUA Journal

OVERVIEW OF CIRCULAR ECONOMY PAPER

Your paper should consist of four general sections:

1. Introduction
2. The body of the paper
3. Conclusion and future directions
4. Literature cited

Review articles contain neither a materials and methods section nor an abstract.

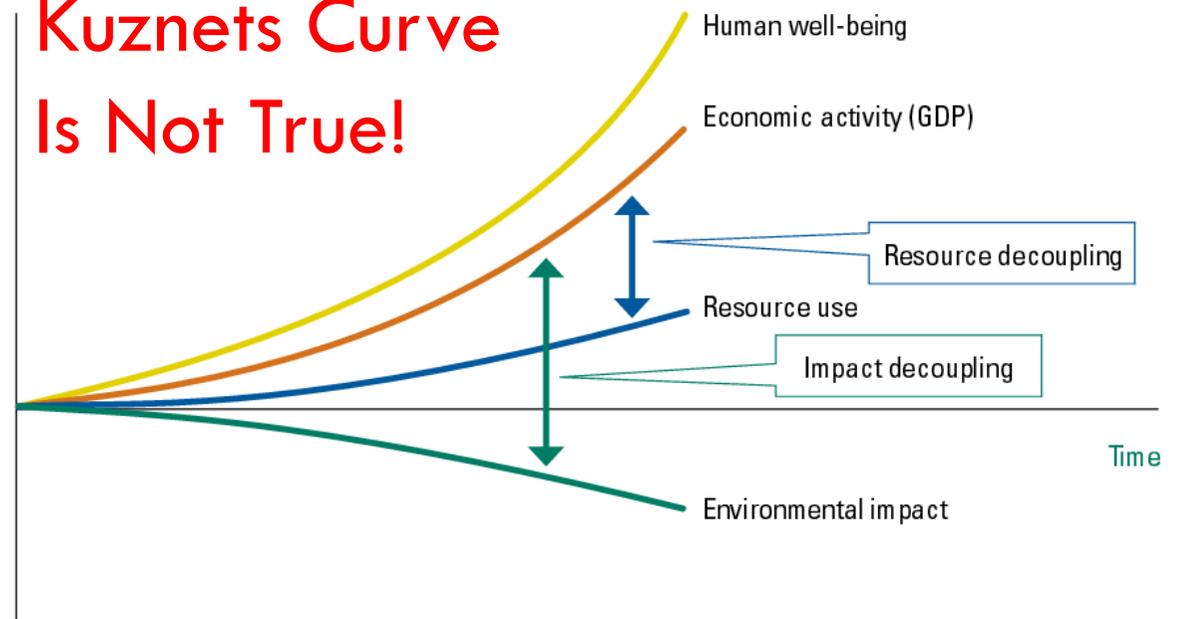


CIRCULAR ECONOMY / SUSTAINABLE DEVELOPMENT

Circular economy is the result of moving from a **simple impact reduction** model to a model of absolute **value creation** that is positive, both socially, economically, environmentally...

.....the central element is the **“decoupling”** of economic growth from an increase in resource use and reduction of environmental impacts.

**Kuznets Curve
Is Not True!**



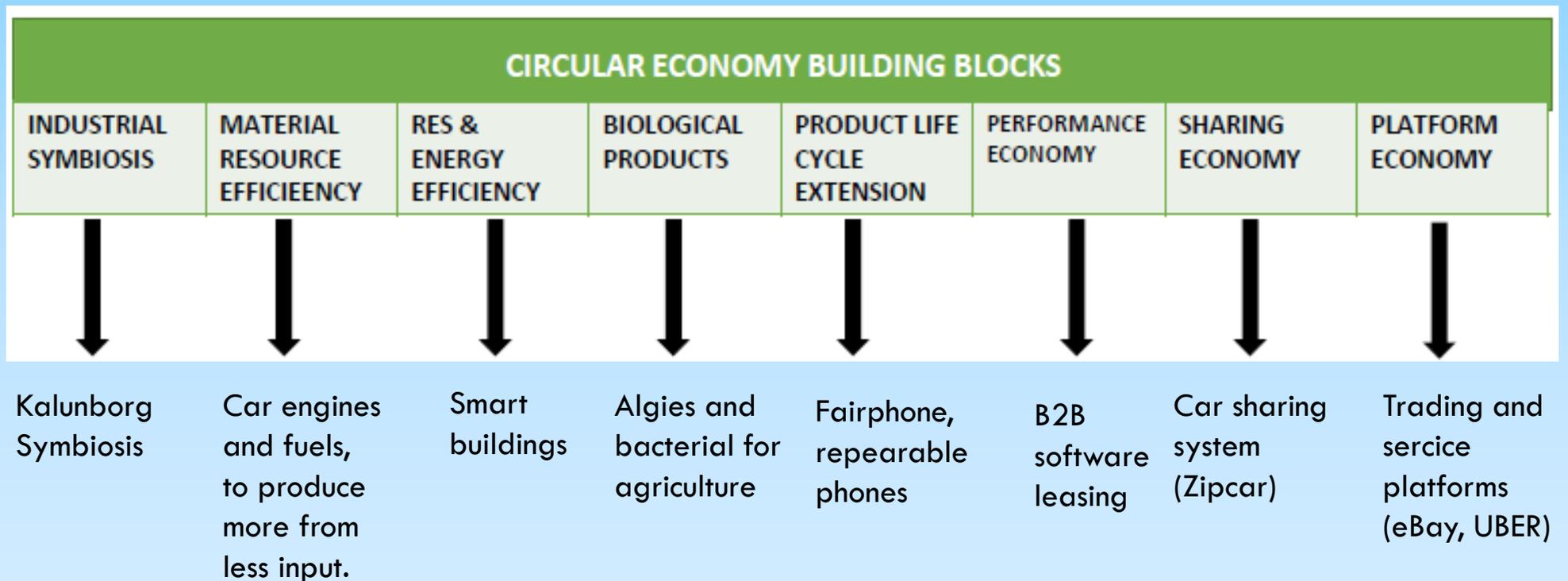
FROM LINEAR TO CIRCULAR - OPPORTUNITY TO TRANSFORM

The **linear economy** is based on a linear process, optimised towards high volume of product and low production cost relying on the **plentiful availability of raw materials at relatively low cost**.

The **circular economy** aims at low environmental impact by minimising waste and extreme resource use by turning goods at the end of their lifetime. Main ways of circulation are **re-use, re-cycle, reductions of waste, re-manufacture** and other practices.



TYPICAL BUILDING BLOCKS OF CIRCULAR ECONOMY

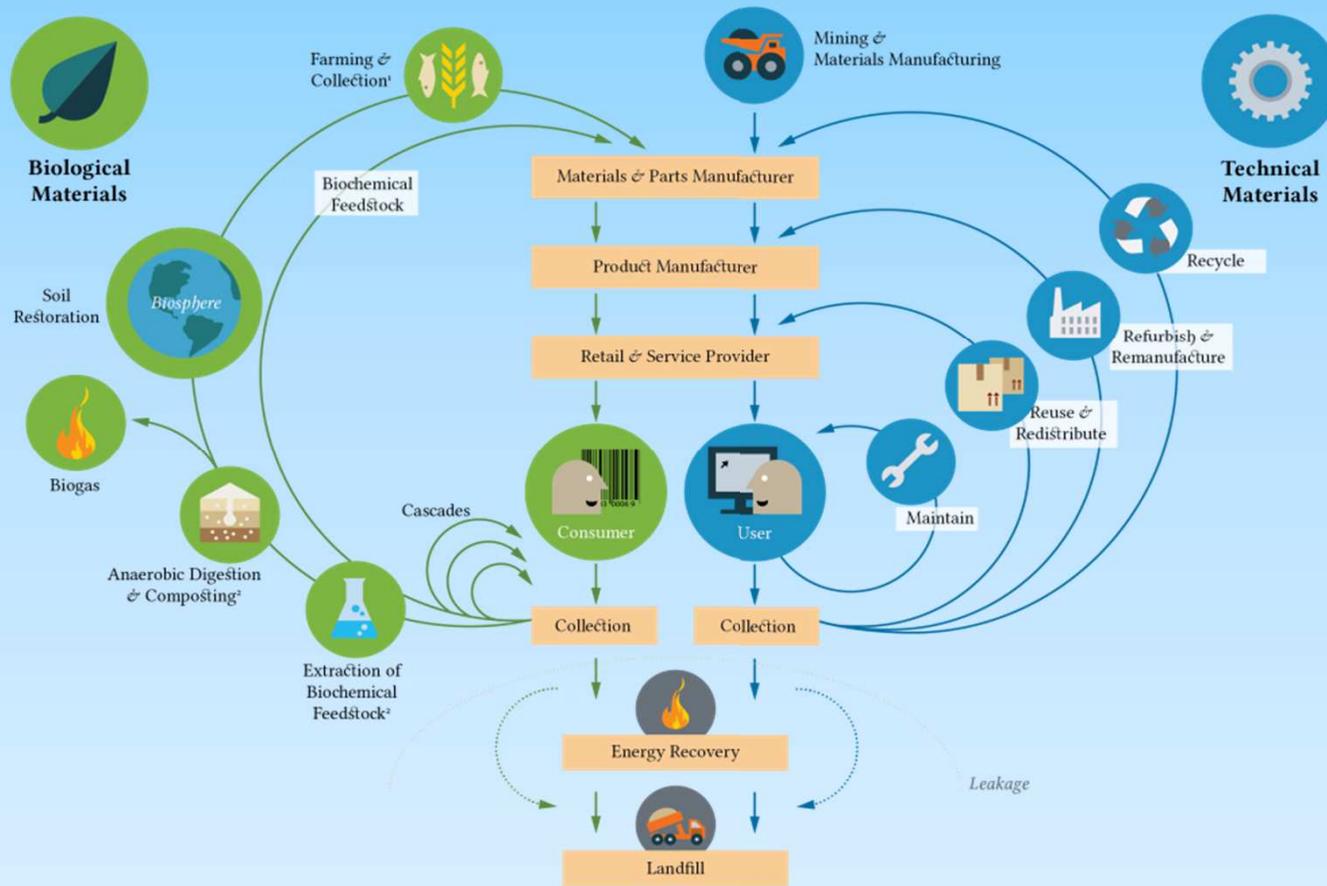


<http://www.symbiosis.dk/en>

The Kalunborg Symbiosis is an industrial ecosystem, where the by-product residual product of one enterprise is used as a resource by another enterprise, in a closed cycle. An industrial symbiosis is a local collaboration where public and private enterprises buy and sell residual products, resulting in mutual economic and environmental benefits.

BIOLOGICAL AND TECHNICAL CYCLES

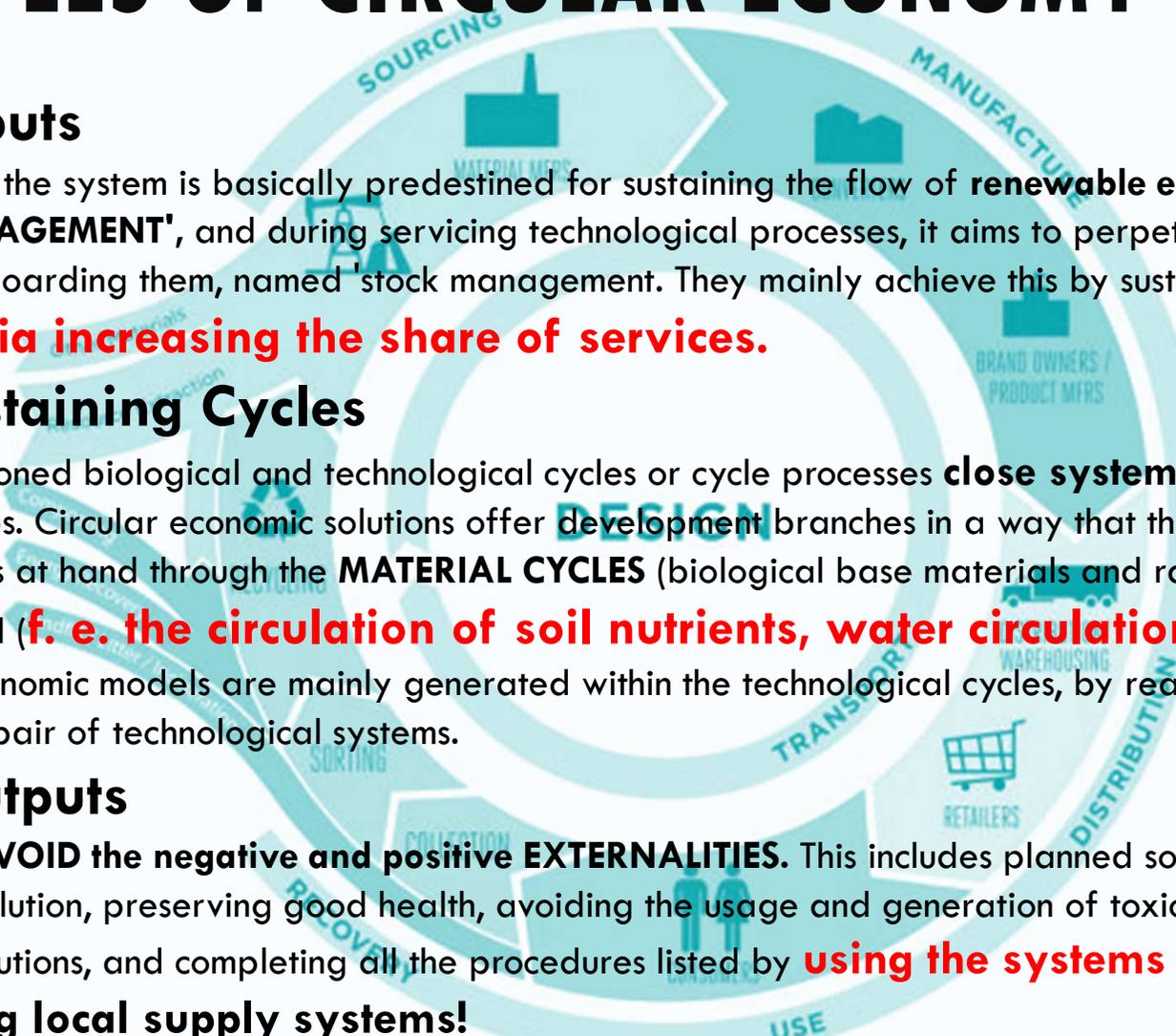
BIOLOGICAL CYCLES
&
TECHNICAL CYCLES



S
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Source: Ellen MacArthur Foundation, 2014

PRINCIPLES OF CIRCULAR ECONOMY



1 - Principle of Inputs

In the case of inputs, the system is basically predestined for sustaining the flow of **renewable energy resources**, named '**FLOW MANAGEMENT**', and during servicing technological processes, it aims to perpetually circulate reserves instead of hoarding them, named 'stock management'. They mainly achieve this by sustaining the material flow, most notably **via increasing the share of services**.

2- Principle of Sustaining Cycles

The previously mentioned biological and technological cycles or cycle processes **close system processes** via the different-length loops. Circular economic solutions offer development branches in a way that they assure these resources are always at hand through the **MATERIAL CYCLES** (biological base materials and raw materials), on the highest possible level (**f. e. the circulation of soil nutrients, water circulation**). The new product cycles of circular economic models are mainly generated within the technological cycles, by reacquisition of resources, or modernisation, repair of technological systems.

3 - Principle of Outputs

The main aim TO AVOID the negative and positive EXTERNALITIES. This includes planned soil usage, avoiding water- and noise pollution, preserving good health, avoiding the usage and generation of toxic materials, avoiding incorrect business solutions, and completing all the procedures listed by **using the systems of local resource usage. Preferring local supply systems!**

The goal is not to achieve the biggest slice of the 'pie' possible

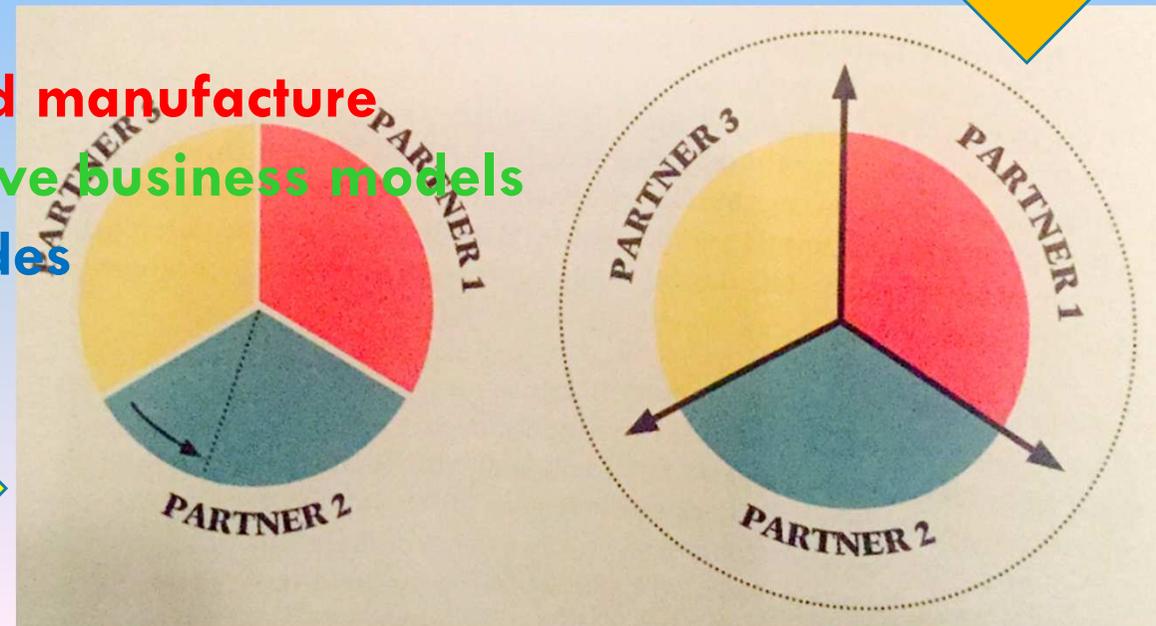
MAIN BRANCHES OF CIRCULAR ECONOMY

The Ellen MacArthur Foundation determined four main points, or basic mechanisms in 2012, which are required for constructing or redesigning the circular economic systems.

These are:

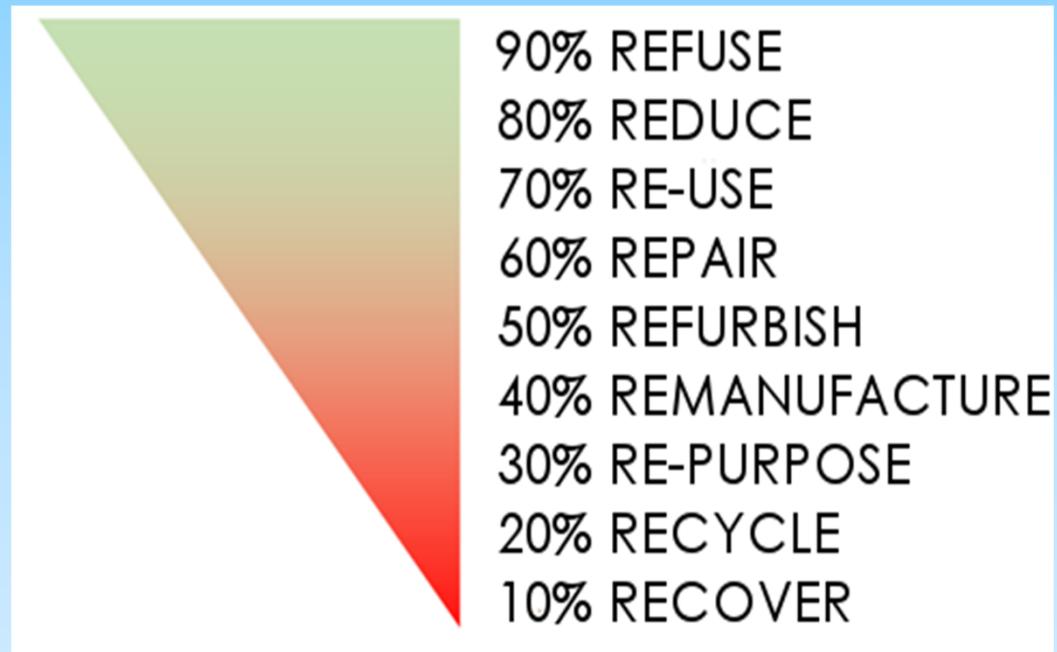
- Circular product planning and manufacture**
- Introduction of new, innovative business models**
- Redirecting cycles and cascades**
- Cross-sector cooperation**

Boke bigger pies!



The goal is not to achieve the biggest slice of the 'pie' possible

PRIORITY LEVELS OF CIRCULATION



This is how we can assure that the preferred process is completed with as

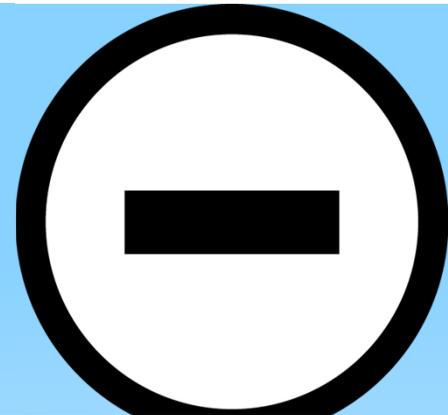
1 **low material usage** as possible.

The **second priority** is to minimise the **energy used**.

2

REFUSE

The method above is also one of the most effective interpretations for circularity. In this case, **we do not have to produce a new product at all**, since consumers **REFUSE** to purchase said product.



HOW TO USE THE PUBLIC WASHING MASCHINE!

HILTI – HAND-TOOL RENTAL SYSTEM

(No buy! –Rent a drill, a saw, a cutter, a polisher...)



REDUCE

We ourselves are responsible for the amount of products currently on the market. If we decide to decrease our consumption, we can force producers **TO STOP creating so many un-necessary products!**

GENERATE NEGATIVE EXTERNAL EFFECTS!

~~BUY TWO GET ONE FREE!~~



Examples of Negative Consumption Externalities

Negative consumption externalities are **spillover costs** generated and received in the consumption of goods and services.



Vehicle pollution



Household waste



Noise pollution from neighbours



Air pollution from smokers



Traffic congestion



Gambling addiction



Litter from tourists



Spillover costs from obesity

REUSE?



High
quality
'English'
used
products!

Little help!!

THE FLOOR IS YOURS!

Please!

ret-reading company



ENGLISH USED CLOTHES

Tel.:06/20 349 9995

WHOLESALE DEALER





REPAIR, REFURBISH AND REMANUFACTURE

...mottos of the XXI. century's consumer society: "I recommend **buying new**, it is **cheaper than the repair costs**".



Nespresso service shop (professional lock-in effect)



Circular planning prefers the creation of products that are easy to disassemble, to make the various elements, parts easy to exchange with new ones.



This is due to us aiming to make a new product from the elements of used products.

UP-CYCLING (RE-PURPOSE)

This is the first method which shows **some similarity with current trends** to some extent. This is caused due to the so-called 'retro' perspective being a fad all around the year, which supports the various methods of reusing already used products.

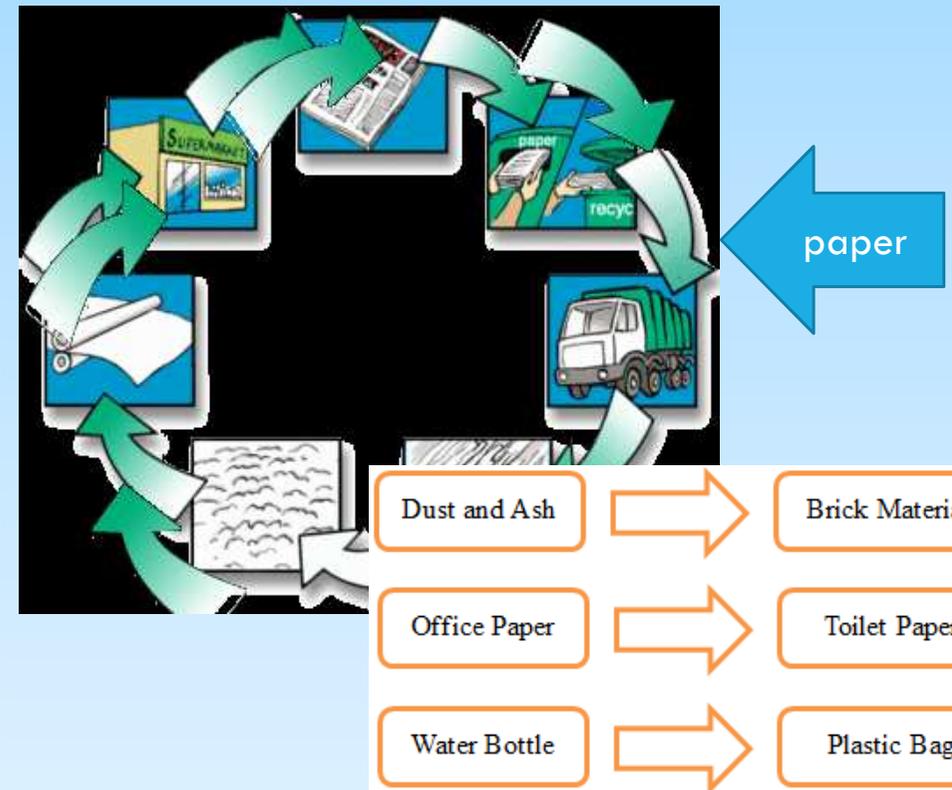
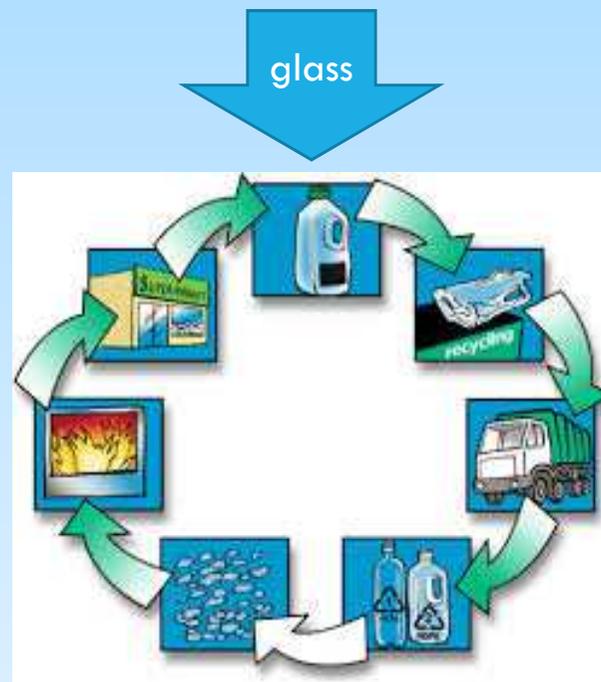


RECYCLE OR DOWNCYCLE

Regarding the concept of circular economies, this mechanism is the first to come up in people's minds. However, our **“Dear Reader surely understood by now”**, that the idea based on circulation is no more than simply returning material into the process.

During recycling, circularity policies are only implemented in a faded manner, since we cannot speak of sustaining the product function, or creating a new function.

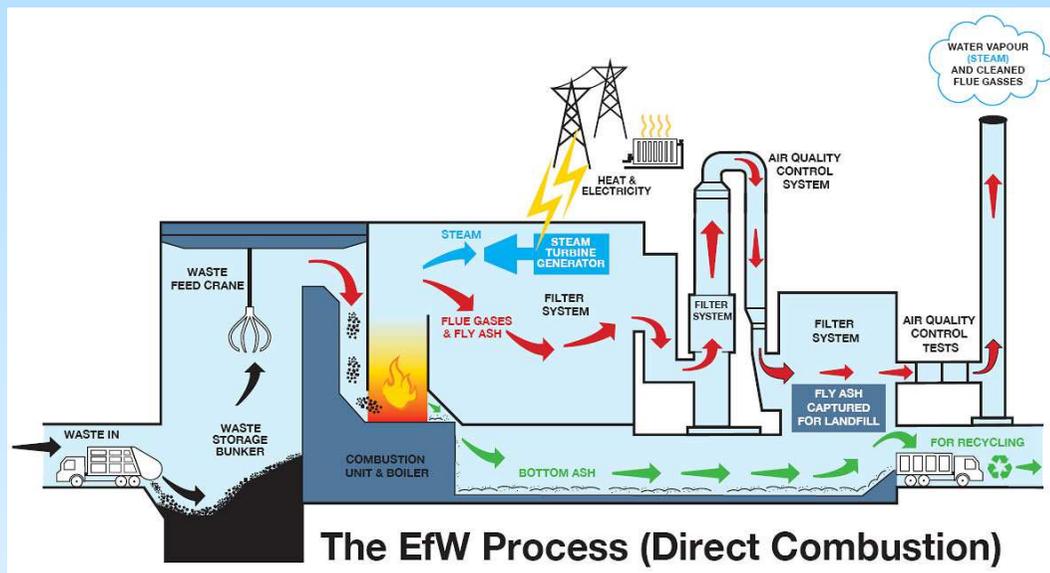
Nowadays the materials used to manufacture products are extremely complex. This is one of the reasons for the product returning facilities **not working** sufficiently even in countries like the Netherlands!



Only energy recovery – we lose the material!!

RECOVERY

Recovering energy from waste is basically one of the most primitive methods of waste treatment processes. People usually associate to energy produced in trash combustors when thinking about this method, which may have a significantly different efficiency due to differences in the actual facility



CIRCULAR 'EXPERIENCES' IN DIFFERENT EUROPEAN COUNTRIES

Reuse network by HÁDA



Import products - used car tyre depo and ret-reading company somewhere in Romania



Sharing economy vs. Uber



The used products which would not be sold in western countries are better to be exported to regions where they meet the demand standards. The problem takes place at the cases when the results of overconsumption end up in second hand stores of other nations without any usage. Therefore we suggest to extend national boundaries to reach higher levels of circularity on EU level, but the appropriate legislation is required to avoid linear processes.

SOLAR POWER SYSTEMS „ZERO WASTE” PLANNING

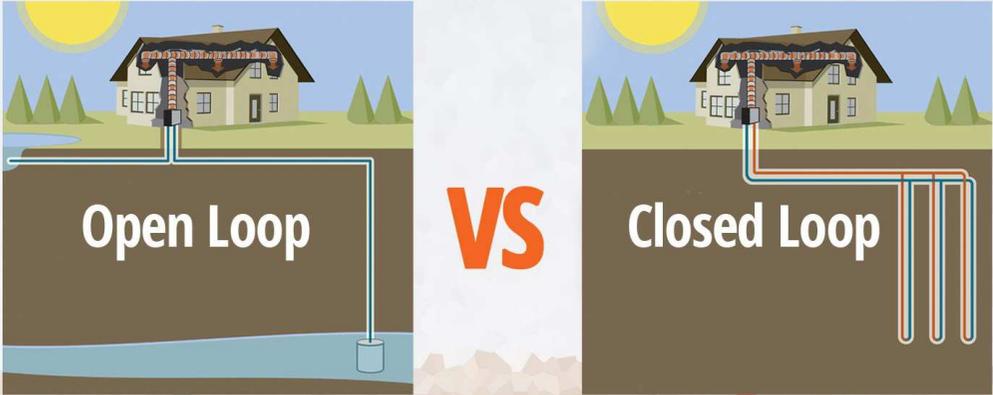


**COST OF NEW SOLAR
PANEL REDUCEABLE WITH
30% IF WE REUSING**

CLOSED GEOTHERMAL SYSTEMS

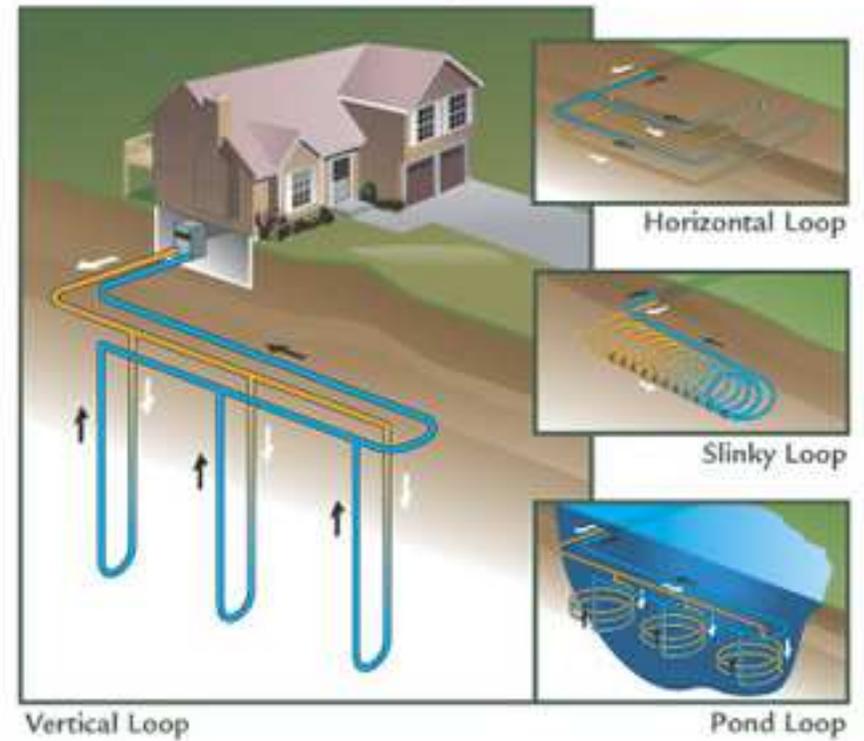
 

GEOTHERMAL HEATING & AIR CONDITIONING

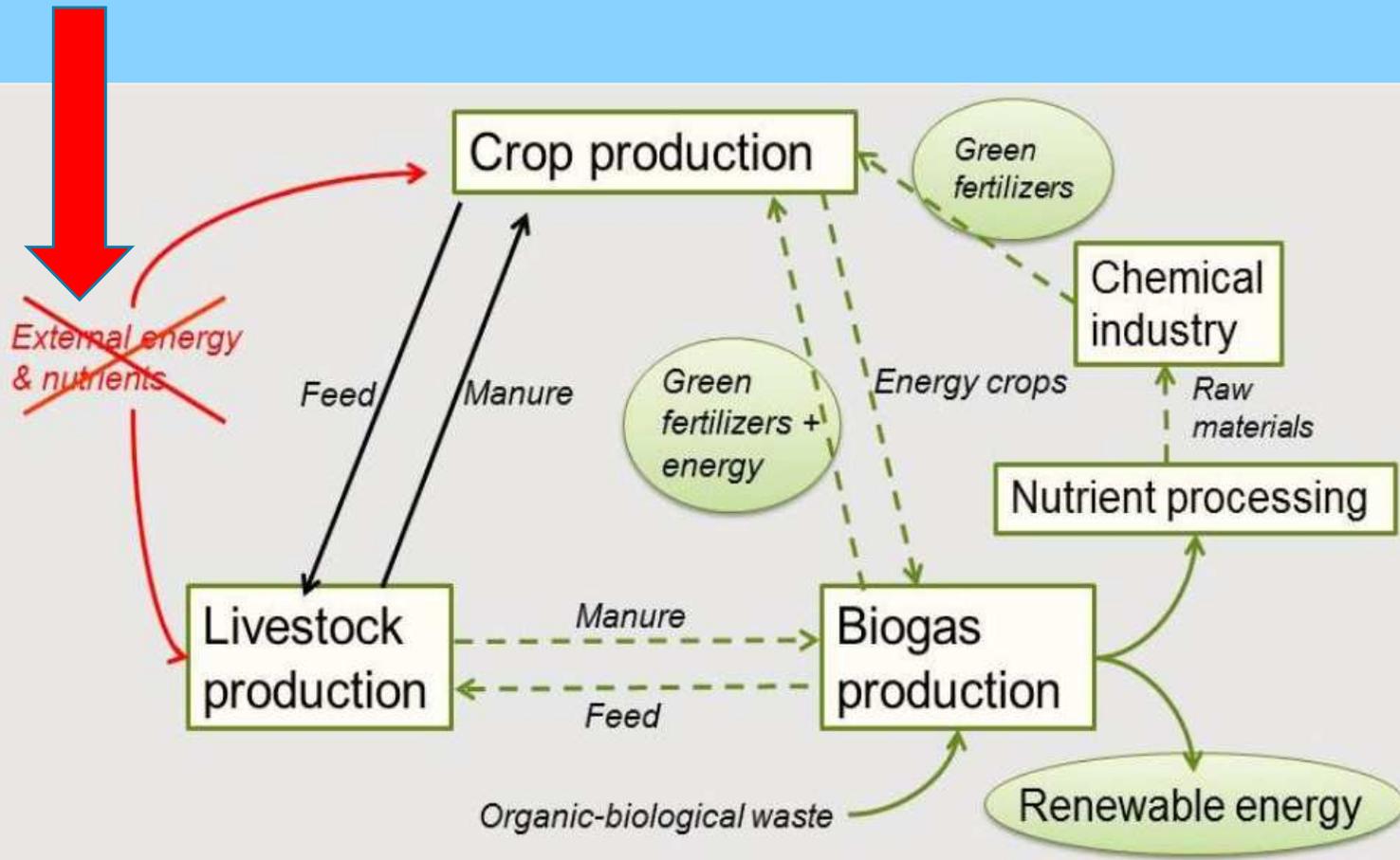
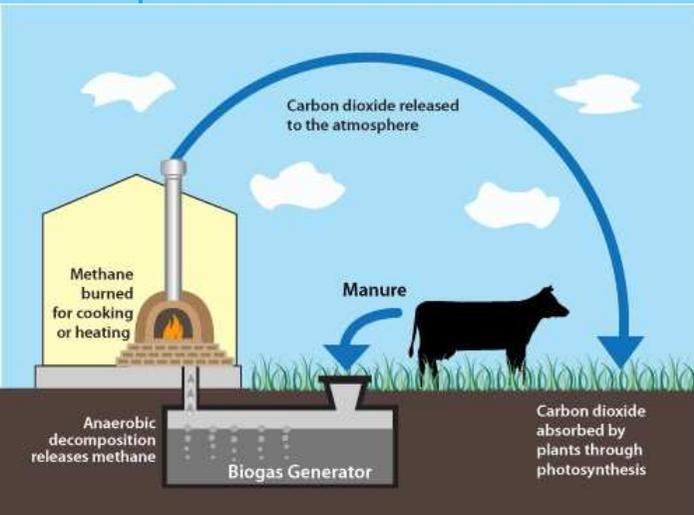


Open Loop **VS** **Closed Loop**

Geothermal Energy for the Home

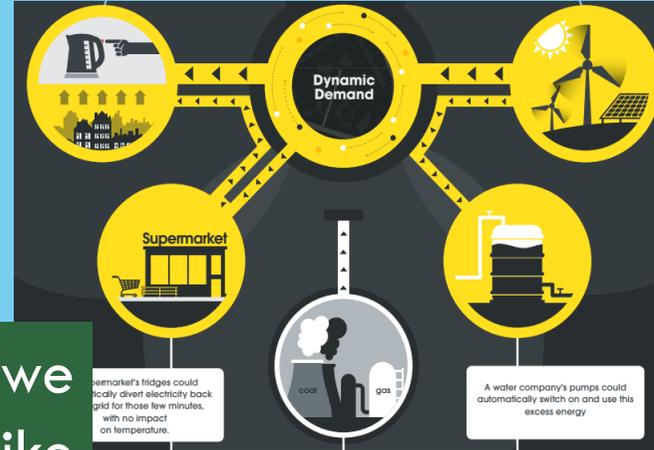


CIRCULAR BIOGAS SYSTEM



RESCOOP AND SMART SYSTEMS

„What we need in the first place is not technology, we need **NEW BUSINESS MODELS** that operate like ecosystems. If we cannot design business models that offer what is good for you & Nature cheaper than junk: forget sustainability!”



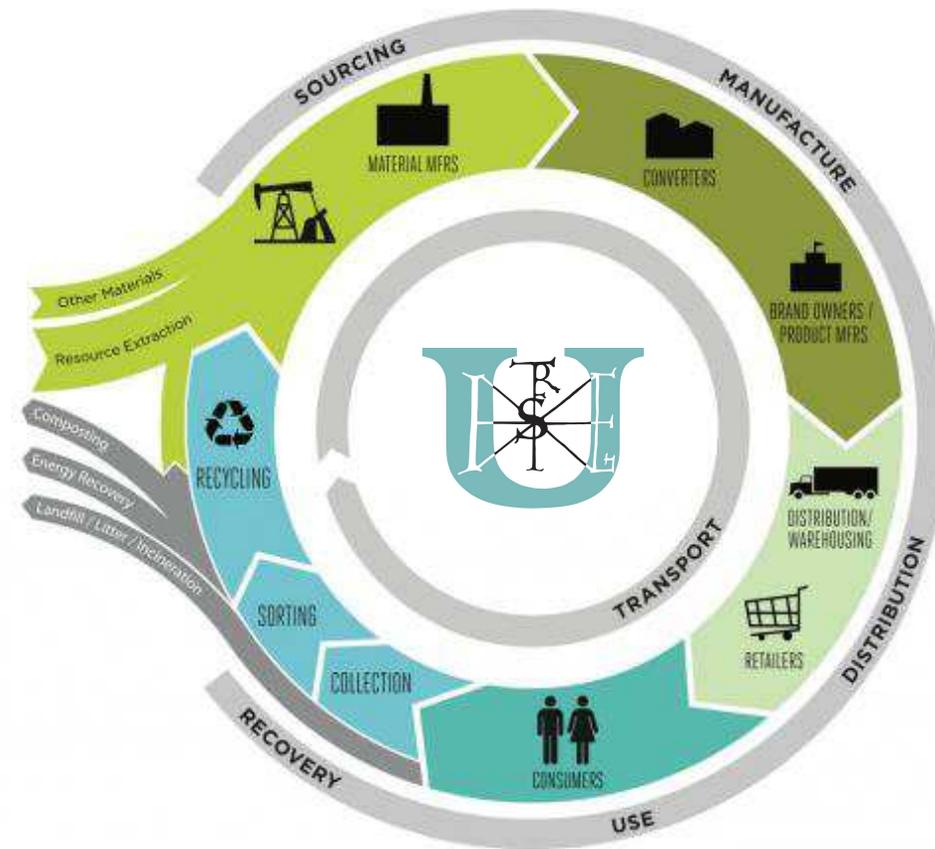
Renewable Energy Source Cooperative (RESCOOP)

Italy was the **PIONEER OF USING SMART measurement systems at the end of the 1990's!**



Smart metering from the past century (time-of-use metering)

THANK YOU FOR YOUR ATTENTION!



CSABA@FOGARASSY.HU

ACKNOWLEDGEMENT

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Links: www.eeagrants.org; www.egt-newenergy.szie.hu

