



# PACKALL

PackAlliance:  
European alliance for innovation training  
& collaboration towards future packaging

Linking **Academy** to **Industry**.

## Training program: modules

- Eco-design & novel manufacturing processing
  - **New materials and biomaterials**
  - Citizen and Consumer Engagement
  - Residue management and valorisation



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## Lecture

# Characteristics of the Principles of the CE of circular economy

- **Introduction**

This part of the module includes issues related to the circular economy in the context of the use of new and biomaterials.

The lecture is divided into two parts.

The role of biomaterials is crucial in the transformation of the linear economy into a circular model. First part is about theoretical principles of circular economy and the second part about following issues:

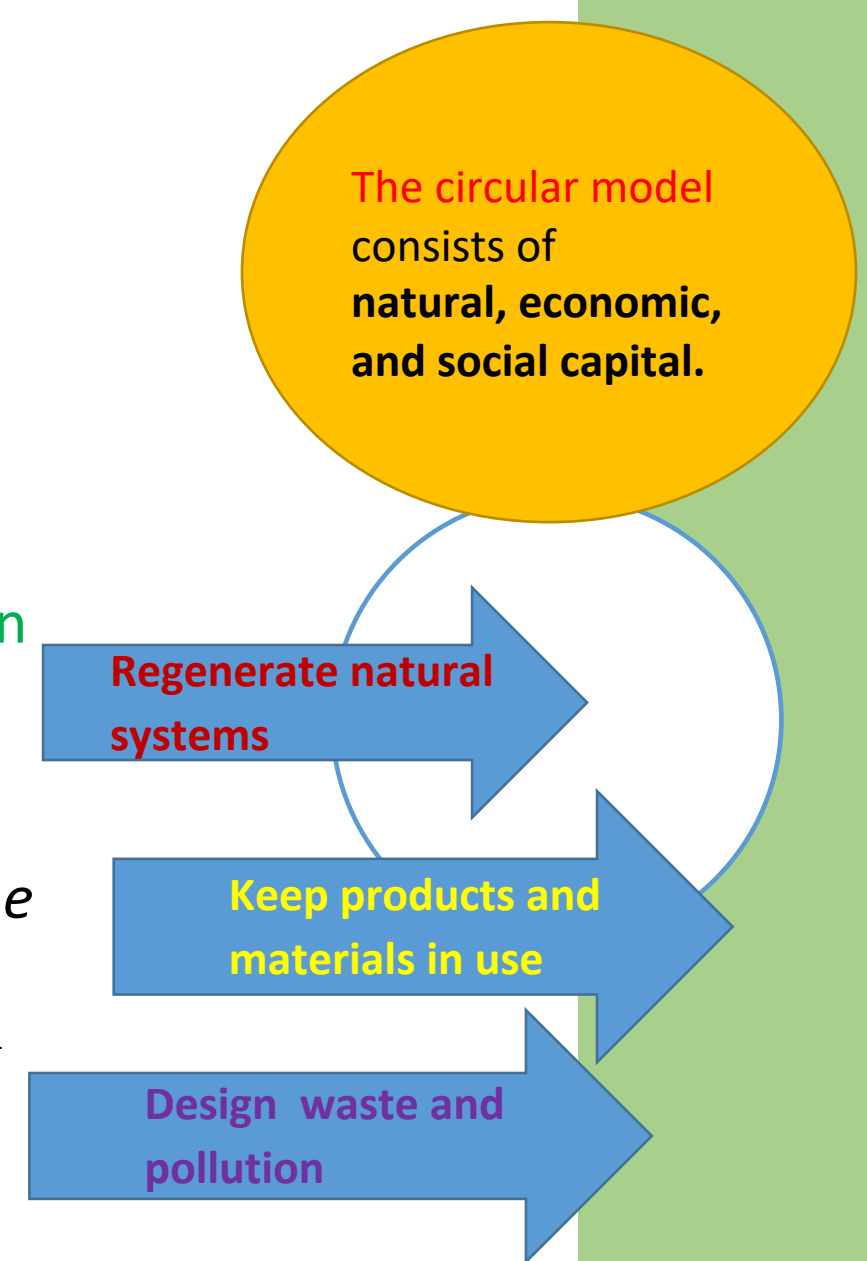
- CE in the context of new materials in the EU Policy, the examples of Tools of monitoring of CE
- CE in the context of new and biomaterial in the selected countries
- Comparison between the introduction of CE in the context of new materials, biomaterials and circular packaging



# Definition of CE

Circular Economy is economy 'where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimised' (*'circular economy' package, the European Commission presented in December 2015 an action plan for the circular economy*)

Source: [https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan\\_en](https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan_en)



A diagram illustrating the Linear Economy. At the top is a large yellow oval containing the text 'Linear Economy' in purple. Below this oval are three blue arrows pointing downwards. The first arrow contains the word 'take' in green, the second contains 'make' in red, and the third contains 'dispose' in blue. To the right of the diagram is a white circle with a blue border containing a blue exclamation mark, set against a blue vertical bar on the far right of the slide.

**Linear  
Economy**

**take**


**make**

**dispose**



# Linear economy must be transformed

- **Linear economy is take-make-waste system:**
- We have to pay attention to the manner:
- we manage resources,
- we make and use products,
- what we do with the materials afterwards.



**3 R – Reclaim,  
retain, restore**



# The role of new and biomaterials in Circular Economy

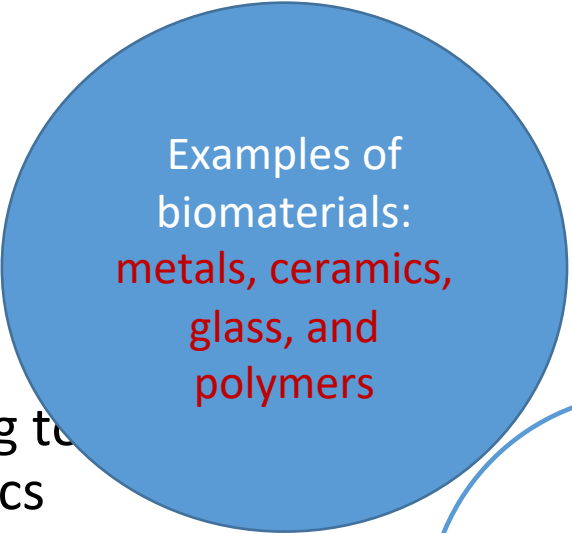
“**Biomaterials**” journal defines **biomaterial** as a substance that has been engineered to take form, which, alone or as a part of a complex system, is used to direct, by control of interactions with components of living systems, the course of any therapeutic or diagnostic procedure

source: Biomaterials - Journal – Elsevier,  
<https://www.journals.elsevier.com> (access:  
31.05.21)



# Definition

- However, not all bioplastics are equal. According to the European Bioplastics Organisation, bioplastics can be divided into three main categories:
- *bio-based or partly bio-based, non-biodegradable plastics, such as softwood cellulose-based Woodly®*
- *plastics that are both bio-based and biodegradable*
- *plastics that are based on fossil resources and are biodegradable*
- Source: [https://docs.european-bioplastics.org/2016/publications/fs/EUBP\\_fs\\_what\\_are\\_bioplastics.pdf](https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_what_are_bioplastics.pdf)

A blue circle containing text. The text reads: 'Examples of biomaterials: metals, ceramics, glass, and polymers'. The words 'metals, ceramics, glass, and polymers' are in red, while 'Examples of biomaterials:' is in white.

Examples of biomaterials:  
metals, ceramics,  
glass, and  
polymers





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