



Fakulteta za kemijo  
in kemijsko tehnologijo



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA GOSPODARSKI  
RAZVOJ IN TEHNOLOGIJO



EVROPSKA UNIJA  
EVROPSKI SKLAD ZA  
REGIONALNI RAZVOJ  
NALOŽBA V VAŠO PRIHODNOST

***Strategic research and innovation partnership –  
Networks for the transition to circular economy  
/ SRIP – Circular economy/  
Slovenia***

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# SLOVENIAN SMART SPECIALISATION STRATEGY - S4

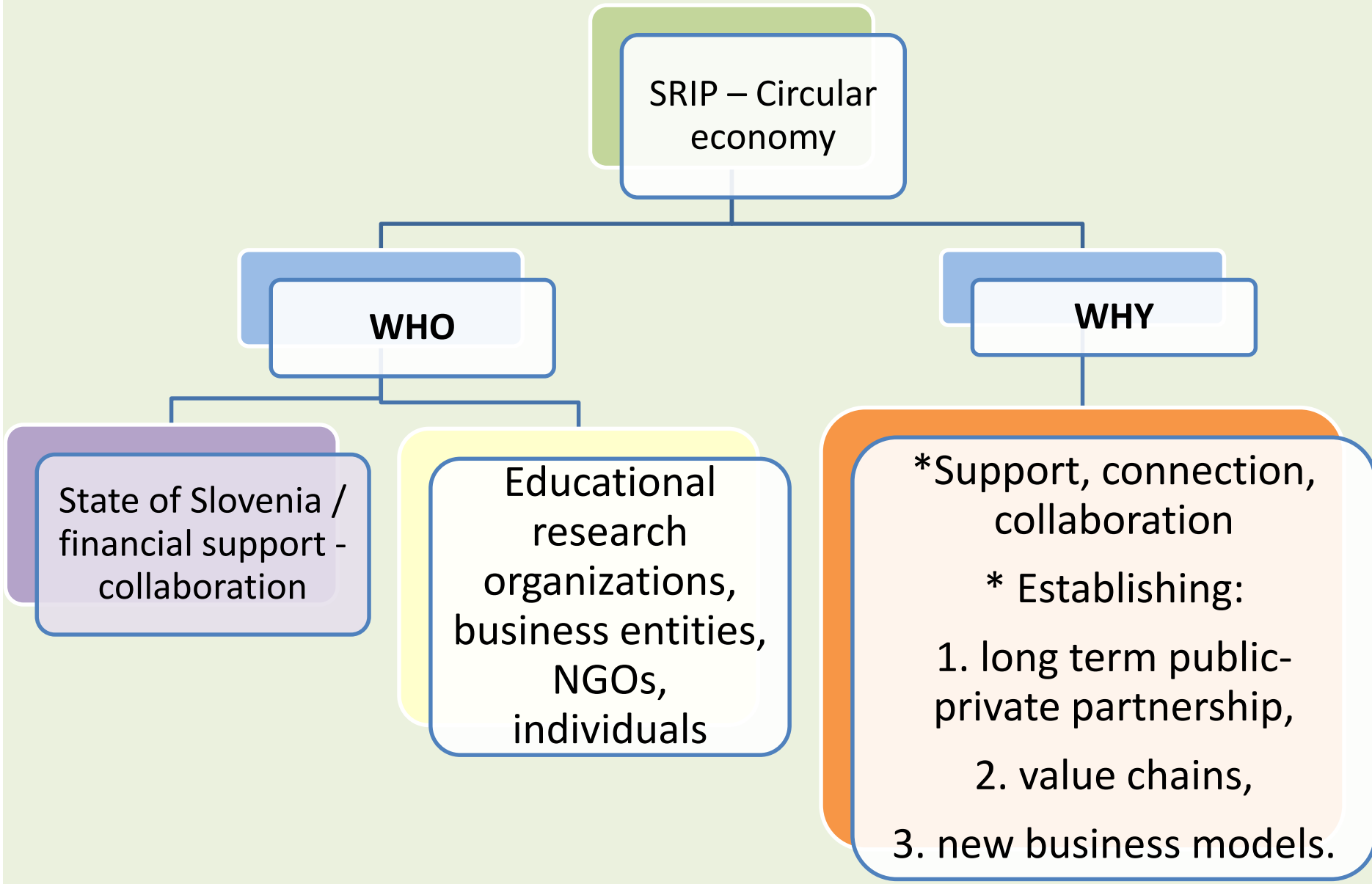


9 priorities

**SRIP CIRCULAR ECONOMY – focus areas:**

1. Technologies for sustainable biomass transformation and new bio-based materials.
2. Technologies for use of secondary and raw - materials and reuse of waste.
3. Production of energy based on alternative sources.

# SRIP – Circular economy



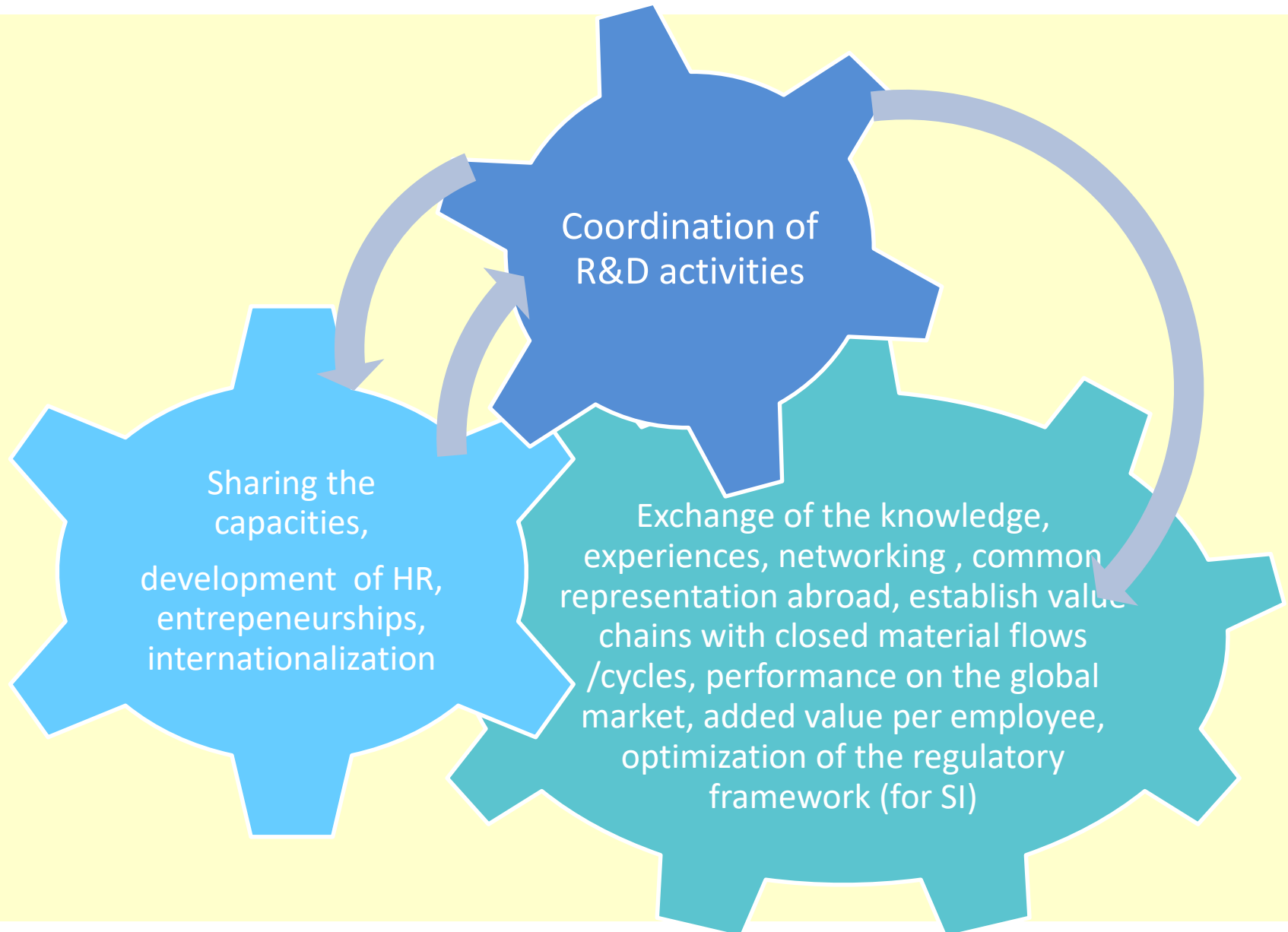
# SRIP – Circular economy: Action plan

- ACTION PLAN: 2016 – 2022 / 3 phases  
(business-development strategy):
  1. Phase: November 2016- June 2017
  2. Phase: June 2017 – December 2019 / external evaluation
  3. Phase: Year 2020 – Year 2022

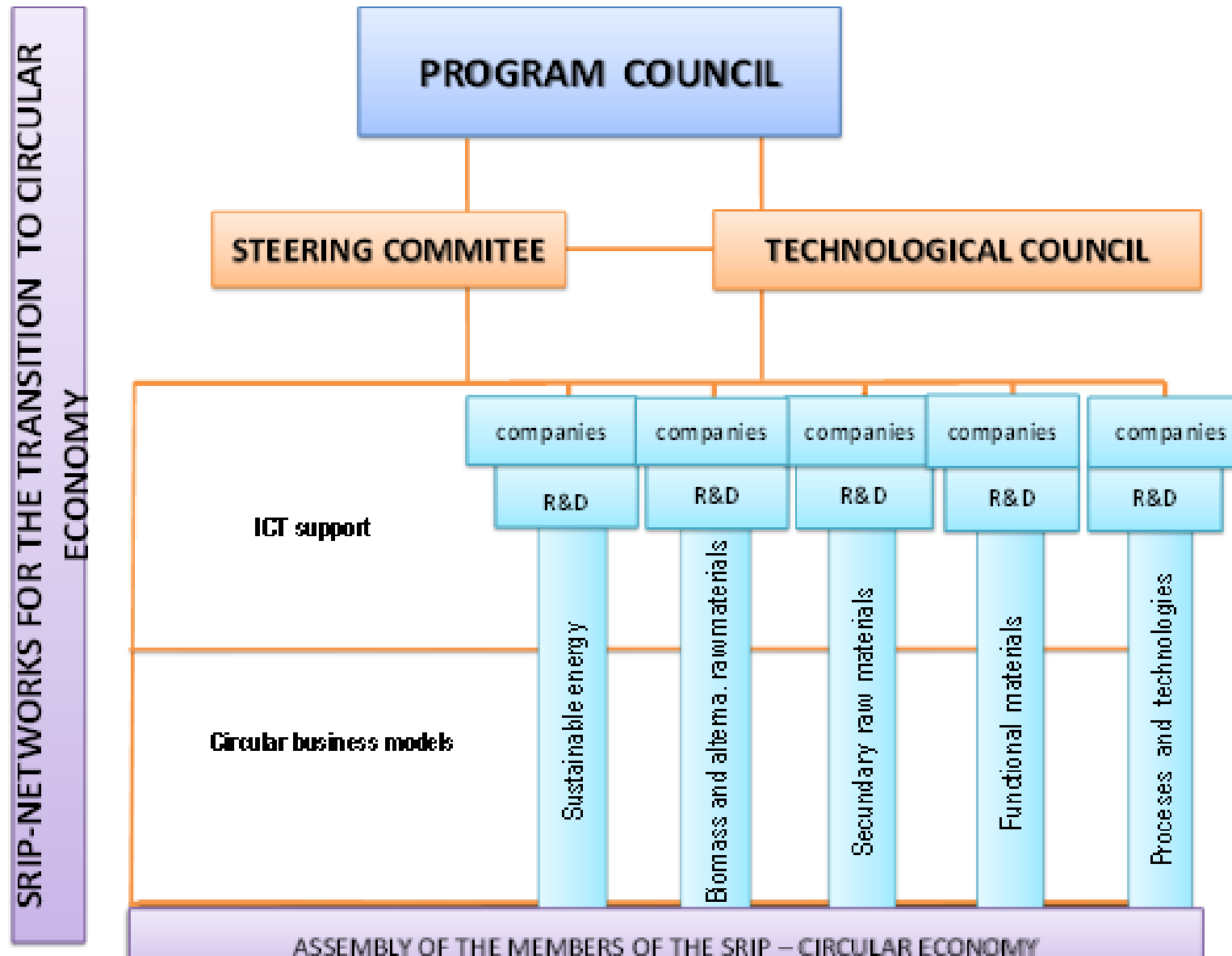
## Vision

Sustainably increase the efficiency and competitiveness of the Slovenia economy and it`s performance on global markets – become the best.

## SRIP – Circular economy - WHAT /objectives /activities:



# SRIP – Circular economy: Business model



- ♣ **Sustainable Energy**: increasing the use of alternative energy sources.
- ♣ **Alternative raw biomass**: as efficiently as possible (energy and materials) to convert raw materials into useful end products and reduce the irreversible disposal in landfills, where the vertical cover first, then the fiber part of recovery.
- ♣ **Recycling**: recycling respectively. processing of bulky waste, construction waste recycling, etc. and their processing.
- ♣ **Functional Materials**: design, development and optimization of the production of new marketable products that are also environmentally friendly (longer useful life, facilitating their recycling, less environmental impact, etc.) And / or are produced from a variety of secondary raw materials, above all (in principle) introducing a new application functionality.
- ♣ **Processes and Technologies**: Processes and technologies connecting the processing of alternative raw materials, improve material and energy efficiency of existing versions, especially connecting incoming raw materials to final commercial products; It is a thermal, mechanical and chemical single operation in the processing and manufacture

# SRIP – Circular economy

## The vertical 1: Sustainable energy

### The value chains:

1. Energy to waste (WtE)


2. Optimization systems for energy and materials efficiency

3. External energy sources

4. New circular business models



# SRIP – Circular economy

- The vertical 2: Biomass and alternative materials
- Biomass  ligno-cellulose biomass (inferior quality of the wood only)
- Alternative raw materials:
  - other sources of organic raw materials (whey, algae,...)
  - paper silt, etc.

## SRIP – Circular economy

The vertical 2: Biomass and alternative  
raw-materials

The value chains:

1. Sustainable mobilisation  
of the biomass

2. Lignocellulose biorefinery

3. Alternative raw  
materials biorefineries

# SRIP – Circular economy

## The vertical 3: Recycling

1.

- Technologies for transformation of waste or by-products into:  
a) added value products (cement clinker, mortar, concretes, vitamins, nutritional supplements);  
b) secondary raw materials as the substitutes and additives to base raw materials (secondary aluminum, waste at: steel production, textile, paper, plastic, glass, etc.)

2.

- Technologies for recovering waste products and its reuse or extended use.

3.

- Extraction technology of useful and toxic materials from waste (phosphorus, metals).

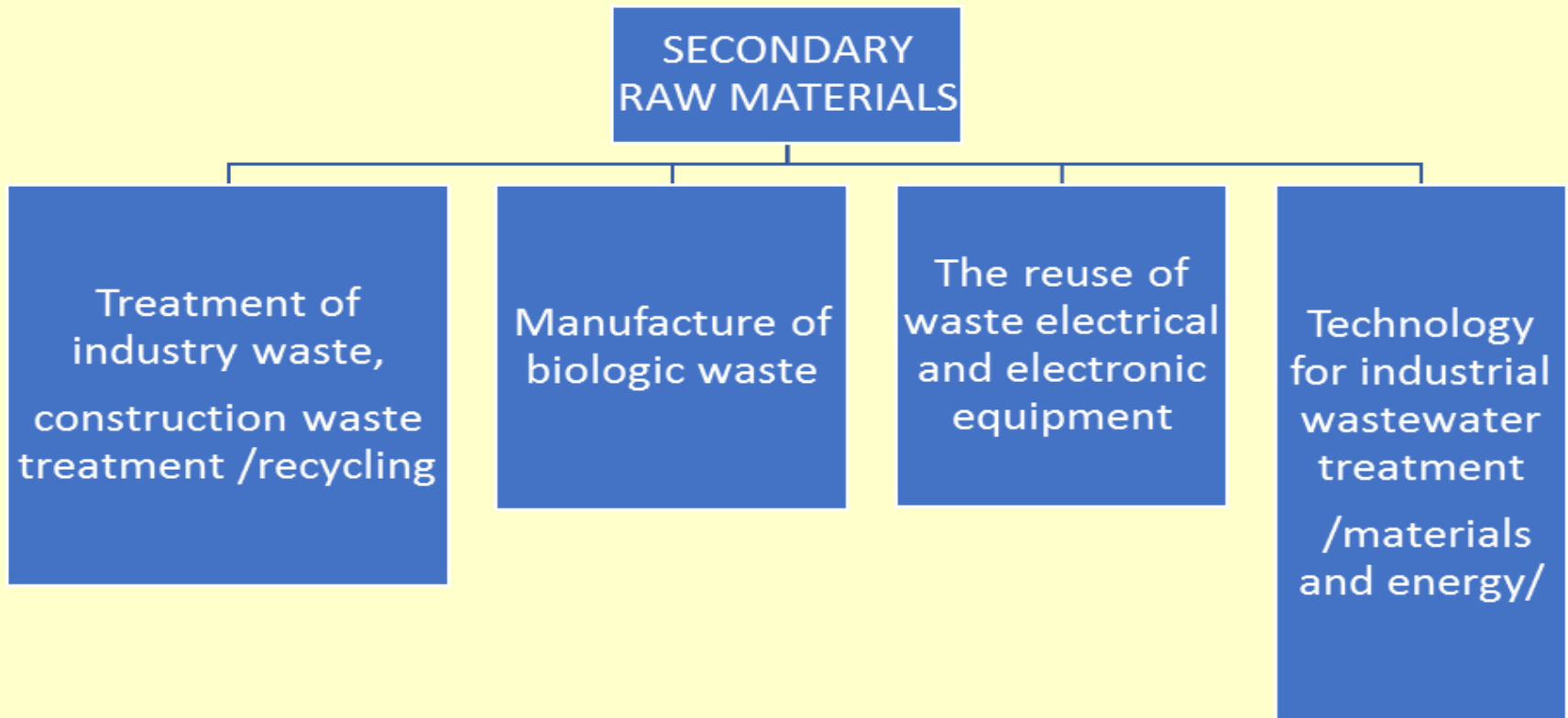
4.

- System - an open data approach to build an industrial symbiosis (data collection of waste management, refurbished / acquired / processed products).

# SRIP – Circular economy

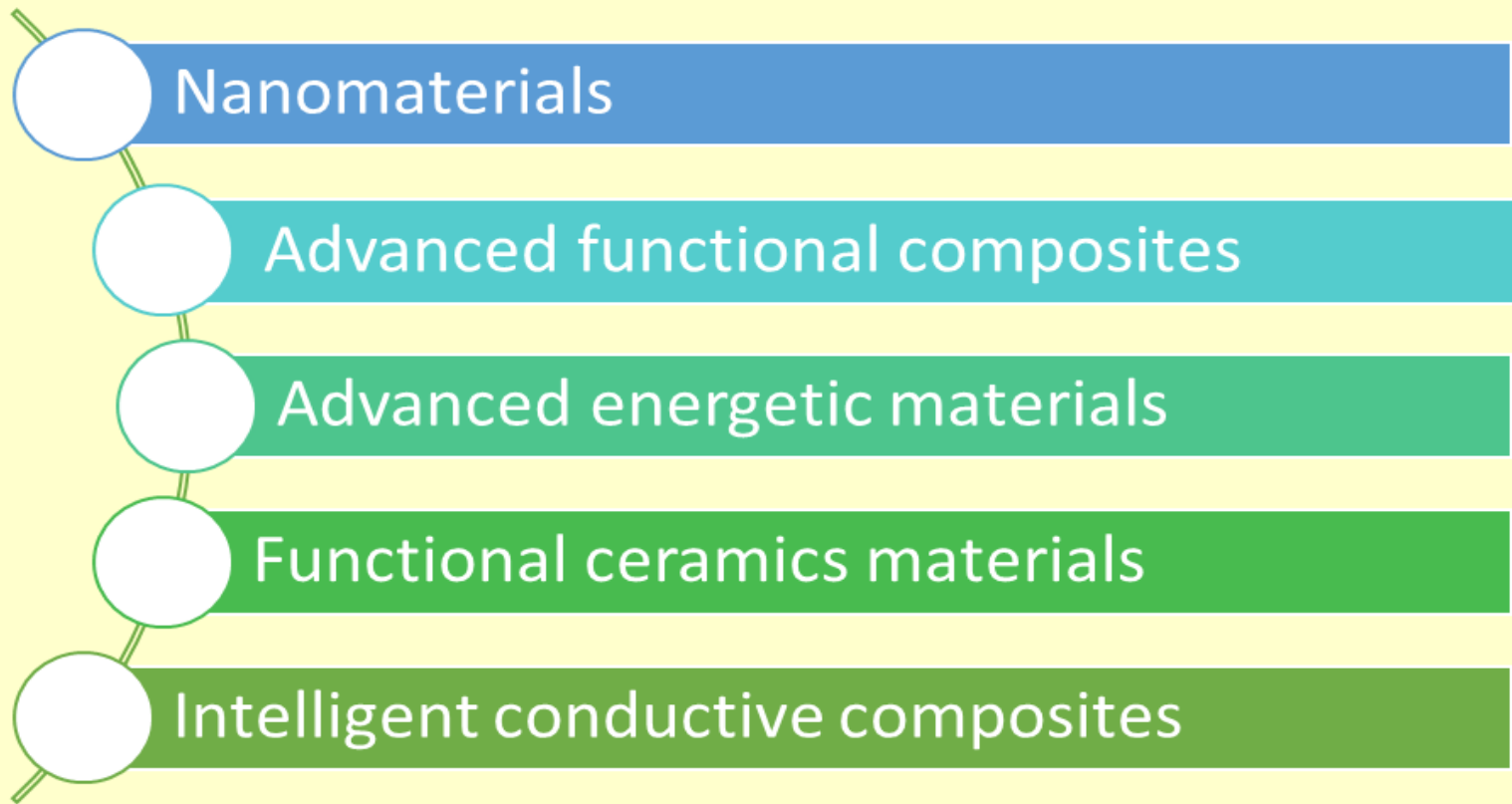
## The vertical 3: Recycling

The value chains:



# SRIP – Circular economy

## The vertical 4: Functional materials



# SRIP – Circular economy

## The vertical 4: Advanced materials

### The value chains:

1. Sustainable composites

2. Advanced packaging

# SRIP – Circular economy: The vertical 5: Processes and technologies

Bio-based green chemicals and materials

Procedures for the production and processing of polymers

Biotechnologically produces compounds

Improved manufacturing processes for the industry

# SRIP – Circular economy

## The vertical 5: Processes and technologies

### The value Chains

Biorefining  
lignocellulosic  
biomass

Emerging of  
biotechnological  
processes

Transition to  
countinuous  
operation  
processes

Improvement of  
old and  
completely new  
production  
processes for the  
industry



# Advantages and opportunities to collaborate with SRIP - circular economy are as follows:

- - ♣ Increasing innovation potential.
  - ♣ Promotion of interested companies on the local and global market scale.
  - ♣ Integration of the different stakeholders of economic actors across regions.
  - ♣ Cross-border relations to known complementary specialization neighboring centers of economy and knowledge - synergies for mutual benefit partners.
  - ♣ Strengthening the instruments of integration in the EU and world market level.
  - ♣ The possibility of accelerated internationalization.
  - ♣ Share breakthrough knowledge and experience, networking and cooperation between businesses and organizations within vertical (between them).
  - ♣ Formation of new, non-existing value chains.
  - ♣ Management of manufacturing / production technologies for the transition to renewable sources of energy / raw materials
  - ♣ Help the stakeholders involved in the transition to renewable sources of energy / raw materials.
  - ♣ Help reduce greenhouse emissions.
  - ♣ reputation for the best integration of stakeholders.



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**Thank you!**

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[www.ki.si](http://www.ki.si)



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