



ŠTAJERSKA
GOSPODARSKA
ZBORNICA



**SRIP CIRCULAR
ECONOMY**



REPUBLIC OF SLOVENIA
MINISTRY OF ECONOMIC DEVELOPMENT
AND TECHNOLOGY



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND
INVESTING IN YOUR FUTURE



Univerza v Mariboru

Fakulteta za kemijo
in kemijsko tehnologijo



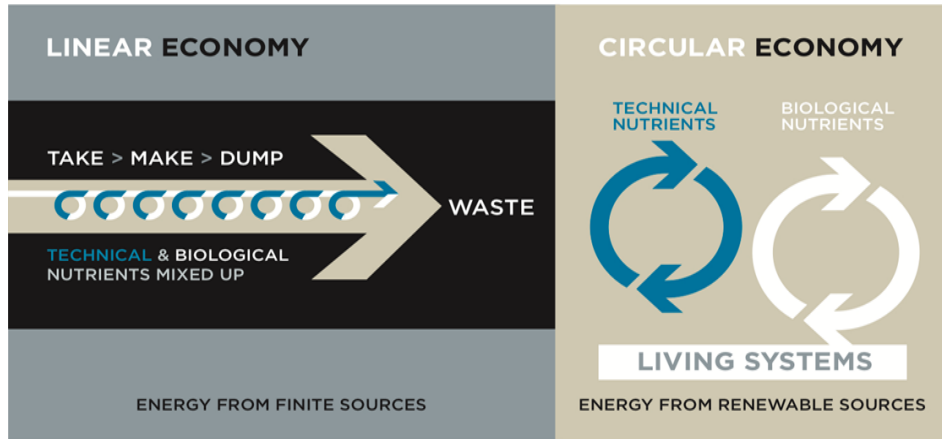
Strategic research and innovation partnership (SRIP) – Networks for the transition to circular economy

Sustainable Business Models in Circular Bioeconomy

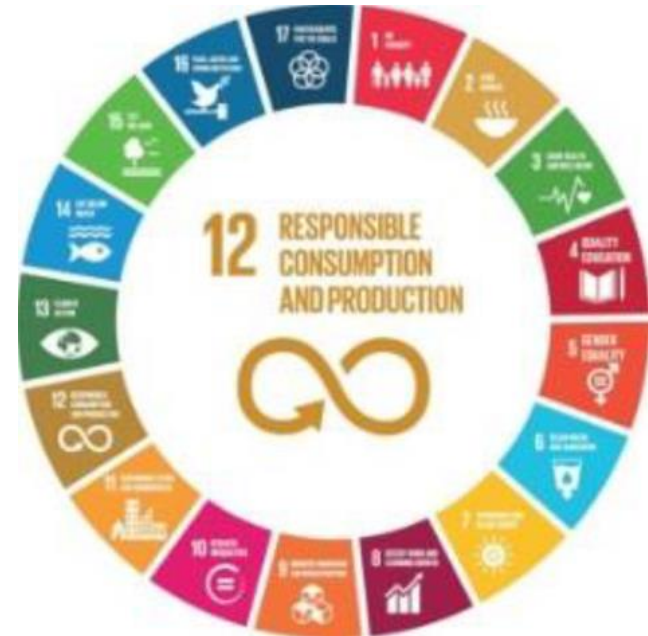
**Dragica Marinic /
Chamber of Commerce and Industry of Štajerska**

23 September 2019 | Brussels

Investment is co-financed by the Republic Slovenia and the EU under the European Regional Development Fund.



AFTER W. McDONOUGH AND H. BRAUNGART

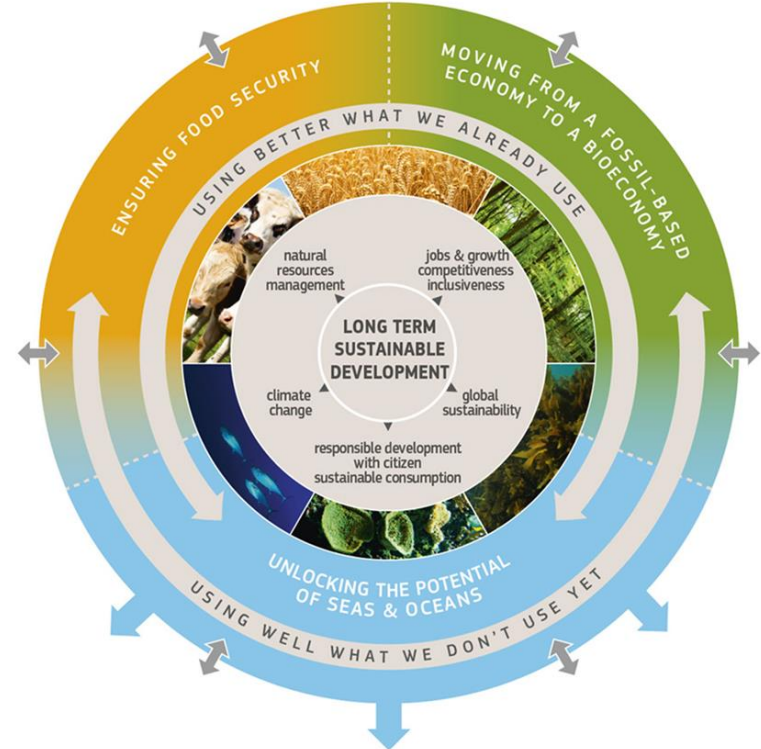
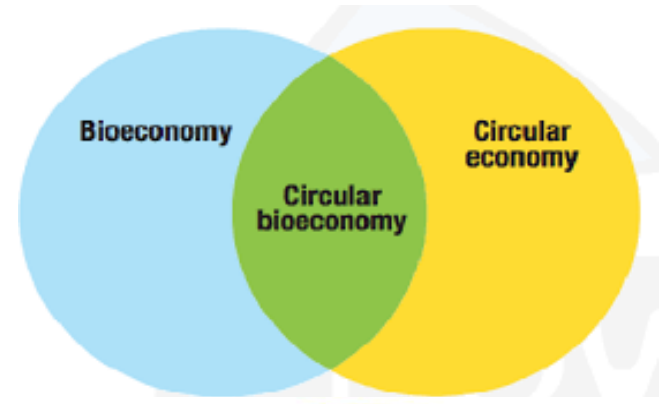
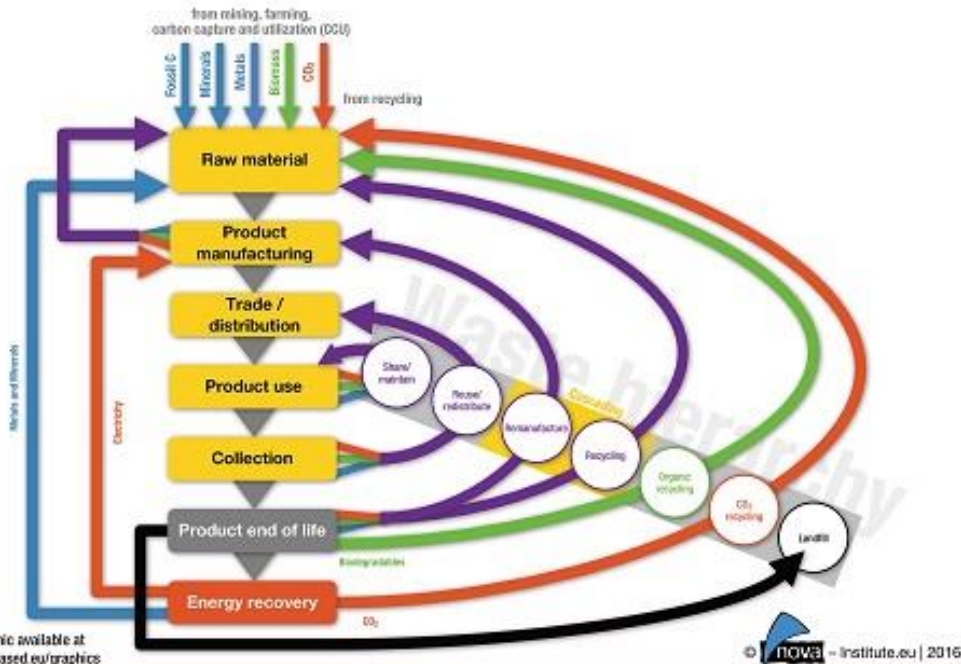


The circular model builds a capital on:
 Economic / Natural / Social level (closing the loop).

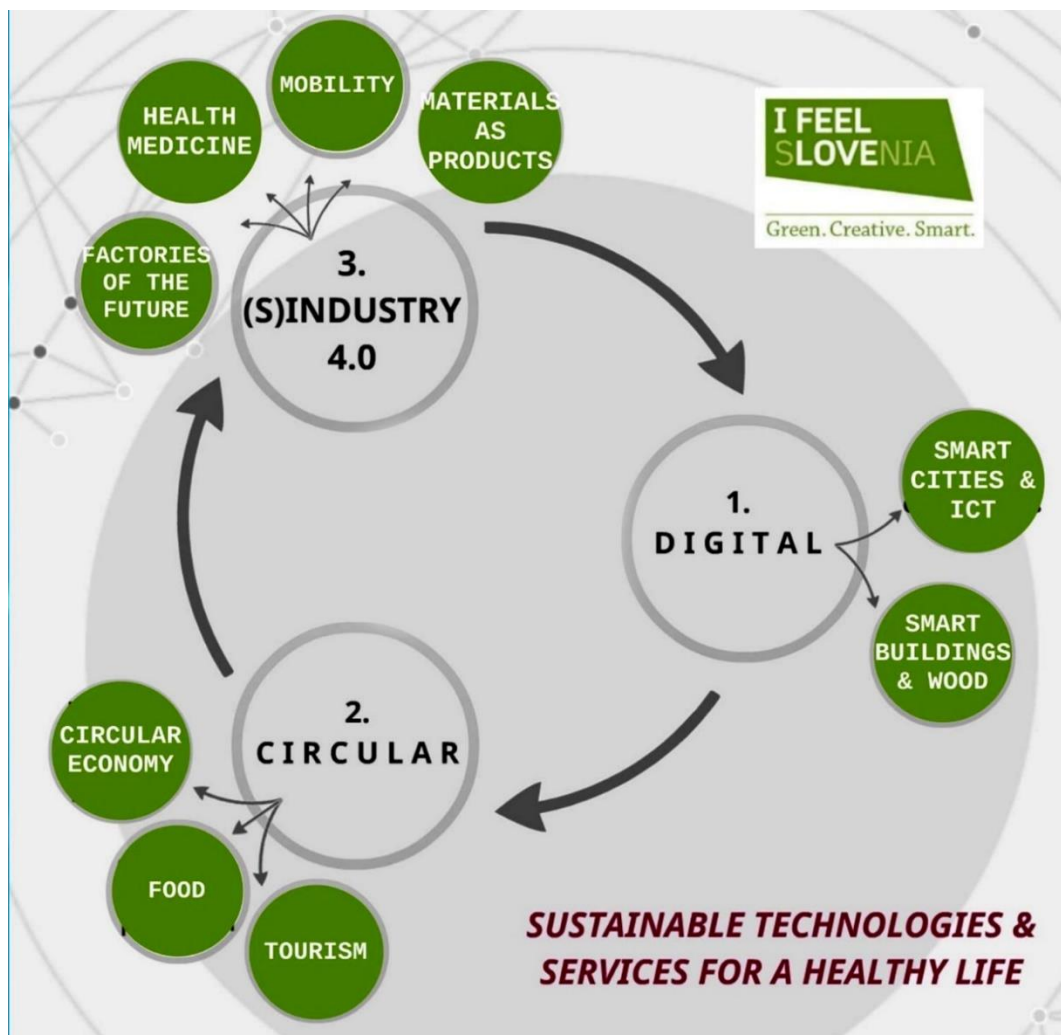
Principles: design out of waste and of pollution, keep products and materials in use, regenerate natural / eco systems
 (Source: EMA 2012)



Comprehensive Concept of Circular Economy



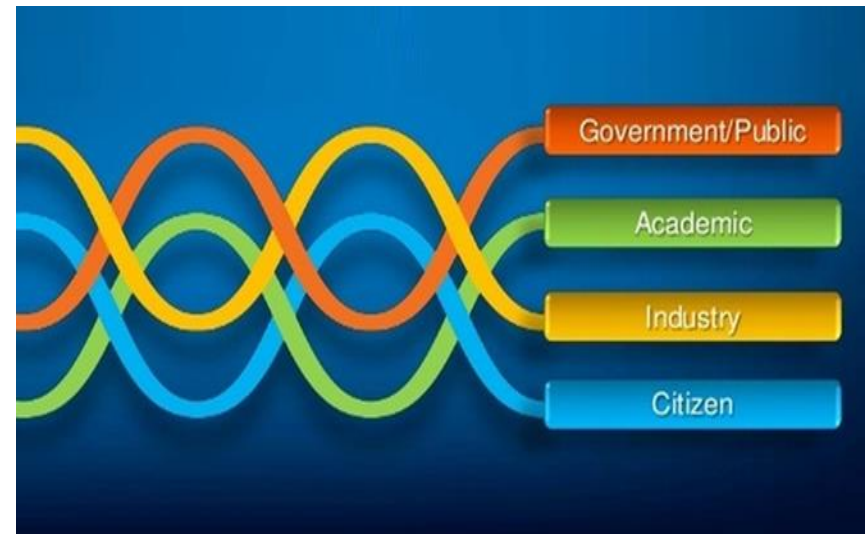
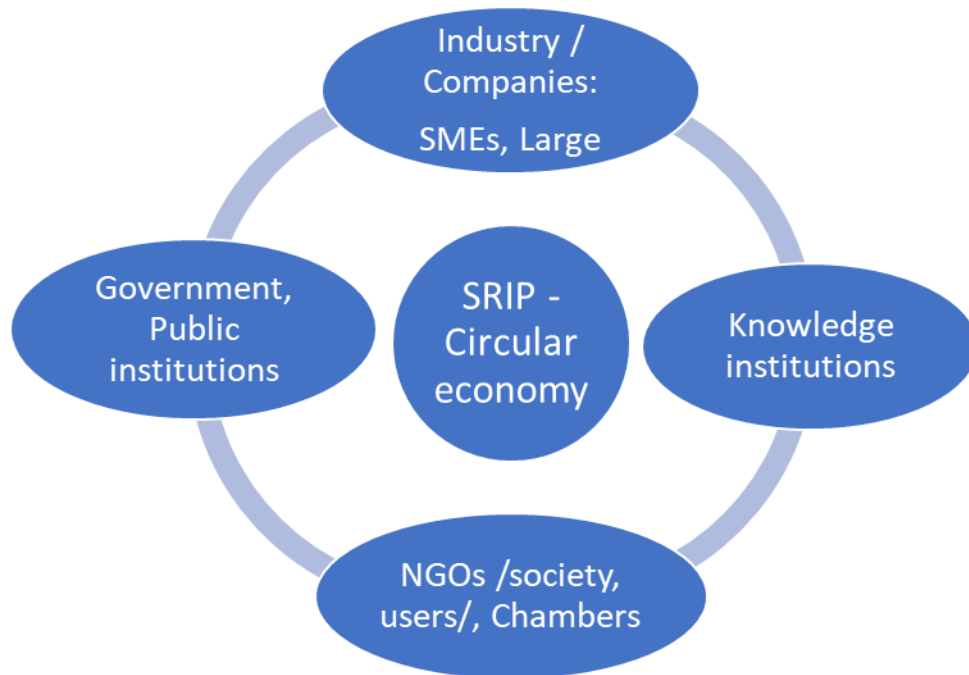
Smart Specialisation Strategy, S4: Strategic Research and Innovation Partnerships (SRIPs)



Strategic research and innovation partnership— Networks for the transition to circular economy /SRIP-Circular economy:

- a long term, sustainable public - private partnership,
- innovation - ecosystem,
- intellectual potentials for an entering to global market among:

Quadruple helix model of open innovation in knowledge-based development ((Source: Boyes 2018)



Smart Specialisation Strategy, S4:

1. Technologies for sustainable biomass transformation and new bio-based materials

S 4

SRIP - Circular
economy

2. Technologies for use of secondary raw materials and reuse of the waste

3. Production of energy based on alternative sources

SRIP – Circular economy /a new business model/

WHO?

Government of
Slovenia /
financial
support -
collaboration

Business entities,
Knowledge
institutions,
NGOs,
Chambers

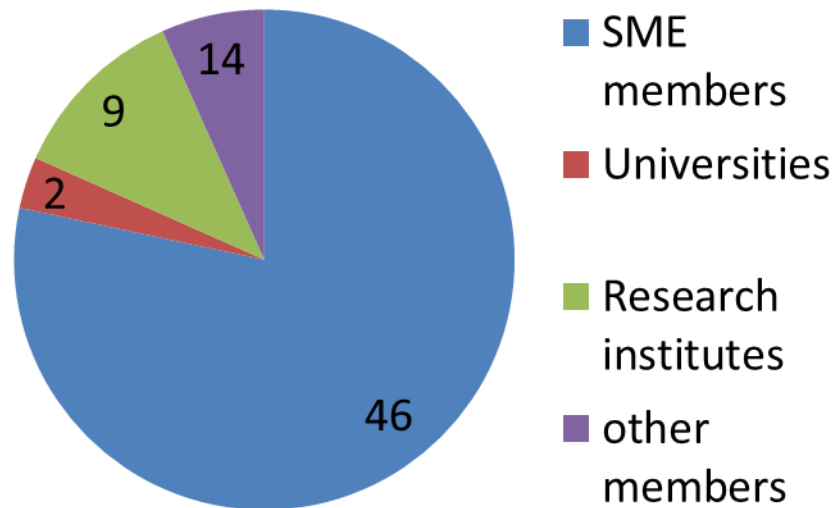
WHY?

- * Support, connection, collaboration
- * Establishing:
 1. long term public-private partnership
 2. value chains
 3. new hi tech products, services
 4. new business models

Start-up year of SRIP: November 2016

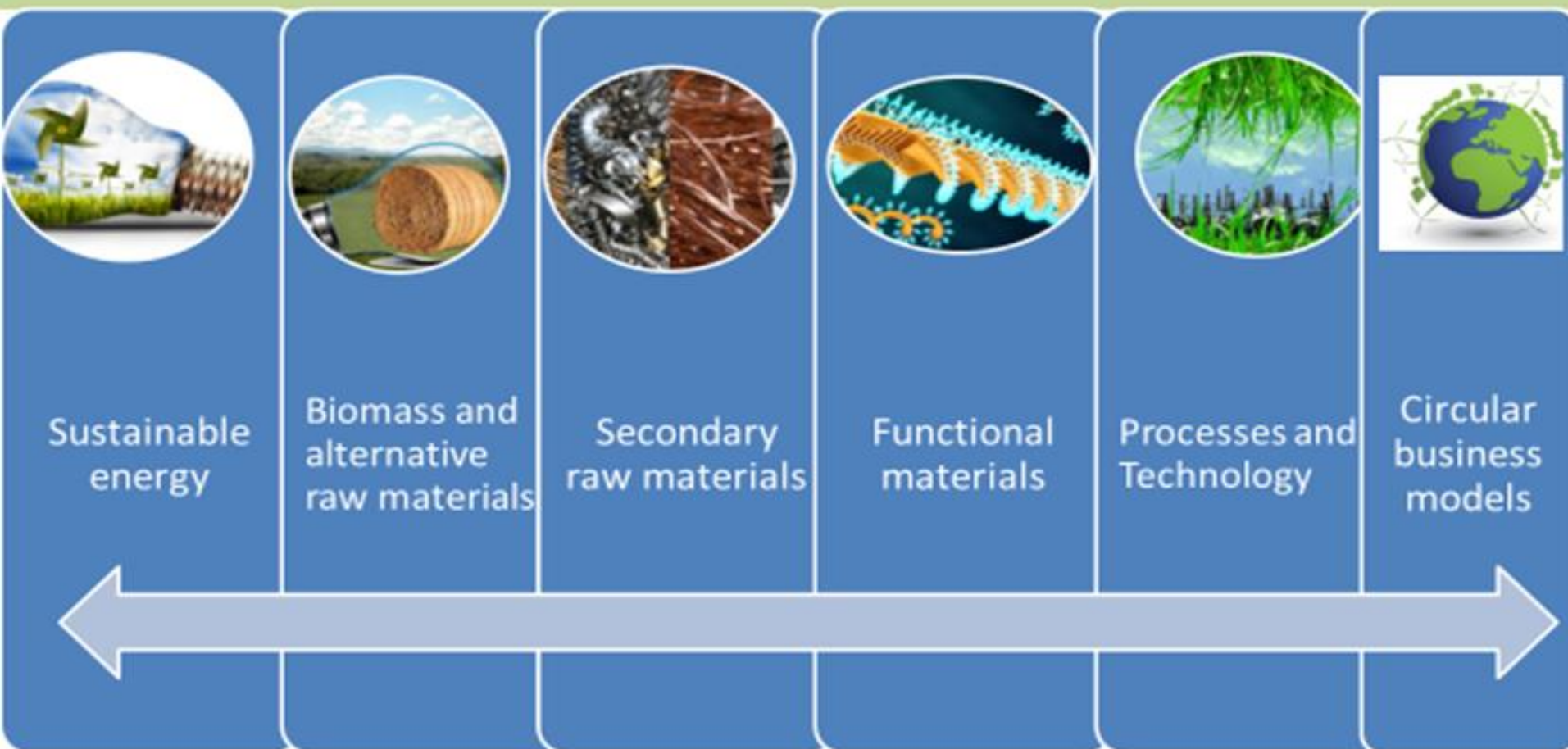
Structure of SRIP

SRIP membership 2019: 72



SRIP – Circular economy

Focus areas / value chains, networking, collaboration



SRIP – Circular economy / Focus areas:

Focus area 1: Sustainable energy

1.

Waste to Energy
(WtE):

the process of
generating energy in
the form of
electricity and/or
heat from the
primary treatment of
waste


2.

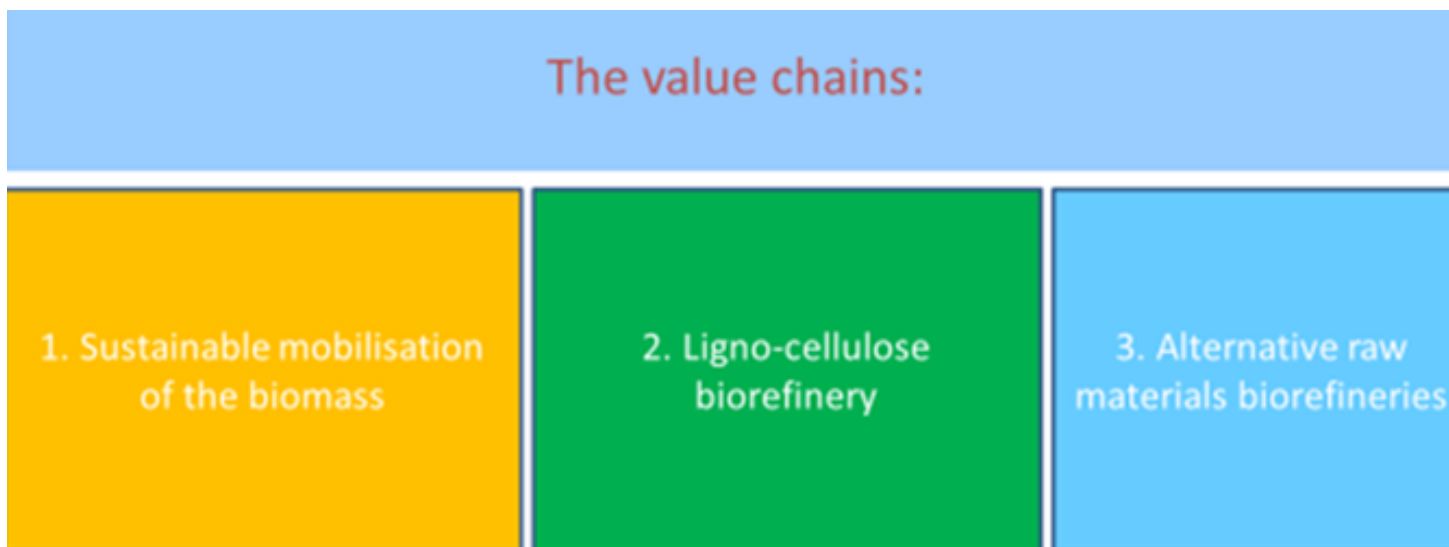
Energy optimization
and materials
efficiency / the
reduction of energy
consumption and its
efficient use

3.

External energy
sources – low carbon
footprint / renewable
energy resources:
production of energy
from water, wind, sun,
radiation sources,
fusion.

Focus area 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.



The focus area 3: Secondary raw materials

1

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

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 collections of waste management, refurbished, acquired products

5

- Water management: drinking water and wastewater management: waste water from certain industrial sectors

Focus area 4: Functional materials

Nanomaterials

Advanced functional composites

Advanced energetic materials

Functional ceramics materials

Intelligent conductive composites

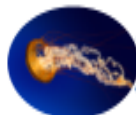
Focus area 5: Processes and technologies



Procedures for the production and processing of polymers



Improved manufacturing processes for the industry



Biotechnologically produces compounds



Bio-based green chemicals and materials

Focus area 6: Circular business models

Circular business models centers on sustainable networks and processes. It should lead to the development of an open computer platform with the goal to bring about a framework for higher technological and economic as well as environmental efficiency of technology, processes and companies. It should allow for sustainable long term development within the whole life cycle.

SRIP – Circular economy: Action Plan – Business Strategy: / Sustainability / Research and Career Platform / Entrepreneurship / Investment / Internationalisation

Action plan of SRIP:

- Joint development activities
- Internationalisation
- Human resources development
- Entrepreneurship and joint services
- The optimization of regulatory framework

1. Public – Private Investment

- 2. Public calls /joint projects/:**
 - Slovenia,
 - EU countries,
 - Others

1. Career Platform:

- Profession of future
 - Individual career plan
 - Training, Education,
 - Competences
- 2. Innovation**
 - 3. Digitalization**
 - 4. Ecodesign**

SRIP – Circular economy: Activities of the members in the field of circular (bio)economy

- **ACIES BIO**, Ljubljana

Innovative Whey2Value technology, which enables the processing of waste acid whey, which only means the cost for the dairy industry, into vitamin B12. / www.aciesbio.com

- **Tekstina**, Ajdovščina: the project TRASH-2-CASH: chemical recycling of cellulose and polyester textile waste to new fibres and new products. / www.tekstina.si | www.tekstina-tech.si

- **Algen, algal technology centre**, Ljubljana

Algal waste water treatment technologies in circular economy. / www.algen.eu

- **Predilnica Litija**: potential of biomass for the development of advanced materials and bio-based products: new value chains. / www.litija.com

SRIP – Circular economy: Activities of the members in the field of circular (bio)economy



- **Pulp and Paper Institute nad consortium partners:**

Potential of biomass for development of advanced materials and bio-based products

<http://celkrog.si/?lang=en>

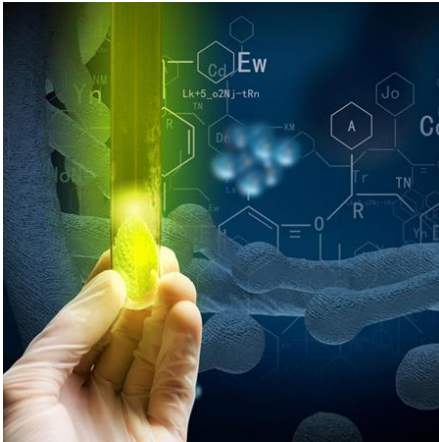
- **Melamin Kocevje:**

one of the most important producers of modified melamine resins and decorative melamine films for chipboards in central Europe /different industry divisions: Chemical, Wood, Footwear

<http://www.melamin.si/en/>

SRIP – Circular economy

Proposals of the collaboration:



- Research projects: SMEs, research institutions,
- Pilot / Demo projects / Vanguard initiative
- Exchange knowledge,
- Learning (workshops, conferences),
- B2B meetings,
- Study visit
- Trade fair participation
- Networking,
- Collaboration in the (global) value chains.





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Thank you!

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