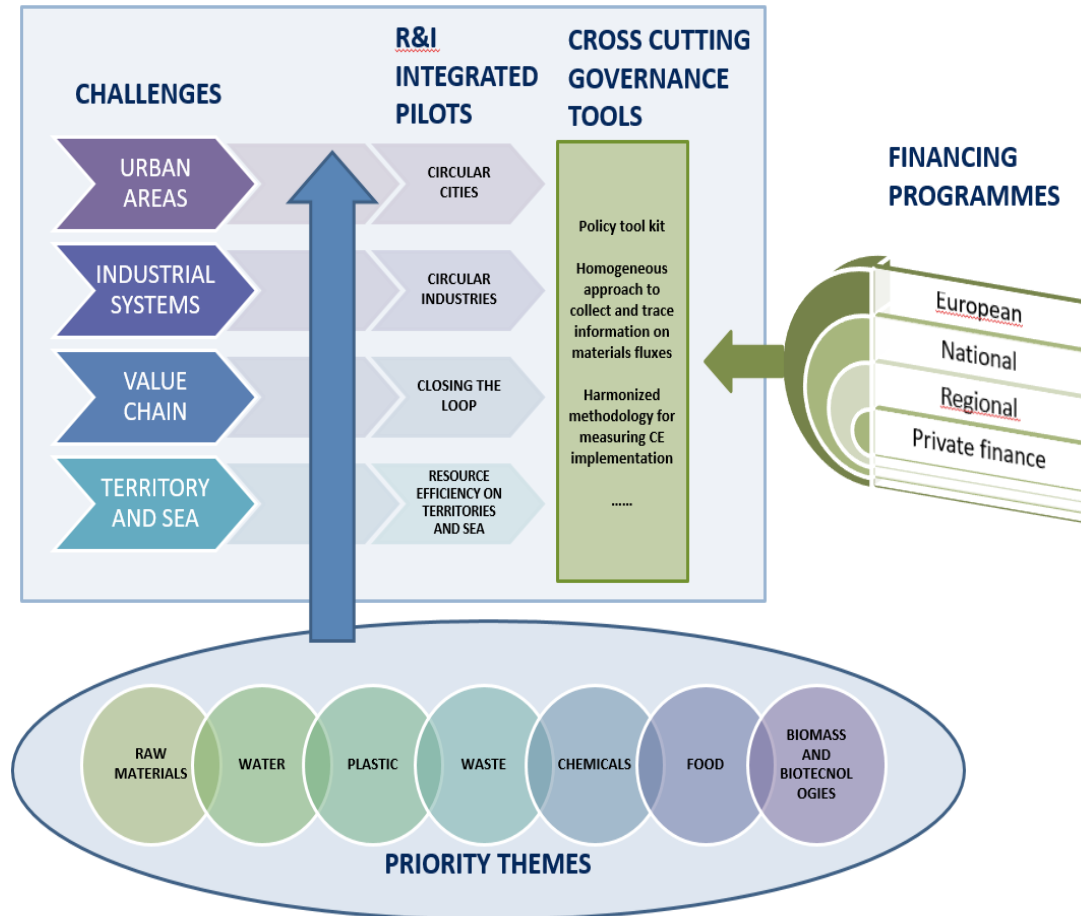


R&I in raw materials circular value chains as per the Commissions' Strategic Research and Innovation Agenda on Circular Economy (SRIA) – the H2020 CICERONE Project

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CICERONE at a glance



Aim:

CICERONE's goals are to **align as much as possible pan-European, national and regional research and innovation on CE** in order to speed up the transition to a European CE. The project's vision relates to cooperation, knowledge, commitment, confidence and trust.

Results:

- address as priority the **definition of joint national and regional funding programmes**, complementary to European and private finance funding programmes.
- establishment of a **platform** which will determine the priorities and pathways for coordinated R&I for circular economy. In turn, this agenda will influence the priorities in future European, national and regional CE programmes. The platform will also increase the sharing and promotion of research results, improve the level playing field in European Member States and Regions, and involve youth, creative sectors and ICT.

Project Objectives:

1. Assess and benchmark the current performance of C.E. research & innovation funding in Europe: **BENCHMARK**

- 1.1. Establish state of the art in CE R&I policy & funding in EU
- 1.2. Define a methodology and criteria to assess performance of funding
- 1.3. Apply this *methodology to the current situation and identify gaps and synergies*
- 1.4. *Benchmark the EU situation vs. international partners*

2. Establish an efficient & inclusive mechanism to jointly define & prioritise C.E. R&I priorities at EU scale: **SRIA**

- 2.1. Agree on a methodology to prioritise R&I at EU scale
- 2.2. Ensure a widescale international consultation of stakeholders
- 2.3. Deliver a first prioritised *strategic R&I agenda covering priorities, funding levels and instruments*
- 2.4. Assess target performance of funding and synergies obtained against state-of-the-art

3. Build and test a lasting organisation and pathways to reach the desired impact: **JOINT PROGRAMMING PLATFORM**

- 3.1. Define the strategic role of a European CE R&I joint programming platform, *considering expectations of all stakeholders (incl. SMEs)*
- 3.2. Design an *institutional capacity-building strategy*
- 3.3. Build and disseminate *policy recommendations* based on identified best practices
- 3.4. Define an organisation to ensure sustainability of the platform post-project
- 3.5. Design a pilot joint implementation plan and identify preliminary lessons learned
- 3.6. Widely promote the project results to relevant stakeholder communities, build and maintain

THE CIRCULAR ECONOMY SRIA

CHALLENGES
(in the form of Innovation Fields)

Urban Areas

Industrial Systems

Value Chain

Territory and Sea

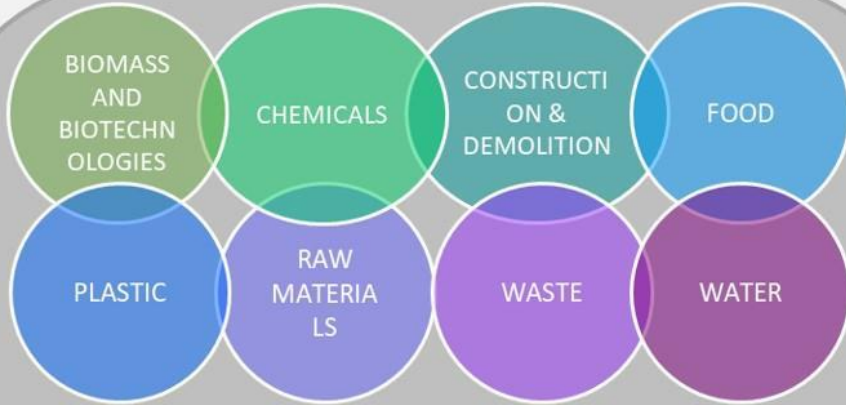
JOINT PROGRAMMES

CIRCULAR CITIES

CIRCULAR INDUSTRIES

CLOSING THE LOOP

RESOURCE EFFICIENCY ON TERRITORY & SEA



PRIORITY THEMES
(in the form of Innovation Fields)

CROSS-CUTTING GOVERNANCE TOOLS



PROGRAMME OWNER PLATFORM

A collaboration platform for circular economy research and innovation to carry out:

- Joint programming
- Capacity building
- Policy support

The CE SRIA was developed by identifying innovation fields across eight themes and four societal challenge areas, out of which four joint programmes were formed. Members of the programme owner platform are foreseen to use both the joint programmes and innovation fields to collaborate on circular economy programming. These aspects of the SRIA can also be tailored to their needs.

CIRCULAR INDUSTRIES

This joint programme focuses on the development of new integrated solutions and the upscaling of existing tools and solutions that already exist at small scale, to be implemented in factories, industrial areas and productive sectors (e.g. agro-industry, metallurgy and textiles, amongst others). This is strongly in line with The EU Green Deal which identifies disruptive innovative technologies a key part of the long-term path to sustainable growth. In this regard, the goal of this joint programme is to facilitate the transition of industries to the circular economy through research and innovation.

The activities identified in this joint programme concern innovation in product design, production processes, the efficient use and management of resources, reduction of emissions and waste, valorisation of process waste, collaborative exchange between different industries and cross-sector collaboration (e.g. through industrial symbiosis), sustainable and circular management of industrial areas, redevelopment of industrial areas and the conversion of existing factories to the circular economy.

Objective A: To develop new technologies, quality standards and analytic methods for new materials production and resource and waste characterisation

A3 Developing new technologies for resource and waste characterization

A3.1 Upscaling systems for widescale secondary raw material use

A3.2 R&D in analytical chemistry and in electronics focused on instrumental analysis

A3.3 Development of cost-efficient extractive and processing technologies for improved separation of by-products of ore mining in the EU within the supply chain of materials in CE

A3.4 Scale up the use of new analytical instrumental technique for characterization

A3.5 New agile processing technologies that adaptively operate within a robust smelter system

A3.3 Development of cost-efficient extractive and processing technologies for improved separation of by-products of ore mining in the EU within the supply chain of materials in CE

This activity involves:

- Focusing on EU deposits of critical raw materials with potential by-products to be considered as drivers in advanced technologies, such as for low carbon industry, e-mobility, communication and health care.
- Mapping the latest developments and technological conceptualisations in extractive technologies, focusing on key developments in extraction and processing.
- Scaling up the latest innovations in extractive and processing technologies by measures including digital twins that permit techno-economic and environmental impacts of the complete CE system. Considering other sustainability and strategic aspects including cost efficiency, social licence to operate and environmental impacts in the process.

TRL: Lab or in-house demonstration (3) --> TRL: Field pilot (6)

- Mining companies
- Metallurgy companies
- Research organisations
- Universities

A3.5 New agile processing technologies that adaptively operate within a robust smelter system

This activity involves:

- Developing technologies and processes to adjust kiln design and operations in smelters to feed primary and secondary sources in terms of obtaining better yields and separation of by-products from carrier metals.
- Considering the quality requirements of products and materials.

- Metallurgy companies
- Plastic companies
- Secondary or higher education establishments/research organisations

CIRCULAR INDUSTRIES

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Objective D: To reduce the carbon emissions of companies

Subprogrammes	Activity name and description
D1 Greenhouse gas accounting and management system (individual company*)	<i>D1.1 Development of GHG accounting or inventory systems</i> <i>D1.2 Development of GHG management systems</i>
D2 Promoting secondary raw materials market and industry	<i>D2.1 Technologies for e-waste dismantling, separation and recycling</i> <i>D2.2 Establishment of secondary market platforms for product reuse</i> <i>D2.3 Improvement of e-waste collection infrastructure</i> <i>D2.4 Separation technologies for food contact plastic</i> <i>D2.5 Establishment of secondary market platforms for raw materials</i>

D2.1. Technologies for e-waste dismantling, separation and recycling

This activity involves:

- Mapping existing e-waste dismantling and separation technologies and solutions.
- Identifying barriers and challenges (e.g. toxic substances, difficulty of separation due to components being glued or soldered together, requiring much manual intervention).
- Developing cost-effective technologies or solutions (e.g. possible automation).
- Collaborating with EEE producers, e-waste collecting centres, recycling companies (for e-waste components: metallurgy, plastic etc.).
- Exchanging and building on experience and lessons learned with EEE producers participating in EPR schemes.

Desired TRL: N/A

- Universities and research institutes
- EEE producers
- E-waste collecting service companies
- Metallurgy companies
- Plastic recycling companies

Example Joint Call 1: *Development of replicable and sustainable joint solutions for closing the loop in raw materials supply and increasing secondary markets in Europe*

This is an example of a joint call that can be created by programme owners under the Closing the Loop joint programme.

Topics covered: Raw materials supply, secondary markets, recycling and reuse, downgrade material analysis, plastics, value chains, waste

Description:

The objective of this call is to develop replicable and sustainable joint solutions for closing raw material supply loops and increase European markets in raw materials. It contributes to the strategies and targets described above.

The projects funded in the call should demonstrate a sustainable replicable method to enhance secondary markets in Europe, both at technological and non-technological level, through closing the loop in raw materials supply. The project should contribute to the reinforcement of European manufacturing.

The expected impacts of this call are:

- Reduction of raw materials dispersion according to circular economy indicators
- Increase in the European internal market of raw materials according to circular economy indicators
- Decrease of raw materials import in Europe according to circular economy indicators
- Increase in job creation in raw materials according to circular economy indicators
- Decrease in the use of hazardous materials in European products according to circular economy indicators

Desired actors involved:	<p>This call is open for application to value chain public, private and civil actors, existing raw materials platforms especially those addressing nutrients and phosphorus issues and complex products alliances (e.g. European Battery Alliance).</p> <p>Other key stakeholders that should be engaged are policy makers and certification bodies (for secondary raw materials).</p>
Locations/scale of application:	<p>All EU/EEA countries. The project should be developed at macro level, demonstrating the replicability in the whole EU continent. Partners from outside Europe should be encouraged, especially the raw materials producers.</p>
TRL levels covered:	<p>Aim to reach TRL 7 including a detailed pathway for reaching TRL 9 three years after the projects' end.</p>
This joint Call contributes to these SRIA objectives:	<ul style="list-style-type: none"> • Closing the Loop Objective 1: To ensure that the manufacturing partnerships in Horizon Europe focus on key priorities in circular economy • Closing the Loop Objective 2: To address toxic/hazardous substances to human and environmental health in the context of circular economy • Closing the Loop Objective 3: To elaborate and stimulate the adoption of new policies, standard and protocols for governance resource management systems, fostering inter-stakeholder collaboration and integrated management in the entire value chain

Merci°! Danke!

Get in touch for more information



All public reports produced in the project will be available for download on the CICERONE website



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