



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No730313

### Synergic Circular Economy Across European Regions

Prof. Marcello Colledani – AFIL, Lombardy Region cluster on Intelligent Factory

Water Technology Unlocking and Scaling Up the Circular Economy May 30th, Committee of the Regions Horizon 2020 Coordinating/Supporting Action - Duration:24 months, started on 01/11/2016 16 European regions from 12 different European countries, and 1 UK national body



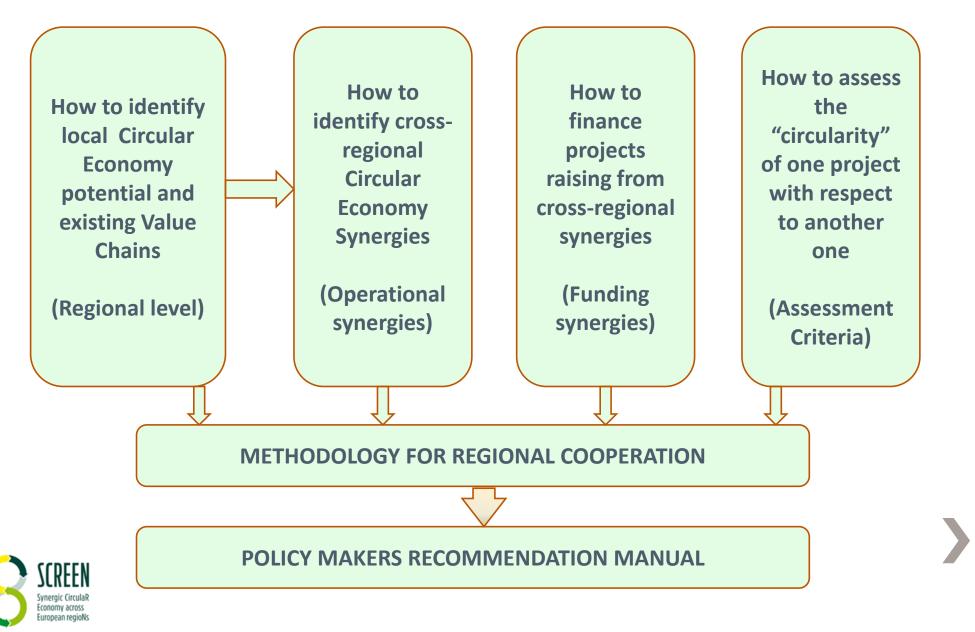
SCREEN aims at defining a replicable and scalable approach, to support European Regions in the transition to new Circular Economy cross-regional value-chains. This will be done through the identification and implementation of operative synergies between R&I investments of H2020 program and EU structural funds.

The methodology developed within the project will be replicable in all the European Union, thus creating an interregional framework for financing Circular Economy value chains.





## The four steps of the SCREEN project

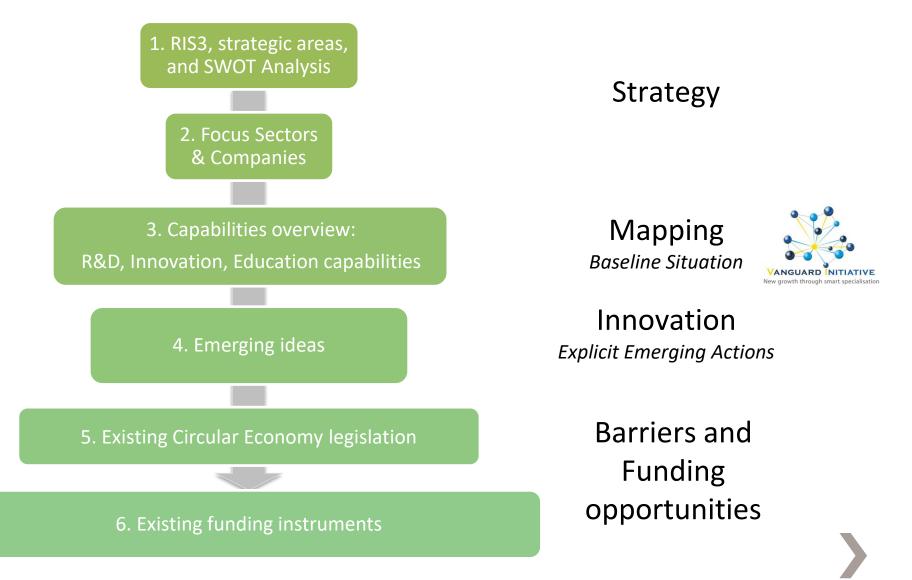


## SCREEN Methodology: From local to cross-regional value-chains

- Data Collection: A tool has been designed to collect data about existing capabilities in the Screen Regions, also considering the Smart Specialization Strategies and the key industry sectors.
- 2. Analysis: A twofold data-driven and interaction-driven approach has been followed in order to analyse the existing capabilities and identify the existence of regional hotspots and cross-regional opportunities and emerging ideas.
- **3. Synthesis**: The existing cross-regional value-chains have been formalized and specific opportunities that can potentially result in actions to be implemented through cross-regional cooperation have been formalized.



## **Data Collection: SCREEN Mapping tool**



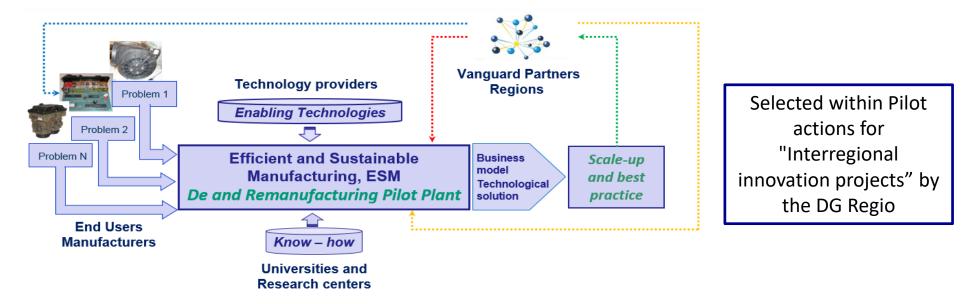


These steps have been formalized within the SCREEN tool. The Regions have compiled the tool and this has been the basis for the local and cross-regional analyses

### **VI ESM De-and Remanufacturing for Circular Economy**



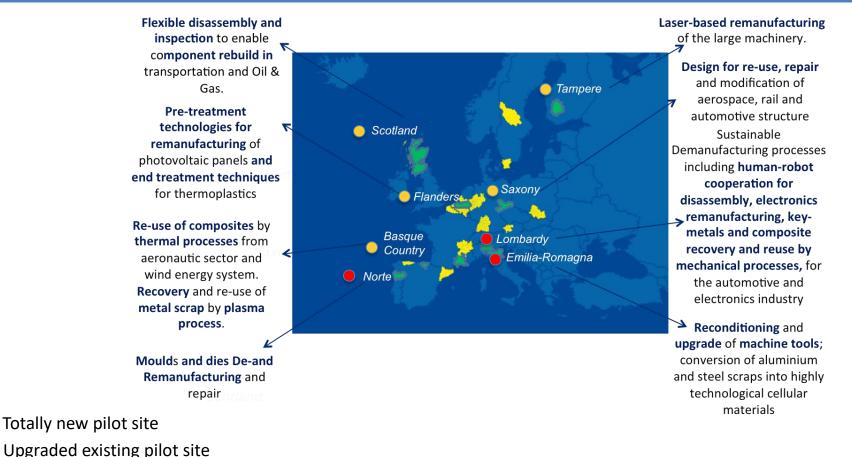
New growth through smart specialisatic



The pilot network nodes will act as *Innovation Hubs for Circular Economy*, being a network of competence and technology centers and supporting future producer-driven replication at industrial scale (TRL 9).

### **Geographic Configuration and Regional Specialization**

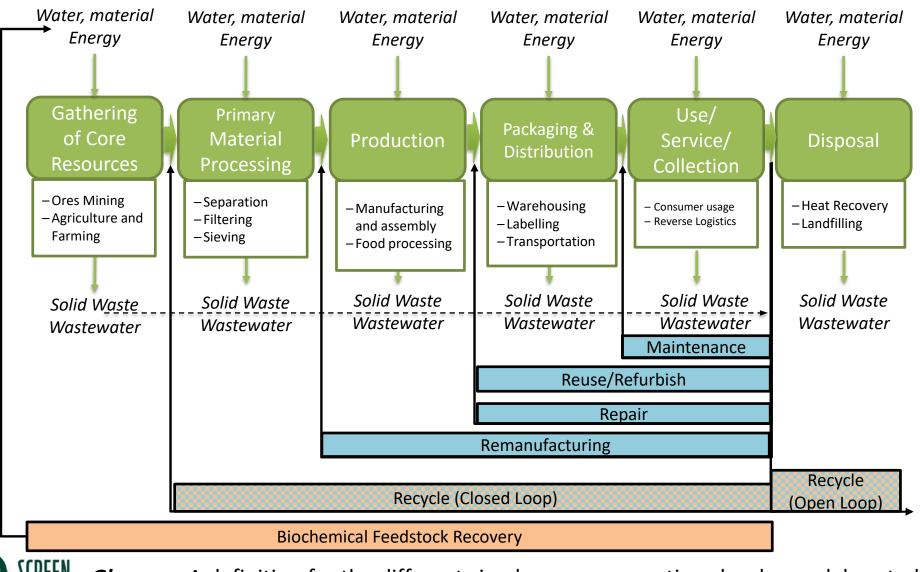




<u>Key Issue:</u> integrated pilot plant solutions, needed by industry to *validate high-risk investments* in circular economy businesses before the industrial implementation.

De- and Remanufacturing Pilot Network

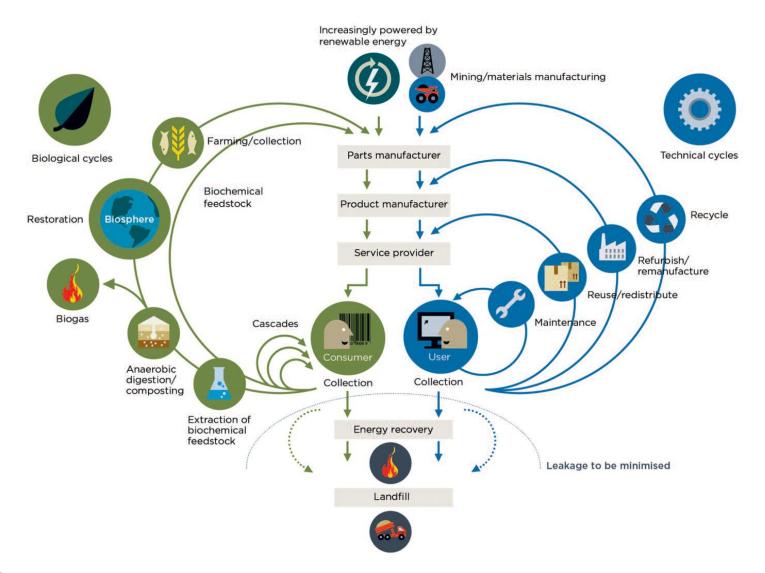
# **Reference Framework: Value-Chain oriented approach**



Screen Synergic Circular Synergic Circular Economy across European regioNs

**Glossary**: A definition for the different circular economy options has been elaborated (relation to existing standards and references).

## **Reference Framework: Value-Chain oriented approach**

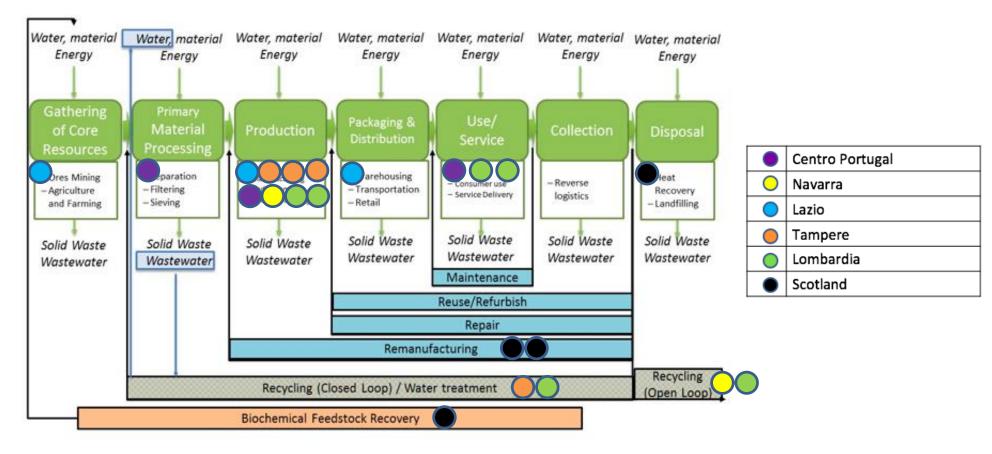




The value-chain oriented approach of SCREEN is compliant to the Ellen Mc Arthur foundation Circular Economy model.

# **Data Driven Analysis**

Starting from the tool inputs a data-driven analysis of the potential crossregional value-chains (sector-driven, material-driven) has been carried out.



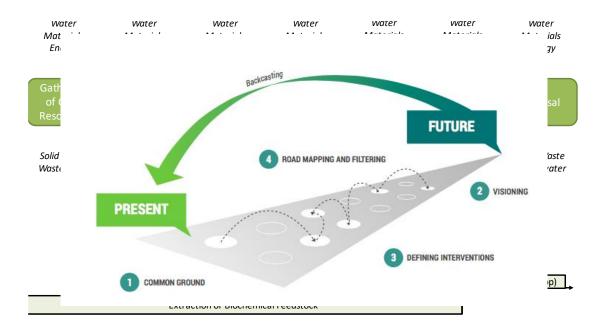


Transport and mobility value-chain.

## **SCREEN workshops**

Starting from the tool inputs and data driven analysis, value-chains have been further analyzed through international and local workshops.

SCREEN Local workshop held in the Lombardy Region on November 2017, on the "Circular value chain for the automotive sector"







Potential synergies with other Regions have been highlighted

# **SCREEN Cross-regional value chains**

Starting from the tool inputs, local and consortium workshops, the crossregional synergies are being identified.

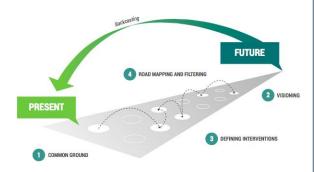
Potential Synergy Grid 5

Manufacturing & De-Manufacturing

**Blind Spots** 

Theme

Example of cross-regional value chain for the "Manufacturing and *Remanufacturing" sector* among Tampere (Finland), Lombardy (Italy) and Navarra (Spain)







together to form a cluster in their field

Seperate collection of organic wastes and local treatment and valorisation

Characterization of recycled reinforcement fibres in composite industry

100% natural/recycled raw-material based rubbers Wear of polymers and the accumulation of micro-sixed polymer praticles in sea

Sustainable bio-based fibre products

All-cellulose based smart-packaging concept

Co-creation of comprehensive information flow model of business ecosystems combining information, material, work and control streams

Design for circularity

Smart platforms for interoperability of software intensive

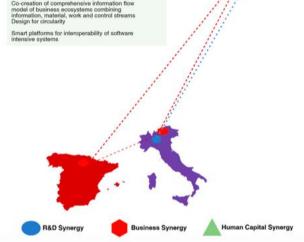




Complementary

Theme

Co-creation of comprehensive information flow



## **SCREEN Cross-regional value chains**

### **A ROADMAP FOR BUILDING CIRCULAR VALUE CHAINS**

Guidelines for regional research and identifying synergies



### Sludge recovery and utilization

#### LAZIO AND TAMPERE:

Lazio in Italy and Tampere in Finland face a challenge with the production of sewage sludge that contains important nutrients. Current sewage systems dilute the sludge, making it harder to valorize and there is a lack of technologies to productively extract the valuable materials.

#### Barriers

HOTSPOT

EMERGING IDEAS

SYNERG)

1. Lack of filtration 2. Lacking consumer acceptance

3. Absence of specific legislation

### Stakeholders



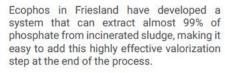
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Tech-Marketplace

INIVERSITÀ uscia

#### FRIESLAND:

Cirtec and KNN Cellulose BV have developed a filtering technology that filters only the cellulose out of the sludge making it possible to use it for example as drainage inhibitor under roads. The extraction of the cellulose also makes the rest of the sludge easier which can lead to a cost reduction of 15-20% for aeration.









### **TECHNOLOGY EXPORT**

Because the innovations are so mature in this case, we would suggest a Technology Export, from Friesland to Lazio and Tampere.



# **SCREEN Cross-regional value chains**

The most relevant value-chains have been identified and analyzed:

### Material-driven value-chains

- > Agriculture
- ➤ (Smart) Packaging
- Water and wastewater
- Biobased materials & biotechnology
- Manufacturing & de-manufacturing
- (Bio)waste management
- Construction/Build Environment

### **Business driven sectorial value-chains**

- Electrical and Electronic Equipment
- > Energy
- Paper and forest-based industry
- > Textile
- Transport and mobility
- Food and beverage



# **Existing financial instruments**

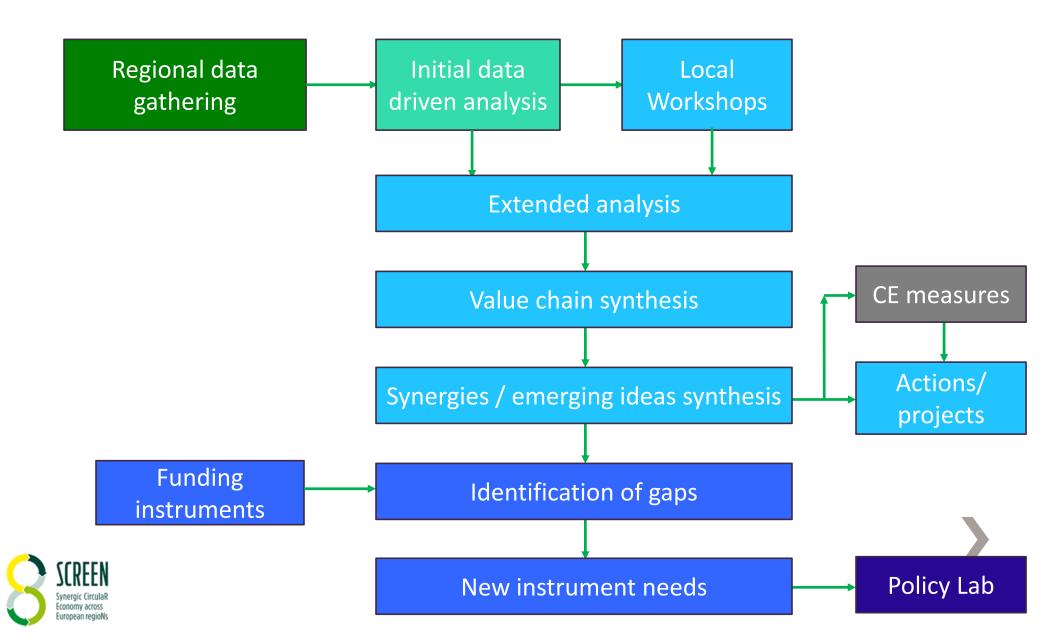
"Existing financial Instruments" have been revised including the instruments already available in the regions which are mapped to:

- 1. Further develop **the emerging ideas**, stemming from the results of the previous steps within Screen.
- 2. Gather **best practices** and hints which can fuel the policy lab, created within the project.





## SCREEN Methodology: From local to cross-regional value-chains







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