SCREEN
Synergic CirculaR Economy across European regioNs

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

SCREEN

Deliverable D6.4

Proceedings of local workshops

Main Author(s)	Alessio Maria Braccini, Stefano Poponi, Alessandro Ruggieri
Due Date	May 25th, 2018
Delivery Date	Oct 25th, 2018
Work Package	6
Dissemination level	**Public**

Project Coordinator: Dr. Carmela Di Giorgio, Regione Lazio, Roma (Italy).
e-mail: cdigiorgio@regione.lazio.it - website: www.screen-lab.eu

TABLE OF CONTENTS

ANNEXES

Introduction

SCREEN is an H2020 CSA that joins 17 regions from 12 European countries together to set up common methodologies and tools able to facilitate the transition towards circular economy. Each of the regions has a specific focus within their local starting point with its unique strengths and challenges, gathered by the project in a unique data set.

Each participating region was expected, according to the SCREEN Grant Agreement to organize a local workshop focused on

- Involvement of regional stakeholders;
- Dissemination of the SCREEN approach;
- Gathering local data, expectations and needs;
- Facilitating cross-regional synergies and projects in the RIS3 field.

for a total of 17 local workshops originally scheduled.

The strong commitment of the SCREEN regions, together with their consciousness of the importance of having a common methodology for a cross-regional cooperation, led to 28 local workshops[1] organized within the project. This is another success of the project to be added to the other ones explained in the different project deliverables

This document presents the results of the workshops according to the internal report "*WP6 - Guideline for Local Workshops Reporting*" prepared by the University of Tuscia. Each workshop proceeding is organized in standard sections including general information, objectives, date and venue, agenda, executive summary, minutes and conclusions. Additional information, when available, are added in the annexes. Figures and schemes wer palced , when possible, in the annexes; however, in some workshop reports they have been maintained in the main text because are functional to the description. Due to the different charachteristics of the 17 participating regions (that are also reflected in their approach to the circular ecnomy) the structures of the workshops' reports present some differences, particularly for the project partners that organized more than one workshop: this should not be considered a limit but just a further indication of the variety of the SCREEN partnership.

Local Workshop n° 26 held in Manchester signs a further step ahead, because it was generated by the interest of the Greater Manchester Combined Authority (which is not a project partner) in the SCREEN four key steps, its tools for synergies, collaboration, funding and the Policy Lab.

Due to the time needed by several SCREEN regions to become enough confident with the SCREEN methodology to properly involve their stakeholder, the majority of the workshops was held during the last month of the project.

[1] *To be noted that two partners did not organize a local workshop: IAU Ordif (Ile de France) was incorporated in another Institution and lost the person in charge of the project. Moreover, the data of the local workshops organized by the partner NEXA, due to a technical problem (computer failure), were not available during the first submission of this deliverable. NEXA was able to recover the proceedings during the revision period and now they have been added to this document*

Therefore, while the results of the first workshops were actually used to develop and test the methodologies and tools described in the other project deliverables, **there is a large amount of data already collected but not yet exploited due to the lack of time**: these data can be used internally by each region, *but only a further follow-up project may ensure a proper exploitation for an actual cross regional cooperation towards a circular economy*.

In the following table there is a resume of the workshops held during the SCREEN Project, with the indication of the date, location number and typology of the stakeholders involved

Workshop N.	Country	Date	Organizing partner	Participants	Public Body	Regional government	Local governement	General public	R&D Institution	Category Association	No-Profit	SME/Industry	NGO	Universities or Education
1	HR	20/6/18	Primorje-Gors	**26**	2	7	2	2	12			1		0
2	NL	20/7/18	Fryslan	**21**			3		2			9		7
3	PL	14/9/17	Lodzkie	**54**	3	7	4	6	7	12	2	12		1
4	PL	18/12/17	Lodzkie	**13**		1	2		1			4	1	4
5	PL	12/9/18	Lodzkie	**16**				16						
6	PL	26/10/18	Lodzkie	**14**								10		4
7	IT	19/10/17	Lombardia	**49**		10		1		5		30		3
8	IT	13/11/17	Lombardia	**29**								21		8
9	SP	21/11/17	Navarra	**9**		1				2		6		
10	SP	24/11/71	Navarra	**6**		1				4		1		
11	P	15/11/17	Azores	**37**										
12	P	30/1/18	Centro	**14**		4					3	7		
13	P	14/2/18	Centro	**24**		5					5	14		
14	P	2/3/18	Centro	**13**		3					4	6		
15	EN	5/7/18	Extremadura	**14**		3						11		
16	FI	23/5/17	Tampere	**6**		2		1				1		2
17	FI	9/6/17	Tampere	**11**		2		5						4
18	FI	9/6/17	Tampere	**11**		2		4						5
19	FI	29/8/17	Tampere	**17**		1			5		1	10		
20	EL	29/6/18	Crete s1	**13**		2		2	2		3	1		3
20a	EL	29/6/18	Crete s2	**21**		6		2	9		2			2
20b	EL	29/6/18	Crete s3	**44**		16		7	13		8			
21	NL	3/7/18	Limburg	**17**		1						15		1
22	IT	9/10/18	Lazio	**7**		1				2		3		1
23	BE	18/6/18	Flanders	**13**		2			2	1				8
24	BE	28/6/18	Flanders	**18**		4			5			9		
25	UK	22/11/17	KTN	**35**		5					2	18		10
26	UK	23/10/18	KTN	**29**		3	3					20		3
27	RO	16/10/18	North East Romania	**47**	3	2	23	11				3	4	1
28	FR	4/7/18	Nexa	**56**	15				2			16	23	
28a	FR	4/7/18	Nexa	**38**	12				3			12	11	
			Total	**722**	**35**	**91**	**37**	**57**	**63**	**26**	**30**	**240**	**39**	**67**

1 Primorje-Gorski Kotar, (Croatia)

- **General information**

Workshop title:

“Circular Economy Workshop“ - SCREEN project local event

Objectives of the workshop:

- Presentation of the Horizon 2020 SCREEN project to key stakeholders in the development of the Primorje-Gorski Kotar County
- Introducing stakeholders with theoretical, strategic and practical aspects of the circular economy and good practice examples
- Establishing contacts between different stakeholders in the Primorje-Gorski Kotar County and identification of the key potentials and obstacles to the development of the circular economy in the Primorje-Gorski Kotar County

Date and location of the workshop:

20th June 2018, Anex building of the Faculty of Economics and Business, University of Rijeka, Ivana Filipovića 4, 51000 Rijeka, Croatia

Number of attendants: 26

Project partner: Primorsko-goranska County

Workshop organisers:
Primorsko-goranska County in cooperation with Centre for Innovation and Knowledge Transfer of the Faculty of Economics and Business, University of Rijeka Ltd.

- **Executive summary**

The workshop titled "Circular Economy" was organized by the Primorsko-goranska County and the Centre for Innovation and Knowledge Transfer of the Faculty of Economics and Business, University of Rijeka Ltd. in the Annex building of the Faculty on the 20th June 2018. The workshop was attended by representatives of the Primorje-Gorski Kotar County administrative departments, local faculties, local governments, relevant development agencies and student population. The workshop program

was structured as a combination of lectures about circular economy and presentations of good practice examples which served as a basis for discussion of participants about the key challenges, opportunities and constraints of the implementation of the circular economy as a new economic model. Consequently, the main goal of the workshop was to identify the key potentials and obstacles to the development of the circular economy in the Primorje-Gorski Kotar County.

Lectures and presentations included the following contents: presentation of the most important determinants of the Horizon 2020 SCREEN project; explanation of the theoretical bases and principles of the implementation of the circular economy; comparative analysis of the performance of the Republic of Croatia in relation to other EU countries based on selected indicators of the circular economy; review of the strategic framework of the circular economy in the EU and the Republic of Croatia with emphasis on EU funds; examples of good circular economy practice in forestry and construction sector; proposals of modalities for linking stakeholders at lower and higher management levels for the purpose of designing and implementing the circular economy projects.

During the discussion, participants found that the Primorje-Gorski Kotar County has significant potential for applying the concept of circular economy in wood-processing sector, energy production and distribution, waste management, communal sector and tourism. The participants recognize the lack of well-developed programs and regulations for encouraging and co-financing the circular economy projects at the national and regional level and the lack of management capacities for designing and implementing complex, multi-sectorial and multidisciplinary projects as the most significant barriers to more intensive development of circular economy in the County area.

- **Participants list**

Name and surname	Organization/company/institution	Category of stakeholder
	Primorsko-goranska županija	Public administration (regional government)
	ATRAC	Public administration (public establishment)
	Ekonoski fakultet Sveučilišta u Rijeci	General public (students)
	Ekonoski fakultet Sveučilišta u Rijeci	General public (students)
	Grad Cres	Public administration (local government)
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Primorsko-goranska županija	Public administration (regional government)
	Fakultet za menadžment u turizmu i ugostiteljstvu u Opatiji	R&D
	Lokalna razvojna agencija PINS	Companies
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Regionalna razvojna agencija	Public administration (public establishment)
	Grad Crikvenica	Public administration (local government)
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Ekonoski fakultet Sveučilišta u Rijeci	R&D
	Primorsko-goranska županija	Public administration (regional government)
	Primorsko-goranska županija	Public administration (regional government)
	Primorsko-goranska županija	Public administration (regional government)
	Primorsko-goranska županija	Public administration (regional government)
	Primorsko-goranska županija	Public administration (regional government)

- **Agenda**

The workshop program was carried out according to the following agenda:

10:00 Workshop opening and welcome speeches by the organizers

10:10 Presentation of the Horizon 2020 SCREEN project

- Luka Dragojević, Primorsko-goranska County

10:30 Introduction to Circular Economy and Comparison of the Republic of Croatia with EU Countries

- Saša Čegar, PhD, Assistant Professor, University of Rijeka, Faculty of Economics and Business

11:00 Circular economy in strategic documents of the EU and the Republic of Croatia

- Igor Cvečić, PhD, Assistant Professor, University of Rijeka, Faculty of Economics and Business

11:30 Pause for networking

- or participants was organized catering, coffee and snack

12:00 Circular economy, practical examples and EU lobbying

- Danijel Bertović, Local Development Agency Pins Ltd.

12:30 Presentation of the SCREEN questionnaire

- “Emerging Ideas” , collecting ideas for the future development of the circular economy initiatives in the Primorsko-Goranska County

13:00 Discussion and comments of participants

14:00 Conclusions and closure of the workshop

- **Minutes of the Workshop**

The workshop was opened by Mr. Luka Dragojević from the Regional Development, Infrastructure and Project Management Department, welcoming all the participants on behalf of the Primorje-Gorski Kotar County.

Mr. Luka Dragojevic also presented the project SCREEN - Synergic Circular Economy Across European Regions, pointing out that the purpose of the SCREEN project is to develop an applicable framework for supporting regional stakeholders involved in circular economy activities in accordance with the concept of smart specialization of each region.

Furthermore, he explained that the plan is to link the European regions into a trans regional operational framework. All in order to increase the impact of the Horizon 2020 program and support so-called "Circular" entrepreneurial initiatives, using results and experience from projects that have already been implemented under the Horizon 2020 program..

Mr. Dragojevic in his presentation emphasized the importance of the full implementation of the SCREEN project 4 steps:

- identify local value chains;
- identify cross-regional synergies;
- finance cross-regional projects;
- assess projects' circularity.

Also, he stated that the concept of smart specialization connects industrial and innovation policy in order to develop innovative economy with the main focus on knowledge and innovation based investments.

After the presentation of the SCREEN project, Saša Čegar, PhD, assistant professor, held a presentation on the topic "Introduction to Circular Economy and Comparison of the Republic of Croatia with EU Countries" in which he explained the growth limits of linear economic systems, elaborated the theoretical bases, principles and features of the circular economy concept and, based on the selected circular economy indicators, he did a comparative analysis of the Republic of Croatia in relation to EU countries.

In relation to that, Igor Cvečić, PhD, assistant professor held a presentation on the topic "The Circular Economy in Strategic Documents of the EU and the Republic of Croatia", in which he presented the EU action plan for the Circular Economy from 2015 and the EU framework for monitoring circular economy, including the first results of their implementation. In his presentation he also gave an overview of the most important thematic documents in the new Circular Economy EU Package from 2018 and pointed out which of the existing strategic documents of the Republic of Croatia indirectly support the development of circular economy.

After the end of the pause for networking, Mr. Danijel Bertović from the Local Development Agency Pins Ltd. held a presentation on "Circular Economy, Practical Examples and EU Lobbying". In his presentation Mr. Bertović referred to selected positive examples of the practical application of the circular economy principles in forestry and construction sector and also demonstrated successful modalities of linking stakeholders at lower and higher management levels that can be used in order to design and implement circular economy projects.

In the last part of the workshop, moderated by Mr. Saša Čegar, the SCREEN questionnaire was presented to the participants. The questionnaire was used to examine opinions and attitudes of participants about potential circular economy projects. Apart from proposing project ideas, recognizing their position in the value creation chains, and defining the sectors and areas of their application, in questionnaires participants were also asked about stimulating and limiting factors which can affect the realization of their project ideas and outputs. Then the participants discussed the questionnaire results with an emphasis on mutually critical discussion on various aspects of conceptualization of their ideas. By summarizing the most important findings that came up during the presentations and the discussion, the main conclusions and recommendations for further actions were presented at the end of the workshop.

The workshop and the interactive discussion of the participants included the following activities:

- Explanation of the objectives and the methodology of the workshop;
- Introduction of participants;
- Presentation of project ideas;
- Comments, questions and discussion;
- Conclusions and recommendations .

At the end of the discussion, all participants agreed that the Primorje-Gorski Kotar County has significant potentials and realistic opportunities for practical application of the circular economy principles, particularly in wood-processing sector, energy production and distribution, waste management, communal sector and tourism.

- **Methodology**

Based on the review and systematization of presented project ideas in questionnaires, workshop organizers identified the potential thematic areas of application of the circular economy concept in

Primorsko-goranska County. Accordingly, participants were divided into working groups so that each group was focused on the elaboration of certain circular economy topic. Members of each working group discussed the opportunities for the implementation of the circular economy principles in specific value chains within the thematic areas they were exploring. Finally, the representatives of the working groups presented their most important findings and results to the other participants of the workshop which than led to a joint discussion moderated by the organizers of the workshop.

- **Output**

The main conclusions of this workshop are reflected in the following:

- Socio-economic reproductive processes in the Republic of Croatia are still predominantly based on the linear economy model.

- Compared with the EU average, the Republic of Croatia is characterized by below-average efficiency of material inputs use in the national economy, above-average intensity of energy consumption in the national economy, below-average circular material use rate, below-average recycling rate and below-average level of eco-innovation.

- There is a significant potential for the development of the circular economy in the Republic of Croatia and the Primorje-Gorski Kotar County, which can not only contribute to the reduction of waste generation and primary resource consumption, but can also stimulate the development of high value added economic activities and boost creation of new jobs.

- Particularly important sectors for the development of the circular economy in Primorsko-goranska County are wood-processing sector, energy production and distribution, waste management, communal sector and tourism.

- The most significant obstacle to the circular economy development in the Republic of Croatia and the Primorje-Gorski Kotar County is that there is still no clearly defined national strategic framework and programs of measures for circular economy. Therefore, there are no national and regional operational programmes for circular economy that are supported by EU funds.

- Apart from creating a quality strategic framework, for the more significant development of the circular economy in the County it is necessary to encourage applicable research related to the circular economy, to establish appropriate modalities of dialogue and cooperation between all stakeholders within the specific production-supply chains, and also to develop management capacities for the circular economy, especially in the public sector, through a more frequent organization of workshops and educational seminars of this type.

2 Province of Fryslân (NL)

General information

Workshop title:

Local Workshop: Ambitions, opportunities and barriers

Objectives of the workshop:

Workshop with regional stakeholders in the Northern-Netherlands

Date and location of the workshop:

20 July 2018, Festival 'Welcome to the Village' in Leeuwarden

Number of attendants: 20

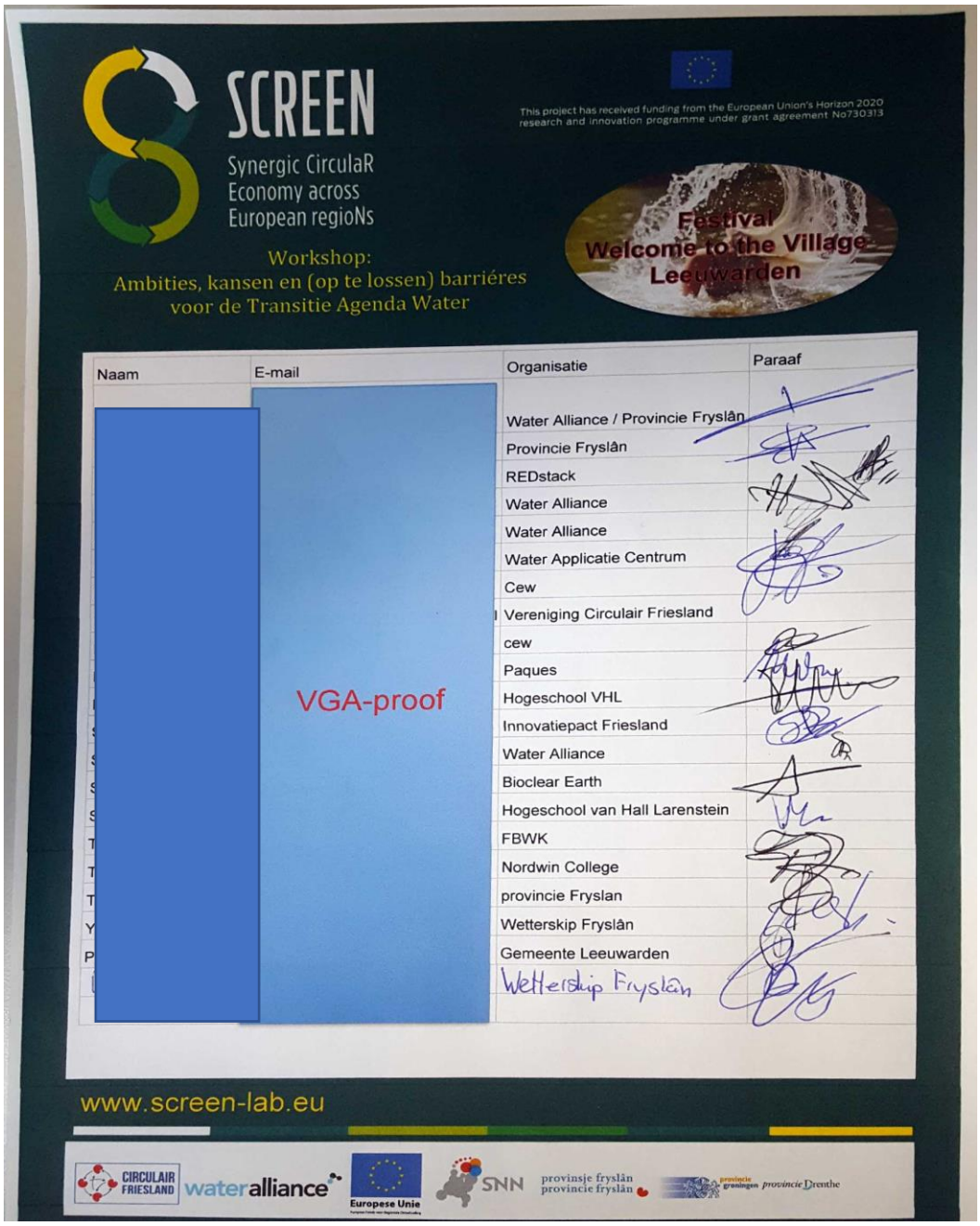
Twenty people of thirteen different organizations participated in this Among the participating organization were public administration/governments, enterprises and SMEs, knowledge and research institutes, and non-profit organizations. The workshop was supported by Water Alliance and Vereniging Circulair Friesland, for this last organization it was aligned with their ERDF funded knowledge development project on stimulating the regions circular economy

Project partner: Province of Fryslan

- **Executive summary**

This report describes the discussions and outcomes of the local workshop with regional stakeholders in the Northern-Netherlands associated to the theme of 'water' within the SCREEN-project. As part of this workshop the province of Fryslan announced to develop a regional Transition Agenda on Water in the Circular Economy, in order to provide a policy framework to boost the development and uptake of circular solution in the field of water.
The workshop took place at 20 July 2018 at an inspiring location during the multi-day Festival 'Welcome to the Village' in Leeuwarden. This Festival is annually produced and is especially interesting because of their ambition to become a 100% circular festival in 2022.
.

- **Participants list**



- **Agenda**

The programme of the workshop was as follows:

- Welcome and introduction to the workshop, highlighting SCREEN and Transition Agenda – Bart Volkers - Province of Fryslân
- Introduction of attendees
- Presentations:
  - Waterboard Fryslân / Wetterskip Fryslân – Yede van der Kooij - Focus on Value Chain Collaboration
  - CEW: Centre for Expertise Water Technology – Martijn Bijmans - Focus on Business Models

- Interaction on opportunities, barriers and possible shortcuts. The selected themes were: Value Chain Collaboration, Business models, International collaboration and Transition Agenda
- Short plenary feedback and discussion on interaction
- Informal networking

The presentations are available in Appendix 2 (only in Dutch). Martijn Bijmans of CEW gave a speech (so there is no presentation available) highlighting the need for new business models, new models for collaboration and a mixture of technological and non-technological interventions to stimulate circular economy in the field of water.

- **Minutes of the Workshop**

Due to the fact that Fryslân already produced a sectorial analysis (CEW, 2017 – sector analysis – report number 2017.0165) describing the water chain and providing an overview of emerging technologies for water & circular economy, this workshop was primarily focused on:

1) Getting a mutual understanding on 'water in circular economy' and the stakeholders positions regarding this matter;
2) Identifying opportunities, barriers and possible shortcuts.

Furthermore, the workshop provided a good opportunity for further informal networking.

- **Methodology**

Attendees reckon the importance of water in the circular economy. It is an essential natural resource to be protected and revitalized and resources in water should be recovered and used in new value chains – this concerns the communal water chain as well as the water resources in (food) industry and agriculture. Furthermore, it is mentioned that it is not only about potable and used water. It is also an essential resource for protecting and conserving rural areas - in Fryslân this concerns the conservation of peaty soils (Veenweiden), and the fresh ground- and surfacewaters itself (against salinization) and the cities living environments. Moreover, circular solutions for water are the key to reach the ambition of the self-sustaining Festivals and Islands (Wadden).

An incentivization about the opportunities, barriers and possible shortcuts among the attendees resulted in the following Outcome

- **Output**

Mutual understand of Water in Circular Economy and stakeholders positions

Fryslân has a strong international position in Water Technology, with regard to science & knowledge, business and human resources. From this point of view Circular Economy is embraced as an economic opportunity for technological and business development, international collaboration and export, education and research. The Water

Figure 1: Keyword selection regarding Water & Circular Economy from introduction attendees

technology Innovation Ecosystem with testing and demonstration facilities and its supporting organisations is a valuable asset to facilitate and speed-up the innovation and innovation uptake.

Opportunities, Barriers and possible shortcuts

An incentivization about the opportunities, barriers and possible shortcuts among the attendees resulted in the following matrix (produced after the workshop). More detailed information per attendee is available for follow-up actions.

	SME	***Knowledge/Education***	***Facilitator***	***Public Administration***
Opportunities	✓ *Business Development* ✓ *Innovation projects* ✓ *Export* ✓ *Collaboration*	✓ *Knowledge Development* ✓ *Supporting opportunities and initiatives* ✓ *Exploring cross-overs* ✓ *Collaboration business and education* ✓ *Internationalization*	✓ *Internationalization* ✓ *Iconic projects* ✓ *Crossectoral projects* ✓ *Business Development* ✓ *Regional proposition enforcement on water technology*	✓ *Circular procurement* ✓ *Launching customership* ✓ *Crossectorial working* ✓ *Pliot- and innovation projects* ✓ *Internationalization*
Barriers	✓ *Organizing Collaboration* ✓ *Finding launching customers* ✓ *Funding*	✓ *Organizing Collaboration* ✓ *Availability of knowledge* ✓ *Innovation capacity* ✓ *Allocation of risks* ✓ *Capacity in time* ✓ *Lack of brokerage platforms*	✓ *Vision* ✓ *Organizing collaboration* ✓ *Investment costs* ✓ *Lack of funding* ✓ *Definition* ✓ *Lack of concrete action*	✓ *Lack of information about barriers for SMEs* ✓ *Lack of knowledge* ✓ *Entrepreneurship* ✓ *Regulation* ✓ *Hesitation in administrations*
Offers	✓ *Knowledge* ✓ *Business support*	✓ *Knowledge and expertise* ✓ *Student capacity* ✓ *Education programs* ✓ *Innovation support* ✓ *Applied research*	✓ *Networking* ✓ *Connecting organisations* ✓ *Internationalization*	✓ *Networking, connecting organisations, subsidies* ✓ *Launching Customer* ✓ *International networks* ✓ *Facilitating innovation*

Needs	✓ *Network* ✓ *Collaboration* ✓ *Launching Customers*	✓ *Network* ✓ *Themes* ✓ *Vision* ✓ *Organizing market-pull / launching customers* ✓ *Consortium development* ✓ *Development Living labs*	✓ *International needs* ✓ *Regional collaboration* ✓ *New business cases*	✓ *Input from SMEs and knowledge institutes* ✓ *Collaboration for funding and programs* ✓ *Connecting initiatives* ✓ *Concrete projects* ✓ *SMEs acting in international collaboration projects* ✓ *Industrial partners*

Most of these can be connected to the plenary feedback from the interactive tables:

1) Transition Agenda:
    a. Define the scope of the Transition Agenda and with this the regional focus on 'water in the circular economy';
    b. Connect Water were relevant with other themes;
    c. Organize the ownership for the Transition Agenda.
2) Business models:
    a. Organize the collaboration between end users, knowledge institutes and technology providers. Use universities of Applied Science, WaterCampus and other facilitating/intermediary organizations to do so.
3) International Collaboration:
    a. International Collaboration Projects and Network provide an attractive alternative for internationalization compared to traditional brokerage events. The regional network and its international activities could provide new market entrances and business/collaboration opportunities.
4) Value Chain Collaboration:
    a. There is a strong need for support on collaboration. Organizations reckon the need for collaboration but are lacking resources and capacity to organize the collaboration;
    b. It is recommended to get stakeholders more involved in collaboration and on specific projects the potential stakeholders should be included in an early stage;
    c. International collaboration can trigger the needed mind set for regional collaboration.

3 Lodzkie Region: Local Workshop 1

- **General information**

Workshop title:

Prezentacja projektu

Objectives of the workshop:

Local workshop

Date and location of the workshop:

Kierownik projektuWojewództwo Łódzkie – 14/09/2017

Number of attendants: 44

Project partner:

Lodzkie Region

Workshop organisers:
Lodzkie Region

- **Executive summary:**

The workshop was attended by representatives of the scientific community, including Lodz University of Technology, University of Lodz, European Regional Center for Ecohydrology PAS, Nofer Institute of Occupational Medicine, business representatives (predominantly from the recycling industry), local government officials and the third sector, among others Fundacja Rozwoju Przedsiębiorczości, Foundation for the Medical University of Lodz. The meeting was opened by Carlo Polidori, coordinator of the SCREEN project with a video intervention.

The workshop was chaired by Marcin Podgórski who explained that this is a first of a series of regional events that Lodzkie Region is planning to carry out within the next 12 months. The workshop was an opportunity to present previous activities in the SCREEN project. The aim of the workshop was to establish cooperation with stakeholders from the Lodzkie region. This is the first stage to select a group of entities in the Lodzkie region, which will continue to cooperate with the Regional Office as part of the SCREEN project. Marcin Podgórski concluded the discussion inviting the participants to cooperate with the Lodzkie Region in building circular economy potential. In the second stage, the objective will be to establish a new framework for optimal use of funds for research and innovation for the development of circular economy and to create a support system for projects that have received high scores in competitions announced under Horizon 2020, but have not received funding due to the limit measures.

- **Participants list in Annex 3**
- **Agenda**

9.40 - 10.00 Registration of participants, coffee break

10.00 - 10.45 Presentation of the circular economy in the context of the SCREEN project
Mr Marcin Podgórski - Director of the Regional Office of the Lodzkie Voivodship in Brussels
Mr. Carlo Polidori - Project Coordinator, VELTHA, Brussels (Video presentation)
10.45 - 12.00 Discussion about the conditions of transformation towards a circular economy. Good examples.
Mr Paweł Okrasa - Mayor of Wieluń, one of the 5 cities in Poland qualified for the pilot program of a circular economy implemented by the Ministry of the Environment
Dr hab. inż. Grzegorz Wielgosiński - Faculty of Process and Environmental Engineering Lodz University of Technology
Dr hab. Edyta Kiedrzyńska - Deputy Director of the European Regional Hydrology Center Polish Academy of Sciences
12.00 - 12.15 Summary, assumptions for further cooperation
12.15 - 12.45 Lunch, networking

- **Minutes of the Workshop**

The workshop was attended by representatives of the scientific community, including Lodz University of Technology, University of Lodz, European Regional Center for Ecohydrology PAS, Nofer Institute of Occupational Medicine, business representatives (predominantly from the recycling industry), local government officials and the third sector, among others Fundacja Rozwoju Przedsiębiorczości, Foundation for the Medical University of Lodz.
The meeting was opened by Carlo Polidori, coordinator of the SCREEN project with a video intervention.
The workshop was chaired by Marcin Podgórski who explained that this is a first of a series of regional events that Lodzkie Region is planning to carry out within the next 12 months. The workshop was an opportunity to present previous activities in the SCREEN project. The aim of the workshop was to establish cooperation with stakeholders from the Lodzkie region. This is the first stage to select a group of entities in the Lodzkie region, which will continue to cooperate with the Regional Office as part of the SCREEN project.
The detailed offer of cooperation of regional stakeholders was presented. Marcin Podgórski shared with the participants the plan for the next project events that are open for the actor from the Lodzkie region (London Workshops in November 2017).
Paweł Okrasa presented the main idea behind the project implemented in Wieluń. The Mayor showed defiladed plans of the system to be implemented in the municipality in relation to the heating, water and waste management all having in mind the circularity of the resources.

Grzegorz Wielgosiński stressed the importance of the research aspects and the circularity as a new idea in the practice but an interesting concept for the researchers. The discussion also went on to the

laws and regulations preventing certain investments planned by the representatives of business, especially in relation to waste collection, waste management and recycling.
Edyta Kiedrzyńska presented the programme of an international event planned in Łódź in September: INTERNATIONAL SYMPOSIUM ECOHYDROLOGY FOR CIRCULAR ECONOMY AND NATURE-BASED SOLUTIONS TOWARDS MITIGATION / ADAPTATION OF CLIMATE CHANGE.

Main Conclusions

Marcin Podgórski concluded the discussion inviting the participants to cooperate with the Lodzkie Region in building circular economy potential. He concluded that in the second stage, the objective will be to establish a new framework for optimal use of funds for research and innovation for the development of circular economy and to create a support system for projects that have received high scores in competitions announced under Horizon 2020, but have not received funding due to the limit measures.
In accordance with the assumptions, the SCREEN project will contribute to:

- involvement of regional entities in joint activities aimed at increasing synergy in the circular economy
- creation of a transnational development cooperation network
- maximizing investments by supporting entrepreneurial initiatives

4 Lodzkie Region: Local Workshop 2

- **General information**

Workshop title:

Łódzka Gospodarka Cyrkularna, Wyzwania i Możliwości - spotkanie w ramach projektu SCREEN

Objectives of the workshop:

- Horizon 2020 presentation Horyzont 2020
- SCREEN Presentation

Date and location of the workshop:

18 December 2017

Number of attendants: 46

Project partner:

Lodzkie Region

Workshop organisers:
Lodzkie Region

- **Executive summary**

A presentation of Marcin Podgórski, Director of the Regional Office of the Lodzkie Region in Brussels on the activities carried out in the Lodzkie Region and nearest planes in relation to the SCREEN project implementation.
Marcin Podgórski stressed the importance of cooperation of regional actors, representing quadruple helix: the academia (represented by the Technical University of Łódź, the Medical University of Łódź, the Nofer Institute of Occupational Medicine, Textile Research Institute and University of Łódź), business (OLP, OPAL Recykling, beyond the Future, ESRI), representation of administration (municipality of Brzeziny, Municipality of Pabianice) and the non-governmental organisations. The establishment of new standards and sharing the expertise in circular economy can only be possible if all the involved actors are willing to cooperate and share the knowledge. That is why the international experience of SCREEN project is so valid.
Marcin Podgórski asked regional stakeholders of SCREEN project Professor dr hab. med. Konrad Rydzyński - Nofer Institute of Occupational Medicine, Maciej Kowalczyk - Pheno Horizon and

Przemysław Nowakowski - Hemidall Combat Systems to share their experience form both Clustering Workshop and Local Workshop held in London in November 2017.
Konrad Rydzyński stressed the importance of the health component in the foreseen calls within Horizon 2020 and the circularity aspects of the H2020 calls. The health and quality of life as well as environmental aspects of the applications need to be taken into consideration.
Maciej Kowalczyk stated that the most important part of the SCREEN project is the possibility of building cooperation both among the regional actors in Lodzkie but also by an international cooperation with the consortium members.
Przemysław Nowakowski expressed the importance of the cooperation of different sectors and actors representing both business and science as well as NGO's.

- **Participants list in Annex 3**

- **Agenda**

12.30 – 13.00 Rejestracja uczestników, bufet kawowy

13.00 – 13.30 ŁÓDZKIE AWANGARDĄ GOSPODARKI CYRKULARNEJ - panel dyskusyjny moderowany przez Marcina Podgórskiego – Dyrektora Regionalnego Biura Województwa Łódzkiego w Brukseli
Witold Stępień – Marszałek Województwa Łódzkiego
Prof. dr hab. med. Konrad Rydzyński - Instytut Medycyny Pracy
Maciej Kowalczyk - Pheno Horizon
Przemysław Nowakowski - Hemidall Combat Systems

13.30 – 15.00 SESJE WARSZTATOWE omówienie naborów w programie Horyzont 2020 dotyczących gospodarki cyrkularnej oraz prezentacja możliwości współpracy ponadregionalnej w trzech grupach tematycznych
1. Zdrowie i jakość życia
2. Mechanizmy finansowania i promocji gospodarki cyrkularnej
3. Recykling i surowce w branży budowlanej

15.00 – 16.00 lunch

- **Minutes of the Workshop**

<u>PARALLEL WORKSHOP SESSIONS</u>

1. Health and quality of life

Chaired by Konrad Rydzyński, Przemysław Nowakowski and Aneta Andrzejczyk (Medical University of Lodz)

In relation to the H2020 Call: Demonstrating systemic urban development for circular and regenerative cities (CE-SC5-03-2018)

The purpose of the project is to base its measures revolving around the idea of circular economy on the social responsibility of city residents, in particular by basing on the role of public spaces in the functional and special structure of the city. The project will be based on current revitalization programs which indicate the degraded areas of the city: public and semi-public spaces (such as residential estates), and green areas (including those with water reservoirs) in the city. A new approach to the co-management of the urban tissue will be developed, where the right to the city involves an obligation to oversee its constant transformation in response to changing civilization challenges, social expectations and spatial and economic functions. The measures of the project will involve application of Crowdsourcing (pertaining to the development of innovation paths), Crowdfunding and PPPs (public-private-people partnerships).

Project key words: public spaces, sustainable lifestyles, gender dimension, re-designing cities through innovative PPPPs (public-private-people partnerships), natural-based solution in terms of health and well-being

Participants representing: the Medical University of Lodz, the Nofer Institute of Occupational Medicine, municipalities.

2. Mechanisms of financing and promotion of circular economy

Chaired by Marcin Podgórski

In relation to the Call: CE-SC5-05-2018: Coordinated approaches to funding and promotion of research and innovation for the circular economy

The call is devoted to a strategic approach to the coordination of objectives and programming of the regional, national and European funding programmes throughout the area of research and innovation for a circular economy. A strategic approach would help build international synergies among programme owners (regional authorities) and strengthen dissemination of lessons learned and new solutions for the circular economy resulting from currently isolated national programmes and funding.

Project key words: strategic approach to circular economy, circular economy financing, Seal of Excellence

Participants representing: the University of Lodz, the research centres, the Textile Research Institute, SMEs

3. Recycling and raw materials in the construction industry

Chaired by Maciej Kowalczyk

In relation to H2020 Call: Raw materials policy support actions for the circular economy (CE-SC5-08-2019-2020)

The project assumes the launch of pilot implementation of PPPPs in housing construction to create the best solutions in the EU's. Construction companies will develop innovative technology solutions for managing and investing in multi-family housing. It is important to involve its future inhabitants in accenting the circular economy.

The circular economy idea is the key aspect of an effective resource management process conducted as part of intradepartmental implementations. Only a strategic approach, one that will be capable of

identifying “loopholes in the system”, one that communicates the existence of anomalies in the flow of resources within functional areas in the city creates a real platform for the implementation of effective solutions. The goal of the project is to significantly improve the effectiveness of use of existing resources. Acceleration of research teams working as subcontractors will create an open approach within the framework of all European research centers. In its entirety, the project establishes the germs of an effective system for implementing the principles of circular economy in the European Union.

Project key words: circural economy, resource management, raw materials in construction sector, better energy and water efficiency, recycling technologies, social innovations

Participants representing: the construction companies, the municipalities interested in such investments

5 Lodzkie Region: Local Workshop 3

- **General information**

Workshop title:

Spotkanie interesariuszy regionalnych projektu SCREEN

Objectives of the workshop:

Dissemination to Regional stakeholders of the SCREEN project

Date and location of the workshop:

September 12th, 2018, Łódź

Number of attendants:16

Project partner:

Łódź

Workshop organisers:
Łódź

- **Executive summary**

On September 12 representatives of universities, entrepreneurs and representatives of regional and local administration met in Łódź during the third meeting of regional stakeholders of the SCREEN project (program).
During the meeting, a report was presented from the 4th International Workshops organized in Pamplona (4-5 September 2018) devoted to the good practice and transnational cooperation along the strategic value chains developed under the SCREEN project, analysed earlier within the project. The aim of the workshop was to develop a joint agreement on the procedure and presentation of the "Portfolio of tools" addressed to representatives of regional authorities, creating new solutions to increase the synergy of EU funds in regions (presentations from the 4th International Workshop).

- **Participants list in Annex 3**

- **Agenda**

11.00 – 13.00 ŁÓDZKIE SPOTKANIA INTERESARIUSZY PROJEKTU SCREEN
- panel dyskusyjny moderowany przez Marcina Podgórskiego
- *Dyrektora Regionalnego Biura Województwa Łódzkiego w Brukseli*

11.00 – 11.10 przywitanie uczestników, omówienie celu spotkania
11.10 – 11.40 prezentacja rozwiązań wypracowanych w projekcie SCREEN (relacja z IV warsztatów regionalnych)
11.40 – 12.00 Przedstawienie wyników badań „Wywiady z podmiotami gospodarki cyrkularnej w województwie łódzkim – branże: Nowoczesny Przemysł Włókienniczy i Mody (w tym Wzornictwo) oraz Zaawansowane Materiały Budowlane"
12.00 – 12.10 informacja o konferencji podsumowującej realizację projektu SCREEN – Rzym 18-19 października 2018 r.
12.10 – 12.20 prezentacja założeń projektu pn. Samorządowe Centrum Gospodarki Cyrkularnej i Umiędzynarodowienia Przedsiębiorstw "ŁÓDZKIE GREEN HUB"
12.20- 13.00 dyskusja

- **Minutes of the Workshop**

During the meeting, the representatives of ASM Centrum Badań i Analiz Rynku [Center for Market Research and Analysis] sp. Z o. o. form Kutno and Pheno Horizon Łódź presented the results of research titled: **"Interviews with circular economy entities in the Lodzkie Region - industries: Modern Textile and Fashion Industry (including Design) and Advanced Building Materials"**. The purpose of the study was exploring the potential and infrastructure and possible connections between enterprises in various sectors (especially with regard to regional smart specializations), analysis of available financial instruments - both under structural funds, investment funds and preferential loans and establishing a new framework for optimal use of research and innovation funds for the development of circular economy. From among six regional specializations selected from the Lodzkie Region, research was conducted with representatives of enterprises operating within two sectors: Modern Textile and Fashion Industry (including Design) and Advanced Building Materials. As part of the study, 20 in-depth interviews were conducted, of which 8 with entities from the textile industry and 12 from the construction industry. The report features the characteristics of enterprises in terms of individual parameters describing both the level of organization development and the specificity of their operations. The results of the study indicate that the implementation of the idea of sustainable development is not evenly distributed in both analysed industries. The surveyed companies from the Advanced Building Materials industry are carrying out large projects, they are focused on achieving direct effects, not only economic but also ecological ones. They often implement solutions for saving materials, reduce the consumption of raw materials, and develop their own energy-saving solutions. In the case of the companies from the textile and fashion industry

(design), the projects are of a smaller scale, which may be related to both the size of the companies and the largely based sales activities. An internship on the market is also important, which affects the awareness of the effectiveness of this type of activities. In the case of companies dealing mainly with service activities (e.g. sales, design), not using raw materials and producing only municipal waste, the scope of possibilities for direct application of the circular economy assumptions is limited. It is only possible to influence the work of subcontractors, e.g. imposing certain work standards or impact through design on the amount of raw materials used.
(presentation regarding the report)
(Research report)
During the 3rd Meeting of Regional Stakeholders of the SCREEN Project, the team presented assumptions of the project entitled. **“Local-government Center for Circular and Enterprise Internationalization "ŁÓDZKIE GREEN HUB"** prepared by the Regional Office of the Lodzkie Region in Brussels. We want to take advantage of long-term experience from the implementation of the SCREEN project and continue the activities related to the implementation of circular economy and the dissemination of practical knowledge. The project is also aimed at increasing the competitiveness of SMEs from the Lodzkie Region on foreign markets through the introduction of energy and resource efficient solutions in the production and provision of services. One of the objectives of the project is also to create a framework for the development of CE in the Lodzkie Region (presentation on the ŁGH project).
At the end of the meeting, a preliminary conference program was presented summarizing the implementation of the SCREEN project, which will be held in Rome on October 18-29, 2018 (conference program). This event will be combined with the CompraVerde Forum (Buy Green) is the most important Italian and European events regarding green and sustainable public procurement. Regional stakeholders were invited to the conference summarizing the SCREEN project.

6 Lodzkie Region - Local Workshop 4

- **General information**

Workshop title:

IV. MEETING OF SCREEN REGIONAL STAKEHOLDERS: Circular economy for the future of the Lodzkie Region

Objectives of the workshop: Introduction of the SCREEN project toolsd and methodologies at the beginning of the First Polish Circular Week

Date and location of the workshop: 26 October 2018, Łódź

Number of attendants: 14

Project partner: Lodzkie Region

Workshop organisers: Lodzkie Region

- **Executive summary:**

Lodzkie Region organised a final SCREEN project meeting on the 26 of October 2018. The meeting in Lodz entitled “Circular economy for the future of the Lodzkie Region” (Gospodarka cyrkularna dla przyszłości regionu łódzkiego) was part of the First Polish Circular Week. Polish Circular Week 2018 (http://circularweek.org/) was organised form 22 to 28 of October 2018 in 11 towns and cities in Poland under the patronage of the Ministry of Enterprise and Technology, Kingdom of the Netherlands, Marshal of the Lodzkie Region, Marshal of the Mazovian Region, City of Warsaw, City of Gdansk, City of Poznan, City of Katowice.

The meeting in Lodz was organized at the premises of the Lodz University of Technology (The Faculty of Process and Environmental Engineering) in Lab Factor and attracted the representatives of research and academia, entrepreneurs, and administration. (programme).

- **Participants list**

  - academia and research:CBI Pro-Akademia, ASM centrum Badan i Analiz Rynku, Uniwersytet Łódzki, Instytut Medycyny Pracy;
  - building materials sector: Atlas, Izodom 2000, Eksa, Budomal;
  - heating and renewable energy sector: Veolia Energia, Ingersoll Rand;
  - waste processing sector: Rekopol;
  - textile sector: Hemidal Combat System, Moratex, Instytut Biopolimerów i Włókien Chemicznych;

- Agenda

SCREEN
Synergic CircularR Economy across European regioNs

Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji „Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 730313 — SCREEN.

26 października 2018 r., Łódź
Spotkanie regionalne
pn. GOSPODARKA CYRKULARNA DLA PRZYSZŁOŚCI REGIONU ŁÓDZKIEGO

Program spotkania

10.30 – 11.00	**Rejestracja**
11.00 – 11.20	**Powitanie gości** **Witold Stępień** – Marszałek Województwa Łódzkiego **dr hab. inż. Piotr Kazimierski, prof. PŁ.** – Dziekan Wydziału Inżynierii Procesowej i Ochrony Środowiska, Politechnika Łódzka
11.20 – 11.30	**Uroczyste podpisane dokumentu rozszerzającego finansowanie dla projektów z zakresu gospodarki cyrkularnej** **Memorandum of Understanding w projekcie SCREEN**
11.30 – 12.00	**Wykorzystanie modelu gospodarki cyrkularnej w tworzeniu i rozwoju innowacji na poziomie regionu** **Wykład inauguracyjny - Joan Prummel** - międzynarodowy doradca strategiczny w obszarze cyrkularnych zamówień publicznych Ministerstwo Infrastruktury i Środowiska Holandii
12.00 – 13.00	**Jak osiągnąć sukces wykorzystując pakiet gospodarki cyrkularnej w przedsiębiorstwie?** **Panel dyskusyjny z udziałem przedsiębiorstw i partnerów projektu** **Moderator: dr Agnieszka Sznyk** – INNOWO **Paneliści:** **Marcin Podgórski** – Regionalne Biuro Województwa Łódzkiego w Brukseli **dr hab. inż. Grzegorz Wielgosiński, prof. PŁ.** - Prodziekan ds. Studenckich i Promocji **dr Magdalena Głogowska** – Krajowy Punkt Kontaktowy **Przemysław Nowakowski** – Broker Innowacji **Michał Mikołajczyk** – Firma Rekopol
13.00 – 13.20	**Technologie dla przemysłu – LabFactor Politechniki Łódzkiej**
13.20 – 14.00	**Lunch i networking**

INNOWO INSTYTUT INNOWACJI i ODPOWIEDZIALNEGO ROZWOJU
Wygodowska 10 m. 65, 02-654 Warszawa

CIRCULAR WEEK 2018

- Minutes of the Workshop

The meeting was opened by the Dean of the Faculty of Process and Environmental Engineering Piotr Kazimierski, Ph.D. D.Sc., Prof. TUL and director of the Regional Office of the Lodzkie Region in Brussels Marcin Podgórski. Marcin Podgórski presented the signed Memorandum of Understanding and explained the importance of this pilot action.

A measurable effect of the SCREEN project " is the Memorandum, a document whose aim is to test a model solution for the implementation of international projects in the field of circular economy. This document is an advantage for the region's economy, including by creating tools for better effective use of European funds under the framework of the European Union "Horizon 2020" program. The mechanism adopted by the Lodzkie Region and 11 partner regions allows for financing projects that received high scores in the framework of calls in the Horizon 2020 program, but did not receive funding due to lack of funds. Such an approach allows to strengthen the region's economic potential through the exchange of experience and cooperation with foreign entities or the acquisition of new markets and contractors, contributing to the development of companies from the Lodzkie Region. This will allow to raise the region's competitiveness on the European arena.

The opening lecture was delivered by Joan Prummel - International adviser, expert on public procurement at the Ministry of Infrastructure and Environment of the Netherlands. (presentation) The main focus of the presentation was on the use of a circular model in establishing and development of innovation at the regional level.

Later o the guests took part in the discussion panel chaired by Agnieszka Sznyk (Institute of Innovation and Responsible Growth INNOWO). The discussion panel was attended by Marcin Podgórski - Regional Office of the Lodzkie region in Brussels,

dr hab. Grzegorz Wielgosiński, prof. PŁ - Associate Dean for Student Affairs and Promotion, dr Magdalena Głogowska - National Focal Point, Przemysław Nowakowski - Innovation Broker and Aneta Stawicka – Rekopol ltd. The panellists discussed possible scenarios for the development of circular economy, the opportunities of financing international projects and the principles of building partnerships.

The meeting was also an arena for presentation of Policy Briefs developed as part of the GPP4Growth Interreg Europe project.

The participants of the “Circular economy for the future of the Lodzkie Region” meeting were invited to visit the laboratories and the premises of Lab Factor (among others Nanotechnology and Hydrogenous Energy Laboratory, Intensification of Mass Transfer Processes Laboratory, Technology of Water and Sludge Laboratory, Environmental Analysis Laboratory, Fluid Mechanics Laboratory and Smoke Laboratory).

- **Methodology**

- **Output**

Łódzkie Voivodeship as part of the project "European regions for synergy in circular economy" SCREEN together with partner regions has developed a Memorandum, which aims to test a model solution for the implementation of international projects in the field of circular economy.

The implementation of the Memorandum will contribute to greater involvement of regional entities, and will allow the creation of a transnational cooperation network. The overarching objective is the joint development of international projects serving the development of the Lodz region.

Adoption of the above solutions in the Lodz region is one of the commitments as a partner of the project "European regions for synergy in circular economy" SCREEN.

So far, the Memorandum has been signed by twelve out of seventeen European regions: Lazzio, Italy; Extramadura and Navarra, Spain; Centro, Portugal; Limburg, the Netherlands; North-East region, Romania, and Crete, Greece.

The memorandum signed by Witold Stępień, the Marshal of the Lodzkie Voivodship allows support and strengthening of the participation of regional stakeholders in international projects in the field of research and innovation concerning the circular economy, especially projects based on interregional synergies. The memorandum will contribute to creating jobs, growth and competitiveness in the diverse regions of Europe. It is also a solution enabling entrepreneurs and local governments to access financing for projects whose participants come from different regions.

This agreement is an advantage for the region's economy, including by creating tools for better effective use of European funds under the framework program of the European Union "Horizon 2020".

The mechanism adopted by the Łódź Voivodeship and other partner regions allows for funding from regional funds projects that received high scores in the framework of calls in the Horizon 2020 framework program, but did not receive funding due to a lack of funds.

Such an approach allowed to strengthen the region's economic potential through the exchange of experience and cooperation with foreign entities or the acquisition of new markets and contractors, contributing to the development of companies from the Lodz region. This will allow to raise the region's competitiveness on the European arena.

A measurable effect of cooperation will be to take more active in raising funds under the Horizon 2020 program, thus increasing the participation of entities from the Lodz region in research and development projects contributing to the commercialization of knowledge and increasing the level of innovation in the regional economy.

7 Lombardia Region – Local Workshop 1

- **General information**

Workshop title:

Wastewater treatment, sludge and circular economy

Objectives of the workshop:

Actions and synergies with the other regions in the specific field

Date and location of the workshop:
19th of October 2017- Pirelli Palace, Sala della Memoria, via Fabio Filzi – Milano

Number of attendants:
49 participants

Workshop organisers:
Lombardy Region

- **Executive summary**

This document reports the proceedings of the local workshop, held in Lombardy Region.

The local Workshop represents STEP 4 of the guidelines proposed by Metabolic to analyze the circular development of value chains selected by the consortium regions. The objective of the workshop is to define the necessary of the partnership for such development.
Based on the work done in the previous phases of the project, the value chain selected by the Lombardy Region is “waste water and sludge”.

Lombardy Region chose to analyze the selected value chain through the simplified methodology of the Metabolic’ Guidelines, constituted by STEP 1 and 4.

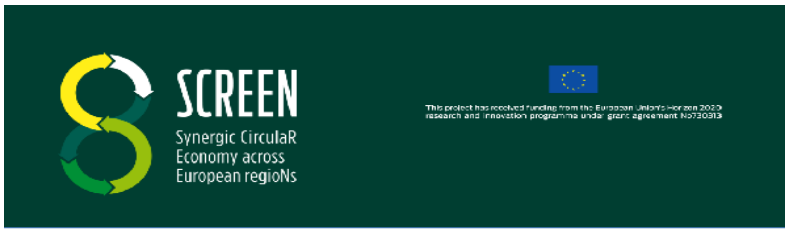
- **Participants list**

Organization	Name	Stakeholder category
COGEIDE S.p.A.		Managers of Wastewater treatment plants
A2A Ciclo idrico S.p.A.		Managers of Wastewater treatment plants

A2A Ambiente		Managers of Sludge Treatment Plants
A2A Ambiente		Managers of Sludge Treatment Plants
A2A Ambiente		Managers of Sludge Treatment Plants
Padania Acque S.p.A. / CISPEL		Managers of Wastewater treatment plants
AIMAG S.p.A.		Managers of Wastewater treatment plants
CAP Holding S.p.A.		Managers of Wastewater treatment plants
CAP Holding S.p.A.		Managers of Wastewater treatment plants
Pavia Acque S.c.a.r.l.		Managers of Wastewater treatment plants
Acqua & Sole S.r.l.		Managers of Sludge Treatment Plants
Alan S.r.l.		Managers of Sludge Treatment Plants
Azienda Agricola Allevi S.r.l.		Managers of Sludge Treatment Plants
EcoTrass S.r.l.		Managers of Sludge Treatment Plants
Eli Alpi Service S.r.l.		Managers of Sludge Treatment Plants
Evergreen Italia S.r.l.		Managers of Sludge Treatment Plants
Lucra 96 S.r.l.		Managers of Sludge Treatment Plants
VAR S.r.l.		Managers of Sludge Treatment Plants
WTE S.r.l.		Managers of Sludge Treatment Plants
Politecnico Milano		Research centers and universities
Università Milano		Research centers and universities
Università Brescia		Research centers and universities
BEA S.p.A.		Managers of Sludge Treatment Plants
SILEA S.p.A.		Managers of Sludge Treatment Plants
FISE Assoambiente		Category associations
EFAR Italia		Category associations
EFAR Italia		Category associations
UTILITALIA		Category associations
CISAMBIENTE		Category associations
Alkematek		Technology supplier
Vomm Impianti e Processi spa		Technology supplier
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		SCREEN Project
R.L. D.G. Ambiente		Institutional regulators of waste management and regional Agencies

R.L. D.G. Ambiente		Institutional regulators of waste management and regional Agencies
R.L. D.G. Ambiente		CIRCE Project
ERSAF		Institutional regulators of agricultural Activities and regional Agencies
Uniacque s.p.a.		Managers of Wastewater treatment plants
SECAM s.p.a.		Managers of Wastewater treatment plants
CORE s.p.a.		Managers of Sludge Treatment Plants
Lario Reti Holding		Managers of Wastewater treatment plants
BioAgritalia/REA Dalmine		Managers of Sludge Treatment Plants
Acque Bresciane		Managers of Wastewater treatment plants
ARPA Lombardia		Institutional regulators of waste management and regional Agencies
MM S.p.A.		Managers of Wastewater treatment plants

- **Agenda**



19th of october 2017

Sala della Memoria – Pirelli Palace
Regione Lombardia, Via Fabio Filzi, 22- 20124 Milano

Local Workshop

Wastewater treatment, sludge and circular economy

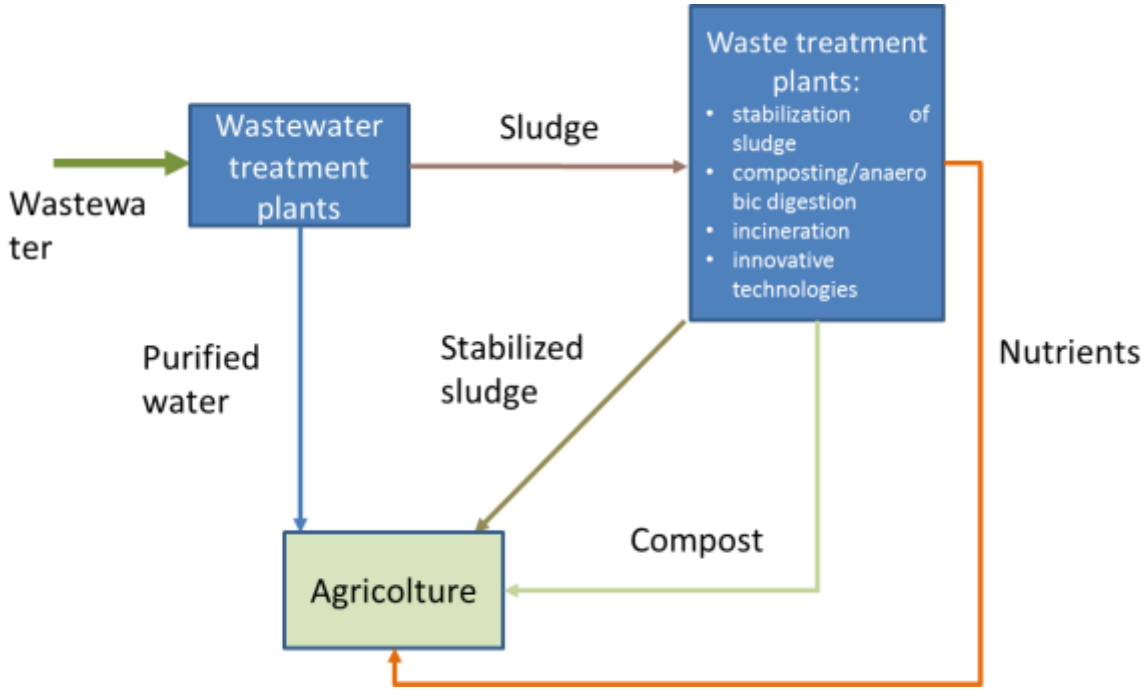
9:00 – 9:15	**Partecipant registration**
9:15 - 9:30	**Introduction and project overview**
9:30 – 9:45	**Objectives and working methods of the workshop**
9:45 - 10:00	**Topic framing and data** **Common vision**
10:00: - 11:00	**Partecipants introducing and roundtable** Each participant will be asked to introduce oneself in two minutes time and to briefly state what he is doing and what he would like to do in view of greater "circularity" and sustainability of the value chain of waste water purification and sludge
11:00 - 11:20	**Coffee break**
11:20 - 12:30	**Discussion** Discussion between all stakeholders to identify a list of possible actions (policies, research, innovations, partnerships, ...) to be put in place, both within the region and seeking synergies in other European regions
12:30 - 13:00	**Conclusions**

www.screen-lab.eu

Regione Lombardia

- **Minutes of the Workshop**

Before the organization of the Workshop, the value chain and its boundaries were defined (STEP 1 of the Metabolic's Guidelines).
Below the schematic representation of the value chain:



Once the components and flows of the value chain have been established, stakeholders have been selected and invited to the local Workshop; they have been included on the basis of the methodology for assessing their importance described in the Metabolic's Guidelines:
- Managers of Wastewater treatment plants (High importance stakeholders);
- Managers of Sludge Treatment Plants (High importance stakeholders);
- Research centers and universities (Facilitating stakeholders);
- Institutional regulators of water treatment and regional Agencies (Facilitating stakeholders);
-Institutional regulators of waste management and regional Agencies (Facilitating stakeholders);
- Institutional regulators of agricultural Activities and regional Agencies (Facilitating stakeholders);
- Category associations (High importance stakeholders);
- Technology supplier (Facilitating stakeholders).

A representative of Lombardy Region of CIRCE Project (Interreg Europe) has been invited to link the actions of the two projects that deal with the circular economy

- **Methodology**

Elisabetta Confalonieri welcomes the participants and explains briefly the day.

Afterwards, Christian Fabbri introduces the SCREEN project and, in particular, the value chain chosen by Lombardy Region, which is related to wastewater and sludge. It was explained the purpose of the

Workshop and the results to be obtained at the end of the day following the guidelines provided by Metabolic (STEP 4):
- a shared vision of the value chain in the regional context;
- a road map of interventions to be put in place by the stakeholders for circular development of the value chain;
- a catalogue of “hot spots” and emerging ideas that would require regional or extra-regional synergies.

- **Output**

Giorgio Gallina deepens the topic of wastewater and sludge by presenting some synthetic data (Annex 4, Figure 1) and some points of attention about this value chain. He then advances a proposal of "vision" for a circular development of the chosen value chain and lets the participants talk for comments and suggestions.
At the end of the first round-table, the value chain structure and the common vision of the actions required for circular development in the regional contest were shared by the partecipants.
In the next part of the Workshop, each of the stakeholders is asked to briefly explain what difficulties they are facing in the development of this sector, what they are already planning to do and what synergies they need from other regional or European stakeholders.
Based on this discussion, in the last part of the Workshop, a list of the interventions that the stakeholders are going to implement in order to improve the value chain in a circular way has been drawn up by the present.
This "roadmap" is shown in the table in Annex 4. The same table shows whether the development of a particular action or the overcoming of a certain barrier needs synergies at extra-regional level: from the discussion among stakeholders emerged that for the implementation of these actions is not necessary, although it is beneficial, the development of synergies with the other European regions.

8 Lombardia Region – Local Workshop 2

- **General information**

Workshop title: Circular Value Chains: progettare il futuro dell'Automotive

Objectives of the workshop: To define a common vision as well as circular economy based strategies and specific actions for the future of the automotive industry, also including those sectors that could benefit from a re-use and recover of product functions and materials from automotive waste

Date and location of the workshop: 13th November 2017 - Sala della Memoria, floor 26, Palazzo Pirelli, Via Fabio Filzi, 22, 20124 Milano

Number of attendants:

29 participants

Project partner: Lombardia Region

Workshop organisers:
AFIL

- **Executive summary**

This document reports the proceedings of the local workshop focused on Manufacturing and Remanufacturing value chains, held in Lombardy Region. Due to the interest in the Region, the specific target sector of the local workshop was the Automotive industry.
Workshop – Circular Value Chains: progettare il futuro dell'Automotive
Date: 13th November 2017
Venue: Sala della Memoria, floor 26, Palazzo Pirelli, Via Fabio Filzi, 22, 20124 Milano (MI)
Based on the work done in the previous phases of the project, this workshop covers one of the two the value chains selected by the Lombardy Region, namely "Manufacturing and Remanufacturig".
The objective of the workshop was to define a common vision as well as circular economy based strategies and specific actions for the future of the automotive industry, also including those sectors that could benefit from a re-use and recover of product functions and materials from automotive waste, wih a cross-sectorial approach. A roadmap reporting the most promising interventions and actions for the future will be produced, in order to support the transition to this new circular vision for the industry. The necessary actions and synergies with the other regions of the partnership for such development will also be highlighted.

- **Participants list**

Surname	Name	Organisation
		AFIL
		Polimi
		Polimi
		Polimi
		ITIA-CNR
		Cobat
		K&I LAB Srl
		TENOVA
		ITIA-CNR
		Italtel
		X-NEXT
		Fondazione Ergo-MTM Italia
		GFM
		AFIL
		Ecomet Refining
		Feragame
		ITIA-CNR
		Ecodom
		Feragame
		Bureau Veritas
		O.R.I. Martin Spa
		Lombardia Aerospace Cluster
		BSD Design
		Pirelli Tyre Spa
		Università Bergamo
		Streparava Spa
		Car Sharing E-VAI
		BLM Spa
		Montello Spa

- **Agenda**

Workshop – Circular Value Chains: design the future of Automotive

The objective of the workshop is to define a vision, built on the Circular Economy paradigm, for the automotive sector of the future. This comprises both the automotive industry, and the entities that can use the end-of-life products of such sector, or its byproducts, as inputs for production. A roadmap will be defined, comprising the most promising interventions in which to invest in the future, to support the transition towards the settled vision.

13th november 2017
Sala della Memoria, piano 26, Palazzo Pirelli, Via Fabio Filzi, 22, 20124 Milano MI.

Agenda:

9:00	Registration and Welcome Coffee
9:15	Introduction of participants: name, organisation, interests in the workshop
9:30	Introduction to the SCREEN project
9:45	Presentation of Automotive business cases
10:45	Towards a circular value chain in the automotive sectorpresentatio of the workshop methodology
11:00	Coffee Break
11:30	Workshop: • Mapping of participants on the circular Value Chain • Mapping of high value materials / components in the car of today and tomorrow • Circular perspectives for the automotive sector • Potential barriers • Technical requirements and innovative strategies
13:00	Wrap-up and closure
13.30	Networking Lunch

- **Minutes of the Workshop**

Marcello Colledani welcomes the participants, and opens the workshop. Then he presents the cluster AFIL and its activities. Afterwards, he introduces the SCREEN project and one of the value chain selected by the Lombardy Region, which is related to the manufacturing sector, and in particular on the automotive industry.

Marcello Colledani introduces the four industrial cases that will be presented during the first session, with the aim of setting the actual technological, organizational, and research issues currently developed in the automotive sector in Lombardy, and to set a vision for the future. Then these cases are presented:

- E-vai – Electrical Car Sharing service implemented in Lombardy. It uses different operational models to supply different services to citizens, public administration, and pendular workers using train.

- Radici Group – chemical company. They present an actual project they are running, focused on the evaluation of recycling processes of plastics from automotive waste. In particular, the case of wheel rim covers is presented, as well with the technical results (material properties) and economic figures.

- Cobat – battery recycling consortium in Italy. The Italian model of consortia is explained, focusing on the collection and recycling of batteries, and its strategic projects about new generation batteries treatment, and tyres treatment.

- FiberEUse Project – it is an European Project coordinated by Politecnico di Milano, started in june 2017, and focused on the recycling of Carbon fibre and Glass fibre reinforced composites. Within the projects, particular value chains stemming from the eolic, aerospace and automotive sector will be studied.

Towards a circular value chain in the automotive sector: presentation of the workshop methodology

Federico Albè presents the methodology that will be used within the workshop, aligned with the protocol developed in SCREEN (Figure 4.1).

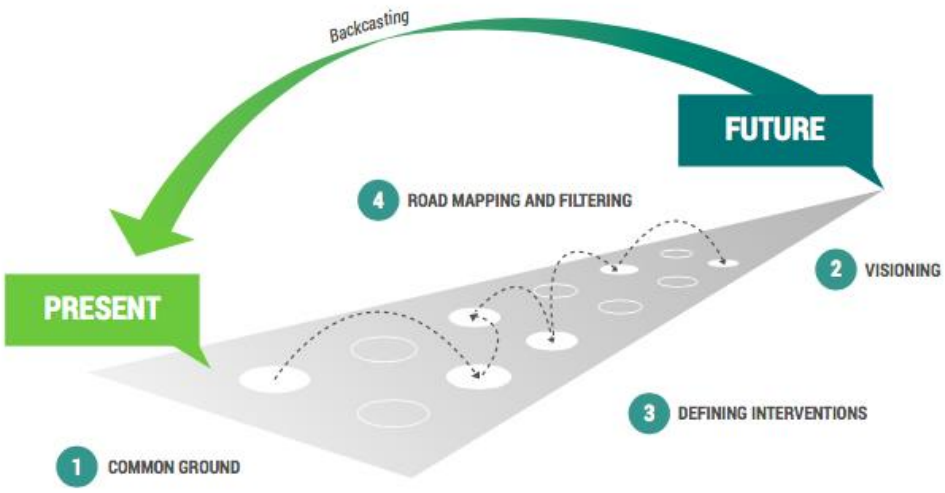


Figure 4.1: methodology for Local Workshop

Albè explains the four steps:

- *Common Ground:* presentation of the value chain model for automotive.
- *Visioning:* already done, during the presentation of the use cases. It will be further analyzed along the workshop.
- *Defining interventions:* barriers and emerging ideas will be combined to define possible interventions, to support the vision identified.
- *Roadmapping:* interventions will be synthetized, and Roadmap points will be drawn.

A model of the current, linear automotive value chain is presented (figure 4.2), with particular emphasis on the existing Lombardy Region best practices.

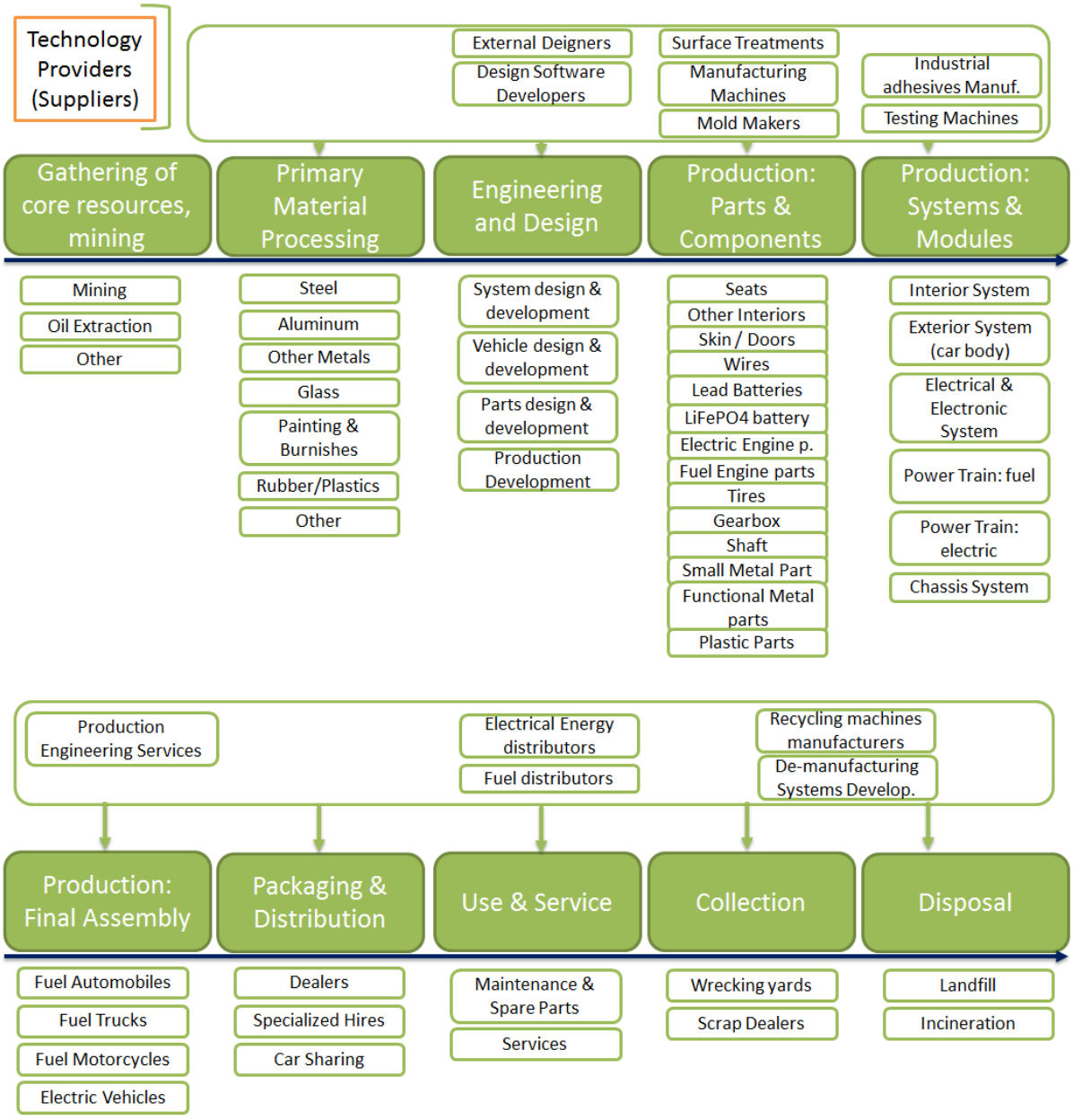


Figura 4.2: linear value chain model for the Automotive sector.

Synthetic data and key features about this value chain are also presented, as a result of the analysis made by AFIL. These are the results of the mapping developed using the model (figure 4.3). Mapped companies are gathered from a public database[2]. At the end of the presentation, the value chain structure and the common vision of the actions required for circular development in the regional contest are shared with the participants. This is shown in Annex 1.

[2] www.europages.com – *keyword: "automotive"*

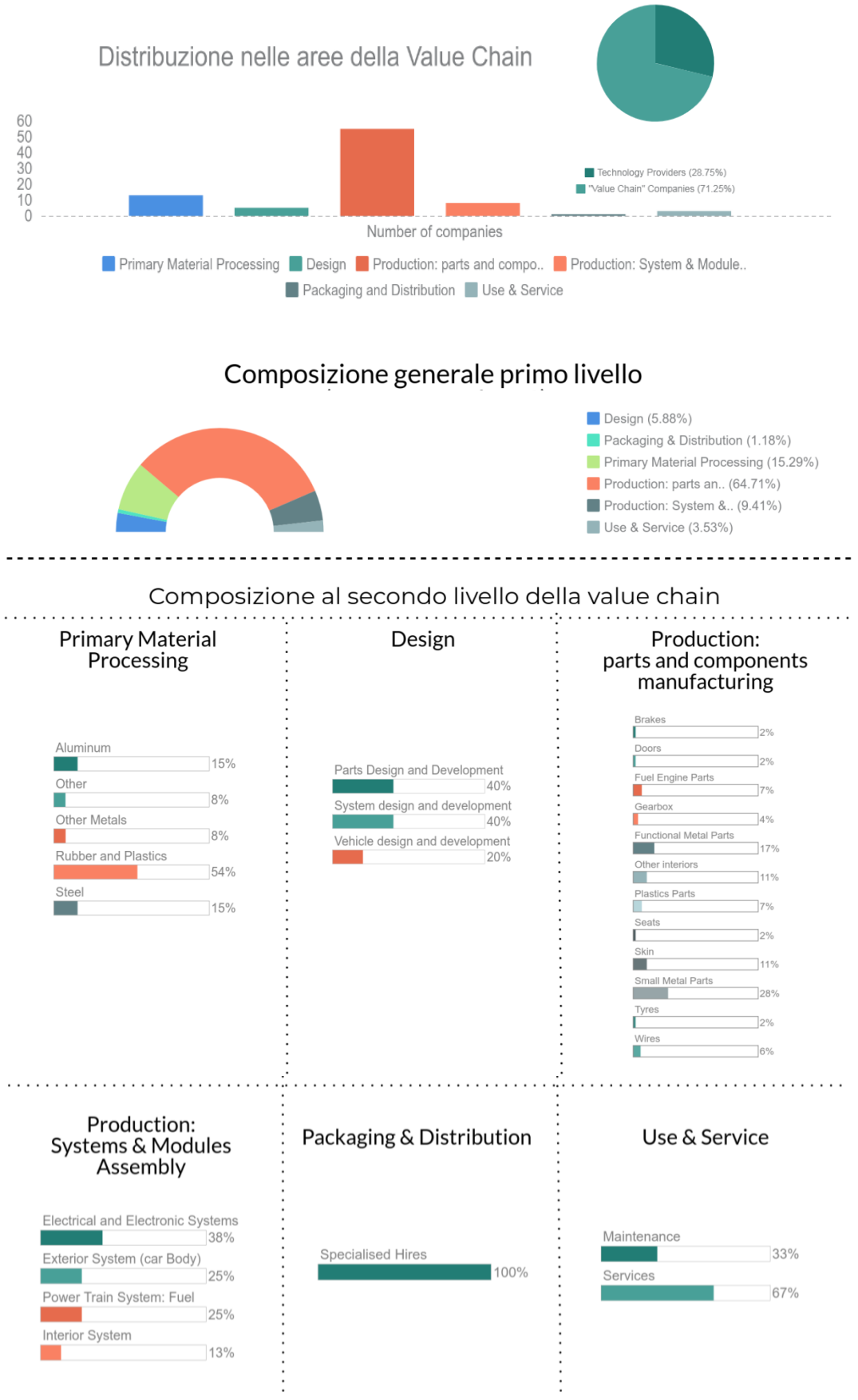


Figura 4.3: descriptive statistics for the automotive value-chain.

In the next part of the Workshop, a discussion is stimulated among the stakeholders, divided into two different groups. The discussion is focused on the gathering of inputs on other existing best practices and emerging initiatives, on the synergies the stakeholders see with other regional or European stakeholders, and on emerging barriers the stakeholders are facing in the circular development of this sector.

The moderators of the group collect all the inputs, translating the gathered feedback into opportunities, barriers that prevent these opportunities to become practices, and the interventions suggested by the stakeholders. Based on these discussions, in the last part of the Workshop, a list of interventions that the stakeholders suggest to implement in order to improve the value chain in a circular way is drawn.
The results of the two groups, and this "roadmap", are shown in the next section (4.6).

Group 1

The participants of the group 1 are mapped on the linear value chain presented before.

Value Chain Step	Companies within the Value Chain	Technology Providers
Gathering of core resources		
Primary material processing	O.R.I. Martin	
Design & Development		K&I Lab
Production (components)	Streparava	BLM Group GFM Fondazione Ergo-MTM
Production (systems and assemblies)		
Production (final product)		
Packaging & distribution		
Use & Service		
Collection	Cobat	
Circular processes	Ecomet Refining Feragame	X-Next K&I Lab ITIA-CNR
Disposal		
	Total participant companies:	**11**

Table 5.1: mapped participants of group 1

Group 2

Value Chain Step	Companies within the Value Chain	Technology Providers
Gathering of core resources		
Primary material processing	TENOVA	
Design & Development	BSD Design	
Production (components)	Radici Group ITALTEL	ITIA-CNR
Production (systems and assemblies)		ITIA-CNR
Production (final product)		
Packaging & distribution	Car Sharing E-VAI	
Use & Service		
Collection		
Circular processes	Feragame Ecomet Refining ECODOM Montello S.p.a.	ITIA-CNR
Disposal		
	Total participant companies:	**10**

Table 5.2: mapped participants of group 2

Wrap-up and closure

Marcello Colledani and Federico Albè, moderators of the two groups, summarize the discussions of the two groups. In the next section (points 1 to 8) all the opportunities, related barriers, and interventions, emerging from the groups are reported and clustered within the related value chain steps. In table 6.1 (page 18), the roadmap created grouping the interventions around different Strategic Lines is presented.

Primary Material Processing

Opportunities	Barriers	Interventions
Reuse of EoL materials directly within by steel-processing plants, with minimal pre-processing and waste.	Products composed by mixed materials are difficult to treat, for example products with joined plastics and metals.	Development of advanced technologies for dismantling, size-reduction, separation and sorting that allow high throughput treatments.

Vehicle Design and Development

Opportunities	Barriers	Interventions
Coordination among recycling and design phases: Co-Design between recycler and product designer.	Co-design, as the partecipative design between single producers and recyclers, on each product, is currently not implemented and seen as too expensive.	Norms and information sharing systems to develop a co-design, which takes into account technical difficulties of de-manufacturing and recycling.
		In parallel with those norms, it could be beneficial to develop guidelines within each company, designed with consortia and recyclers.
Manufacturer-centric circular economy, in order to have a higher economic return from circular practices.	Not all the components are certified, and their origin is not always clear.	Conformity norms should be compulsory for all products. An EPR legislation revision is needed.
	Lack of information flows between the producer, consumers and the recycler.	Facilitate and make compulsory the information flow along the value-chains to increase traceability.
	Absence of car makers in the Lombardy Region – difficult to establish physical flows of products and materials.	Create partnerships with other regions with massive presence of car-makers and designers.

Production

Opportunities	Barriers	Interventions
Use components and materials from End-of-Life products as production inputs for new products.	Normative barriers – not customized norms and non-homogeneous norms among confining regions: *e.g.* the use of dross originated from steel mills in the production of armed concrete cannot be done, by the application of law, in Lombardy, while in Veneto (confining Region) is allowed. It is also known that this use for steel dross creates a concrete with even higher mechanical properties than the usual one. The specific pitfall is that the "Unified Environmental Text" (testo unico ambientale) is applied, and it doesn't differentiate between use of different waste types for different applications. The problem identified is that, for the particular application	The solution proposed is the creation of sub-texts within the norm, which would be added modularly in time, and take into account the specificity of each application. This would demand the **creation of a normative process**, similar to the one applied to new pharmaceuticals (with different stage of trials) to understand if each application would be environmentally safe or not.

	under examination, the waste particles need to pass a certain test to be declared safe. The waste material, before the test, needs to be crushed into particles of a certain size fixed by law. In the case of dross, dross particles at that standard size are in fact environmentally dangerous; the stakeholders claim, anyway, that for the application into concrete dross particles need to be reduced to a size greatly bigger than the standard one, and the same test on such particles would declare them as environmentally safe. In Veneto region, the same law is applied, but with a different interpretation, mediated by environmental control agencies, thus allowing this application.	
	As these innovations may erode markets of well established but less environmentally safe and resource efficient sectors, there may be a pressure to maintain the normative status quo. (e.g. Gravel makers in the case of concrete production would see dross makers as new competitors)	The circular economy normative process should be informed by scientific and technical results of tailored research projects, and should involve materials, chemical, and environmental experts. It should base on quantitative and objective environmental studies and impact assessments.

Packaging and Distribution

Opportunities	Barriers	Interventions
/	/	/

Use and Service

Opportunities	Barriers	Interventions
Car sharing allows a higher control over the vehicle life cycle, because the vehicle is owned by the company delivering the service during the use phase. This means that the maintenance, and post-use treatment of vehicles could be performed more efficiently, and in a more controlled way.	Cultural barriers: citizens still tend to prefer to own a car.	Communication and awareness campaigns for citizens/companies finalized to sustainable mobility.
	Car sharing models typically make use of electric and hybrid vehicles. Circular economy businesses for these vehicles are not yet developed, especially considering batteries,	Support research, innovation and pilot actions towards the identification of circular economy businesses non combustion engine cars, exploiting non-ownership car

	composites, and advanced mechatronics.	sharing models.

Collection

Opportunities	Barriers	Interventions
Use of innovative technologies (e.g. collaborative robots) to quickly disassemble cars (less time needed equals a diminished cost to recover components)	Absence of such technologies, tailored to the car post-use treatment business. Destructive shredding is still the preferred option. Poor skills on automation at the junkyards side.	Conversion of car demolition businesses into "Smart Dismantlers" which make recoverable and reusable materials and component from car, available for further treatment, on demand.

Circular processes (Reuse, repair, remanufacture, refurbish, recycle)

Opportunities	Barriers	Interventions
Detailed data about products is existing, but not easily accessible.	Data about the composition of end-of-life products collected from the market are not easily accessible by recyclers. This issue is caused by different factors: • Production companies not willing to publicly share the composition of their products (especially true for batteries and tires); • Production companies have structured data about products, but it is not clear to them which ones would be useful for the recyclers. • Data about the material composition are codified on products, in automotive, but are not readable by recyclers. • Lack of a business model for providing value to the data availability.	An interesting proposal is the creation of a norm/standard for the management of product data. This should point out which is the subset of data, among all the data owned by producers, that would be useful to the recycler, and enable their easy re-constructability and/or transferability. To do that, the group agrees upon the fact that it would be necessary to carry out an extensive research to identify the nature, quantity and quality of such "recycling" data.
Higher recycling efficiency of collected waste	Related to the previous barrier, there is a wide Informational GAP between producers of components and recyclers. Clear Gap between technologies adopted in manufacturing and de- and remanufacturing.	Increase the link between manufacturer and de-and remanufacturer, by creating common discussion tables and sharing technological innovations. The cluster could help in this activity.
	Documents about the material composition of each product component exist but they are not following the product after it is sold in the market. The norm does not currently require that the material declarations follow the product. Currently, the issue of materials recognition is tackled by developing technologies able to recognize the composition of recovered products (characterization). The	Create **strategic partnerships** between producers and de- and remanufacturers (e.g. in the form of joint ventures, consortia, associations, …) in order to promote information sharing and increase the efficiency of the product treatment along the entire life

	use of these inspection technologies requires additional processing time and equipment costs, and this causes additional burdens on de- and remanufacturers.	cycle. This seems to be particularly promising in the automotive value-chain, where few big car makers are available.
Use of fine powder from tires as raw material for modified asphalt manufacturing	Prejudices of citizens and companies towards the use of recycled materials/products	Communication and awareness campaigns for citizens and companies
Use of dross produced by steel works as secondary raw material	Legislative barriers.	Change the regional legislation on materials/products classified as waste when they are re-usable as secondary raw materials in other applications (e.g. fine tire powder, steel dross)
Recover material/product before it is classified as waste (as in the repair cafes)	Absence of a business model for this scenario.	Rise the number of courses in universities about business models for materials/products recycled.

Disposal

Opportunities	Barriers	Interventions
In the steel mill industry, around 20% of dross is landfilled, even if they have suitable structural properties to be reused. The same is true also for the fine metal parts recovered from lead batteries, and the glass from cathode ray tubes.	The norm doesn't allow the use of the material in some applications	V. interventions in "Production"

First elements for a strategic roadmap towards innovative Circular Economy businesses in the Automotive value chain.

Strategic Line #	Action	Type of action (P=Policy, I=Innovation, C=Communic.)	Involved Stakeholders	Need of a cross-regional synergy
1 Technologies	Development of high throughput size-reduction, separation and reuse technologies, for highly mixed materials. High interests for case studies emerging during the workshop, i.e. Batteries, tyres, steel mill dross.	I	**Research Institutes, Recyclers, Primary Materials Processers**	Yes
2 Waste life cycle data management	Development of a norm to implement product co-design, in order to take into account the technical difficulties of de- and remanufacturing during the product design process.	P	**Normative entities, producers, recyclers**	Yes
	Facilitate the information flow from the producer to the recycler. The norm should point out which subset of data, already owned by producers, could support de-and remanufacturer in the efficient treatment. To do so, the group agrees that is necessary to develop and implement a research project to identify the nature, quantity and quality of such necessary data for the automotive sector.	P+I	**Recyclers, producer of components, producers of systems**	Yes
	Create strategic partnerships between producers and de-and remanufacturers (e.g. in the form of joint ventures, consortia, associations, …), to increase the efficiency of processes by sharing technological knowledge and best practices.	P+I	**Recyclers, producer of components, producers of systems, clusters.**	Yes
3 New normative processes for the circular economy	Create different sub-texts within the norm for industrial waste management, starting from the current normative text and declining it into specific cases (e.g. use of steel mill dross for civil applications, use of tyres fine powder, …) .	P	**Normative entities, primary materials producers, recyclers**	Yes
	Creation of a normative process, similar to the one applied to new pharmaceuticals (with different stage of trials) to understand if each application would be environmentally safe or not, by using quantitative and objective	P+I	**Normative entities, primary materials producers, recyclers**	Yes

	data.			
4 New university courses	Increase the number of university courses focused on Circular Economy, with particular emphasis on “design for de-and remanufacturing”, “advanced de-and remanufacturing processes”, and “new circular business models”.	I	**Universities**	Yes
5 Incentives	Create fiscal and/or financial incentives for more durable products developed with a eco-design approach.	P	**Financial entities (public and/or private)**	No
	Create fiscal and/or financial incentives for suppliers and users of car sharing services, lowering the costs to the final customers.	P	**Financial entities (public and/or private)**	No
6 Normative enforcement	Make compulsory the conformity norms for all types of products.	P	**Normative entities**	Yes
7 Awareness	Communication and awareness campaigns targeted to citizens and companies, aiming at the spread of the concept of sustainable mobility (e.g. car sharing).	C	**Public entities (municipality, regional government)**	No
8 Evolution of car dismantling businesses	Conversion of car dismantling businesses into “Smart Dismantlers”.	I+P	**Certified car demolition businesses**	Yes
	Training courses for car demolition businesses created within professional institutes and/or Universities, with the participation of car makers and recyclers.	I+P	**Certified car demolition businesses, Universities**	No
	Execution of a research project focalized on the economical evaluation of recovery and recycling of all automotive components, to define decision support systems that identify the optimal level of disassembly, recovery and recycling of car components and materials, including emerging green vehicle technologies.	I	**Universities, Research Institutes, producers of components, Certified car demolition businesses**	Yes
7 and 8	Communication and awareness campaigns for citizens and companies, focused on the advantages and the quality of recycled and reconditioned products.	C	**Public entities, producers of components and systems**	No
4 and 8	Increase the number of courses in universities on circular business models.	I	**Universities**	No

Table 6.1

The workshop ends at 2:00 PM

9 Navarra Region: Local workshop 1

- **General information**

Workshop title:

"PLASTICS FOR AGRICULTURAL USE AND CIRCULAR ECONOMY

Objectives of the workshop:

Local Workshop. To know initiatives for agricultural plastic waste prevention and promoting joint reflections of the needs to be addressed in this area to achieve the objectives proposed by the Waste Plan of Navarre 2017-2027.

Date and location of the workshop:
21st November 2017, Assembly Hall of the Department of Rural Development, Environment and Territorial Planning of Government of Navarre (Gonzalez Tablas Street, 9, Pamplona-Iruña).

Number of attendants:
9 participants

Project partner:

Navarra Region

- **Executive summary**

The workshop was organized as a round table with the presentation from Smurfit Kappa and Solteco of their solutions related to the reduction of plastics in agriculture,. A discussion followed among the participants that asked questions and details. After the debate the Department of Rural Development, Environment and Territorial of Navarra Government underlined that the Waste Plan of Navarre 2017-2027 will take into consideration the results of the debate in the next Plan revision

- **Participants list**

- Government of Navarre (Department of Rural Development, Environment and Territorial

Planning);- GAN-NIK (Environmental Management of Navarre, public company);

- INTIA (Transference and Innovation in Agrifood Sector in Navarre, public society);

- UAGN (Agrarian Union of Navarre);

- AN Group (Food cooperative of Navarre);

- Smurfit-Kappa (Paper company);

- Solteco (Plastic wood producer company);

- Waste managers;

- Municipalities of waste.

- **Agenda**

Welcome speech.

- Speech by GAN-NIK: “Situation of agricultural plastic waste in Navarre”.
- Speech by INTIA: “Prevention in the generation of waste due to the mulching in horticulture”.
- Speech by Smurfit-Kappa: “Sustainable alternatives for agricultural mulching. The role of the Circular Economy”.
- Speech by Solteco-Elkarkide. “Transforming is just the beginning”.
- Debate between participants.

- **Minutes of the Workshop**

In 2016, 1,503 tons of these plastics were collected in Navarre, but the real situation of the destination and management of 45% of agricultural plastic waste is unknown. Of the collected amount, 14% (215 tons) were recycled. The rest was destined to landfill, mainly due to the dirt with which it is received.

INTIA and Smurfit Kappa presented the tests carried out in this regard. Since 1990, they explained, INTIA has been working on testing alternatives to polyethylene with biodegradable, oxodegradable, photo-degradable and, more recently, in collaboration with Smurfit Kappa, with paper. According to their studies, there are no notable differences in production and quality between PE and biodegradable pads and, for the time being, the main limitation to the expansion of alternatives to PE padding is the cost. From his experience it is also clear that oxo-degradables and photodegradable do not reach the degradation capacity of biodegradable and / or compostable ones.

Solteco, a company dedicated to the production of recycled plastic material and profiles for street furniture, explained that, together with the company Elkarkide, they plan to promote a pilotexperience to recycle this type of plastics, generating employment.

The Waste Plan of Navarre 2017-2027 proposes various measures in this regard, such as the creation of agricultural plastic collection points in cooperatives or others, the formation of the agricultural sector to promote good use and minimization of the use of plastics in agriculture, in coordination with key agents (trade unions, INTIA, etc.), and advance in the use of compostable and biodegradable plastics.

10 Navarra Region: Local workshop 2

- **General information**

Workshop title:
Information and environmental awareness to stakeholders in the application of the new legislation about management of vehicles at the end of their useful life.

Objectives of the workshop:
The application of the new Spanish legislation about vehicles at the end of their useful life was held.

Date and location of the workshop:
24th NOVEMBER 2017, Castle of Gorraiz (Egües avenue, 78, 31620 Gorraiz, Navarre).

Number of attendants:
6 participants

- **Executive summary**

The discussion about the Royal Decree is to establish measures aimed at the prevention of the generation of waste from vehicles , led to a better understanding of environmental concepts and obligations of all the agents of interest that will affect the good compliance of the new legislation. SCREEN project was presented to the participant stakeholders, in order to realize the possibilities of developing cross-regional synergies in this field.

- **Participants list**

- Government of Navarre (Department of Rural Development, Environment and Territorial
- Planning);
- ANADRA: Navarre association of scrapping and recycling of automobile and recycling;
- AEDRA: Spanish association of wreckers and recycling of automobile;
- SIGRAUTO: Environmental association for the treatment of end of life vehicles;
- ANTRV: Navarre association of garages for reparation of vehicles;
- Automotive sector companies.

- **Minutes of the Workshop**

Information and awareness to entities related to the sector as well as to the end user of the legislative changes proposed by the new Spanish legislation based on criteria of circular economy,

clarifications of concepts and obligations of environmental compliance of all the agents involved in the treatment of a vehicle at the end of its useful life.

The purpose of this new Royal Decree is to establish measures aimed at the prevention of the generation of waste from vehicles and collection, the preparation for re-use, recycling and other forms of recovery of end-of-life vehicles, including its components, in order to reduce waste disposal and improve efficiency in the protection of human health and the environment throughout the life cycle of vehicles. For all these reasons, the session led to a better understanding of environmental concepts and obligations of all the agents of interest that will affect the good compliance of the new legislation.

This new legislation adapts what is stipulated in the Waste Law with some improvements, which include several related to reuse. In particular, it establishes that the Authorized Treatment Centers (ATC) must reuse parts and components that represent at least 5% of the weight of the vehicles that have been treated annually from 2017 to 2021, 10% from that year until 2026 and 15% from that year onwards. In addition, the extraction of parts and components for reuse and commercialization can only be done in a ATC, and only to vehicles that have been decontaminated and discharged in the Traffic Department. ATCs will also be responsible for, after decontamination and recovery of reusable components, deliver, directly or through authorized manager, the rest of the vehicle to a fragmentation facility.

- **Output**

Throughout the meeting some aspects of the legislation on vehicles at the end of their useful life, approved at the beginning of this year, were discussed with different sectors involved in the chain of treatment of end-of-life vehicles, such as manufacturers, importers of vehicles, scrappers and fragmenters. Furthermore, SCREEN project was presented to the stakeholders, in order to realize the possibilities of developing synergies in this way.

11 Azores Region

- **General information**

Workshop title:

Cryptomeria japonica value chain

Objectives of the workshop:

- Formulating together a vision for a more circular Cryptomeria value chain
- Define concrete actions (roadmap) at regional level to reach the first objective
- Do a survey of emerging ideas (interventions) that require regional or trans-regional synergies to materialize.

Date and location of the workshop:

15/11/2017 Ponta Delgada, Azores

Number of attendants:

37 participants

Workshop organisers:
The Regional Fund for Science and Technology (FRCT)

- **Executive summary**

Taking into account the forestry strategy defined for the Autonomous Region of the Azores, in order to promote the dynamization and modernization of the area and the protection of the forest heritage, the Government of the Azores has implemented the certification of a management system for Forest Perimeters and Forests with a view to ensuring the sustainable use of resources.

This certification process, begun in 2013 at the Achadinha Forestry Nucleus in the county of Northeast - São Miguel Island, will be extended to the remaining cores of the various Forest Perimeters of the Region, in order to ensure that these resources are managed in response to social needs, economic and environmental impacts of future generations.

Cryptomeria japonica, as the mainstay of the regional forestry sector, a brand image of local production forest, and the main species present in public and private areas, plays a key role in the definition of the new forestry strategy, hence the possibility of creating direct employment , or in the

activities of forest exploitation, reforestation and maintenance of stands, or in the downstream processing industry.

In this strategy, the search for new markets and opportunities assumes structuring importance. The implementation of a CE marking process and the dissemination of the brand "Cryptomeria dos Açores", through the execution of a marketing and marketing plan, are basic instruments of this process, contributing to the credibility and valorisation of the products, in a global market every demanding, selective and competitive.

- **The cryptomeria wood**

Being exploited in fustadio, the criptomeria produces a soft wood and easy to work, light and durable that, however, it easily pops when nailed, being frequently employed in construction (formworks), carpentry of clean, furniture and box office. The frequency of winds in the Azores, coupled with the rapid growth of the species produces rings of very heterogeneous thickness, eccentric and with a high incidence of tension and traction wood. In fact, the wood with better technological characteristics is produced in the worse quality stations, where the growths are smaller.

The Azores Forestry Strategy, aimed at ensuring the management and management of forest resources, is based on the following strategic objectives:

1. Promote the certification of forest management, the valorization of forest products and their commercialization through the search of new markets;
2. Increasing the competitiveness of the forestry sector through the sustainable use of forest resources;
3. Encourage active forest management;
4. Streamline the multiple use of forests.

- **Participants list**

NOT AVAILABLE IN THE PUBLIC VERSION

- **Minutes of the Workshop**

Working Group with a specific topic for analysis to explore opportunities of circularity in the value chain of the roductive process of the cryptomeria.

- Due to the high number of entries, we subdivided the Working Group into 2, so that it was easier to manage the discussion of the group.
- Presentation of the SCREEN Project and on the Circular Economy – Fundo regional para a Ciência e Tecnologia (FRCT)

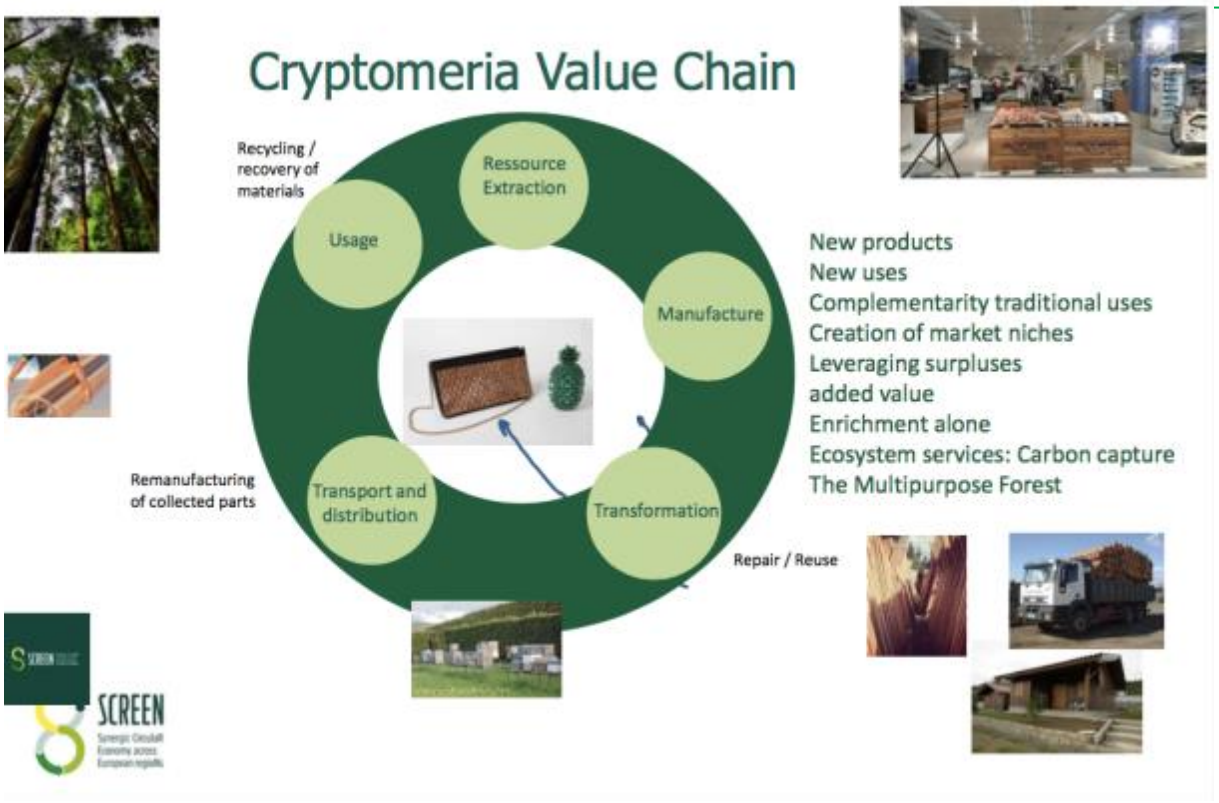
- Presentation of the Reference Value Chain of the Cryptomeria – Direção Regional dos Recursos Florestais (DRRF)
- Two challenges were posed :
  1o: Contributions for the survey of the Value Chain of the Cryptomeria 2o: Contributions to the circularity of the Value Chain of the Cryptomeri

- **Methodology**

- 2 Working groups with a topic oriented to explore opportunities for circularity in a concrete value chain.
- The selected Value Chain was the Cryptomeria in its production chain because of the growing economic importance to the Azores due to the high export potential and value added.
  - There was a small Presentation of the SCREEN Project and on the Circular Economy - Regional Fund for Science and Technology (FRCT)
- There was a small presentation of the Reference Value Chain of the Cryptomeria - Regional Directorate of Forest Resources (DRRF)
- 2 tables and 2 questions
- A Vision for the Value Chain
- Contributions to Circularity (Emerging Ideas)

- **Output**

According to the DRRF, we can subdivide the productive process into four levels:
1st - Preparation: Before planting, the land to be afforested are subject to a cleaning, depending on the type and the existing vegetation development status.
2nd – Plantation: Plantations are made from November to March, possibly until April.
3rd - Maintenance: In the first 2 years after planting, semiannual cleanings are carried out; in the next 3 to 4 years the cleanings are annual. The maintenance of the stands should be permanent.
4th - Cut: The stands are cut, the regulated minimum, at age 30. This period can be enlarged to ensure the production of larger diameters.



The developing opportunities are:

- Greater use of the product at regional level: public uses – urban furniture
- Reconversion of materials, substitution by cryptomeria
- Greater promotion in the internal and external market
- International positioning of the species by its uniqueness
- Harnessing regional dynamics in tourism
- Acoustic and physical characteristics of Madeira
- Traditional uses recovery
- Cycle of the species, genetic selection, nurseries
- Greater knowledge of the species
- Technology Transfer and Training, especially in the exploration phase

Emerging Ideas and Contributions

- Preservation of selected seeds of cryptomeria - Seed Bank;
- Use of surplus and by-products for energy production;
- Study on the thermal and acoustic characteristics of wood;
- Glasses, bicycles, road barriers, table games;
- Promotion of wood as a trademark of the Azores;
- To encourage the use of the cryptomeria in the coating of houses as it was used in the past;
- Urban Real Estate;
- Sell criptoméria tree;
- Participation of tourism in the plantation;
- Saunas;
- Caravans;
- Replace the wood use in the road guards by the cryptomeria;
- Selling shavings bags for Horses and others;

- Bathroom furniture line;
- Small vegetables and flower pots;
- Merchandising;
- Bags with remnants of carpentry (shavings, etc);
- Compound for plants;
- Aroma Box of the Azores;
- To promote the use of wood in the area of agriculture, livestock;
- Bonsai of criptoméria;
- Use of forest soils;
- Essential oil of the branches as an identifying mark of the Azores;
- Bio insecticides;
- Densification of wood for use on other surfaces
- Cup base, heat base;
- Essential oils in pesticides;
- Sobrantes - Energy recovery / Fertilizers;
- Public area signs;
- Use of Essential Oils for Pest Control Management; • Toys;
- Surplus-use in pedestrian resources;
- Pineapple Boxes;
- Use in interior / exterior aesthetics (footbridges, etc);
- Use of leftovers Compound / Biogas;
- Crafts;
- Introduce the cryptomeria in the tourism marketing of the Azores;
- Musical instruments.

12 Centro Region Local Workshop 1

- **General information**

Workshop title:

Defining interventions and road mapping: Pulp and paper

Objectives of the workshop:

Definition of a common vision for a more circular value chain and the setting of regional interventions to achieve this common goal.

Date and location of the workshop:

30.01.18, Celulosa Beira Industrial (CELBI), S.A. – Leirosa, Marinha das Ondas

Number of attendants:

14 participants

Project partner:

Centro

Workshop organisers:
Centro

- **Executive summary**

The sector of pulp and paper is represented in the region through a number of 131 companies and 3129 workers, a turnover of 1971 M€ and a gross value added of 440 M€ (data from INE – Statistics Portugal, 2015).

With the aim of contributing to the definition of a strategy for the transition to circular economy, as well as for the promotion of synergies across regions (in this case, among partners of SCREEN), CCDRC invited relevant stakeholders of the identified sectors to three meetings dedicated to each specific value chain.

The objective of the was, therefore, to define a common vision for a more circular value chain and to identify the necessary regional interventions to facilitate this aim.

- **Participants list**

	Name	Institution	Category of stakeholder
1	[redacted]	CELPA	Non-profit organization
2		CCDRC	Public administration
3		CCDRC	Public administration
4		RENOVA	Company
5		NAVIGATOR	Company
6		CCDRC	Public administration
7		ALTRI	Company
8		CELPA	Non-profit organization
9		EUROPAC	Company
10		EUROPAC	Company
11		CELPA	Non-profit organization
12		RENOVA	Company
13		CCDRC	Public administration
14		ALTRI	Company

- **Agenda**

Workshop "Defining interventions and road mapping"
Value chain: Pulp and paper

10h00	Registration of Participants and Welcome coffee
10h15	Brief introduction of the participants
10h50	Introduction of SCREEN and main objectives of the project
10h45	Objectives of the meeting and methodology for the workshop
11h00	Workshop
12h30	Conclusion and summary
13h00	End of meeting

- **Minutes of the Workshop**

Local Workshop with the Paper industry

For the meeting with the value chain of pulp and paper a working paper was previously sent describing the reasons for the selection of the sector and some of the purposes of the meeting, namely the main objectives and the adopted methodology.

Identification of the value chain:

CCDRC has been working in the identification of sectors and value chains relevant to Centro region of Portugal, considering their economic impact and circular potential. Aiming at the definition of a strategy for the transition to circular economy and the promotion of synergies among the regions that are partners of Horizon 2020 SCREEN project, CCDRC has identified the value chain of pulp and paper as one of the most strategic working areas.

This sector is relevant by its regional importance, namely at the level of employability – considering the number of companies (131) and workers (3129) -, and at the level of the turnover (1971 M€) and gross value (440 M€)[2].

Objective: Definition of a common vision for a more circular value chain and the setting of regional interventions to achieve this common goal.

[2] Data from INE – Statistics Portugal, 2015.

- **Methodology**

1. Approach to the sector – Discussion of the value chains in the sector that are relevant for the transition to Circular Economy;

2. Identification of the hotspots/barriers and constraints of the sector that prevents an effective transition;

3. Proposal of projects and ideas that may enable the closing of this kind of loophole.

The meeting was conducted by CCDRC and facilitated by CELPA – Association of the Paper Industry, and was structured according to the working document. After the introduction of all participants, CCDRC explained the main goals of project SCREEN and the objectives and methodology for the morning workshop. Two questions were in the table for discussion: First, the identification of the main barriers and constraints for adopting production methods that are more circular and second, what could be done to overcome these constraints and enable a more effective transition of the sector to the circular economy.

Since we were only 14 people with five of them belonging to CCDRC, we decided to make an open discussion with the entire group, giving the opportunity to everyone to talk. Therefore, each

participant contributed with his or her own perspective to the questions in debate, offering valuable inputs on this matter.

- **Output**

CELPA made a presentation[3] that summed up most of the obstacles and needs of the sector for making it more circular:

1. Major constraints, barriers, hotspots for the transition to Circular Economy

- Lack of regulation and flexibility in the promotion of by-products exchange;
- Process of classification of substances as by-products too slow;
- Final product originated from by-products perceived as having poor quality when compared with product originated from raw materials;
- Lack of partnership between companies and research centres for the development of new technology of processes and equipment;
- Lack of agreement on by-product characteristics established by legal entities;
- High cost of transportation between potential partners (due to their geographical location);
- Poor cooperation between partners for industrial symbiosis;
- Lack of technology, materials and processes to support the re-use of by-products;
- Uncertainty about the return on investment in industrial symbiosis plants;
- Uncertainty about the environmental gains originated from the industrial symbiosis;
- Lower cost of raw materials and natural resources when compared with recycled ones;
- Lack of organizational structure/culture to support industrial symbiosis implementation;
- Poor communication between client and supplier;
- Insufficient public/political pressure to implement circular strategies;
- Uncertainty of the by-products market;
- Lack of knowledge and other issues concerning the country culture to successfully support by-product recovery actions;
- High costs of by-products regulation;
- More involvement of industry on environmental matters is needed;
- Lack of human resources with circular economy skills;
- Lack of awareness of circular economy concept and industrial symbiosis;
- Consumer's behaviour needing change;
- Insufficient eco-design strategies.

2. Measures or solutions to overcome some of these obstacles

1. Promotion of partnerships between companies and research institutions for the development of new technology regarding processes and equipment;
2. Working closely with the national authorities in the processes of classification of by- products and in the end-of-waste status to break myths and erase fears;
3. Raising awareness and dissemination of the importance on by-products use in making new products with high quality;

4. Investing in renewable energy, namely in the use of forest biomass;
5. Increasing the environmental quality of the forest area for sustainable certification;
6. Investing in new equipment and in a better waste recovery;
7. Investing in new techniques and processes to improve the reuse of waste water;
8. Promoting cooperation and synergies among companies from the sector and inter- sector, potentiating industrial symbiosis.

Among other projects, CELPA is currently working with a University, in the development of a new subject related with circular economy to be part of one of their master's course. They have been collaborating with this institution through support and guidance to Master's students. In 2017, a Master's dissertation about circular economy in the Portuguese industry of pulp, paper and cardboard was completed.

13 Centro Region Local Workshop 2

- **General information**

Workshop title:

Defining interventions and road mapping: Ceramics

Objectives of the workshop:

Definition of a common vision for a more circular value chain and the setting of regional interventions to achieve this common goal.

Date and location of the workshop:

14.02.18, CTCV – Centro Tecnológico da Cerâmica e do Vidro, Eiras, Coimbra

Project partner:

Centro

Workshop organisers:

Centro

Number of attendants:

24 participants

- **Executive summary**

The sector of ceramics, namely the manufacture of ceramic materials for construction (e.g., brick, tile), fireproof dish, finishing works (floor construction, coating, sanitary products, etc.), as well as other products made of porcelain and ceramic, is represented in the region through a number of 513 companies and 13539 workers, a turnover of 876 M€ and a gross value added of 322 M€ (data from INE – Statistics Portugal, 2015); Detailed Report in Annex 14

With the aim of contributing to the definition of a strategy for the transition to circular economy, as well as for the promotion of synergies across regions (in this case, among partners of SCREEN), CCDRC invited relevant stakeholders of the identified sectors to three meetings dedicated to each specific value chain.

The objective of each meeting was, therefore, to define a common vision for a more circular value chain and to identify the necessary regional interventions to facilitate this aim.

- **Participants list**

Workshop "Defining interventions and road mapping"
Value chain: Ceramics
Date: 14.02.18
Location: CTCV – Centro Tecnológico da Cerâmica e do Vidro, Eiras, Coimbra

1	CCDRC	Public administration
2	APICER	Non-profit organization
3	CCDRC	Public administration
4	CCDRC	Public administration
5	CS – Coelho da Silva, S.A.	Company
6	CCDRC	Public administration
7	GRES PANARIA	Company
8	MOTA	Company
9	MOTA	Company
10	CTCV	Non-profit organization
11	SORGILA	Company
12	IPN	RTO
13	UMBELINO	Company
14	COSTA VERDE	Company
15	PRÉLIS	Company
16	SANITANA	Company
17	REVIGRÉS	Company
18	CCDRC	Public administration
19	SANINDUSA	Company
20	CTCV	Non-profit organization
21	PRÉLIS	Company
22	Cerâmica F. Santiago, S.A.	Company
23	Cluster Habitat Sustentável	Non-profit organization
24	CTCV	Non-profit organization

- **Agenda**

Workshop "Defining interventions and road mapping"
Value chain: Ceramics

09h00	Registration of Participants and Welcome coffee
09h15	Brief introduction of the participants
09h45	Introduction of SCREEN and main objectives of the project
10h00	Objectives of the meeting and methodology for the workshop
10h15	Workshop
11h00	Coffee break
11h15	Workshop
12h30	Conclusion and summary
13h00	End of meeting

- **Minutes of the Workshop**

Local Workshop with the Ceramics industry

For the meeting with the value chain of ceramics a working paper was previously sent describing the reasons for the selection of the sector and some of the purposes of the meeting, namely the main objectives and the adopted methodology.

This sector is relevant by its regional importance,(see Annex 14) namely at the level of employability – considering the number of companies (513) and workers (13539) -, and at the level of the turnover (876 M€) and gross value (322 M€).[7]

Objective: Definition of a common vision for a more circular value chain and the setting of regional interventions to achieve this common goal.

- **Methodology**

1. Approach to the sector – Discussion of the value chains in the sector that are relevant for the transition to Circular Economy;

2. Identification of the hotspots/barriers and constraints of the sector that prevents an effective transition;

3. Proposal of projects and ideas that may enable the closing of this kind of loophole

The meeting was conducted by CCDRC and facilitated by CTCV – Technological Centre for the Ceramics and Glass, and APICER – Portuguese Association of Ceramics and Glassware, and was structured according to the working document.

After the introduction of all participants, CCDRC explained the main goals of project SCREEN and the objectives and methodology for the workshop. Benefiting from the previous workshop with the pulp and paper value chain, we worked our initial questions into a set of thematic issues to be addressed in this workshop. Therefore, four questions were in the table for discussion:

- First, the identification of the major barriers and constraints for adopting production methods that are more circular, namely normative barriers or of another kind, and of the obstacles that are directly related to the development of new technologies;

- Second, what measures can be adopted to enable successfully the sector's transition to circular economy, namely which actors are important for this process, and if there is a need of (for?) specific funding mechanisms for circular economy;

- Third, what projects of circular economy can be promoted in the companies of this sector and with whom? (e.g. Universities, suppliers). Here we would like to learn about the best projects (developed or in development) regarding circular economy, and the identification of potential collaboration areas/sectors;

- Fourth, what kind of synergies can be established? Is there a possibility of cooperation between sectors, at a regional and/or national level? What are the areas where an international collaboration is welcome?

Since there were 19 participants (with five more from CCDRC) we divided the group into four small groups, assuring the participation of all. Therefore, each participant contributed with his or her own perspective to the questions in debate, offering valuable inputs for the discussion.

Close to the end of the workshop, each group presented in plenary their insights to the questions in discussion.

- **Output**

The main ideas as follow:

1. Major constraints, barriers, hotspots for the transition to Circular Economy:

- The concept of Circular Economy is not sufficiently disseminated in the sector and it is not culturally rooted and widespread in the market. This is a sector where one can find big companies with highly advanced technology and, at the same time, SMEs less advanced usually not so open to this new approach;
- Albeit the advantages offered to producers regarding low costs of materials, many companies are confronted with legal and bureaucratic issues in their attempt to be more circular;
- Uncertainty about secondary raw materials' level of quality and difficulty to determine exactly the level of impurity present in the materials or their adequacy for an high quality recycling;
- Necessity for the creation of quality's norms applicable to secondary raw materials or by-products;

2. Measures or solutions to overcome some of these obstacles:

- Promotion on the raising of awareness of people and companies about the concept and strategies of Circular Economy;
- Gathering and organization of data and technology by intervention area in a way that can be easily found;
- Promotion of more efficiency in symbiosis between different sectors and economic actors involved, in order that the waste of some industry can be used as raw material or resource in other sector, bearing in mind the excessive red tape in moving waste;
- Creation of information systems and training about waste, resources and products that can be recovered or recycled in order to extend product's life cycle and promote eco-innovation;
- Increasing of incentives and/or financial benefits to stimulate process efficiency and a more circular resource´s (re)use;
- Motivating society for a new life style, one that can be more collaborative and sustainable.

3. Promotion of circular economy projects in the ceramic's sector

The industry of ceramics has been over the years investing in innovation regarding the issue of circular economy, namely in the reuse of tiles and in the recycling of ceramic materials originated from construction and demolition waste.

In waste recovery, there has been an amount of trials for the incorporation of waste from different areas, such as the slush from the wastewater treatment plants, cellulose's waste, forest's waste and waste from the iron and steel industry, to name just a few. The aim is the incorporation of these different kinds of waste in the production of ceramic materials.

In addition, the use of their own by-products minimize the extraction of natural resources and eliminates storage waste, promoting circular economy.

Preventing waste production and promoting waste recovery, use and recycling with the aim of extending the life cycle and developing strategies for a circular economy are also governmental priorities in the waste management issue, as well as in ceramic's sector that has the ability to implement those strategies. Therefore, this is a sector with strong potential to incorporate and to inert waste, being this a growing practice in the country.

Besides developing a sustainable way out for the waste, it also opens a door to innovative products.

Some examples of circular economy projects already in course or in development:

- Incorporation of sludge from waste water treatment plants in the manufacture of ceramic materials;
- Incorporation of forest waste in the manufacture of ceramic materials;
- Incorporation of sludge from cellulose in the manufacture of bricks and ceramic
- materials;
- Incorporation of residues from fluorescent lamps in the manufacture of ceramic
- materials;
- Incorporation of recycled glass in the manufacture of ceramic materials;
- Residues from melting processes (metal and iron industry) transformed in new
- ceramic products;
- Re-use of waste from tannery processes into new ceramic products;
- Re-use of waste from the brewing industry into new ceramic products;
- Incorporation of sludge from car industry in the production of new ceramic products;

4. Synergies and cooperation between sectors

The ceramic's industry has the potential for making the production process more innovative and for recovering their own and other sector's waste and by-products, therefore promoting circular economy strategies and industrial symbiosis. In this process, it is important the cooperation between industry and the scientific and technological entities. Universities, research and technological centres have a crucial role on this. Working closely with the industry would beneficiate all involved in the conduction of research and circular strategies in the most diverse areas, such as:

- Studies about the incorporation of waste as raw material;
- Research on methods for reducing the energy consumption;
- Studies about enhancing the quality of products;
- Analysis of industrial parks to identify potential synergies at the micro level;
- Listing different types of waste found in the industrial parks;
- Mapping waste by typology, in a regional and national level, and matching it with
- data about potential users, finding solutions that entails less logistics and more direct routing;
- Studies for the recovering of 100% of water in the ceramic's processes;
- Creation of areas for sustainable industry – industrial eco-parks.

These projects can help reduce costs, avoiding the costs of landfill use and costs in companies with waste collection. Furthermore, it would help fuel the sector's transition to circular economy.

14 Centro Region Local Workshop 3

- **General information**

Workshop title:

Defining interventions and road mapping: Glass

Objectives of the workshop:

Definition of a common vision for a more circular value chain and the setting of regional interventions to achieve this common goal.

Date and location of the workshop:

02.03.18, CTCV – Centro Tecnológico da Cerâmica e do Vidro, Eiras, Coimbra

Number of attendants:

13 participants

Project partner: CENTRO Region

Workshop organisers: CENTRO REgion

- **Executive summary**

The sector of glass is represented in the region through a number of 126 companies and 2242 workers, a turnover of 296 M€ and a gross value added of 109 M€ (data from INE – Statistics Portugal, 2015).
With the aim of contributing to the definition of a strategy for the transition to circular economy, as well as for the promotion of synergies across regions (in this case, among partners of SCREEN), CCDRC invited relevant stakeholders of the identified sectors to three meetings dedicated to each specific value chain.
The objective of each meeting was, therefore, to define a common vision for a more circular value chain and to identify the necessary regional interventions to facilitate this aim.

- **Participants list**

Workshop "Defining interventions and road mapping"
Value chain: Glass
Date: 02.03.18
Location: CTCV – Centro Tecnológico da Cerâmica e do Vidro, Eiras, Coimbra

1	CCDRC	Public administration
2	CCDRC	Public administration
3	AIVE	Non-profit organization
4	VERALLIA	Company
5	GEO PACK SOLUTIONS/ MALTHA	Company
6	AIVE	Non-profit organization
7	FEVE	Non-profit organization
8	BA GLASS	Company
9	GALLO/ VIDRALA	Company
10	CCDRC	Public administration
11	CTCV	Non-profit organization
12	GALLO/SANTO BAROSA/VIDRALA	Company
13	BA GLASS	Company

- **Agenda**

Workshop "Defining interventions and road mapping"
Value chain: Glass

12h00	Registration of Participants and Welcome coffee
12h15	Brief introduction of the participants
12h30	Introduction of SCREEN and main objectives of the project
12h45	Objectives of the meeting and methodology for the workshop
13h00	Lunch and networking
14h00	Workshop
15h30	Conclusion and summary
16h00	End of meeting

- **Minutes of the Workshop**

For the meeting with the value chain of glass a working paper was previously sent describing the reasons for the selection of the sector and some of the purposes of the meeting, namely the main objective and the adopted methodology.

Working Document: Identification of the value chain:

CCDRC has been working in the identification of sectors and value chains relevant to Centro region of Portugal, considering their economic impact and circularity potential. Aiming the definition of a strategy for the transition to circular economy and the promotion of synergies among the regions that are partners of Horizon 2020 SCREEN project, CCDRC has identified the value chain of glass as one of the most strategic working areas.

This sector is relevant by its regional importance, namely at the level of employability – considering the number of companies (126) and workers (2242) -, and at the level of the turnover (296 M€) and gross value (109 M€).9

- **Methodology**

1 Approach to the sector – Discussion of the value chains in the sector that are relevant for the transition to Circular Economy;
2 Identification of the hotspots/barriers and constraints of the sector that prevents an effective transition;
3 Proposal of projects and ideas that may enable the closing of this kind of loophole.

In turn, the Association of Glass Packaging Industry (AIVE) sent us their proposal of questions and issues concerning their value chain, identifying the main constraints and hotspots for a transition to circular economy.

The meeting was conducted by CCDRC and facilitated by AIVE and CTCV – Technological Centre for the Ceramics and Glass, and was structured according to the working document sent by AIVE on which they had been working, added by the main questions formulated in the working document created by CCDRC.
After the introduction of all participants, CCDRC explained the main goals of project SCREEN and the objectives and methodology for the workshop. Two key issues were in the table for discussion:

1. **What are the barriers/obstacles/hotspots for the transition to circular economy, taking into account**:

1. a) Energy and Natural resources;
2. b) Eco-design;
3. c) Production and distribution;
4. d) Consumption;
5. e) Waste recycling.

2. **Some contributions of the glass packaging industry to Circular Economy**.

Since there were 10 participants (plus 3 from CCDRC) we chose not to divide the group assuring the participation of all. Therefore, each participant contributed with his or her own perspective to the questions in debate, offering valuable inputs for the discussion.

Close to the end of the workshop, we summarized the ideas as follow:

- **Output**

1. *Major constraints, barriers, hotspots for the transition to Circular Economy:*

- **Great amount of energy and water consumed and lack of technology to prevent this consumption**

In the production of glass packaging, a great deal of water and energy is consumed. The two most used types of energy are electricity and (mainly) natural gas. Although it is possible to obtain electricity from renewable sources there is not, in Portugal, any large hoven, adequate to glass packaging, capable of operating with electricity (big ovens only operate with natural gas).

- **Low percentage on the use of recycled and recyclable materials**

The glass sector exports 80% of its production. Materials that can be recycled/reused for new glass products are, therefore, lost.

- **Limited use of by-products in the production of glass**

This happens because of strict regulations that prevents any effort to invest more in this area.

- **Limited market for raw materials coming from sustainable sources**

There is not always, in the market, many alternative sustainable sources to include in the global production of glass materials.

- **Practice of eco-design**

Still an infrequent practice

- **Enhancement of product**

This could be achieved through the eco-design of the product. For instances, the average weight of the glass packaging has not changed for the last five years. Reducing it could bring major benefits to the sector and raise the percentage of recycled glass. 2. Measures or solutions to overcome some of these obstacles:

Energy and Natural resources

- Lowering prices of electricity (even the electricity obtained from renewable sources); - Fostering use of renewable sources;
- Funding projects of R&D on the use of energy from renewable sources;
- Supporting the investment in technology that allows the use of renewable sources.

Eco-design

- Adding value to the final product through eco-design;
- Designing a package having in mind its extended life through durability, reusability/recyclability.

Production and distribution

- Increase and dissemination of good practices (e.g. generalizing the labelling of “environmentally friendly” in glass packaging);
- Investing in the development and commercialization of new alternatives for glass packaging.

Consumption

- Raising awareness among consumers to buy environmentally friendly packages;
- Creating markets to foster demand on secondary raw materials;
- Development of public policies to support a more sustainable market (e.g. promotion of green public procurement);
- Raising awareness among consumers to promote circular market demand.
- Dissemination of circular economy concept.

Waste recycling

- Funding opportunities for circular economy projects;
- Increasing the percentage on the use of recycled and recyclable materials;
- Investing in studies and research about incorporation of by-products in new glass products;
- Reducing bureaucracy, red tape and costs associated to current regulations on the incorporation of by-products;
- Investing in more glass recycling bins addressing different kinds of glass (e.g. by colour);
- Increasing awareness of the consumers for glass separation/recycling sorted by colour.

3. Synergies and cooperation:

- Cooperation between international companies that are clients of the glass packaging industry to allow that glass containers produced in Portugal can be reused and recovered in other EU member-states (and vice versa);
  - Collaboration with Universities and R&D centres to develop new projects and solutions;
- Inter-sectorial cooperation for the creation of platforms/networks that gather information on waste and technology that supports the recovery of by-products sorted by sector/intervention area, publically available;
- Promotion of synergies between sectors and economic actors to facilitate the incorporation or use/reuse of by-products as inputs;
- Investing in training and data systems about waste, resources and materials that can be recovered or recycled to extend the life cycle of products and promote eco-innovation;
  - Raising the number of studies and research projects to promote the transition of this sector to circular economy, like studies or research:

    a. On the incorporation of by-products as raw material;
    b. On methods for reducing energy consumption;
    c. On the enhancement of product's quality;
    d. About applying other industries processes in the glass industry;
    e. On industrial symbiosis at a micro level, (e.g. eco-industrial parks);
    f. On mapping the kind of waste generated in each industrial park;
    g. On mapping the produced waste by its typology, at a local/regional and national level, in order to match potential re-users and find solutions that bring less logistic and more direct re-routing;
    h. On the total recovery of water used;
    i. About the creation of sustainable industrial areas (e.g. eco-industrial parks).

In the end of the workshop, all participants agreed about the importance of promoting such meetings and showed interest in following SCREEN project's results and recommendations.

- ## General Methodology adopted for the 3 workshops

  Although all sectors have been already implementing several work methodologies to facilitate the transition to circular economy, they provided some inputs regarding the main

obstacles for getting their value chain more circular, as well as a set of measures that can improve this process.

One of the main conclusions was that several of the identified obstacles and proposed measures to overcome these were common to the three value chains, which makes them central to an agenda for the transition to a circular economy.

This was the case with barriers and possible solutions related with:

Legal and regulation issues concerning by-products

There is overall a lack of regulation or a too strict regulation to promote the use of by-products, and an excessive bureaucracy in the process, that altogether discourages companies attempt to be more circular. It was also reported that the process concerning by-products regulation has a high cost, contributing therefore as a major barrier to promote the reuse of by-products.

The solution proposed to overcome these problems is to work closely with the national authorities in the process of declassification of by-products and in the end of waste's status, enabling more and better circular economy's practices among companies. The bureaucracy, red tape and costs associated to current regulation must be reduced.

Distrust on the quality of the final product originated from by-products or uncertainty about the level of quality of secondary raw materials

It appears to be, among the consumers – and even among certain producers –, the perception that the product manufactured from secondary raw material has a poorer quality than another product made from natural resources. Connected to this is the uncertainty about secondary raw materials level of quality and the difficulty to determine the exact level of impurity present in the materials or even their adequacy for a high quality recycling.

The proposed solutions concern the raising of awareness of the public regarding circular economy concept and practices, investment in studies and research about the reuse of by-products to produce new materials or products, sharing good practices (e.g. generalizing the labelling of "environmentally friendly"), and examples of high quality products made with secondary raw materials.

Insufficient collaboration between companies and research centres for the development of new technology, new equipment and new circular processes

Albeit there is some cooperation between industry and research entities, the consensus is that it is not sufficient. Therefore, it is of paramount importance the promotion of more collaboration and synergies between companies and research centres. This could lead to the improvement of methods, technology and equipment based on studies that actually meet the companies' needs for circular economy actions and strategies. Related to this is also the need for more financing for circular economy projects.

Lack of technology, materials and processes to support the reuse of by-products and to prevent the amount of energy and water consumed in the production phase

The increase of investment in new technology and new processes to support the recovery and added value of by-products can be the solution to overcome some of the barriers that companies identified for an effective transition to circular economy. In the value chain of glass packaging, for instances, there is a lack of technology that can prevent their massive consumption of water and energy in the production process. Another important obstacle is the availability of materials to reuse. For example, in the value chain of glass packaging, there aren´t enough materials that can be recycled and/or reused, not only because of the sector's high exportation rate but also because of the country's low ratio in terms of glass recycling. One of the proposed solutions, beyond raising awareness among consumers for glass separating/recycling sorted by colours, is the investment in more recycling bins or in more collection systems (e.g. collecting door to door, "pay as you throw") to prevent the loss of secondary raw materials. Another possible solution is the promotion of international cooperation that can support the recovery of material to reuse from the exported material. International/inter-regional cooperation is also seen as a measure that can help overcome many of the identified obstacles, and one of the conclusions that was common to all value chains was the openness of the industry to inter regional cooperation.

Insufficient cooperation between inter-sectorial partners to promote industrial symbiosis solutions

It is not only the international collaboration that is insufficient when it comes to the barriers for an effective transition to circular economy. There is also low cooperation between inter-sectorial partners preventing any attempt to promote industrial symbiosis solutions. As a consequence, all the benefits derived from this kind of cooperation (reducing carbon emissions, recovering waste and using it as raw material or resource in other sector, ending with the red tape in moving waste, reducing energy and water consumption, etc.), are not being used.

Lower costs of raw materials and natural resources when compared with recycled ones

The proposed solution to overcome this obstacle is fostering demand on secondary raw materials through the raising of awareness of the public, promoting market demand and public policies that can support the creation of sustainable markets, for instances, through the promotion of green/circular public procurement. The increase of incentives and/or financial benefits is seen, also, as an important measure to stimulate a more circular resource use.

Insufficient eco-design practice

The eco-design of a given product enables its extended life, adding value to it and assuring its durability, reusability and/or recyclability. Therefore, increasing and promoting eco- design practice is crucial to the implementation of circular economy in any value chain. It helps

support the enhancement of products, fostering less waste and avoiding excessive consumption of natural resources. It can also enable the emergence of new business models.

Lack of awareness among consumers and insufficient dissemination of circular economy's concept

According to all stakeholders this is a major barrier because it can be connected directly and indirectly with most obstacles and solutions indicated so far.

Changing the behaviour of consumers, motivating people to adopt a more sustainable, circular life style is key to overcome many of the problems signalled to prevent an effective transition to circular economy. This implies the adoption of the transition to a circular economy as central in all public policy, the dissemination of its objectives and necessary actions, and the rising of public's awareness on why circular economy matters.

Besides these common conclusions there were specific issues raised related with each value chain that show the main points on the barriers and possible solutions to an effective transition to circular economy. These main conclusions discussed in each value chain meeting are included in the present report, in chapter 4.

- General Output of the 3 workshops

Although all sectors have been already implementing several work methodologies to facilitate the transition to circular economy, they provided some inputs regarding the main obstacles for getting their value chain more circular, as well as a set of measures that can improve this process.

One of the main conclusions was that several of the identified obstacles and proposed measures to overcome these were common to the three value chains, which makes them central to an agenda for the transition to a circular economy.

This was the case with barriers and possible solutions related with:

Legal and regulation issues concerning by-products

There is overall a lack of regulation or a too strict regulation to promote the use of by-products, and an excessive bureaucracy in the process, that altogether discourages companies attempt to be more circular. It was also reported that the process concerning by-products regulation has a high cost, contributing therefore as a major barrier to promote the reuse of by-products.

The solution proposed to overcome these problems is to work closely with the national authorities in the process of declassification of by-products and in the end of waste's status,

enabling more and better circular economy's practices among companies. The bureaucracy, red tape and costs associated to current regulation must be reduced.

Distrust on the quality of the final product originated from by-products or uncertainty about the level of quality of secondary raw materials

It appears to be, among the consumers – and even among certain producers –, the perception that the product manufactured from secondary raw material has a poorer quality than another product made from natural resources. Connected to this is the uncertainty about secondary raw materials level of quality and the difficulty to determine the exact level of impurity present in the materials or even their adequacy for a high quality recycling.

The proposed solutions concern the raising of awareness of the public regarding circular economy concept and practices, investment in studies and research about the reuse of by-products to produce new materials or products, sharing good practices (e.g. generalizing the labelling of "environmentally friendly"), and examples of high quality products made with secondary raw materials.

Insufficient collaboration between companies and research centres for the development of new technology, new equipment and new circular processes

Albeit there is some cooperation between industry and research entities, the consensus is that it is not sufficient. Therefore, it is of paramount importance the promotion of more collaboration and synergies between companies and research centres. This could lead to the improvement of methods, technology and equipment based on studies that actually meet the companies' needs for circular economy actions and strategies. Related to this is also the need for more financing for circular economy projects.

Lack of technology, materials and processes to support the reuse of by-products and to prevent the amount of energy and water consumed in the production phase

The increase of investment in new technology and new processes to support the recovery and added value of by-products can be the solution to overcome some of the barriers that companies identified for an effective transition to circular economy. In the value chain of glass packaging, for instances, there is a lack of technology that can prevent their massive consumption of water and energy in the production process. Another important obstacle is the availability of materials to reuse. For example, in the value chain of glass packaging, there aren´t enough materials that can be recycled and/or reused, not only because of the sector's high exportation rate but also because of the country's low ratio in terms of glass recycling. One of the proposed solutions, beyond raising awareness among consumers for glass separating/recycling sorted by colours, is the investment in more recycling bins or in more collection systems (e.g. collecting door to door, "pay as you throw") to prevent the loss of secondary raw materials. Another possible solution is the promotion of international cooperation that can support the recovery of material to reuse from the exported material. International/inter-regional cooperation is also seen as a measure that can help overcome

many of the identified obstacles, and one of the conclusions that was common to all value chains was the openness of the industry to inter regional cooperation.

Insufficient cooperation between inter-sectorial partners to promote industrial symbiosis solutions

It is not only the international collaboration that is insufficient when it comes to the barriers for an effective transition to circular economy. There is also low cooperation between inter-sectorial partners preventing any attempt to promote industrial symbiosis solutions. As a consequence, all the benefits derived from this kind of cooperation (reducing carbon emissions, recovering waste and using it as raw material or resource in other sector, ending with the red tape in moving waste, reducing energy and water consumption, etc.), are not being used.

Lower costs of raw materials and natural resources when compared with recycled ones

The proposed solution to overcome this obstacle is fostering demand on secondary raw materials through the raising of awareness of the public, promoting market demand and public policies that can support the creation of sustainable markets, for instances, through the promotion of green/circular public procurement. The increase of incentives and/or financial benefits is seen, also, as an important measure to stimulate a more circular resource use.

Insufficient eco-design practice

The eco-design of a given product enables its extended life, adding value to it and assuring its durability, reusability and/or recyclability. Therefore, increasing and promoting eco- design practice is crucial to the implementation of circular economy in any value chain. It helps support the enhancement of products, fostering less waste and avoiding excessive consumption of natural resources. It can also enable the emergence of new business models.

Lack of awareness among consumers and insufficient dissemination of circular economy's concept

According to all stakeholders this is a major barrier because it can be connected directly and indirectly with most obstacles and solutions indicated so far.

Changing the behaviour of consumers, motivating people to adopt a more sustainable, circular life style is key to overcome many of the problems signalled to prevent an effective transition to circular economy. This implies the adoption of the transition to a circular economy as central in all public policy, the dissemination of its objectives and necessary actions, and the rising of public's awareness on why circular economy matters.

Besides these common conclusions there were specific issues raised related with each value chain that show the main points on the barriers and possible solutions to an effective transition to circular economy.

15 Extremadura Region

- **General information**

Workshop title:

PROJECT SCREEN - LOCAL WORKSHOP

Objectives of the workshop:

- Present SCREEN Project main output to the regional stakeholders
- Build a representative regional value chain
- Create a Roadmap for making more circular this value chain

Date and location of the workshop:

Mérida, July, 5th 2018

Number of attendants:

14 participants

Project partner: EXTREMADURA

Workshop organisers:
Junta De Extremadura – Dirección General De Medio Ambiente

- **Executive summary**

There were two main objectives for the Local Workshop developed In Extremadura. On the one hand to expose different relevant information about Circular Economy framework in Extremadura specially both "Estrategia de economía verde y circular Extremadura 2030" which is highly relevant in the region, and the main results of Screen Project. On the other hand, the objective proposed was also to generate a common discussion and debate about one or two representative value chains in Extremadura and which measures it's necessary to take in the future in order to make more circular those value chains. Finally, due to time limitations we had to select a value chain, in this case water resources sector.

In order to optimize the results, the organization chose a small group (10-15 people) of representative stakeholders located in the region. The development of the workshops was successful, and the feedback received by the stakeholders was excellent.

The methodology used for the organization was described in the deliverable D3.1 Report on Synergies with minor modifications. A facilitator was designed to coordinate the workshop. He exposed a draft of one representative value chain in Extremadura and this chain was completed by the stakeholders identifying hotspots and leverage points. In the next step the facilitator invited the stakeholders to expose some measures/ideas in order to make the chain more circular. The

measures/ideas proposed were classified and assessed with the purpose of create a feasible Road map to Circular Economy by 2030. Finally, the facilitator acted as rapporteur at the end of the discussion session.

A lot of conclusions were adopted at the end of the event, but we agreed that the main one was circular cconomy must be a priority in the next years and decades in order to ensure the future sustainable development.

- **Participants list**

Name	Organization/company/Institution	Category
	Complus Ambiental S.L.	Company
	Sociedad de Gestion Pública Extremadura SAU	Public company
	Junta de Extremadura	Public administration
	Sociedad de Gestion Pública Extremadura SAU	Company
	Interlun	Company
	AGENEX	Public company
	CICYTEX	Public administration
	Junta de Extremadura	Public administration
	Sociedad de Gestion Pública Extremadura SAU	Company
	ENCE Energía	Company
	Junta de Extremadura	Public administration
	PROMEDIO	Public company
	Ayuntamiento Miajadas	Public administration
	GESPESA	Public company

- **Agenda**

09:30 - 10:00 Welcome and registration.

10:00 – 10:30 Estrategia de economía verde y circular Extremadura 2030.

Mr. Santos Jorna Escobero (Local Action Coordinator).

10:30 - 11:00 Project SCREEN H2020 main outputs.

Mrs. Isabel de Vega Fernández (Environment Sustainability Section chief).

----------COFEE BREAK----------

11:30 - 12:00 Building value chains. Examples of regional value chains.

12:00 - 12:30 Circular Economy – 7 Pillars vision.

12:30 - 13:00 Storm braining "makes value chain more circular"

13:00 - 13:30 Road mapping to Circular Economy 2030

13:30 - 14:00 Sharing outcomes

13:30 - 14:00 Networking lunch

- **Minutes of the Workshop**

Firstly, a round of assistants' presentation was led by the facilitator. All stakeholders exposed who they were and the role in circular economy they had. In a second step the facilitator comments workshop development foresees, the parts and what was expected of each one.

Then Mr. Santos Jorna Escobero made a presentation about "Estrategia de economía verde y circular Extremadura 2030" which is highly relevant in the region. According the presentation the participants initiate some early debates, including one specially interesting about water reuse.

Afterward Mrs. Isabel de Vega Fernández presents SCREEN Project to stakeholders. Main of them already know about it and collaborated with Junta de Extremadura in the past. Anyway, we considered important focus on some specially interesting concepts of SCREEN: common pot, assessment criteria, questionnaire results and the current and future deliverables. According with the matter SCREENPLAY was presented as a future collaboration with the stakeholders. The creation of an operational stakeholders' group was considered.

After this part of the workshop a coffee break was made.

The second part started choosing a generic regional value chain to work with between two proposed by the coordinator: water resources and agri-food sector. The selected was finally the first one. As a first step the coordinator exposed a generic value chain according with the structure showed in the deliverable D3.1.

Subsequently thanks to the knowledge and experience of all of the stakeholders the original value chain proposed was enhanced and a more representative to real water resources sector value chain was established.

The following step was to identify hotspot and leverage points in the value chain. After some debate the group conclude the following:

• Main Hotspots:

- Waterleaks
- Sewage sludge quality and properties o Lack of environmental awareness
- Lack of awareness about real cost

• Main Leverage point:

- Real and effective Green Public Procurement.

In the end of the workshop the objective was to establish and classify several measures in order to make the current value chain more circular. The next table shows a summary of the result reached.

Measure	State of art	Return	¿transferable to other regions?	Horizon	Responsible
Installation of Water meters in crops	Mature	Financial Ecological Social	yes	Short-term	National/regional authority
Real costs information to the citizen	Mature	Financial Ecological Social	yes	Medium-term	Water managers
Sewage sludge better management	Pilot	Ecological	yes	Long-term	Sewage sludge managers with authorities' support
Reduce water leaks	Mature	Ecological	-	Long-term	Water managers
Centralized technical assistance in water treatments for local authorities	Plan	Ecological Social	-	Medium	National/regional authority

- **Methodology**

In general, the Local Workshop has been developed using the methodology depicted in Deliverable 3.1 - Report on Synergies. Concretely the information relative to STEP 4: DEFINING INTERVENTIONS AND ROAD MAPPING - STEP 4.1: WORKSHOP.

The Workshop has been separated in two different parts. The first one consists on exposing different relevant information about Circular Economy framework in Extremadura exposing "Estrategia de economía verde y circular Extremadura 2030" which is highly relevant in the region. Likewise, Screen Project was exposed to the stakeholders.

The second part of the workshop was designed as a common discussion and debate about one or two representative value chains in Extremadura. All the process was developed with one single group guided by a person with relationship with SCREEN Project. This facilitator exposed a draft of one representative value chain in Extremadura and this chain was completed by the stakeholders identifying hotspots and leverage points. In the next step facilitator will invite the stakeholders to expose some measures/ideas in order to make the chain more circular. The measures/ideas

proposed will be classify and assessed with the purpose of create a feasible Road map to Circular Economy by 2030. The facilitator will act as rapporteur at the end of the discussion session.

- **Output**

The main output achieved in the workshop could be summarized:

- The circular economy must be a new paradigm, it is not a simple patch
- There are big possibilities to make current value chains more circular, a specific case is water resource sector.
- There are multiple hotspots in the value chain that must be rectified
- Most of the measures defined to make value chain more circular needs an active political will: i.e. Green Public Procurement
- Some of the measures has a minimal cost: i.e. Real costs information to the citizen
- Circular Economy must be a priority in the next years and decades in order to ensure the future sustainable development.

16 Tampere Region: Local Workshop 1

- **General information**

Workshop title:

ECO3 – Circular Economy Center/Eco- Industrial Park in Tampere Region

Objectives of the workshop: Discussions on the international collaboration found also some ideas for potential cross-regional synergies.

Date and location of the workshop:

23rd of May 2017, Council of Tampere Region, Kokouskeskus Pellava, Kelloportinkatu 1 B

Number of attendants:

6 participants

Project partner: Tampere

Workshop organisers: Tampere

- **Executive summary**

This document reports the proceedings of the local workshops, held in Tampere Region. In total 4 workshops were organized in the Region between May and August 2017 as part of H2020 SCREEN projects local regional actions. The initial results of the local workshops were released already in the SCREEN projects deliverable D3.1. Report on synergies. The target for organizing the workshops follow the project guidelines provided in the SCREEN projects Description of Action (Annex 1 part A). The primary goal for the workshops from the regional perspective was to engage local stakeholders to the circular economy actions. The goals for the results of the workshops was to 1) identify different regional stakeholders within the chosen theme's value chain, 2) identify business opportunities within the value chain, 3) identify challenges and open items within the value chain and innovation actions within, 4) identify relevant areas of development and possible next actions towards circular economy goals.

Descriptions of methodology Methodology and Outputs are grouped in the results of Workshop 4.

- **Participants list**

Workshop: ECO3 – Circular Economy Center/Eco-Industrial Park in Tampere Region, 23rd of May 2017

Nbr	Organization	Name	Stakeholder category
1	Council of Tampere Region	Nillo Halonen	Public administration
2	Council of Tampere Region	Johanna Alakerttula	Public administration
3	Verte Oy	Sakari Ermala	Companies
4	Tampere University of Technology	Marko Seppänen	R&D
5	Tampere University of Technology	Jukka Rintala	R&D
6	- not published based on the informed consent form	- not published based on the informed consent form	Companies

Discussions on the international collaboration found also some ideas for potential cross-regional synergies. Experience exchange and network support from other similar ecosystems trying to promote the use of side streams, and recycled materials were seen supportive for the development of ECO3. International network partners could exchange contacts for potential new companies in the area or to support the identification of new materials to ECO3 processes. Also best practices exchange were seen as an opportunity.

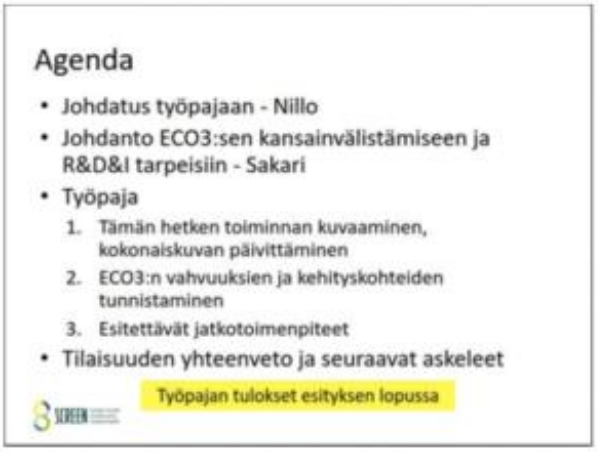
As a conclusion from the interactive work shop, ECO3 is seen as strategically important area, which at the same time seem to be bringing a lot of visibility to circular economy in the region in general. A possible vision for the region is that EIP areas such as ECO3 for Tampere Region can facilitate the development of circular economy solutions especially by providing an area and a network for especially piloting and demonstrating new technologies. An interesting contribution for other regions within national context and on European level is that how to replicate such circular economy centers and network cross-regional activities to facilitate the development towards circular economy European wide.

- **Agenda**

Workshop: ECO3 – Circular Economy Center/Eco-Industrial Park in Tampere Region, 23rd of May 2017

Agenda

- Introduction and welcome, coffee
- Introduction to ECO3 –eco-industrial park – EC03 representative
- Interactive work shop
  - Description of current situation
  - Identification of strengths and areas of development
  - Ideas for interventions
- Wrap up



- **Minutes of the Workshop**

Workshop: ECO3 – Circular Economy Center/Eco-Industrial Park in Tampere Region, 23rd of May 2017

Nillo Halonen welcomes all the participants to the workshop. He presents the SCREEN-project and goes through the goal and structure for the workshop.

After this Sakari Ermala makes an introduction to the ECO3- eco-industrial park (EIP) including its most topical needs in relation to research, development and innovation as well as internationalisation. In general, ECO3 is nationally well known industrial scale circular economy center in Finland. There exist several established companies in the EIP area and investments exceed 60 million euros. ECO3 is also mentioned as part of the national circular economy roadmap described by Sitra. Park has grown rapidly and there exists several different areas for growth. There is also a rising need for internationalisation. This work shop is a possibility to capture some of the opportunities for looking into these internationalisation options.

After Sakari Ermala's introduction the discussion was lead to the interactive work shop session. Nillo Halonen explains the goals and the steps and has prepared an initial value chain model to be used as support for discussion and inputs. The initial value chain model presents ECO3 –eco-industrial parks current situation. Participants gather around the printed value chain and moderated discussion begins. All of the participants are familiar with each other, so no personal introductions were made.

The first step was to extend the identified value chains with potential areas of growth and areas of gaps. During the discussion several ideas were captured. Participants gave their inputs in form of post its. The results are given in Table 1. The results are grouped into different material cycles, which are examined separately although different cycles can be cross-connected.

The ideas for potential areas of growth and gaps were found within nutrient cycles, blue economy, energy, technical material cycles and wood cycle. In general, participants agreed that there are many directions for potential growth in the area. Also discussions covered thoughts on ECO3 platform development. In its current status, the EIP as an area is still searching for new businesses to be established physically to the area. In addition, there are thoughts on the platform services and shared projects that might interest the ECO3 network companies. Also some thoughts were given to the phase of ECO3 development when the area is ready. For example topical ideas to think about are how to make ECO3 as a replicable product or a full house service for bio material and technical material cycles.

Table 1. Identified areas of opportunities and areas of development in ECO3 eco-industrial park.

	Opportunities	**Area of development**
Nutrient cycles	Introduction of new food industry stakeholders and materials to eco- industrial park's material flows	Collaboration and R&D with brewery companies and bakeries. Utilisation of their sidestreams
	Capability to process any biomaterial with available infrastructure	Finding new biomaterials to process. New stakeholders to collaborate with.
		Developing ECO3 -shared capacity marketing. ECO3 biomaterial processing as a combination of capacities of different companies.
		Development of business models to the ECO3-level biomaterial processing
	Ethanol-gas integration to be a natural next step to the biogas plant.	R&D collaboration to look into technology and business opportunities in ethanol-gas
	New products from biowaste	R&D development for separation technologies, processing technologies and material development.
	More value added from sludge	Development of recovery of phosphorus from sludge
		Development and introduction of separation technologies for different materials from sludge
		Development for recovery of nytrogen from sludge
Blue economy	Fish production side streams to utilise	Introduction of fish production to the area.
	Alga production	Introduction of Alga production pilots to the area.

	Developing the water and waste water infrastructure	Development projects for finding new opportunities for resources from water. Piloting new technologies.
Technical cycles	Area of growth to cover technical cycles such as plastics, ceramics, metals etc.	Introduction of building's demolition waste and their treatment technologies
		Reuse of materials in soil - technology development for higher value added
		Development of plastics recycling pilots in the area.
Wood cycles	New wood based products	R&D collaboration with local research centers and universities and industry collaboration with local forestry companies to develop and pilot new wood based products
ECO3 Platform Development	Development of piloting support	development of shared services on demand for the ECO3 network
	Finding new synergies from the existing ecosystem	Planning crossing projects between the companies in the ecosystem on synergies
	ECO3 as a full house service for bio and technical material cycles	Marketplace for side streams
		Development and marketing of shared products between companies. Requires the development of business models.

- **Methodology**

See Methodology in Local Workshop 4

- **Output**

See Output in Local Workshop 4

17 Tampere Region: Local Workshop 2

- **General information**

Workshop title:

Smart Packaging

Objectives of the workshop: Discussion on the smart packaging initiatives related to the circular economy

Date and location of the workshop:

9th of June 2017, Tampere University of Technology, Laboratory of Mechanical Engineering and Industrial Systems

Number of attendants:

11 participants

Project partner:

Tampere

Workshop organisers:
Tampere

- **Executive summary**

During the workshop, local capabilities in the region especially within RDI context were identified covering different areas of smart packaging value chains. Region possesses multi technology research and product development, know how and strong industry. Participants identified that in Tampere Region local strengths are especially in rich resources for raw materials, namely forests and water. Region is logistically well positioned in Finland, innovation environment is active. From the cross sectoral collaboration point it is seen also important that in Tampere Region there are several growing software companies and long history in ICT such as Nokia. Finally, the group concluded that the attitude towards smart packaging in general is highly positive. This means that business, public, research and consumers anticipate potential from it and expect WIN-WIN situation for the region both economically and environmentally.

- **Participants list**

Workshop: Smart Packaging, 9th of June 2017

Nbr	Organization	Name	Stakeholder category
1	Council of Tampere Region	Nillo Halonen	Public administration
2	Council of Tampere Region	Johanna Alakerttula	Public administration
3	- not published based on the informed consent form	- not published based on the informed consent form	R&D
4	Tampere University of Technology	Tomas Björkqvist	R&D
5	- not published based on the informed consent form	- not published based on the informed consent form	R&D
6	Tampere University of Technology	Tero Juuti	R&D
7	Tampere University of Technology	Jukka Rintala	R&D
8	Tampere University of Technology	Markus Pöllänen	R&D
9	- not published based on the informed consent form	- not published based on the informed consent form	R&D
10	- not published based on the informed consent form	- not published based on the informed consent form	R&D
11	- not published based on the informed consent form	- not published based on the informed consent form	R&D

- **Agenda**

Workshop: Smart Packaging, 9th of June 2017

Agenda

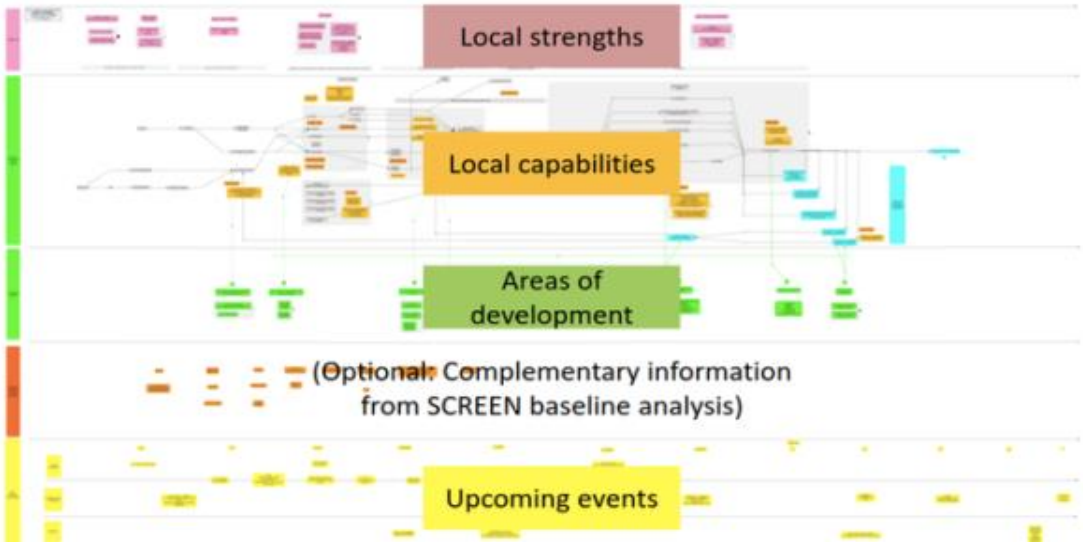
- Introduction and welcome, coffee
- Introduction to theme – researcher from Tampere University of Technology
- Interactive work shop
  - Introductions of participants
  - Identification of local strengts and areas of development
  - Recommendations for next actions
- Wrap up

- **Minutes of the Workshop**

Nillo Halonen welcomes all the participants to the workshop. He presents the SCREEN-project and goes through the goal and structure for the workshop. Johanna Alakerttula presents some of the current circular economy innovation policy activities in Tampere Region and introduces the upcoming ERDF funding opportunities.
After this representer of packaging research group (name not published according to consent form) makes an introduction to the smart packaging solutions making an overview of the most latest topics discussed and what kind of activities presenter and his/her research group has been doing around the topic. The presenter characterises the topic under broader theme of smart biobased solutions as the ideas can be applied to many other field, although packaging being a very part of it. According to presenter, biobased solutions can address many of the current challenges in the economies and enable fully biodegradable, hydrophilic and non-toxic products. Presenter raised some of the focus points of his/her research group of paper converting and packaging technology. The group educates university students and makes research on paper, paperboard and polymer processing. The primary materials applied are wood-, fibre- and plastic-based. Lahti explains some of the challenges of current packaging solutions being coating and surface treatment in general.

After this the interactive session begins. Nillo Halonen explains shortly the structure for the session and the group gathers around a prepared poster that illustrates already identified capabilities within the theme context. The poster is filled with inputs using post its during the session. Figure 2 illustrates the structure of the poster that was followed. The working order in the session was to look in the smart packaging context local capabilities, then identify local strengths, areas of development and finally look into next steps and upcoming events. First, each one introduces himself or herself and attaches their research topics and other related activities (past and present) and networks to the

local capabilities. All of the participants were representing research centers and universities, therefore the outputs focused mainly in research, development and innovation topics.



Structure of the outputs gathered from smart packaging work shop.

During the session, local capabilities in the region especially within RDI context were identified covering different areas of smart packaging value chains. Region possesses multi technology research and product development, know how and strong industry. Participants identified that in Tampere Region local strengths are especially in rich resources for raw materials, namely forests and water. Region is logistically well positioned in Finland, innovation environment is active. From the cross sectoral collaboration point it is seen also important that in Tampere Region there are several growing software companies and long history in ICT such as Nokia. Finally, the group concluded that the attitude towards smart packaging in general is highly positive. This means that business, public, research and consumers anticipate potential from it and expect WIN-WIN situation for the region both economically and environmentally.

The session moved on to identify areas of development within smart packaging context. At this point, participants agreed that the focus would be extended to smart biobased solutions. The group identified a comprehensive list of areas of development to be adressed summarised in table 3.

Value chain position	Area of development	Description
b. Primary Material Processing	Exploitation of different biomasses as packaging material	development of new raw materials, for example biowaste, sludge, CO2, development for Use of sidestreams
	New value and high value added products from biomass	Identifying wew ways to utilise "Forest", Development of Bio-based electronics
c. Production	Smartness from bio-based materials	Incentive support to use more from available materials, development of easier reusability/ recyclability in packaging, tackling Electronics Everywhere challenge

	Applications from new production methods	Development of Digital printing, digital fabrication
d. Packaging & Distribution	Sustainable transportation and logistics	Development of sustainable traffic and transport systems -use of smartness, traceability, monitoring -development of transport chains -reduction of emissions
f. Collection	Material reuse/ recycling	Design for Lean Flow -process -methods -tools, Energy-efficiency along with eco-efficiency
covering all of the value chain positions	Answering challenges of megatrends	development of solutions for - authenticity -safety -shelf-life -e-commerce -food waste -limited natural resources

Next phase during the interactive work shop was to look into possible next steps to take the identified areas of development further. Participants shared some upcoming contributing events. Participants agreed that the discussion on the topic has been fruitful especially in the multi technology context and there could be potential in finding shared project to tackle broader challenges as introduced in the beginning of the event.

As a next action, a follow up meeting was decided, where these thoughts would be taken forward and possibilities for an ERDF project application would be considered.

After the interactive session, Nillo Halonen summarised the results of the work shop and thanked all of the participants. As a successor for this work shop smart biobased solutions working group continues and operates ERDF funded smart biobased solutions collaboration platform project. More information can be found: https://www.eura2014.fi/rrtiepa/projekti.php?projektikoodi=A73634.

- **Methodology**

See Methodology in Local Workshop 4

- **Output**

See Output in Local Workshop 4

18 Tampere Region: Local Workshop 3

- **General information**

Workshop title: Circular Construction and Built Environment

Objectives of the workshop: Discussion about the Circular Economy opportunities in the Construction sector

Date and location of the workshop:

9th of June 2017, Tampere University of Technology, Laboratory of Mechanical Engineering and Industrial Systems

Number of attendants:

11 participants

Project partner: Tampere

Workshop organisers: Tampere

- **Executive summary**

The workshop analyzed different circular economy economy contexts, basically divided into into two principles and two groups. Principles are A) to use more reused or recycled construction materials and B) avoid construction waste disposal to landfills. The two groups of circular economy contexts are 1) extension of life cycles of buildings and infrastructure in existing built environment and 2) reuse and recycle of construction materials. Development potential was identified in 3 different value chain domains: policy and planning , Use/Services and Collection

- **Participants list**

Workshop: Circular Construction and Built Environment, 9th of June 2017

Nbr	Organization	Name	Stakeholder category
1	Council of Tampere Region	Nillo Halonen	Public administration
2	Council of Tampere Region	Johanna Alakerttula	Public administration
3	- not published based on the informed consent form	- not published based on the informed consent form	R&D
4	- not published based on the informed consent form	- not published based on the informed consent form	R&D
5	- not published based on the informed consent form	- not published based on the informed consent form	

			R&D
6	Tampere University of Technology	Tuomo Joensuu	R&D
7	Tampere University of Technology	Pirjo Kuula	R&D
8	Tampere University of Technology	Minna Leppänen	R&D
9	- not published based on the informed consent form	- not published based on the informed consent form	R&D
10	Tampere University of Technology	Tapio Kaasalainen	R&D
11	Tampere University of Technology	Jaakko Sorri	R&D

- **Agenda**

- *Welcome speech and introduction to the goals and context of the event Introduction to the specific topics within the chosen theme by different stakeholders*
- *Introduction of participants,*
  Identification of business opportunities
  Identification of challenges and barriers
  Identification of areas of development for next actions

- **Minutes of the Workshop**

Nillo Halonen welcomes all the participants to the workshop. He presents the SCREEN-project and goes through the goal and structure for the workshop. Johanna Alakerttula presents some of the current circular economy innovation policy activities in Tampere Region and introduces the upcoming ERDF funding opportunities.

Next, two representers of architecture and construction research introduced all of the participant to the theme context of circular costruction and built environment. Presenters see circular construction rather a broad topic. However, in Tampere Region there is a comprehensive orientation and capabilities towards the theme. Basically, presenters group different circular economy economy contexts into two principles and two groups. Principles are A) to use more reused or recycled construction materials and B) avoid construction waste disposal to landfills. Two groups of circular economy contexts are 1) extension of life cycles of buildings and infrastructure in existing built environment and 2) reuse and recycle of construction materials. By this short introduction presenters welcomed participants to the interactive session.

The interactive session begins, which follows the similar order as described in the smart packaging work shop. Participants introduced themselves to each other. All of the participants were from different research centers and universities and described there activities related to the topic. Participants represented different areas of building construction, land construction, architecture of buildings and areas, waste recycling and recovery. After this, local strengths within reagion were identified. In Tampere Region collaboration networks between architects and construction experts are strong and building structure and material know how is wide. Also there exist broad orientation

towards life cycle know how and design practice recommendations. In addition, Tampere region has one of the most advanced research on energy efficiency. Also the development of built environment is well covered.

The discussion was focused to areas of development. Development potential was identified in 3 different value chain domains as described in table.

. Identified areas of development in circular construction.

policy and planning	regulations	information sources for example dynamics of the building stock,
		procurement and approval processes,
		prerequisites for circular economy in code of building regulations (fire, energy, material use, etc.),
		+ other regulations and norms that affect construction costs
Use/Services	Diverse and efficient use of existing building stock	Service economy, renting, joint use in buildings,
		actions that increase the diverse use of existing buildings,
		communal solutions
Collection	Life cycle extension solutions	Design for maintenance, reconstruction, conversion and reuse
		Lifetime models and life cycle extension models
		dynamics of the building stock
		LCA MFA
		Open construction
	Reuse of construction elements	Reuse on industrial scale
		design of new structures enabling reuse of elements
		reuse of wooden construction elements
	Recycle of construction materials	concrete material development
		new recycled materials

Participants shared upcoming events and actions. There are several supportive events that contribute to the topic and openly available.

After the interactive session, Nillo Halonen summarised main findings from the work shop. The orientation towards circular construction is comprehensive. It was agreed that the topic was very broad to harness within a work shop and it would be more practical to focus into single circular economy domains such as construction element reuse or recycle. However, the work shop made explicit interestingly varying points that has to be taken into account in the circular construction context.

- **Methodology :** See Methodology in Local Workshop 4
- **Output:** See Output in Local Workshop 4

19 Tampere Region: Local Workshop 4

- **General information**

Workshop title: Circular manufacturing and Remanufacturing

Date and location of the workshop:

29th of August 2017, Tampere University of Technology, Campus Arena

Number of attendants: 17 participants

Project partner: Tampere

Workshop organisers: Tampere

- **Executive Summary**

The workshop was divided into two phases. First there will be three presentations from research and industrial stakeholders, followed by an interactive session aiming to capture capabilities, business, potential gaps and recommended actions to support circular manufacturing
Based on the work shop results, summaries of the problem situation towards a future vision for each of Tampere region's circular economy spearheads was described. Starting from the ECO3 eco-industrial park the vision is that circular economy center such as ECO3 has the potential to be a linking entity for the regional circular economy innovation activities

Participants list

Workshop: Circular Manufacturing and Remanufacturing, 29th of August 2017

Nbr	Organization	Name	Stakeholder category
1	Council of Tampere Region	Nillo Halonen	Public administration
2	Hermia Oy	Harri Kuusela	Companies
3	Tampere University of Technology	Minna Lanz	R&D
4	Linjateräs Oy	Aki Karuveha	Companies
5	Tampere University of Technology	Matti Majuri	R&D

6	VTT Technical research centre of Finland ltd	Päivi Kivikytö-Reponen	R&D
7	VTT Technical research centre of Finland ltd	Maria Antikainen	R&D
8	Dimecc Oy	Reijo Tuokko	Companies
9	FIMA	Antti Siren	Non-profit organizations
10	Agco Power Oy	Jarkko Roiha	Companies
11	Elisa Oyj	Ville Grönlund	Companies
12	Valtra Oy	Jari Luoma-Aho	Companies
13	Titako Oy	Tapio Saarinen	Companies
14	Tampere University of Technology	Jarkko Pakkanen	R&D
15	Valtra Oy	Jari Luoma-Aho	Companies
16	Tamlans Oy	Mikael Kortesluoma	Companies
17	Production Software Finland Oy	Jari Kukkonen	Companies

- **Agenda**

Workshop: Circular Manufacturing and Remanufacturing, 29th of August 2017

Agenda

- Introduction and welcome, breakfast and coffee
- 4 presentations from research and industry in the field
- Interactive work shop
  - Introductions of participants
  - Identification of business potential
  - Identification of barriers
  - Recommendations for actions
- Wrap up
- Time for networking

- **Minutes of the Workshop**

Nillo Halonen welcomes all the participants to the workshop. He presents the SCREEN-project and goes through the goal and structure for the workshop. The workshop is divided into two phases. First there will be three presentations from research and industrial stakeholders. Presentations are followed with an interactive session aiming to capture capabilities, business, potential gaps and recommended actions to support circular manufacturing.

Minna Lanz gives in her presentation an outlook to circular economy perspectives within manufacturing innovation activities. Finland has been one of the top innovators in Europe for several years based on the European innovation scoreboard. Lanz anticipates that this continues and circular economy may a possible new future trend in industrial evolutions. Development from early industrial times through mass production to automation and more recently to smart factories has been rapid. Based on IDC worldwide manufacturing predictions such as customer centricity, operating model transformation towards digitalisation and resiliency contribute to circular economy. However, the market in heavy machinery towards circular economy is not yet visible. For Finland and Tampere

Region, circular economy may be potential especially by looking into solutions improving technical material cycles and digital manufacturing.
Matti Majuri presents an ERDF funded Kyvykäs-project, which aims to facilitate Tampere Region's manufacturing companies, especially SMEs, capabilities to utilise and develop circular economy business. The core result is a method to visualise manufacturing company's capabilities current status and needs for development. This method helps companies interested to grow in circular economy business to improve know how in circular economy business demands and supports companies' strategical work.
Jarkko Pakkanen gives an insight into modular design of machinery products. Pakkanen and his research group has done over ten years collaboration with manufacturing companies in developing modular products. According to Pakkanen, modular product structures are critical to enable successful leasing and remanufacturing business. These are ways for companies to grow their current business and at the same time decrease products environmental impacts by prolonging life span. Few of the mentioned benefits from modularity are cost savings in different phases of product life cycle, such as development, maintenance, remanufacture. However, modular design is challenging and requires especially attention to product data management and collaboration between different functional areas in company.
Jari Luoma-Aho gives a presentation to Valtra companies Remanufactured machinery components. Remanufacturing operations began in 2012 and since have been growing steadily. The business logic is based on replacing old components during the maintenance of tractors to remanufactured ones. There is a certain deposit, customer pays from a remanufactured product, which is returned when the component is received back. Basically, when components are returned to the factory, they are disassembled, washed, checked. Broken part are replaced with new original parts. Quality standards are applied. If the product development has made improvements in parts or software, the remanufactured product will receive also these updates. Finally, parts are assembled, tested, coated as original parts and ready for sales. Benefits for customers from remanufactured components are cheaper prices and fast delivery, for partners and Valtra this is successful business.
After the presentations, the work shop continues to the interactive session. The participants are divided into two groups of 8-9 people. First is the introduction round, second is identification of business opportunities, third step is identification of barriers and fourth is recommendation for actions. In the end of the work shop a summary will be drawn to significant findings from the discussions.
Stakeholders are identified from product development, engineering services, production, ICT and research. Half of the participants are from industry, half from public organisations and research institutes. Together, participants identify covering a broad range of value chain positions.

Business opportunities are identified in 1) new products, 2) more efficient production, 3) more efficient production network/supply chain, 4) added value to existin product/production, 5) new/extension to life cycle services, 6) new markets, 7) avoiding costs from environmental risks and safety

Barriers to development of circular manufacturing business were identified in 1) lack of information and awareness of remanufacturing or circular economy, 2) limitations of technical know how and skills related to technology, 3) barriers related to the cores and processes of remanufacturing, 4)

remanufactured/CE products demand issues, 5) barriers related to collaboration, and 6) regulative barriers.

Finally, recommendations for actions are listed in the following table 5.

Table 5. Recommended actions in circular manufacturing and remanufacturing.

1. PRODUCT DEVELOPMENT / MODULARIZATION, NEW DIGITAL SOLUTIONS	Modularisation / Design reuse business pontential analysis together with companies
	Reused design information/ design rationale into a usable and updated format 24/7
	Development of modular product structures
2. RESOURCE EFFICIENCY OF PRODUCTION OR SUPPLY CHAIN, INDUSTRIAL SYMBIOSIS	Holistic understanding of reguirements and phenomena impacting circular economy enabling capabilities
3. NEW BUSINESS MODELS AND SERVICE MODELS, CIRCULAR ECONOMY ON BUSINESS OPERATIONS	Digital solutions into forecasting/proactive maintenance + identifying products
	Life cycle thinking and systems thinking into broader use in networks
	There is work to do in digitalisation --> more doers needed
	How do we make business with new services?
4. PILOTING, DEMONSTRATION, TESTING OF PRODUCTS, e.g. REMANUFACTURABILITY	Piloting -business models -technology -user understanding -->quick, cheap and concrete results
	Pilot for Calculating real costs/ Systemic functionality and proof vs. opportunistic assumptions
	Sharing information and company collaboration -->information reaching with different examples -->funding through innovative projects
5. MORE INFORMATION, MORE CASES, MORE EVENTS, NETWORKING OPPORTUNITIES	Selling ideas requires more examples and cases of how the value added is created
	Communicating on possibilities to companies and decision makers
	Knowledge about succesfull cases
	New visions
6. INTERNATIONAL COLLABORATION	-Support international collaboration (Vanguard, EC) -Mapping success cases -Developing service

	business towards remanufacturing

- **Methodology**

The four organized workshops were planned in alignment with common guidelines provided by the SCREEN consortium. For the last organized workshop, also the guidelines provided in the D3.1 Report on synergies were used to structure the workshop inputs. An overview of the process used in organizing the workshops is the following:

1. Preparation for the local workshop

a. Building the core working group around the theme and for organizing the local workhops.

2. Identification and initial structuring of the value chain within the theme
3. Preparations for organizing the local workshop.

2. Organizing the local workshop

1. Introduction presentations of the Tampere Region to SCREEN project and regional goals and actions to facilitate regional development towards circular economy.
2. Introduction presentations to the context within the theme. Presenters were from the working groups.
3. Interactive workshop going through 6 steps.

1. Providing the guidelines for the interactive session. Moderator/Moderators takes the responsibility to follow the workshop structure.

2. Introduction of the participants. Each participant introduces him or herself providing the name, organization, role and a link to the topic discussed. The results are provided in the form of post its attached to the predescribed value chain.

3. Description of business opportunities. Each participant describes business opportunities in the form of post its and shares there view to each other.

4. Description of challenges or barriers in innovation actions. Each participant describes there inputs in the form of post its and shares there view to each other.

5. Description of development actions. Each participant describes there inputs in the form of post its and shares there view to each other.

6. Making a summary and final thoughts on the workshop. Workshop moderator/moderators make a summary of the workshop sessions results and formalize next actions.

3. Synthesis and making conclusions based on the results of the organized workshop in collaboration with the working group.

1. Synthesis of challenges and aims within the theme based on the results of the workshop.
2. Preparation of a summary of the workshop results
3. Support for next actions identified during the workshop.

- **Output**

Vision for the regional circular economy

Based on the work shop results summaries of the problem situation towards a future vision for each of Tampere region's circular economy spearheads was described. Starting from the ECO3 eco-industrial park the vision is that circular economy center such as ECO3 has the potential to be a linking entity for the regional circular economy innovation activities. This is especially the case with ECO3, which helps R&D&I activities from technology readiness levels 6-8. Figure 2 illustrates the idea of ECO3 facilitating the regional level circular economy innovation actions.

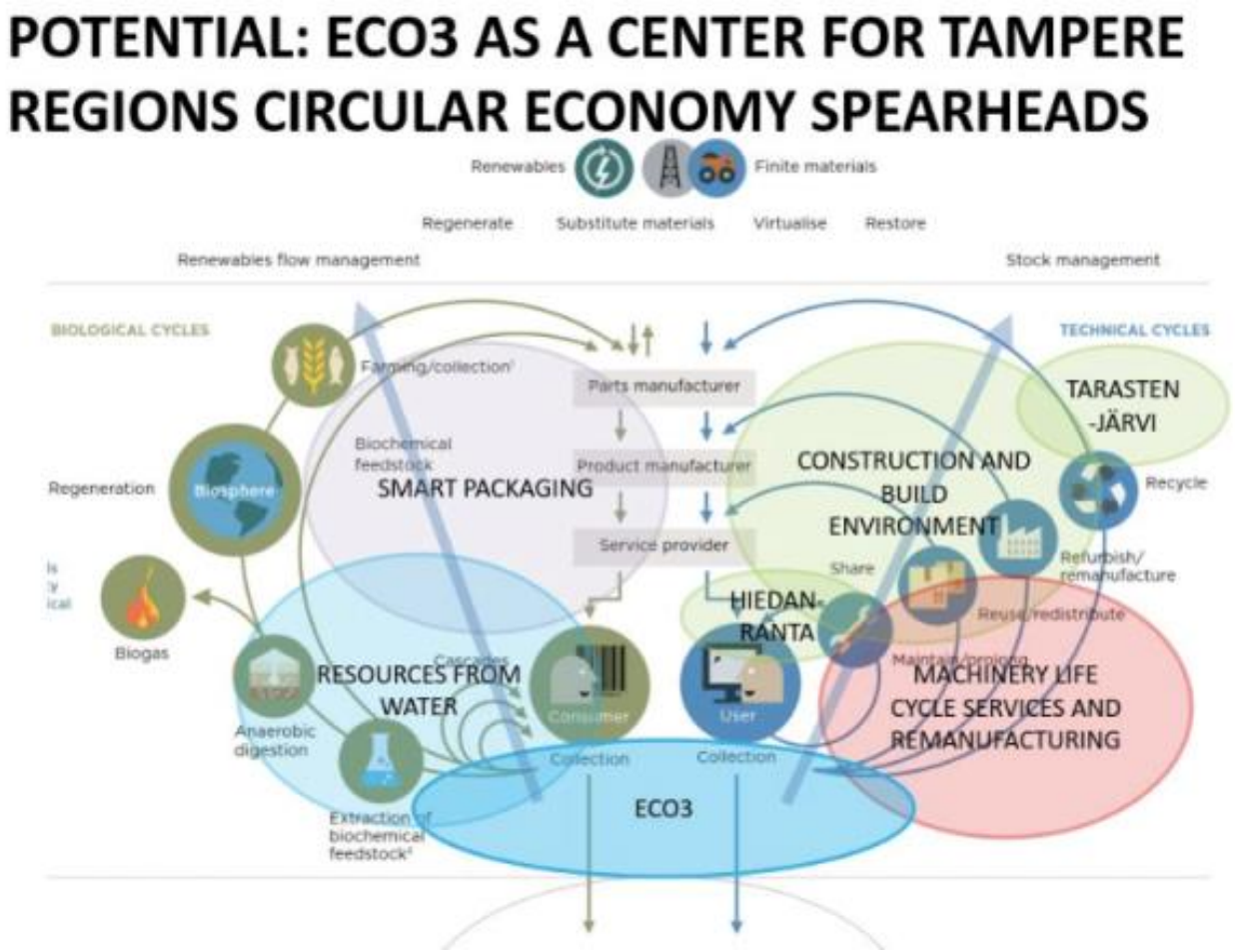


Figure 3. ECO3 as an example of a circular economy center facilitating local innovation actions. The framework used behind is the Ellen MacArthur Foundations circular economy framework.

Vision in smart biobased solutions (formerly smart packaging) identifies current regional challenges, where there is anticipation for limited natural resources and problem of electronic and plastic waste. In addition in the current situation, due to the regions higher cost structures, there is a need for higher value added packaging products. Also there is need for more efficiency in the current market trends of online shopping, food production's shelf life and getting rid of empty transportation.

The future vision for smart biobased solutions sees a lot greener region where bioecomony based solutions are the primary consumables especially in disposable wastes, making it possible for endless biological cycles. Packaging support circular loops and locality such as local food. Consumption than again is more sustainable in a sense that products have longer life span and even packaging is more reused than disposed and recycled. Above all, smartness of biobased solutions promotes region's high innovation capabilities and links different sectors such as pulp and paper, manufacturing of discrete products, ICT and recycling companies. Figure 3 summarises the vision for smart biobased solutions.

Construction and built environment in its current situation struckles with insufficient recycling rates of construction and demolition material. Similarly, there is little reuse of construction elements from old buildings to new buildings. Structurally more fundamental challenges are lack of holistic planning and design in industry, which partly causes the problem of artificial ageing of existing buildings. Artificial ageing meens such examples, where new buildings such as new shopping centre is built next to an old one. This might cause negative effects to the surrounding buildings if the architecture, demands for building stock etc. are not considered.

In the future vision region sees closed loops for elements and materials. The building stock is multipurpose, convertible and long lasting buildings that adapt to changes and have high utilisation rates. The national regulations support these intentions. The vision for circular construction is illustrated in figure 4 of Annex 8.

Finally, manufacturing is seen currently optimizing product performance and low-carbon in the expense of life cycle length. Products are well recycled, but for the regional higher value added intentions, especially service business, maintenance, reuse and remanufacture should be promoted. In general, sustainability is an external part of many SMEs' strategy and there is lack of know-how to make business out from it. The global competition in manufacturing forces to spealize in products to find competitive advantage. Locality drivers are needed, that would make the region more recilient.

Vision in circular manufacturing is that manufacturing operates in WIN-WIN-WIN scenario, where business, environment and people all benefit. Even the most complex products with multi-technology and multi-materials are in continuos material circulations. In the region digitalisation is an advantage and a source for competitive advantage. Servitization such as sharing economy, products as services, leasing and maintenance business enable sustainable business models that enable long life spans for products. Figure 5 summarizes the vision for circular manufacturing.

COMMON GROUND – DESCRIPTION OF STAKEHOLDERS

This section includes the lists of different stakeholders within each of the circular economy spearheads. Stakeholders are grouped into primary stakeholders, secondary (facilitative) stakeholders and primary stakeholders that are needed for collaboration.

ECO 3 STAKEHOLDERS WITH EMPHASIS ON RESOURCES FROM WATER

List of PRIMARY STAKEHOLDERS:

1. Consumers in the city
2. Building and construction producers
3. Commerce and industry
4. Farmers and forestry
5. Distributor, logistics
6. Waste management for municipal waste and biowaste
7. Biogas/biofuel producer and CO2 producer
8. Biogas process technological service provider
9. Biogas distriputor for transport
10. Thermal heat treater of sludge
11. Fertilizer producer
12. Energy: Heat and electricity producer
13. Wastewater treater
14. Pyrolysis plant for recycled plastic and tyres

List of SECONDARY STAKEHOLDERS:

1. Platform service provider
2. Technological University
3. RDI institutes for bio- and technical cycles
4. Cities and municipalities
5. National circular economy program manager and funder for pilots
6. Baltic Sea Action Group
7. Regional business and funding services provider
8. citizens

STAKEHOLDERS/COLLABORATION NEEDED, regarded also as PRIMARY STAKEHOLDERS

1. Food producers
2. Biobased products producers
3. Fish producers
4. Alga producers
5. Partners for waste and wastewater organisations for smart preseparation solutions and approaches

SMART BIOBASED SOLUTIONS

List of PRIMARY STAKEHOLDERS:

1. Farmers
2. Forestry companies, harvesters,
3. saw mills
4. cellulose producers including nanocellulose, cellulose made from different bio based materials
5. biobased material producers such as bioplastics
6. packaging producers
7. electronic equipment producers
8. software compenies to different life cycle phases, primarily to production of packaging and added

   value of packaging/product

9. customers such as food production and manufacturing, B2B
10. industrial designers
11. logistics, distributor
12. users, consumers
13. inverse logistics
14. recyclers of paper and packaging material
15. waste managers

List of SECONDARY STAKEHOLDERS:

1. Technological University
2. RDI institutes for bio- and technical cycles
3. Eco-industrial parks, circular economy centers
4. Cities, municipalities
5. Paper and packaging networks
6. Electronic equipment producers networks
7. Use case sector networks such as food industry, bio- and medical technology
8. Regional business and funding services provider
9. Citizens

STAKEHOLDERS/COLLABORATION NEEDED, regarded also as PRIMARY STAKEHOLDERS

1. Maintenance of packages, closed loop reuse of packages
2. Smart packaging service – logistics providers

CONSTRUCTION AND BUILD ENVIRONMENT

List of PRIMARY STAKEHOLDERS:

1. Regional planning/area developers
2. Civil Engineering consulting
3. Civil Engineering and architecture design and development services
4. Real estate selling companies
5. Land mass haulers
6. Buildings (housing, business premises) and infrastructure constructing companies
7. Real estate managers, renters
8. Housing cooperatives
9. Private owners
10. maintenance companies
11. Repair companies
12. Recyclers of construction materials
13. Distributors, logistics
14. Software companies to different life cycle phases

List of SECONDARY STAKEHOLDERS:

1. Regional planners
2. Cities, municipalities
3. Circular economy piloting areas such eco-industrial parks and residential and industrial areas
4. Real estate investors

STAKEHOLDERS/COLLABORATION NEEDED, regarded also as PRIMARY STAKEHOLDERS 1. Reusers of construction elements such as concrete elements

CIRCULAR MANUFACTURING AND REMANUFACTURING OF HEAVY MACHINERY

List of PRIMARY STAKEHOLDERS:

1. Distributors, Logistics
2. Sales, Dealers
3. Engineering consulting such as Engineering Design, Retrofiting, planning
4. Software developers providing digital solutions for different life cycle phases of product
5. Parts manufacturers
6. Product manufacturers
7. Packaging and distributors,
8. Brokers, integrators
9. Retailers
10. Life cycle service providers
11. Customers
12. Users
13. Collectors
14. Waste managers
15. Recyclers
16. Disposers of hazardous waste

List of SECONDARY STAKEHOLDERS:

1. Regional council
2. Cities, municipalities
3. Universities, RDI
4. Educational organisations
5. Private RDI organisations
6. Investors
7. Manufacturing networks

STAKEHOLDERS NEEDED, regarded also as PRIMARY STAKEHOLDERS 6. Independent remanufacturers

5.3 ROAD MAPPING IN REGIONAL CIRCULAR ECONOMY SPEARHEADS IN CROSS REGIONAL CONTEXT

For the purpose of roadmapping the results collected from the local work shops, it is beneficial to start from looking into the overall picture of circular economy actions in Tampere Region. Here, Tampere region's situational picture work done in 2017 is used as an introduction to the intial roadmap. In the situational picture for the regional bio- and circular economy, three phases of development in the region can be anticipated. These three phases are illustrated in figure 7. The first phase is characterised by actions that bring results in short term through incremental development. In Tampere Region the incremental development is seen natural within circular economy centers such as ECO3 eco- industrial park. There is also a lot of innovation actions invested in bio based fuels and other renewable energy and improved use of waste water and municipal waste. A popular topic here is nutrient cycles. The second phase include systemic solutions and services through new cross-sectoral collaborations. Here the anticipation is within technical material cycles in manufacturing and construction material cycles and regenerative built environment. The third phase introduces new products and services to the market that are designed for circular economy with cutting edge R&D&I services and education. These solutions can be seen replacing the less sustainable current solutions in a longer term. However, what is notable is that regardless of the short term and long term anticipation, investments have to be done not only in short term innovations but also in research and development contributing to solutions arrising during the phases two and three.

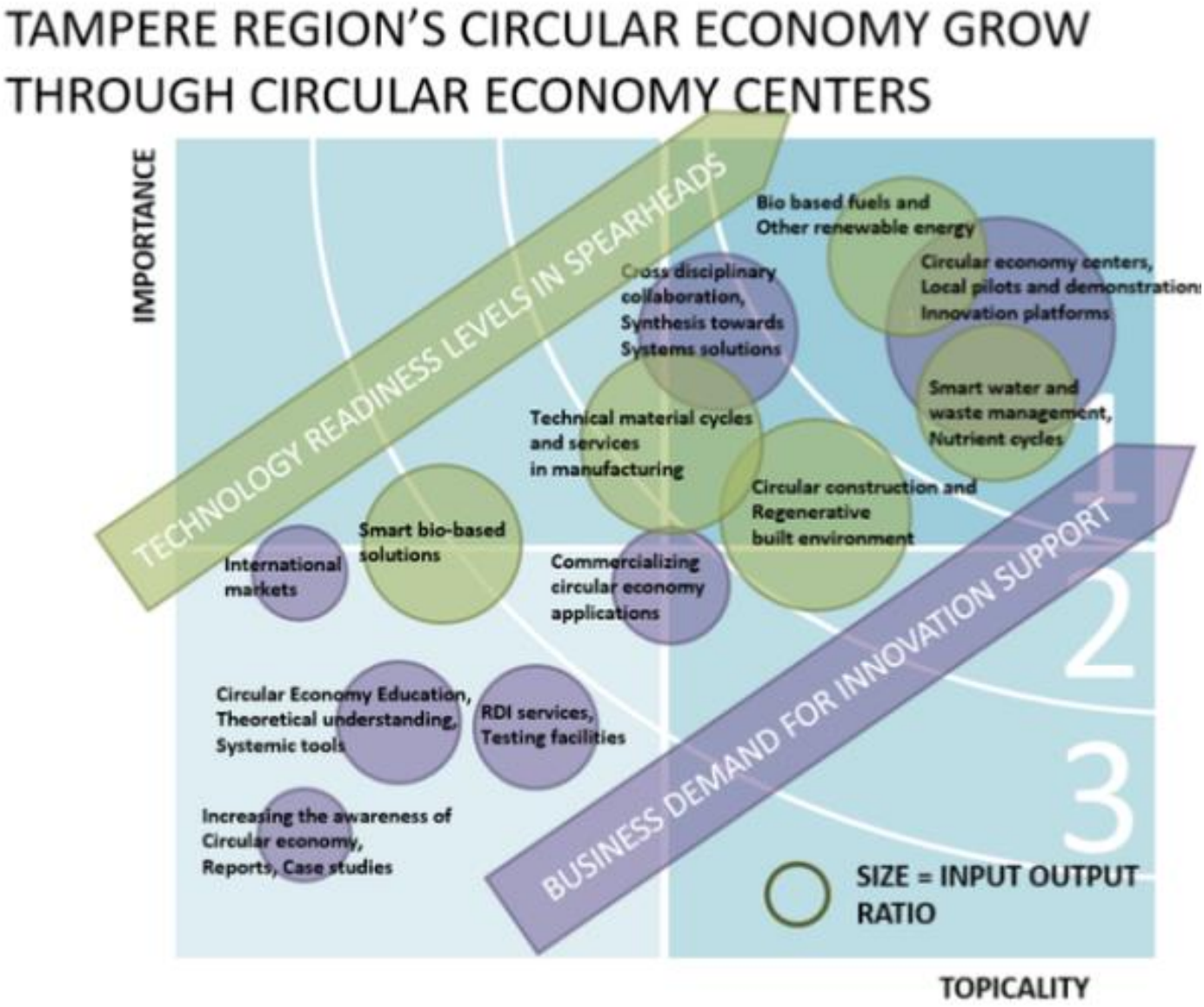


Figure 7. Anticipated roadmap for circular economy innovation actions in Tampere Region.

A specific attention should be taken to identifed significant environmental challenges within the Region, namely hotspots. The following table 6 the collection of the five top priority hot spots in Tampere region and there solutions that would benefit from cross-regional collaboration.

Table 6. Hotspots in Tampere Region linked to cross-regional synergies.

Theme	Hotspot	Actions	Potential partners in the region
Resources from water, ECO3 eco-industrial park	Creation of sludge and its management	Preseparation of nutrients, materials before entering sludge. New biorefinery concepts for biomass, next generation characterization of energy, carbon and other material cycles in the urban environment. Creating ways to decrease the amount of sludge. Biogas from sludge is one part-solution. Also sludge used as a fertilizer and inciniration of sludge are part-solutions, but only solving partly a problem	ECO3, waste water management, waste management, energy producers, technology/service providers for nutrient cycling, R&D organisations and collaboration, orchestration and network facilitation organisations
	Diffuse sources of pollution in water systems especially in the Baltic Sea, especially phosphorus and nitrogen are fatal for the sea.	Systemic solution, crossregional collaborative approach with several targeted solutions to manage this problem. There is no single organisation, technology, product or material that can solve this.	ECO3, waste water management, waste management, energy producers, technology/service providers for nutrient cycling, R&D organisations and collaboration, orchestration and network facilitation organisations
Smart biobased solutions	Use of plastics, plastic pollution, problem for the water systems and environment. Especially nano sized plastic particles	Biobased smart products replacing plastics, solutions for recycled plastics	Tampere University of Technology, Technical Research Center of Finland ltd. (VTT), Tampere University of Applied Sciences, Over ten medium-sized or large- sized enterprises linked to packaging
Construction and Built Environment	Little reuse of construction elements, construction material recycling rates insufficient,	sustainable long-term value preservation solutions of the stock, Solutions to reuse and extend the life span of existing building stock, reuse of construction elements,	construction companies, Tampere University of Technology, Ramboll Oy

	Utilisation rates of building stock/ real estate are low and buildings life span short	improved recycling	
Circular manufacturing and remanufacturing	Machinery products performance and low- carbon characteristics are done in the expense of product life span. Week solutions on carbon footprint on systems level.	life-cycle services --> PSS, added value of IoT, I4.0, maintenance reuse and remanufacture especially in heavy machinery products design for long life cycle and circular economy = DfCE	Tampere University of Technology, Technical Research Center of Finland ltd. (VTT), several machinery companies

The following tables 7-10 are the synthesis of identified development actions in each workshop relevant to the cross- regional collaboration. These actions are also complementary to the identified hotspots.

Table 7. Synthesis of identified development actions in resources from water.

Theme	**Action**	**Typology (policy, innovation)**	**Potential for cross-regional collaboration**
Resources from water, ECO3	Cross-regional marketplace for side streams	I	Yes, Industrial and research partners
	Shared infrastructure solutions for resources from water technologies	I	Yes, Industrial and research partners
	eco-industrial park platform service extending to cross-regional synergic services.	I,P	Yes, Industrial and research partners

Table 8. Synthesis of identified development actions in smart biobased solutions.

Theme	Action	Typology (policy, innovation)	Potential for cross-regional collaboration
Smart biobased solutions	Exploitation of different biomasses as packaging material	I	Yes, Industrial and research partners
	New value and high value added products from biomass	I	Yes, Industrial and research partners
	Smartness from bio-based materials	I	Yes, Industrial and research partners
	Applications from new production methods in smart packaging	I	Yes, Industrial and research partners
	Whole life cycle management and measuring in smart packaging	I	Yes, Industrial and research partners
	sustainable transportation and logistics taking the advantage of smart packages	I	Yes, Industrial and research partners
	Study on smart packages and their holistic answer to global megatrends	I	Yes, Industrial and research partners
	concepts and business in packaging reuse and material reuse and recycle	I	Yes, Industrial and research partners

Table 9. Synthesis of identified development actions in construction and built environment.

Theme	Action	Typology (policy, innovation)	Potential for cross-regional collaboration
Construction and Built Environment	Regulation development actions in Construction and Build Environment enabling circular economy	P	Yes, Industrial and research partners
	Enabling diverse and efficient use of existing building stock	I	Yes, Industrial and research partners
	Life cycle solutions to extend the building life cycles or reuse of buildings dynamically	I, P	Yes, Industrial and research partners
	Industrial scale solutions to reuse construction elements	I	Yes, Industrial and research partners
	Industrial scale solutions to recycle construction materials, primarily concrete and creating new close loop recycling materials	I	Yes, Industrial and research partners

Table 10. Synthesis of identified development actions in circular manufacturing and remanufacturing.

Theme	Action	Typology (policy, innovation)	Potential for cross-regional collaboration
Circular manufacturing and remanufacturing	remanufacturing pilots for calculating the real costs and system level envirnomental benefits	I	Yes, Industrial and research partners
	digital solutions for more proactive and networked maintenance of machinery	I	Yes, Industrial and research partners
	Developing cross-regional field labs for remanufacturing	I, P	Yes, Industrial and research partners
	integrated modular product development, new leasing business models and de- remanufacturing piloting service	I	Yes, Industrial and research partners

20 Crete Region

- **General information**

Workshop title:

REGION OF CRETE SUPPORTS THE CIRCULAR ECONOMY: We continue the dialogue with Wine and Cheese Makers

Objectives of the workshop: Local Workshop for SCREEN dissemination to local stakeholders

Date and location of the workshop: Friday June 29th 2018, Heraklion, Crete

Number of Attenants: 79 participants

Project partner: Crete

Workshop organisers: Crete

- **Executive summary**

Region of Crete organized the final workshop in the framework of project SCREEN entitled "THE REGION OF CRETE SUPPORTS THE CIRCULAR ECONOMY: we continue the dialogue with Wine and Cheese Makers". The workshop was held in Heraklion, Crete, Greece, in June 29. The main objectives were to: a) introduce and communicate the concept of circular economy to potential stakeholders b) develop a common vision regarding the regional circular value chain and c) develop a strong common understanding on the related challenges and opportunities within the Region of Crete, including potential ideas, initiatives and investments. The workshop consisted of two sessions: the first session included speakers from Region of Crete, University and private sector and was followed by two parallel sessions, as round tables: on the value chain of Wine making and of the Cheese making, respectively. Participants in both round tables included representatives of wine and cheese makers, as well as representatives from academic institutions and local authorities.

During the first session of the workshop, the coordinator of project SCREEN for Region of Crete, Dr. Hatziyanni, presented the current status related to circular economy in Crete and explained actions and synergies made so far. Other subjects presented and discussed during this first session were: a) the potential of circular economy in management and use of agro-industrial residues and waste b) new technologies for extension of life cycle for dairy products c) development of innovative products and d) Corporate Social Responsibility (CSR) in circular economy. At the end of this session, it was presented a local case study on circular economy which is the cluster "Delights of Crete".

During next session of the two round tables, two local groups of stakeholders -the "Wines of Crete" network and the recently established "Cretan Cheese Cluster"- were investigated along with their value chains. Initial communication, consultation and preliminary value chain analysis for those two groups, had been made by Region of Crete, in order to prepare those two groups to participate in project's "SCREEN" local final workshop. The groups were chosen upon their initial characteristics, including their wide number of members interested in high quality products and their contribution to the economy of Crete. Also, for their expressed interest in introducing circular economy activities into their process and value chains, as well as in implementing European policies.

At the end of the workshop valuable conclusions were drawn. In each one of the two value chains, domains with high potential to introduce circular economy activities were highlighted, such as the liquid waste disposal/use, the water recycling or the use of renewable energy. The potential use of different types of by-products was thoroughly discussed: a) for winery by-products in agriculture, animal feeding, pharmaceutics and cosmetics b) for dairy by-products (whey) in animal feeding, as a food enhancer and/or as a food supplement. Both winery and dairy by- products could be used in biogas production. In order to incorporate circular economy activities there are specific interventions that need to be faced. Elaboration of a feasibility study for the integration of by-products into circular economy activities seemed to be necessary. Also, establishment of a solid synergy between enterprises and research institutes would help a lot towards this direction.

- **Participants list**

2.1 Rapporteurs

NAME – SURNAME	ORGANIZATION/COMPANY	CATEGORY OF STAKEHOLDER
	INTERREG MED GC	GENERAL PUBLIC
	MEDICAL SCHOOL, UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE	PUBLIC ADMINISTRATION
	MEDICAL SCHOOL, UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	BIOEREVNITIKA ERGASTIRIA S.A. (BIORESEARCH LABORATORIES S.A.)	
	ANELIXIS DEVELOPMENT CONSULTANTS S.A.	GENERAL PUBLIC
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	MEDICAL SCHOOL, UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	WINES OF CRETE	R&D COMPANIES
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	SYCHEM S.A.	R&D COMPANIES
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS

2.2. 1st parallel session (wine value chain)

NAME – SURNAME	ORGANIZATION/COMPANY	CATEGORY OF STAKEHOLDER
	REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE	PUBLIC ADMINISTRATION
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	WINES OF CRETE	R&D COMPANIES

	DIAMANTAKI BROS O.E. - WINES OF CRETE	R&D COMPANIES
	BIC OF CRETE	R&D COMPANIES
	REGION OF CRETE	PUBLIC ADMINISTRATION
	EAS PEZON	R&D COMPANIES
	CRETAN SPIRITS	R&D COMPANIES
	OENOLOGIST, AGRICULTURIST	GENERAL PUBLIC
	MEDICAL SCHOOL OF UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	MEDICAL SCHOOL OF UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	TOPLOU CRETE WINERY	R&D COMPANIES
	DEVELOPMENT COMPANY OF LASITHI S.A. OTA	NON-PROFIT ORGANIZATIONS
	DAOK R.S. OF HERAKLION	PUBLIC ADMINISTRATION
	FO.D.S.A. VORIAS PEDIADAS	PUBLIC ADMINISTRATION
	AGRICULTURIST	GENERAL PUBLIC
	MILLS OF CRETE	R&D COMPANIES
	ITE/ETEP-CRETE	R&D COMPANIES
	FO.D.S.A. VORIAS PEDIADAS OTA S.A	PUBLIC ADMINISTRATION
	ELLINDOR IKE	R&D COMPANIES

2.3. 2nd parallel session (cheese value chain)

NAME – SURNAME	ORGANIZATION/COMPANY	CATEGORY OF STAKEHOLDER
	REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE	PUBLIC ADMINISTRATION
	MEDICAL SCHOOL, UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	CHEESEMAKERY RETHYMNO	R&D COMPANIES
	REGION OF CRETE	PUBLIC ADMINISTRATION
	DPT OF SCIENCE AND TECHNOLOGY OF MATERIAL, UNIVERSITY OF CRETE	NON-PROFIT ORGANIZATIONS
	VICE-GOVERNOR OF CRETE	PUBLIC ADMINISTRATION
	REGIONAL COUNSILOR	PUBLIC ADMINISTRATION
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	DAOK R.S. OF HERAKLION	PUBLIC ADMINISTRATION
	BIORESEARCH LABORATORIES S.A.	R&D COMPANIES
	A.S. OROPEDIOU LASITHIOU	R&D COMPANIES
	BRANDTOUR - REGION OF CRETE	PUBLIC ADMINISTRATION

	MEMBER OF GEOTEE M.C.	NON-PROFIT ORGANIZATIONS
	REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE - DEVELOPMENT DPT	PUBLIC ADMINISTRATION
	MECHANICAL ENGINEER	GENERAL PUBLIC
	REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE	PUBLIC ADMINISTRATION
	STAMATOGIORGIS CHEECEMAKERY	R&D COMPANIES
	MILLS OF CRETE	R&D COMPANIES
	VETERINARY DEPARTMENT - REGION OF CRETE	PUBLIC ADMINISTRATION
	REGION OF CRETE	PUBLIC ADMINISTRATION
	MAN. KARGAKIS & SIA O.E.	R&D COMPANIES
	DEVELOPMENT COMPANY OF LASITHI S.A. OTA	NON-PROFIT ORGANIZATIONS
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	DECENTRALIZED ADMINISTRATION OF CRETE	PUBLIC ADMINISTRATION
	TEI OF CRETE	NON-PROFIT ORGANIZATIONS
	A.S. MYLOPOTAMOU	R&D COMPANIES
	MECHANICAL	GENERAL PUBLIC
	BLACKSHEEP TRAVEL TEAM	GENERAL PUBLIC
	FREELANCE	GENERAL PUBLIC
	FOOD TECHNOLOGIST	GENERAL PUBLIC
	"GOGIONIS" DAIRY PRODUCTS	R&D COMPANIES
	ARCHITECT - ENGINEER	GENERAL PUBLIC
	PROACTIVE S.A. BUSINESS CONSULTANTS	R&D COMPANIES
	SYCHEM S.A.	R&D COMPANIES
	ANELIXIS CONUSLTANTS S.A.	GENERAL PUBLIC
	MANOUKARAKIS S.A.	R&D COMPANIES
	MANOUKARAKIS S.A.	R&D COMPANIES
	MUNICIPALITY OF RETHYMNO	PUBLIC ADMINISTRATION
	CHAMBER OF HERAKLION	NON-PROFIT ORGANIZATIONS
	SYCHEM S.A.	R&D COMPANIES
	DECENTRALIZED ADMINISTRATION OF CRETE	PUBLIC ADMINISTRATION

- **Agenda**

Περιφέρεια Κρήτης
Region of Crete

SCREEN
Synergic Circular Economy across European regions

THE REGION OF CRETE SUPPORTS THE CIRCULAR ECONOMY: We continue the dialogue on Wine and Cheese Makers

Friday 29 June 2018, Galaxy hotel, 75 Dimokratias Avenue, Heraklion, Crete

09:00-09:30	**Arrival - Registration**
09:30-09:45	**Welcoming addresses**
09:45-10:00	***Actions and Synergies of the Region of Crete for Circular Economy*** Dr. Eleni Chatzigianni, Environment and Spatial Planning Director of the Region of Crete, Coordination of the European Programme SCREEN
10:00-10:15	***Circular Economy in the Management and Use of Agro-Industrial Residues and Waste*** Dr. Thrasyvoulos Manios, Professor, School Of Agriculture, Food and Nutrition, Vice Rector for Financial Affairs, Planning and Development, Technological Educational Institute of Crete
10:15-10:30	***Extending the Life Cycle of Dairy Products - Development of Innovative Products*** Dr. Anna Psaroulaki, Assistant Professor of Microbiology/Animal Diseases, Medical School, University of Crete
10:30-10:45	***Corporate Social Responsibility in Circular Economy. The ROAD-CSR (Interreg EU) project*** Giannis Mavrogiannis, Project Consultant, ANELIXIS S.A.
10:45-11:00	***The role of cluster in Circular Economy - The case of "Delights Of Crete"*** Alexandros Markantonakis, Chemical Engineer, Managing Director of MILLS OF CRETE, Coordinator of the cluster of companies MILLS OF CRETE, AVEA, VERO KRITIKO, VIOCHYM
	Coffee break

European Programme SCREEN - Horizon 2020
"Synergic Circular Economy Across European Regions"

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

1st Parallel Session:

Round Table on the Value Chain of Wine Making
Moderators: Dr. Maria Kandilogiannaki, Dr. Vasilis Tzanakakis

12:00-12:15	**The Pharmaceutical and Cosmetic Use of Winery Wastes (wine lees)** Dr. Marilena Kampa, Associate Professor of Laboratory Endocrinology Dr. Ilias Kastanas, Professor of Laboratory Endocrinology, Medical School, University of Crete
12:15-12:30	**The Added Value, Properties and Use Potential of Bio-active Ingredients of Winery Waste** Dr. Filippos Ververidis, Professor of Biochemistry and Plant Biotechnology, School of Agriculture, Technological Educational Institute of Crete
12:30-12:45	**The Wine making Industry in the Light of Circular Economy** Nikos Miliarakis, Wine Maker and President of the Cretan Network of Winemakers
12:45-14:30	**Interventions - Expression of Views by participants of the industry**

2nd Parallel Session:
Round Table on the Value Chain of Cheese Making
Moderators: Eleni Kargaki, Dr. Aliki Karousou

12:00-12:15	**Whey Management - Legislative Framework** Zacharias Somaras, Head of the Veterinary Division, Region of Crete
12:15-12:30	**Use Potential of Dairy Sub-products in Human Diet** Dr. Georgios Fragkiadakis, Associate Professor of the Technological Educational Institute of Crete
12:30-12:45	**Processing of Agricultural Products and Circular Economy. A Timeless Approach - A Modern Demand** Dr. Alexandros Stefanakis, Veterinarian, Chairman of the Management Committee of the Geotechnical Chamber of Greece - Region of Crete Voutzourakis, Nikolaos, Dietician - Nutritionist M.Sc., VIOEREVNITIKA ERGASTIRIA S.A.
12:45-13:00	**Use of Creamery Residues for the Production of Biogas in Crete** Dr. Alexandros Yfantis, Chairman & Managing Director of SYCHEM
13:00-14:30	**Interventions - Expression of Views by participants of the industry** **Lunch Break**
15:00-15:15	**INTERREG MED: "SYNGGI" Synergies for Green Growth, Joint Actions, Financing Opportunities in the Agri-Food Industry** Dr. Dimitris Kokosioulis, Representative of MED Green Growth Community Horizontal Projects
15:15-16:00	**Conclusions- Proposals - Further action**

Περιφέρεια Κρήτης Region of Crete crete SCREEN

- **Minutes of the Workshop**

The workshop was consisted of two sessions: i. a general session with speakers from Region of Crete, University and companies and ii. two parallel sessions, as a round table each, on the value chains of wine making and cheese making respectively.

First session (objectives, potential use of agro-industrial by-products, life cycle of dairy products, Corporate Social Responsibility (CSR), a local cluster as a case study of circular economy)
In the first session, the main objectives of the workshop were presented by Dr. Eleni Hatziyanni, coordinator of "SCREEN" project on behalf of Region of Crete, which were: to introduce and communicate the concept of circular economy to potential stakeholders, develop a common vision regarding the regional circular value chain and define the necessary regional interventions on a timeline. Dr. E. Hatziyanni also presented the current status related to circular economy, actions and synergies made so far, and potential future initiatives and actions towards the introduction and implementation of circular economy in the Region of Crete.

Potentials of circular economy in the management and use of agro-industrial residues and waste were presented by Dr. T. Manios, Professor at the Agriculture, Food & Nutrition department of Technological Educational Institute of Crete. He also presented, current research activities of his group, as well as participation in projects related with specific actions of circular economy (such as the use of food waste from hotel restaurants to produce animal feed, or the use of olive oil factories waste to produce compost). Finally, Dr. Manios stressed the need of production re-manufacturing, by re-estimating the regional value chains for the overall of local production, in order to conclude into an economic sustainable model, according to circular economy rules.

Three more lectures were given from a) Dr. Anna Psaroulaki, Assistant Professor of Microbiology/Animal Diseases in Medical School of University of Crete, presenting methodologies for extension of the life cycle of dairy products and development of innovative products b) Mr. Giannis Mavrogiannis, project consultant of ANELIXIS S.A., who presented the ROAD-CSR (Interreg EU) project regarding the Corporate Social Responsibility in circular economy, and c) Mr. Alexandros Markantonakis, coordinator of the cluster "Delights of Crete" who explained the multiple benefits deriving from a cooperation-synergy between 4 different companies producing from their by-products animal feed, fuel and soil improvers, and cereal oatmeal.

Parallel sessions
Two parallel sessions (round tables) on the value chains of wine making and cheese making, respectively, were carried out, including the Stakeholder groups "Wines of Crete" network and the "Cretan Cheese Cluster" along with representatives of local authorities and academic community.

1st parallel session (round table on the wine value chain)
Initially, a short presentation of the wine value chain and its different parts was made, while participants were invited to contribute actively to the discussion. Then, the President of "Wines of Crete" network, Mr, N. Miliarakis, presented the wine making industry and the potentials of circular economy, describing the current situation, problems and challenges. Next speaker was Dr. F.

Ververidis, Professor of Biochemistry and Plant Biotechnology, at the Agriculture department of Technological Educational Institute of Crete, who presented previous and current research data regarding the properties and the potential use of bio-active ingredients of winery waste. Dr. I. Kastanas and Dr. M. Kampa, Professor and Associate Professor respectively at the Endocrinology Lab. of Medical School, University of Crete, provided information regarding the pharmaceutical and cosmetic use of winery wastes.

Each presentation was followed by discussion among participants. The main aspects discussed during the session included a) the potential domains related to circular economy for the wine value chain (e.g by-products, energy, water recycling) b) the related research activity, and the barriers and challenges that need to be addressed. It was mainly proposed the use of winery solid wastes (marc and lees) for animal feed and as substrate to extract organic compounds that could be used to food industry, plant protection, cosmetics, aesthetics, and pharmaceuticals. Another potential use, including also plant biomass, is the production of soil improvers (composts). Also, it was stressed that most of the above options are technically feasible, since the research activity is relatively mature. Finally, it was proposed the adoption of practices that reduce water and energy consumption. (e.g. use of photovoltaic plants).

The wine makers stressed that the financial viability of a circular economy activity is a critical issue that needs to be addressed, suggesting that proposals-actions should be evaluated on the basis of certain economic and technical criteria. The size of "critical mass" of raw material was set as a potential barrier that needs to be overcome, suggesting the need for the development of partnerships-synergies. Moreover, the need to educate workers and consumers about the proper use of water and energy was highlighted. Finally, the necessary actions handled by stakeholders were set, presented below in the "Output" section.

<u>2nd parallel session (round table on the cheese value chain)</u>

During this session participants contributed actively to the discussion. Initially, a brief presentation of the cheese value chain took place, followed by the presentation of the Head of Veterinary Directorate of Region of Crete, Mr. Z. Somaras, about the whey management and the importance of the legislative framework. The speaker stressed the amount of produced whey, which consists a critical mass of liquid waste that can be reused as an animal feed without being remanufactured. At the same time, producers involved to the discussion, indicated the double benefit of such a use, as livestock farmers reduce the cost of animal feed and the need for water intake because the whey is a nutritious feed with a high percentage of water. A major issue for this use of whey is the need to transfer it to animal farms.

Next speaker, Dr Georgios Fragkiadakis, Associate Professor of the Technological Educational Institute of Crete presented the potential use of dairy sub-products in human diet. He mentioned that related techniques and methodology are available in his lab.

The processing of agricultural products and the potential use of creamery residues for the production of biogas were thoroughly presented by Dr. Yfantis, chair-president and management director of the private company SYCHEM. He explained how his company has the know-how to use organic waste in order to produce biogas. An issue that was discussed was the cost of transportation of whey to the company along with two critical factors: a) on the one hand, the wide geographical distribution of cheese making factories and b) on the other hand, high percentage of water in the consistency of

whey. Dr. Yfantis suggested the method of whey condensation in order to reduce the mass of the material that will be transferred to the company of biogas production.
Discussion with cheese makers stressed also the need of social acceptance by farmers and consumers related to the introduction of whey in animal feed as well as in products which will be used by humans.

Most important conclusions drawn regarding the potential circular economy actions, included the use of whey as animal feed, food enhancer and/or food supplement and the use of for biogas production. Actions by livestock farmers and cheese makers should meet strictly the legislation requirements and the specifications set by the technical process. Finally, yet importantly, regarding the utilization of whey for biogas production, the creation of concentration and condensation stations was proposed in order to reduce the mass and respectively the transfer cost of the whey, which is characterized by high percentage of water. Investment interest was expressed for the biogas production technology and a proposal is expected to be submitted to an upcoming call related to Research and Innovation Strategy (RIS3) of Crete, as long as cooperation between the parties concerned will be achieved.
Following the above discussion, the participants ended up to certain initiatives and interventions that need to be handled by specific stakeholders, as presented below in "Output" section.

Synergies for Green Growth, Joint Actions, Financing opportunities in the Agri-Food Industry.
Dr. D. Kokosioulis, Representative of MED Green Growth Community Horizontal Projects, presented the "Switch MED" Horizon project as an SME instrument of funding. He referred to the upcoming CIRCLE Conference organized by EC, held in Chania (September 20-22/2018), where representatives of "Switch MED" will be present and organize b to b meetings for interested companies and enterprises.
Dr. Kokosioulis also briefly presented the "EMBRACE" project.

- **Methodology**

The workshop was conducted as a follow up of the preceded consultation among the members of the working group of Region of Crete (and the contractor) with the potential primary stakeholders within the wine and cheese making value chains. The objective of the workshop was to communicate the concept of circular economy, emphasizing mainly on the importance of the potential benefits derived from the adoption of circular economy actions, as well as to help in the development of a common vision and understanding of the challenges and opportunities that need to be handled within the regional value chains and through cross-regional synergies.

Workshop consisted of two sessions. The first included general presentations to introduce and communicate the concept of circular economy to potential stakeholders, highlighting the potential benefits for the economy and environment, and to present the current status, actions and initiatives made by the Region of Crete. The second session consisting of two parallel sessions (round tables) emphasizing on the value chains of wine and cheese making, respectively. Two groups "Wines of

Crete" network and the "Cretan Cheese Cluster", were invited and participated in each of round tables along with participants from private and public section and academic and research institutes.
The two groups were chosen upon their characteristics: wide number of members and interest in high quality products, contribution to economy of Crete, processing, and expression of interest to introduce circular economy activities and implement European policies. Speakers and participants of this session were selected on the basis of their previous experience and expertise in order to provide information regarding the possessing and knowledge of the value chains, the definition of the domains with potential circular economy actions within the two value chains, the feasibility of the methods and equipment needed, and the level of maturity for the relevant research.

In the two parallel sessions discussion was set on the basis of providing initially a common vision regarding the current state of each of value chain (i.e. the parts of the chain and material flows, if any) as well as of the critical domains of the chains in which intervention would be necessary ending up to new shaped or reformatted value chains. The potential interventions including policy actions, innovation technologies and joint ventures-synergies, were subject of discussion. Evaluation of intervention (road mapping and filtering) was discussed and based on their potential impact on value chain and their ability or likelihood to take place in a realistic timeframe. The best possible interventions and the relevant actions and tasks were assigned to competent stakeholders.

- **Output**

The main conclusions drawn by round table for wine value chain were:

- The elaboration of a feasibility study (business plan) which would respond to specific economical and technical questions and issues and propose potential options in order to integrate products into the Circular Economy and
- The establishment of a single body for the purpose of co-operation between enterprises and research institutes.

Regarding the cheese value chain it was concluded:

- Actions to develop cooperations-synergies across cheese makers, livestock farmers, research institutes and laboratories, enterprises, and consumers.
- The elaboration of a feasibility study to evaluate cost-benefit analysis in order to show economic viable options of dairy by-products into the circular economy.

21 Province of Limburg

- **General information**

Workshop title: Circular Economy in Limburg, circular transition in horticulture

Objectives of the workshop: Dissemination and Exploitation

Date and location of the workshop: Limburg, on the 3th of July 2018.

Number of attenants: 17 participants

Project partner: Province of Limburg

Workshop organisers: Metabolic and Bio treat Center

- **Executive summary**

SCREEN is an H2020 coordinating and supporting action carried out by 17 European regions, aiming at the definition of a replicable systemic approach towards a transition to Circular Economy in EU regions within the context of the Smart Specialisation Strategy. The project also deals with the identification and implementation of operational synergies between investments in research and innovation under Horizon 2020, the Structural Funds and the European Investment Funds.

As part of the SCREEN project a stakeholder workshop on circular horticulture in Limburg has taken place on the 3th of July 2018.
The aim of the workshop was to:

- establish an emerging network of stakeholders for circular horticulture in Limburg (the Netherlands);
- define the main challenges and opportunities for a circular horticulture in Limburg and define the next steps to take;
- collect insights about the hotspots and opportunities that could be shared in the SCREEN project.

The framework for the workshop was inspired by the backcasting method from the SCREEN guidelines. In summary all the participated stakeholders are involved in the circular economy in Limburg and are part of a regional value chain circular horticulture. The workshop and the interviews

with the stakeholders identified main challenges and opportunities, barriers and interventions for a circular horticulture in Limburg. It collected insights about the possible next steps to be taken by all stakeholders;

- to explore the suggested synergies between stakeholders within regional value chains in more depth (facilitating Bio treat center, Venlo)
- to prioritise and explore list of interventions which can be handled through cross-regional synergies within the SCREEN project and which can be handled within the region itself (facilitating Province of Limburg)

- **Participants list**

	BVB Substrates	Company
	Vissers Aardbeien	Company
	NewFoss BV	Company
	Tue	University
	B-Berry	Company
	Jacobs Innovation	Company
	Grassa	Company
	Botany	Company
	Hoffmans BV	Company
	Eco Makelaar	Company
	Bio Verbeek	Company
	FreshPark Venlo	Fresh and food hub
	Wijnen Square Crops	Company
	Bio Treat Center, *host*	Half (open) innovation center
	Bio Treat Center	Half (open) innovation center
	Metabolic, *host*	Consulting campany
	Provincie Limburg, *host*	Regional authority

- **Agenda**

8.45 Arriving time
9.00 Opening
9.10 Introduction
- Introduction round
  - Introduction to Limburg and Circular Economy – Harma Albering, Province of Limburg
  - Introduction to the SCREEN project – Harma Albering, Province of Limburg
  - Introduction to Bio treat center – Patrick Lemmens, BTC
  - Introduction to Metabolic – Thomas Thorin, Metabolic
  - Introduction round by participants

- Workshop intro

10.00 Workshop
- 1st session Background
- 2nd session Vision

11.00 Break

11.20 Workshop
- 3rd session Interventions
- 4th session Deep dive

12.20 Closing round

12.30 End

- **Minutes of the Workshop**

Agenda item 1: Opening & Introduction

Mr. Thorin opens the meeting and welcomes everybody. He briefly explains the agenda and the goals of the meeting. After that all participants introduce themselves. **Ms Albering** outlines the circular economy in Limburg focusing on the regional perspective and she also briefly explains the SCREEN project (Annex 1 and 2). The workshop for circular transition in horticulture was hosted by the Province of Limburg together with Bio treat center and Metabolic. Bio treat center is (half) open innovation center for processing biomass and residual materials to generate semi-finished products and products for the bio-based economy. The Center is a partnership between companies, the Province of Limburg and knowledge/education partners located in the Southern Netherlands (Venlo). **Mr Lemmens** shortly presents the Bio treat center (Annex 3). **Mr Thorin** briefly introduces *Metabolic. It is a consulting and venture building company that uses systems thinking to tackle global sustainability challenges. The company is also involved with the SCREEN project (Annex 4)*

Agenda item 2: Workshop

Mr Thorin explains the methodology of the workshop and introduced the general situation of the horticulture sector in Limburg (Annex 5). During the meeting we slightly adjusted it due to lack of time. The last step road map and filtering has been discussed in a general perspective.
In small groups the participants talk about challenges, opportunities, barriers and intervention for circular horticulture in Limburg. The results of the workshop are outlined in more depth in chapter 5 of this report.
Regulation, bureaucracy, investment, technology (push/pull), market (novel and circular products can be difficult to get on the market), education (there is a lack of understanding of the technical challenges and opportunities in the circular economy) and collaboration are mentioned as important barriers for a circular transition in horticulture in Limburg. In addition, the stakeholders have discussed in small groups intervention possibilities. The list of intervention can be found in annex 6.

Agenda item 3: Closing round

The workshop and interviews will give insight in the next steps to take by all stakeholders;

- to explore the suggested synergies between stakeholders within regional value chains in more depth (facilitating BTC, Venlo)
- to prioritise and explore list of interventions which can be handled through cross-regional synergies within the SCREEN project and can be handled within the region itself. (facilitating Province of Limburg)

- **Methodology**

Stakeholders have been interviewed in person or by phone call, to get insight about the company, waste streams, circular economy initiatives, opportunities, challenges and barriers.
The workshop should foster a strong shared understanding of the challenges and opportunities within the regional value chain as well as an idea about which challenges and opportunities can be handled through cross-regional synergies and which can be handled within the region itself.

The framework for the workshop that will get the participants there is inspired by the Backcasting method (see Figure 1) but has been modified to fit this purpose.
The time frame for the workshop is 3.5 hours (instead of the almost 5 hours suggested in the SCREEN guideline) and the content had to be adjusted to this. All the participants are, on the other hand, already involved in the circular economy, so much time can be saved on explaining and aligning.

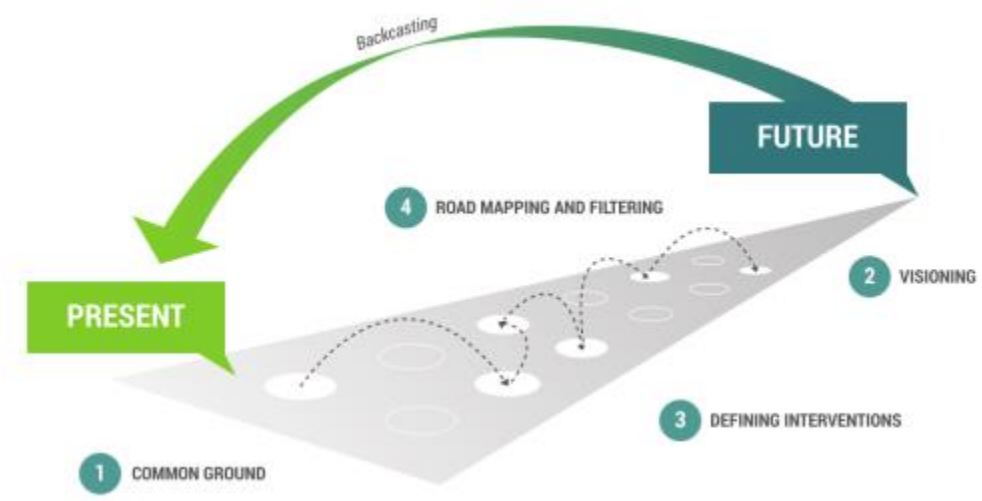
The method of the workshop consists of four steps:

1. **Common ground**
   In the first section, the participant get started with a short introduction to the general situation of horticulture in Limburg and they move on to sit together in groups and talk about challenges and opportunities for circular horticulture in Limburg.

2. **Visioning**
   In the second round the participants are introduced to the importance of developing a vision.. After that, they sit in groups and decide on keywords for their envisioned circular horticulture in Limburg.

3. **Defining interventions**
   The participants are introduced to the idea of systems thinking and leverage points and are asked to develop interventions for 3 challenges/opportunities that they defined earlier.

4. **Road mapping and filtering**
   In the SCREEN guideline, it is suggested that the participants structure and prioritize the interventions that have been defined and put them into a timeline that will then form a roadmap. We decided to have the participants define a roadmap for a single favourite intervention instead. This is then done by collectively defining stakeholders, needs and next steps for the intervention.



- **Output**

The results presented in this chapter are based on the workshop and on the interviews with the stakeholders by person or by phone.

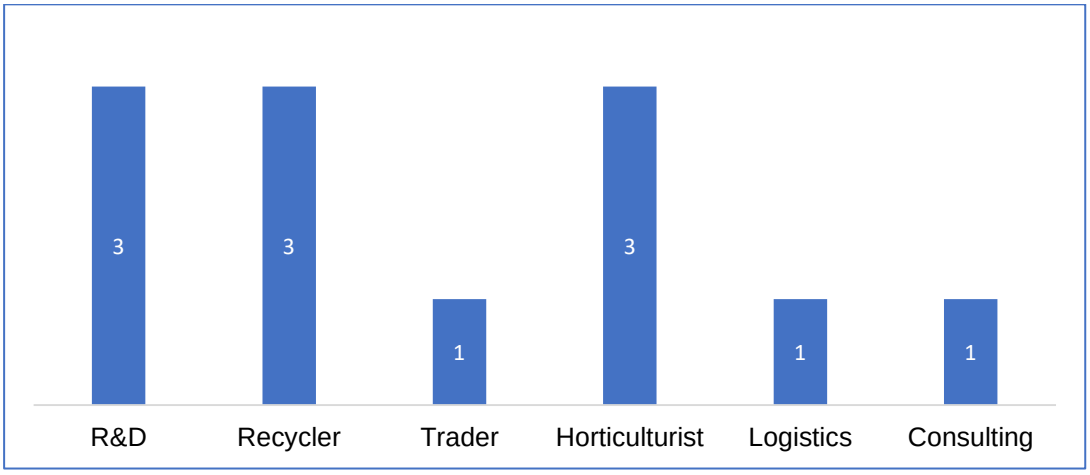


Figure 2: participants

In total 12 companies participated in the workshop, representing the value chain (Figure 2). Figure 4 and 5 in Annex 9 visualises two horticulture value chains of Limburg and the main processes taking place within them. Figure 4 in Annex 9 shows how packaging can add to the circularity of the sectors. The visualization has been based on public data (CBS, statline, Environmental data compendium, world resource institute).

Relevant resource streams of interest for a circular transition in horticulture are biomass, water, energy, nutrients, household waste and CO2 (Figure 3). Resources can be shared within the regional value chain (Figure 6). A challenge in the circular economy is often to find the right match between resources are waste at one place and potential inputs at another place.

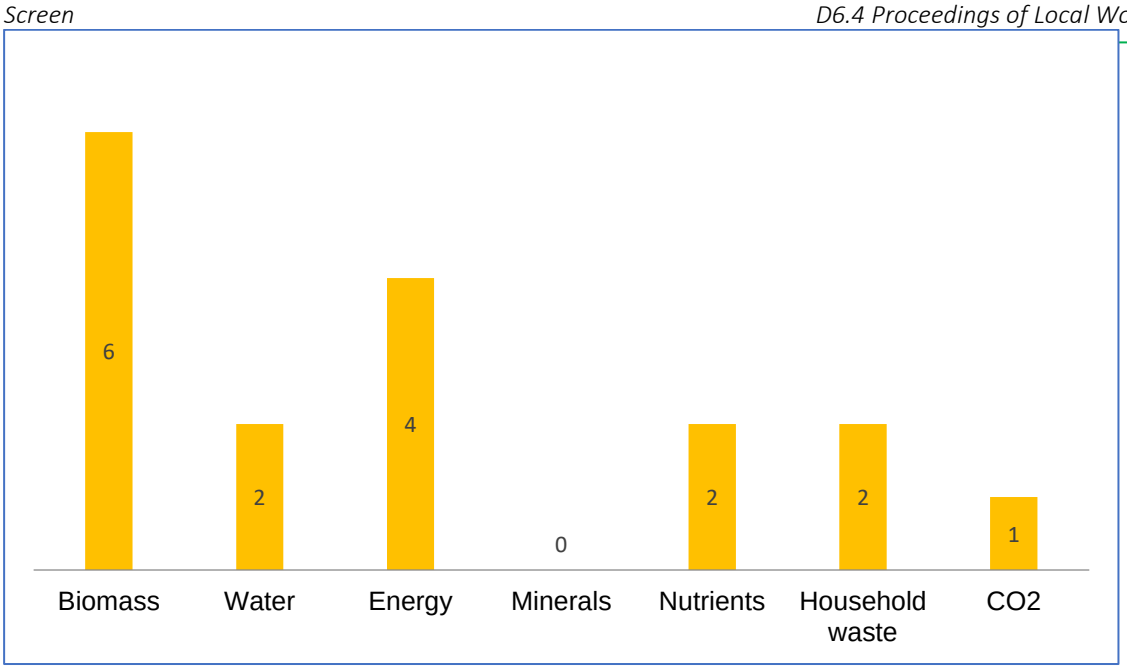


Figure 3: Relevant resource streams of interest according to the participants

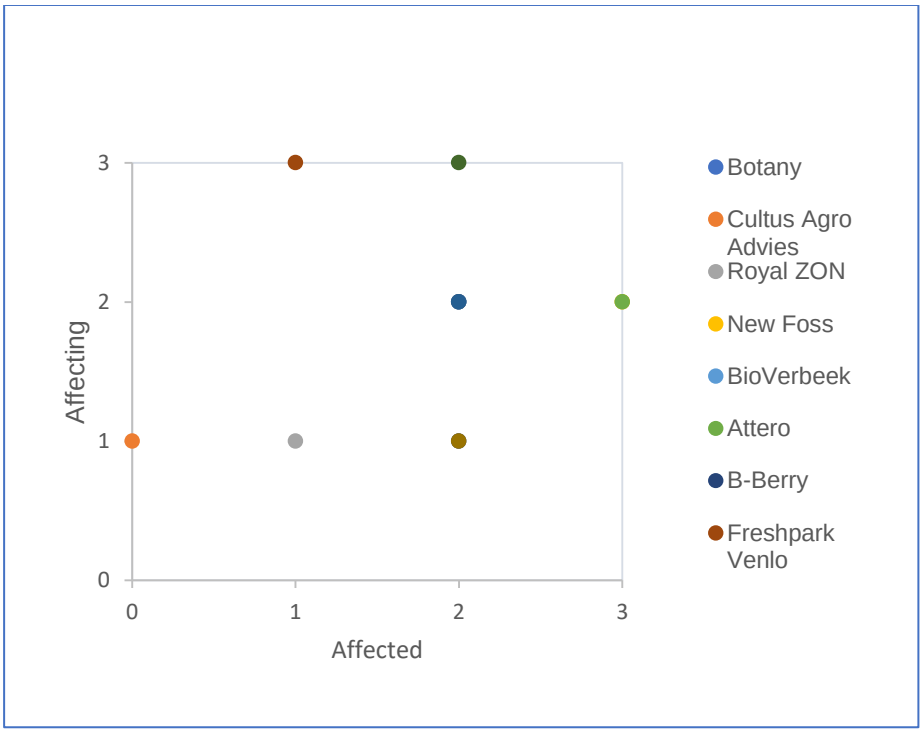


Figure 6 : Plot of stakeholder scores (affecting and affected)

Challenges, Opportunities and Barriers

During the workshop participants sat together in groups and talk about challenges, opportunities and barriers within the regional value chain and also discuss about which challenges and opportunities can be handled through cross-regional synergies and which can be handled within the region itself. Opportunities and barriers are presented in Figure 7.

Important barriers according to the stakeholders are (Figure 8):

- bureaucracy - innovators experience long waiting time for obtaining permits and licences
- regulation - entrepreneurs experience that the current regulation is hampering their attempt to facilitate the circular economy
- market – novel circular products can be difficult to get on the market
- investment – many entrepreneurs experience a lack of available financial support
- technology
- education – there is a lack of understanding of the technical challenges and opportunities in the circular economy
- collaboration

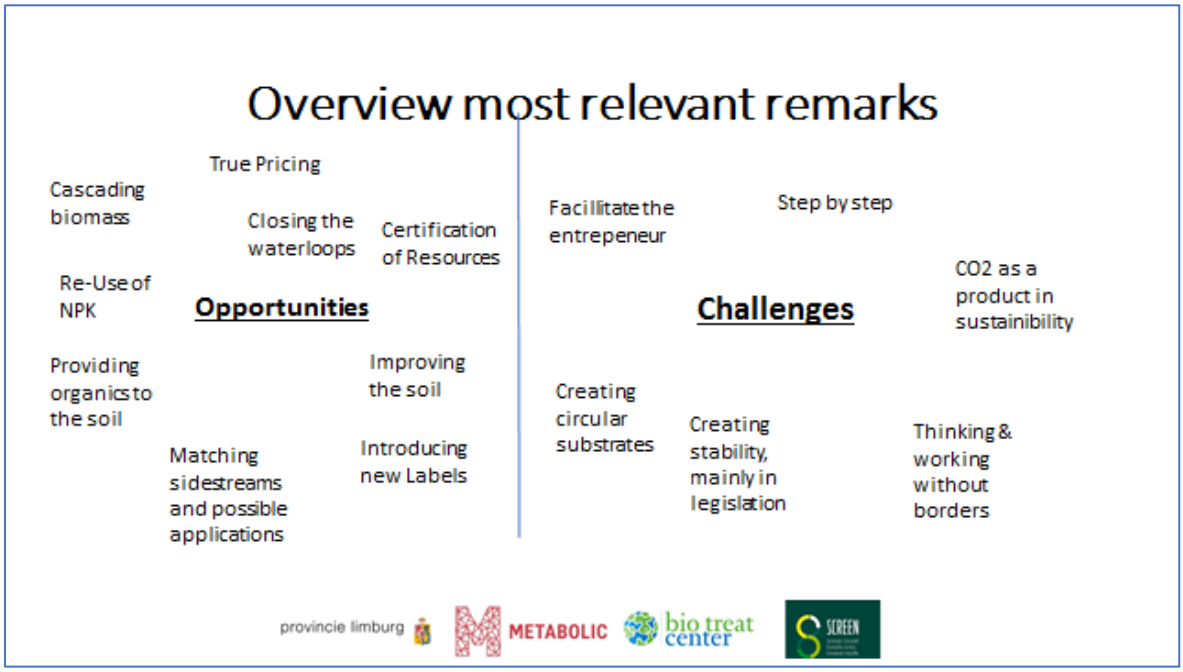


Figure 7: Opportunities and Challenges

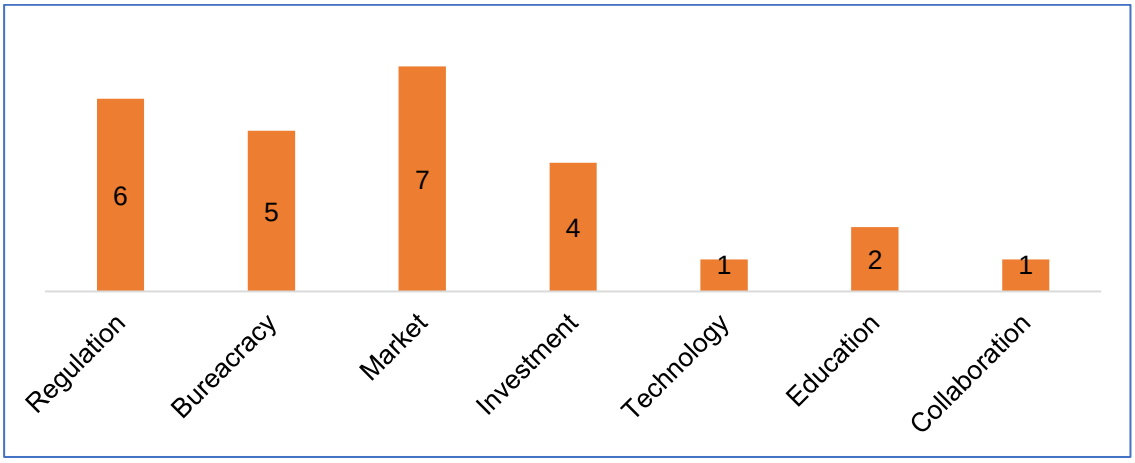


Figure 8: Identified barriers by stakeholders

Interventions

Stakeholders have defined interventions for the challenges, opportunities and barriers. In annex 6 the whole list of interventions is presented. Underneath a short summary including the suggested requested interventions for the province of Limburg (Figure 9).

- administrative support – make a 'fast track' for applications coming from companies that are working in a circular economy, establish a simple way of registering that a company is working to promote the circular economy and give them help to handle administrative processes
- incubation program – establish an incubation program or the most promising start ups within circular and biobased economy
- experimental zones – establish a geographical area where dispensations for new technologies related to circular or biobased economy are given more easily.
- governmental network – establish a working group with the municipalities and national government to identify and address important legislation that is underpinning circular economy initiatives.
- launching customer
- investment fund for circularity – support R&D
- sharing technologies – make a product library
- biomass platform
- food waste tracking – establish a way to monitor the amount of wasted food in the supply chain to be able to identify the most important problems to solve
- food waste strategies

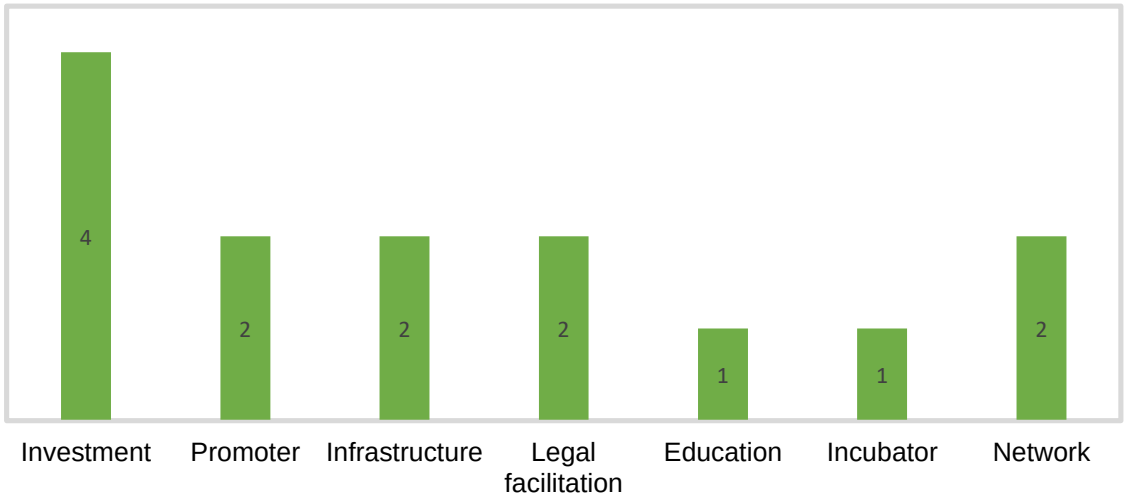


Figure 9 : Requested role of the province

Follow-up

In summary all the participated stakeholders are involved in circular economy in Limburg and are part of a regional value chain on circular horticulture. The workshop and the interviews with the stakeholders (by persons of phone) identified main challenges and opportunities, barriers and interventions for a circular horticulture in Limburg. It collected insights about the possible next steps to be taken by all stakeholders.

- future initiatives/partnerships/projects. To explore the suggested synergies between partners within regional value chains in more depth (facilitating Bio treat center, Venlo)
- prioritise and explore list of interventions which can be handled through cross-regional synergies within the SCREEN project and which can be handled within the region itself. (facilitating Province of Limburg)

22 Lazio Region

- **General information**

Workshop title: Local Workshops of the Lazio Region

Objectives of the workshop: Synergies with the stakeholders

Date and location of the workshop: 09 October 218, Univeristy of Tuscia, Viterbo

Number of attenants: 7 participants

Project partner: University of Tuscia

Workshop organisers: University of Tuscia

- **Executive summary**

The local workshop of the Lazio Region was held on October 9th 2018, at 12:00 – 13:30, at the venue of the University of Tuscia in Viterbo. The workshop was participated by the main stakeholders in the region, including representatives of companies, of local institutions, and of banks.

The workshop was preceded by the introduction of the current state of circular economy application within the region, a presentation of the SCREEN project, and of exemplar cases of application of the circular economy partnered by the University.

The open discussion raised two points: one related to the potential treats to the development of circular economy introduced by recent courts judgements in Italy, and the second related to the diffusion of re-usable use cases of circular economy to share among companies for stimulating the contagion and the diffusion of actual applications within the region.

- **Participants list**

- Università degli Studi della Tuscia
- Regione Lazio
- Lazio Innova
- Camera di Commercio

- Unindustria
- ASL Viterbo
- Banca Intesa

- **Agenda**

The local workshop was held on October 9th 2018 in Viterbo from 12:00 to 13:30 with the following agenda:

- Welcome address by the Rector of the University;
- Introduction to the local workshop;
- Introduction of participants;
- Presentation of sample cases of circular economy applications;
- Interactive discussion;
- Wrap-up.

- **Minutes of the Workshop**

The local workshop starts with the welcome address of the Rector of the University of Tuscia, which presents to the audience the vision of circular economy for the region, and the current status of applications within the region, including the role played by the University within the region.

Following the welcome address Prof. Alessio Maria Braccini presents the SCREEN project concept, the project plan, and the instruments realized to support circular economy application at the regional level, and the results achieved so far.

The agenda is continued with the presentation of two potential applications of circular economy developed within the region: the first one in the bio-chemistry domain of application based on the reuse of wood processing remains for the extraction of chemical nutrients, the other in the agriculture domain for the extraction of ceramic raw materials from the waste of chicken eggs production.

Following the introduction, the workshop continues with the interactive discussion among the participants. The discussion highlights the relevance of circular economy application at the economic level, and the adequate awareness that companies over the Lazio territory have in relation to this aspect.

The participants bring to the table the regulatory problems that potentially pose limitations to the reuse of waste, and potentially on circular economy applications. In particular the recent judgment of the Italian Council of State has taken the decision-making capabilities on the resources to be approved for reuse out of Regions, leaving it only to the central government and the European union.

The number of regulatory acts in terms of waste reuse is large and depicts a complex landscape so it is difficult for companies to understand what it is possible and what it is not. At the same time, the avoidance of the region role on the end-of-waste decision worries companies. To this regard the participants highlight the need to have some reference examples, demonstrators, or use cases that could show the actual applications of circular economy. Within the discussion the University of Tuscia presents the SCREENPLAY project proposal – under evaluation – and the knowledge base that it intends to develop and release to the public, containing the information on potentials, applications, and use cases of circular economy across the region.

- **Output**

The discussion raised two points as follow-up:

- Sharing sample application cases;
- Normative barriers for the reuse of waste in production cycles.

Concerning the first aspects, both regional and local representative organizations of entrepreneurs and firms pointed out the need to diffuse knowledge on potential applications of circular economy.

The presence of several financial funds over the territory to sustain innovation is not always matched with an adequate innovative capacity of entrepreneurs who would benefit from a knowledge base of exemplar application cases of circular economy, or from a stronger contact with entities active in innovation and research to instil a contagion effect on the territory.

The second aspect concerns instead the normative barriers to actual forms of waste reuse. A recent judgement of the Italian Council of State (February 28th 2018 n. 1229) ascribed only to the European Union and to the State the right to assert when a waste is considered end of life and could be reused as secondary raw material.

This is a potential problem because a strict interpretation of this judgement will prevent the recycle of resources which are not inserted in those listed in national and European regulation. Before this judgement regions could intervene on a case by case manner to authorize the recycle of resources not included in these lists.

23, 24 Flanders Region Workshops 1 and 2

- **General information**

Project partner: EWI Vlaanderen

Workshop organisers: EWI Vlaanderen

The Department of Economics, Science and Innovation organised two local workshops for the SCREEN project. Next to these workshop, a separate meeting with the responsible administrators of the structural funds in Flanders was organised as well. During these three meetings, the opportunities and barriers for the implementation of the SCREEN tools were discussed.

The local workshops assessed the possibilities to instore a certificate of excellence for circular projects. In order to keep the discussions as focussed as possible, it was decided to split the meeting into two groups. The groups were assembled following two promising circular technology trajectories in Flanders :

- Revalorisation of agricultural and organic waste streams for food, feed and non-food applications
- Fermentation and revalorisation of waste gases and CO2

Date and location of the workshop

The meetings were organised as follows :

1) From waste streams to applications :

   a. Datum: Maandag 18/06/2018, 13:00-15:30,

   b. Plaats: Gebouw Herman Teirlinck, zaal 01.55 - Hilda Ram, Brussels

2) Revalorisation of waste gases and CO2 :

   a. Datum: Donderdag 28/06/2018, 13:00-15:30,

   b. Plaats: gebouw Herman Teirlinck, zaal 01.42 - Alice Nahon

Number of attenants:

- Workshop 1 : 13 participants
- Workshop 2**:** 18 participants

- **Executive summary**

The circular economy in Flanders is an active community of industrial actors, start-ups, research groups and knowledge centres. Based on the historical economic activity in wood-based products and agro-food, new initiatives have sprung up and the initial formative years seem to have given way to a new phase where more complex technologies and value chains will be created.

The policy framework should also adapt to this new phase of development. A general conclusion is that generic policy instruments are not applicable any more as the diversity of solutions and technologies increases sharply. More targeted instruments and actions are necessary, requiring a more flexible policy framework. At the same time, closer interaction with the local stakeholders has to be created to maintain a close coherence with the policy makers.

The sector should investigate also options to structure itself more coherently. A better network can provide visibility, increased synergies and faster development. Also international partners may be better guided by a central structure in order to speed up international collaboration and project proposals.

The sector expresses a continuing need for more support for demonstration and pilot facilities. In theory, the proposed method of a 'seal of excellence' from the SCREEN project can help in this respect. There are however some crucial elements to be regarded in any future discussion about this instrument :

1) The stakeholders are very well acquainted with the different forms and conditions for subsidies and public finance. The overall objectives between of the Horizon 2020 framework and those of the structural funds are clearly different, even if there is a lot of effort from the EC to make both instruments better aligned to each other. The situation is still that often H2020 projects that are evaluated as excellent, are not adapted to the needs of the structural programs. It is possible that there is a match between the H2020 project and the objectives of the structural funds, but this is not obligatory. Therefore, the seal of excellence for a H2020 project cannot automatically lead to a regional financing support. There has to remain an regional evaluation to ensure that the project is also compatible with the requirements of the structural funds.

2) The economic stakeholders stress that the added value of European projects is most important for innovative investments. The consequence is that a seal of excellence should only be applied for highly innovative projects, that include infrastructure investments. This would provide the highest benefit for both instruments.

These conclusions have also been discussed with the responsible administrators of the structural funds. The principle lines for execution of a "seal of excellence" are in itself not contested. There are however two important practical considerations to make:

1) First, the budget for structural funds in Flanders is relatively small. The budget is also embedded in a multi-annual framework that is built up with long a large stakeholder involvement process. This

means practically that some years before the new multi-annual framework is started, the stakeholder involvement is started and the strategic lines of investment and activities are decided for the next seven years. These lines are further detailed until the entire budget is decided upon at the start of the new framework. During the present multi-annual framework, there is no budget left for any projects that are awarded a seal of excellence. So any contribution to new projects through a seal of excellence can only happen within the next multi-annual framework, starting 2021.

2) Secondly, the seal of excellence system does not follow the long-term development strategies that have been chosen by the stakeholders of the Flemish authorities. Any new project that is approved, does not necessarily fall within the strategic priorities. It is therefore necessary to investigate to what extent the approved project contribute to the strategic priorities that have been set out from the beginning, before granting support. This means that the project with a seal of excellence still will need to be evaluated at a regional level.

- **Participants list**

WORKSHOP 1

Van reststromen tot food, feed, biobased materials en chemicals: van onderzoek en ontwikkeling tot productie in Vlaanderen.

Datum: Maandag 18/06/2018, 13:00-15:30, Brussel

Plaats: Gebouw Herman Teirlinck, zaal 01.55 - Hilda Ram

Naam	Category
	Private innovative company
	Research institute
	Farmers' Association
	Specialised Consultant
	Administration
	Specialised Consultant
	Innovation cluster
	Research institute
	Private innovative company
	Administration
	Specialised Consultant
	Private innovative company
	Private innovative company

Workshop Thema 2

Gebruik van biogassen en CO2

Datum: Donderdag 28/06/2018, 13:00-15:30, Brussel

Plaats: Gebouw Herman Teirlinck, zaal 01.42 – Alice Nahon

Naam	Category
Bert Lagrain (KULeuven)*	Research institute
[redacted]	Research institute
	Specialised Consultant
	Administration
	Private innovative company
	Specialised Consultant
	Research Institute
	Research institute
	Cluster Organisation
	Private innovative company
	Private innovative company
	Administration
	Private innovative company
	Research facilitator
	Harbour authority
	Private innovative company
	Private innovative company
	Harbour authority
* : Verontschuldigd	

- **Agenda**

1. The two workshops with local stakeholders followed both the same agenda :

   13h00 Introduction and problem statement
   13h15 Review of survey results and discussion
   13h40 Discussion of new initiatives and options for economic development

   "What are the priority actions for stakeholders / research / authorities ?"

14h30 Organisation and coordination
Detailed discussion of initiatives that could stimulate circular investments

- Knowledge centre
- Interregional “Seal of Excellence” system

15h00 Conclusions

- **Output**

The Bioeconomy and circular economy policies in Flanders are currently being evaluated. This evaluation draws from the official policy document and stakeholder participation. In a first stage, an extensive survey was addressed to a wide range of private actors. Based on the survey results, priority themes were identified for the organisation of workshops. In these workshops, policy challenges were identified, discussed in detail, and potential options for solutions were proposed. This section includes a structured and shortened overview of the policy challenges, and provides a list of potential adaptation options.

Current challenges

In logistics and value chain construction:

- - The extension of the value chain towards the inclusion of primary producers remains problematic. Farmers and professional field laborers need to setup cooperatives, to be able to provide sufficient quantities of biomass or biomass waste streams. The creation of cooperatives is a time-consuming and complex process. However, the agricultural sector has a large experience in this type of set up.
- - Providers of industrial waste streams are often companies that are not interested in new circular industrial development. For instance, breweries can provide large quantities of spent grains for innovative chemical transformation, but their interest is not in creating new value chains for spent grains. Additional effort is necessary to motivate providers of waste streams to engage themselves in new value chains.
- - The most valuable waste streams are unmixed streams that can be easily transported and stored. This brings generic challenges for the recuperation of the available organic waste streams :

o The focus on separate collection of waste streams has to continue.

o Pre-treatment methods can increase the value and applicability of waste streams considerably. Drying, separating or compacting waste may provide sources that have new applications or that are easier to store and transport. Shared facilities for these pre-

treatments are currently not available, and this hampers the creation of new value chains. - Several technological projects are working on innovative value chains with gaseous intermediary or final products (CO, H2, CH4, ...). The density of the chemical and manufacturing industry in Flanders is

high, and as a consequence, the pipeline network for these gases is well developed. However, access to these private networks is very limited, and this also reduces the number of options for innovative business models making use of this infrastructure. .

In technological development and innovation

- The circular economy is created a very diverse group of actors spanning several sectors (agriculture, food and nutrition, pharma, chemistry, manufacturing, ...) The current spearhead cluster policy is too much sector-centred and provides no visibility to the circular economy network. There is no central network or focal point in the economic structure at the moment. Therefore, R&D projects cannot benefit from the spearhead cluster budgets and have to fall back to the generic and highly competitive R&D budgets. The circular economy does not seem to be a policy priority.
- The administrative procedures to create new pilot plants or business ventures remain too complex. The use of biobased materials provides an additional layer of complexity. The policy principle in Flanders is to focus on the Cascading use of biomass. In order to ensure the sustainable use of biomass, new bioeconomy ventures are expected to provide the highest added value for the biomass stream. This steers away from direct combustion or gasification for energy purposes.

  In itself this principle is accepted and understood by private partners. However, for more complex value chains, it is not possible to set up all necessary steps in the biorefinery process at once. There is an evolutionary process necessary to start from simple transformation steps and to gradually complexify the value chain structure and technologies. However, these first steps do not adhere to the optimal cascading rule. The more complex the value chain, the more necessary it is to look at the cascading use of biomass in a longer timeframe.

- International project become increasingly important. Flanders is limited in size and capacities, and international collaboration can bring new knowledge and initiatives from abroad. Moreover, the Flemish actors have demonstrated that their level of specialisation makes it possible to compete internationally, and this position should be maintained and reinforced.

For financing and business plan creation

- There is an uneven level playing field between applications of biomass for energy and for materials. Energy applications are less sustainable, provide lower added value, but can benefit from higher IRR as regional, national and European legislations and support instruments are not fully coherent for both applications. As a result, valuable waste streams of organic materials (municipal organic waste, black liquor from paper production,...) are used in direct combustion and the involved actors are not inclined to provide the basis to build up more innovative value chains.

Policy adaptation options

Several options have been proposed to improve the policy framework for the developing circular economy in Flanders.

1. Circular economy network organisation: Currently there is no representative of the diverse group of actors involved in the circular economy. A designated network representative could increase the visibility for policy makers and society. Additionally, the actor should also organise targeted networking activities. In the formative years of the circular economy, general networking events were organised gathering an increasingly diverse and large crowd of stakeholders. These events are no longer efficient. At the moment very targeted meetings should be organised, each time around one detailed technology or local value chain.

   Finally, the research and development activities are numerous but dispersed. More coherence and synergy can be achieved by increasing the knowledge on these initiatives amongst stakeholders.

Moreover, a central R&D knowledge centre should also support further internationalisation of the projects.

2. An advisory council. The current policy revision has highlighted the latest trends and challenges. It would be beneficial both for policy makers and private stakeholders to maintain a closer relation to the field activities in the future. It was proposed to instore an advisory council of private actors to work in parallel with the Interdepartmental Working Group at the policy level. This council should provide a bridge to channel feedback for policy discussions and information on new developments and initiatives to policy makers.
3. Permitting procedures. It can be investigated if the new legislation for temporary “regulatory poor areas” can be applied for circular initiatives. These areas are designed to allow experimental developments with temporary regulatory alleviation. The approach is powerful in enabling complex initiatives that span multiple societal areas and include several stakeholders. For innovative complex initiatives, these areas may be able to provide impetus.
4. Regulatory adaptation. Several legislative frameworks are built without taking the newest technological solutions into account. Markets for new products can be supported by adapting regulations, both within the regional authorities or by collaborating with the federal authorities:

   - Novel food regulations (to include opportunities for biobased ingredients made from organic waste streams)
   - Municipal solid waste treatment
   - Regulations for organic waste combination and usage

5. It remains difficult to find finance for two phases of new initiatives: pilot infrastructure and industrial development. Public venture capital is available in Flanders, but these institutions are not attuned to the specific working conditions of bioeconomic ventures.

25 KTN Local Workshop 1 in London

- **General information**

Workshop title:

Circular Economy across European Regions: building new collaborations through Horizon 2020

Date and location of the workshop: 22nd of November 2017, London UK

Project partner: KTN

Number of attenants: 35 participants

- **Executive Summary**

Workshop organised in collaboration with the UK's National contact Point for H2020 for Societal Challenge 5 and the European Enterprise network. It aimed attendees who are serious about applying and developing project ideas relevant to the forthcoming calls for Circular Economy. The event was actually interactive and focused on brokering collaborations for H2020 proposals.

- **List of participants**

Prefix	First Name	Surname	Company	Work Country
Mrs.			KTN	GB
Mr.			AFW	GB
Dr.			Tampere University of Technology	FI
Dr.			Tampere University of Technology	FI
Dr.			Imperial College London	GB
Mrs.			LCS Events	GB
Mr.			VELTHA ivzw	BE
Mrs.			VELTHA ivzw	BE
Mr.			Aston Business School	GB
Mr.			OxSDE	GB
Mrs.			FRCT - Regional Fund for Science and Technology (AZORES)	PT

Mrs.			Regional Directorate for Science and Technology	PT
Mrs.			Primorje-Gorski Kotar County	HR
Mrs.			Primorje-Gorski Kotar County	HR
Mr.			inventid	GB
Dr.			Topolytics	GB
Mr.			University of Greenwich Business School	GB
Ms.			Sofies UK	GB
Dr.			Sofies UK	GB
Prof.			University of Applied Sciences Western Switzerland	CH
Mr.			Siemens	GB
Mr.			Exergy LTD	GB
Mr.			HR Wallingford	GB
Dr.			Biotech Consultants Limited	GB
Mr.			Recycling Technologies	GB
Dr.			Vertech Group	FR
Prof.			Tampere University of Technology	FI
Dr.			TWI Ltd	GB
Mr.			Douglas Winters Associates Limited	GB
Mrs.			Learn to Re-create Limited	GB
Miss			Opportunity Peterborough	GB
Dr.			Leiden University Institute of Environmental Sciences	NL
Dr.			Loughborough University	GB
Mr.			Brunel University London - BCAST	GB
Mr.			Recycle2Trade LTD	GB

Calls covered by the discussion tables:

- Methods to remove hazardous substances and contaminants from end-of-life materials
- Independent testing programme on planned obsolescence
- Demonstrating systemic urban development for circular and regenerative cities
- Building a water-smart economy and society
- New technologies for the enhanced recovery of by-products
- Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes

  - Sustainable processing and refining of primary and/or secondary raw materials:
  - Recycling of raw materials from **end-of-life** products:
  - Recycling of raw materials from buildings:
  - Advanced sorting systems for high-performance recycling of complex end-of-life products:

- Raw materials policy support actions for circular economy (Lower priority
- Digital solutions for water: fostering digitisation, smartening water systems
- Bioeconomy cities: integrated system innovation in valorising urban biowaste
- Demonstrating systemic urban development for circular and regenerative cities
- Realising the potential of regional and local bio-based economies
- Integrated system innovation in valorising urban bio-waste
- Closing nutrient cycles
- Climate-smart and resilient farming
- Sustainable harvesting of marine biological resources
- Digital solutions for water: linking the physical and digital world for water solutions
- EU-India water co-operation

- **Agenda**

	Title	**Speaker**
09.30 – 10.00	**Arrival and Registration**	
10.00 – 10.10	Welcome and introductions	Claire Claessen, KTN
10.10 – 10.40	SCREEN project	Carlo Polidori, Regio di Lazio
10.40 – 11.10	Flash Delegate Introductions	**New contacts for future collaborations: Round table 30 second introductions**
11.10 – 11.40	Introduction to H2020 and forthcoming CE related Call topics, including case study examples from previous calls	Ewa Bloch, NCP
11.40 – 12.40	**Group exercise** – preparing a proposal summary	
12.40 – 13.00	Support with proposal preparation and consortium development	Chris Woodward, EEN
13.00 – 14.00	**Lunch and networking**	
14.00 – 14.30	Proposal template and evaluation criteria	Ewa Bloch, NCP
14.30 – 15.30	**Group exercise** – contribution to expected impact	Claire Claessen, KTN
15.30 – 16.15	Presentation of proposal ideas and feedback from presenters	
16.15 – 16.30	Next steps	Claire Claessen, KTN

26 KTN Local Workshop 2 in Manchester

- **General information**

Workshop title:

Local workshop with the Circular Economy Club, Manchester

Date and location of the workshop: 23rd of October 2018, Manchester UK

Number of attenants: 29 participants

Project partner: KTN

- **Executive Summary**

This report covers the SCREEN Local Workshop, which was held on the 23rd of October 2018 in Manchester. The workshop was organised by KTN in collaboration with the Circular Economy Club Manchester (CEC-Manchester).

The workshop brought together key businesses, academics and local authority representatives involved in Circular Economy in the Greater Manchester area.

The CEC-Manchester has been initiated by and is led voluntarily by Amanda Reid, who works as the Waste to Resource Innovation Network Manager for Manchester Met University. It is a networking platform to share best practice, to stimulate collaborations and innovation to drive forward the CE. It is open to all size and types of business, across all sectors and brings together both community groups and academia.

Having established the connection with the CEC Manchester, there are now several follow-up opportunities:

1) Outputs from the workshop to feed into the wider SCREEN mapping and analysis, adding a further regional perspective.
2) Interest and potential for the Greater Manchester Combined Authority to join the SCREEN Policy Lab going forward. Introduction between Carlo Polidori, SCREEN Project Manager, and Amanda Reid, CEC-Manchester, have been made to continue discussions.
3) Introduction between Amanda Reid and Cheryl Robb, Zero Waste Scotland, have been made. Opportunities for collaboration and best practice sharing are being established.
4) Potential for KTN to link in with other Circular Economy Clubs across UK and engage them with the SCREEN project.

- **List of participants**

Company	Prefix	First Name	Surname
Greater Manchester Combined Authority	Mr.		
North West Ambulance Service NHS Trust	Mrs.		
PA	Mr.		
Dsposal Ltd	Mr.		
REPIC Ltd	Miss		
Viridor	Mr.		
RTC North	Mr.		
Biocore Organics	Mr.		
Equitus Engineering	Mr.		
Lancashire LEP	Miss		
Vita	Mr.		
Desap	Ms.		
Bitcoin Manchester	Miss		
STFC	Dr.		
Your Ideal Business Partner	Mrs.		
Ecospheric Ltd	Mr.		
Macmillan Environmental Ltd	Mr.		
Cundall	Dr.		
Eunomia	Mr.		
Eunomia	Mr.		
The Knowledge Transfer Network	Ms.		
Dsposal	Miss		
The Knowledge Transfer Network	Mrs.		
The Knowledge Transfer Network	Mr		
Manchester Metropolitan University	Ms.		
Manchester Metropolitan University	Prof.		
Greater Manchester Combined Authority	Ms.		
Manchester Metropolitan University	Ms.		
Greater Manchester Combined Authority	Ms.		

- **Agenda**

Lead	Time	Detail
Arrival	5 - 5.30 pm	Networking and Drinks.
Amanda Reid – CEC-M Lead	5.30 – 5.40 pm	Welcome and Introduction.
Darren Hill Knowledge Transfer Network Viola Hay Knowledge Transfer Network	5.40 - 6.00 pm	Introduction to the Knowledge Transfer Network The SCREEN Project – A regional approach to the transition towards a Circular Economy.
Andrea Wyers Knowledge Transfer Network	6.00 – 6.10 pm	Regional CE analysis for the UK.
Mark Hilton BSc MSc Head of Sustainable Business Eunomia, Research and Consulting	6.10 - 6.25 pm	**Circular Manufacturing - Business case and models.**
Prof. Craig Banks Head of RKE Faculty of Science and Engineering Manchester Metropolitan University	6.25 – 6.40 pm	''Plugging the research gap'' Access to research funds and benefits of collaborating with MMU.
Workshop Identifying opportunities for cross-regional collaboration and HE sector research.	6.40 – 7.15 pm	This workshop will gather information on barriers and opportunities for cross-regional collaboration, looking at: Common assessment criteria for CE projects; Opportunities to access funding for CE initiatives with MMU.
7.15 – 7.45 pm Wrap up and further networking		

Circular Economy Club – Manchester
CEC's is an international event platform and network of Circular Economy professionals.
The club exists to spur collaboration by connecting professionals, because together we can make a bigger impact. Members are located all over the world and meet periodically through local CEC events, to network, collaborate and share knowledge.

The CEC-Manchester has been initiated by and is led voluntarily by Amanda Reid, who works as the Waste to Resource Innovation Network Manager for Manchester Met University. It is a networking platform to share best practice, to stimulate collaborations and innovation to drive

forward the CE. It is open to all size and types of business, across all sectors and brings together both community groups and academia.

CEC Manchester has the support of the Greater Manchester Combined Authority (GMCA).

Workshop Context

The event explored the question: *How can your business benefit from Circular Economy collaboration and access to research funding?*

The worlds resources are depleting, costs to import materials following Brexit will increase. Use of the UK's secondary material markets can provide continuity in supply and help provide self-sufficiency and resilience to the economic and resources challenges that lay ahead.

To utilise existing waste feedstocks more effectively there is a need to establish collaborative partnerships, regionally and between regions, between sectors and through the vertical value chains. Establishing waste materials as which can then be re-engineered and remanufactured.

The event gave participants the opportunity to find out about:

- SCREEN – A system approach focusing on cross-regional collaboration opportunities for the transition towards a Circular Economy. Funded by the EU's Horizon 2020 Programme.
- The progress that other UK regions are making.
- Access to research funds for your business – How the Higher Education sector (MMU) can plug the research gap to help your business realise the value of your waste materials.

Following the presentations there was a networking workshop, which aimed to identify potential barrier and opportunities for regional collaboration, and where HE sector research (MMU) can assist by increasing the value of your waste.

- **Minutes of the Workshop**

The workshop started with welcome and introductions from Amanda Reid, CEC-Manchester. Darren Hill from KTN's European Programmes Team then briefly introduced KTN, highlighted some of the collaborative projects KTN has been involved with (e.g. CRM Recovery, REBus Project) and presented a number of tools, which are useful for any company that want to innovate (e.g. Digital Readiness Level Tool, 4Manufacturing, Innovation Canvas).

Viola Hay then presented the SCREEN project, its four key steps, highlighting synergies for collaboration, funding and the Policy Lab. Viola also explained the common assessment criteria for Circular Economy projects. This was followed by Andrea Wyers, who presented preliminary findings from a regional Circular Economy analysis for the UK, highlighting specifics and comparisons between the Greater Manchester Region / North West of England and the rest of the UK.

After that, Mark Hilton from Eunomia spoke about circular manufacturing – business cases and models, providing a number of examples and case studies. Professor Craig Banks finished the presentation session, outlining access to funding and collaboration opportunities. After a short break, a workshop session followed in which delegates were asked to discuss barriers and opportunities for cross-regional collaboration, reflecting on value chain and waste flows.

- **Methodology**

In the workshop session, delegates worked in pairs and were provided with the following template as basis for their discussion.

Company Name and Contact:								
Which sector:	Healthcare *(pharmaceuticals)*	Food and Beverages *(Hospitality)*	Buildings and construction	Manufacturing *(WEEE Plastic Textiles)*	Agriculture	Transport	Communications	Chemical
Products / Services								
Suppliers: *(checking value chain)* List the principal material types used in manufacturing Where do your materials come from?								
Clients: *(checking onward*								

value chain) Please list: Sector / Location and Names where commercially available	
Waste materials from purchases manufacturing and end of life: *(identifying value for waste)* Via - Packaging and processing Where does your waste go? What is the cost?	

At the end of the workshop session, delegates had the opportunity to feedback to the rest of the room and get ideas and suggestions on their particular project challenges.

Six templates were completed, see full details under 6. Outputs. Brief summary of key ideas :

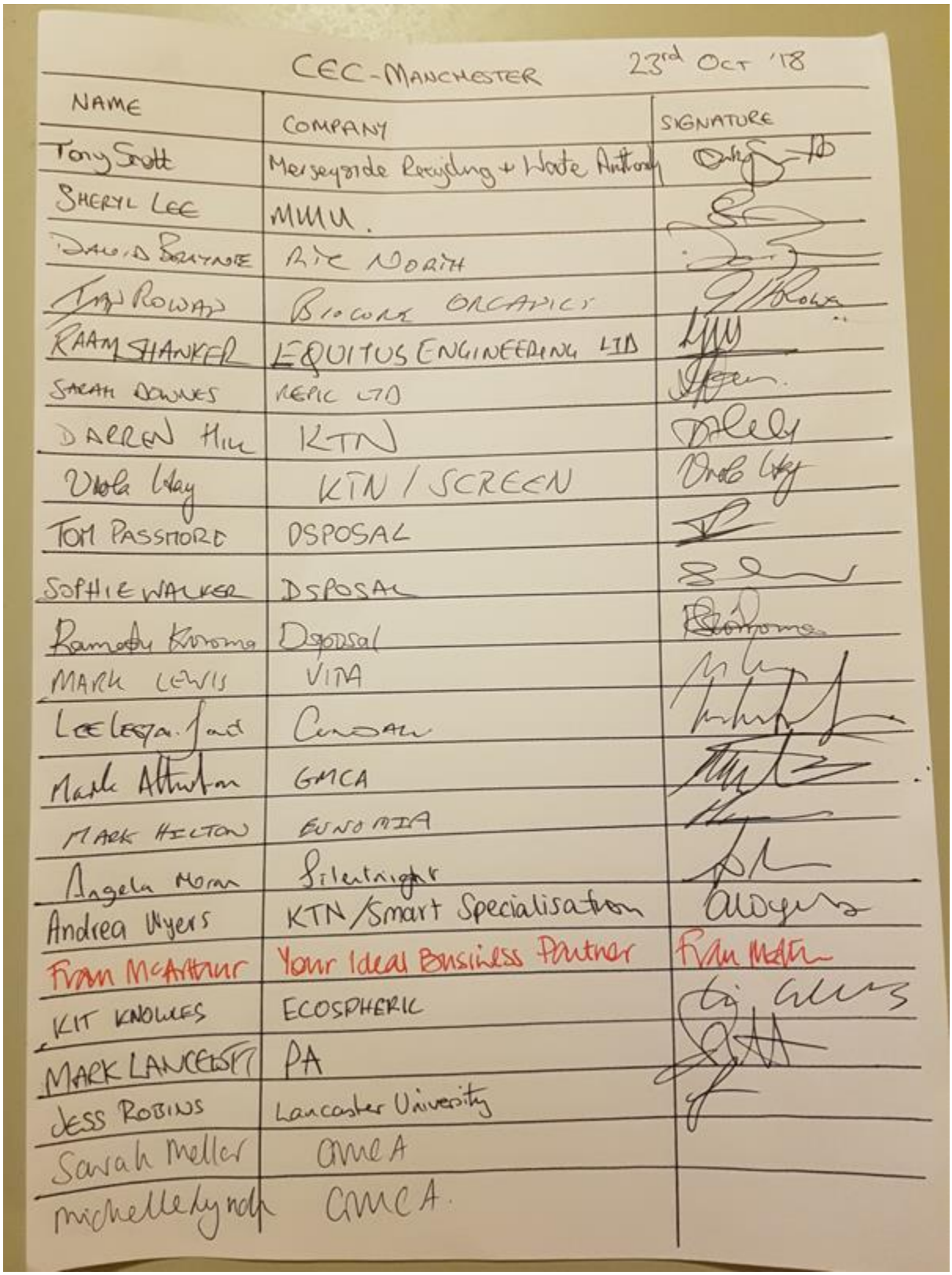
1) Silent Night: Company who produces matresses and wants to find solution to reuse and turn polyester fibres and PU foam into value-added products, e.g. as insulation material for roofs or walls.
2) Idea around affordable passive houses, looking at a modular approach using magnesium boards as fully breathable insulation solution.
3) Biocore: Idea around finding synergies between marine waste to by-product from Fishing Industry. The aim is to create product which can go into agricultural nutrient cycle.
4) Vodaphone: Idea to be more resourceful, component focused, reuse of equipment at end of life => lease kit on service model basis from supplier, e.g. Cisco.

- **Output**

Output 1: Mapping of current CE initiatives in the Greater Manchester area
This map was produced by stakeholders of the first CEC-Manchester meeting

Key IN USE IN PLANNING / RESEARCH IDEAS	CIRCULAR ECONOMY CLUB MANCHESTER - MAPPING OF CURRENT INITATIVES					
	Cities	Consumer products	Fashion	Food and Beverages	Manufacturing	Other
Design: For disassembly	The participant stakeholders asked to maintain confidential this output					
Resources: Biodegradable materials, renewable energy, clean processes, no hazadous chemicals, clean packaging						
Business Models: Product as a service, rent, re-sell, lease						
Product Life Extension: Reuse, share, redistribute, donate, repair, remanufacture						
Waste as a resource: Recycling, compost, energy from waste						

Sign-in Sheet



CEC-MANCHESTER 23rd OCT '18

NAME	COMPANY	SIGNATURE
Tony Scott	Merseyside Recycling + Waste Authority	
SHERYL LEE	MMU.	
DAVID BRAYNE	RIE NORTH	
TIM ROWAN	BIOCORE ORGANICS	
RAAM SHANKER	EQUITUS ENGINEERING LTD	
SARAH DOWLES	REPIC LTD	
DARREN HILL	KTN	
Viola Lilay	KTN / SCREEN	
TOM PASSMORE	DSPOSAL	
SOPHIE WALKER	DSPOSAL	
Ramadu Kuroma	Dsposal	
MARK LEWIS	VITA	
Lee Leggat	Cenosan	
Mark Atherton	GMCA	
MARK HELTON	EUNOMIA	
Angela Morris	Silentnight	
Andrea Myers	KTN/Smart Specialisation	
Fran McArthur	Your Ideal Business Partner	Fran McA
KIT KNOWLES	ECOSPHERIC	
MARK LANCASTER	PA	
JESS ROBINS	Lancaster University	
Sarah Meller	GMCA	
Michelle Lynch	GMCA.	

27 Nord Est Romania Region

- **General information**

Workshop title:
"ECONOMIA CIRCULARĂ LA NIVEL DE COMUNITĂȚI – ORAȘE ZERO DEȘEURI
(Circular economy at communities' level – Zero Waste Cities)

Objectives of the workshop:

Local Workshop. To know initiatives for agricultural plastic waste prevention and promoting joint reflections of the needs to be addressed in this area to achieve the objectives proposed by the Waste Plan of Navarre 2017-2027.

Date and location of the workshop:
16 octombrie 2018 - Iași, Unirea Conference Centre – Mezanin Room

Number of attendants:
47 participants

Project partner: ADR Nordest

- **Executive summary**

The North East Regional Development Agency organized on Tuesday, October 16, 2018, the workshop "Circular economy at community level - Cities ZERO Waste", held in Iasi, Hotel Unirea, starting at 09:30, according to of the attached agenda.

The transition to a circular economy guides the discourse on reuse, repair, refurbishment and recycling of existing materials and products.

Given the influence of integrated (integrated) waste management in the transition to a circular economy and the publication of the Zero Waste for Communities / Cities Guide as a concrete instrument, particularly important for urban planning, the event was the occasion for a pragmatic debate with Zero Waste Romania on the 20 measures included in the Zero Waste certification scheme, which has produced very short results in at least three of the cities that have joined Scheme (Tg Lapus, Salacea, Sf. Gheorghe), to which Oradea and Iasi will be added, now in different stages of implementation.

The lecturers presented the guidelines, the national and European framework as well as the concrete examples that facilitated circularity in Romania and answered participant's questions were: Elena Rastei, Sustainability Consultant and Circular Economics Specialist, co-author of the Zero Waste for Communities / Cities Guide;

Dr. Pasztay Zoltan-Atila, collaborator of Zero Waste Romania, pilot project coordinator UAT Salacea (Romania) for the separate collection of 5 factions, leading to overcoming the targets for reducing the amount of waste deposited at the pit: sorting at 60% recycling 40% of the amount of waste produced, within 3 months of assuming implementation of the Zero Waste strategy;

Stefano Ambrosini, an international consultant in the design of Integrated Waste Management Systems, involved in the pilot project in UAT Salacea, as well as in other 27 projects / localities (from Italy, Romania, Brazil, Russia, Philippines) in this field.

The organization of this event was facilitated by the Synergic Circular Economy across European Regions (SCREEN) project funded under the Horizon 2020 Program, where the North East Regional Development Agency is a partner since May 2017.

This project complements, along with other similar initiatives, the concerns of North-East RDA in the context of the European context, given that the circular economy is the main objective of a strategic package of actions to facilitate the transition to circular production models through a reviewing the regulations on incentives for the re-use of waste and by-products and the use of secondary raw materials.

- **List of participants**

#	Name	Organization	Category of stakeholder
1		Chemistry Faculty – Environment dept.	PhD student
2		Chemistry Faculty – Environment dept.	Master student
3		North-East RDA	Project partner
4		North-East RDA	Project partner
5		Zero Waste Romania	Lecturer - NGO
6		FAPTA	NGO
7		Bacau County Council	Public authority
8		ADIS Bacau	Waste system operator
9		APM Iasi	Environment protection local authority
10		APM Bacau	Environment protection local authority
11		APM Bacau	Environment protection local authority
12		APM Bacau	Environment protection local authority
13		Iasi County Council	Public authority
14		Chemistry Faculty – Environment dept.	Master student
15		Iasi Municipality	Local Public Authority

16		APM Neamt	Environment protection local authority
17		APM Iasi	Environment protection local authority
18		Roman Municipality	Local Public Authority
19		Salubris SA	Waste system operator
20		Chemistry Faculty – Environment dept.	Master student
21		Iasi County Council	Public authority
22		Chemistry Faculty – Environment dept.	Master student
23		Chemistry Faculty – Environment dept.	Master student
24		Iasi Municipality	Local Public Authority
25		Chemistry Faculty – Environment dept.	Master student
26		Comanesti Municipality	Local Public Authority
27		ECO VALEA MUNTELUI Comanesti	NGO
28		Chemistry Faculty – Environment dept.	PhD student
29		Chemistry Faculty – Environment dept.	PhD student
30		Buhusi Municipality	Local Public Authority (Mayor)
31		Bacau Municipality	Local Public Authority
32		Vaslui Municipality	Local Public Authority
33		Vaslui Municipality	Local Public Authority
34		Chemistry Faculty – Environment dept.	Master student
35		Chemistry Faculty – Environment dept.	Master student
36		Bicaz Municipality	Local Public Authority
37		Bacau Municipality	Local Public Authority
38		Tg. Frumos Municipality	Local Public Authority
39		APM Botosani	Environment protection local authority
40		APM Botosani	Environment protection local authority
41		Chemistry Faculty – Environment dept.	Assistant professor
42		Slanic Moldova Municipality	Local Public Authority

43		Radauti Municipality	Local Public Authority
44		Onesti Municipality	Local Public Authority
45		Comanesti Municipality	Local Public Authority
46		Waste Management Italy	Lecturer
47		Zero Waste Romania	Lecturer - NGO

- **Agenda**

09.00 – 09.30	Înregistrare participanți
09.30 – 10.30	*Sinergii regionale pentru economie circulară* – proiect SCREEN *Gabriela Bobeanu*, Agenția pentru Dezvoltare Regională Nord-Est
10.30 – 11.45	*Schema de certificare Zero Waste pentru comunități zero deșeuri* *Elena Rastei,* Zero Waste România
11.45 – 12.00	Pauză de cafea
12.00 – 13.00	*Sortarea și colectarea eficientă a deșeurilor* – Principii generale, strategie, studii de caz internaționale *Stefano Ambrossini,* Waste Management Specialist SRL
13.00 – 14.00	Pauză de prânz
14.00 – 14.30	*Contribuția pentru economia circulară* – OUG 74/2018 *Elena Rastei,* Zero Waste România
14.30 – 15.30	*Cum poți ajunge de la 2.5% la 60% sortare în doar 3 luni, în România?* studii de caz naționale *Zoltan Pastay, Expert durabilitate*
15.30 – 15.40	Pauză de cafea
15.40 – 16.30	Discuții și concluzii

- **Minutes of the Workshop**

The meeting was open by **Ms. Gabriela Bobeanu** (GB) who welcomed the participants, presented the regional context and the SCREEN project.

A **tour de table** was given. The audience included representatives of the municipalities, the waste management systems operators, students (master and PhD), university professors, environment protection authorities, NGOs.

Ms. Elena Rastei (ER) presented the Zero Waste movement (32 countries, 400 municipalities) and it's objectives to contribute to the Circular Economy Package.

The measures they propose divert up to 90% of the waste from waste deposits and reintroduce them to the economic cycle. The transition towards circular economy is the most efficient starting at local level because this is the level where we meet suitable, flexible instruments as well as the decision to implement such models, in order to obtain the desired impact.

Zero Waste Romania provides technical assistance for planning the measures, for free, to the municipalities that aim at achieving the zero-waste state, but the investments needed for implementing the plans are the responsibility of the municipalities.

Moreover, the guidelines help Romania to meet its European goals.

ER presented the 20 steps that a municipality should take in order to achieve the zero-waste statute.

ER saluted the presence of universities to the event as they are the main actors that can enable the re-use of secondary raw materials for new products; they should provide the technological solutions for re-use.

Mr. Stefano Ambrosini (SA) presented the rationale behind the integrated waste management cycle, based on the pyramid of priorities (bottom-up approach): citizens > local public authorities > operators > national authorities > results and described the working method with all the stakeholders involved.

SA gave examples from the different municipalities that implemented this model, as well as recommendations for Iasi, the only city from the North-East Region that is committed to achieve zero-waste.

The discussions concentrated on the collection services, monitoring of the process, citizens' and private actors' commitment, as well as on payment and financial instruments.

Mr. Zoltan Pasztay (ZP) presented the specific cases he managed in Romania and more in detail the case of Salacea municipality that reached the European targets in 3 month from implementation.

ZP also addressed the issue of integrating the diverted waste into the economic cycle and presented the steps to valorise the recovered resources, as a component of the circular economy concept.

The event was closed with a session of **questions and answers** regarding the newly introduces Gov. Dec. 74/2018 establishing the tax for circular economy in Romania, in relation to the low level of separated waste collection (6%) and the panel of experts clarified to the participants the implications that this law will have at local level.

- **Methodology**

The event was highly interactive due to the low level of awareness among the public authorities in North-East Region regarding their influence on fostering the transition towards the circular economy. At the same time, the participants understood the concept and the mechanisms to unleash the potential of transitioning to this economic model.

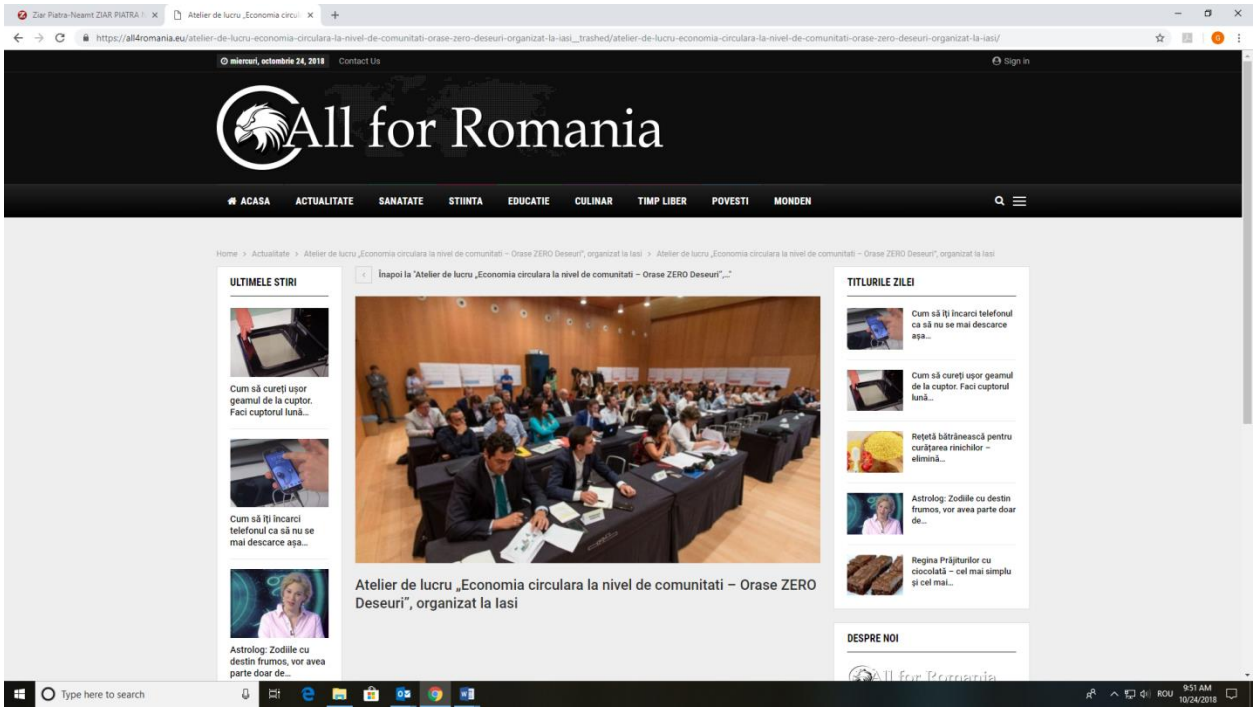
- **Output**

After the seminar, 3 municipalities represented in the room declared that they will adhere to the Zero Waste Network and will work on the Zero Waste Plan for their cities. This output would not have been obtained otherwise as this was the first and only Zero Waste presence in the North-East Region.

Attachments

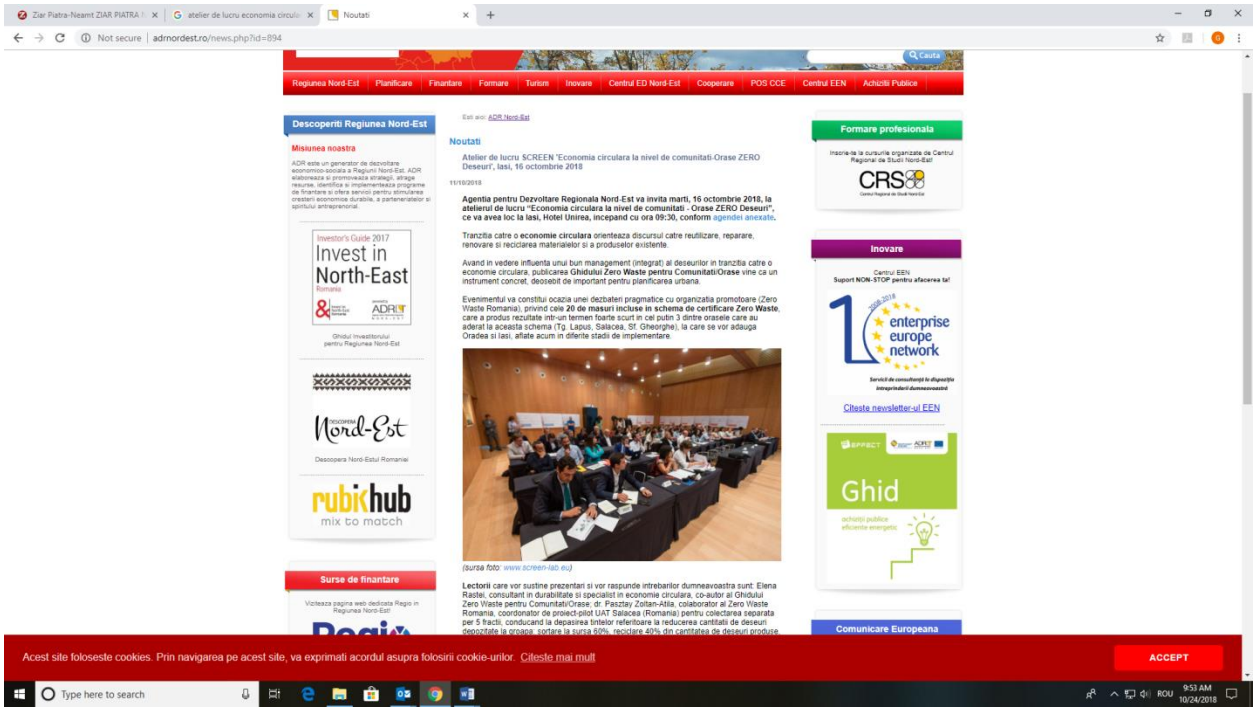
Presentations
Press articles

https://all4romania.eu/atelier-de-lucru-economia-circulara-la-nivel-de-comunitati-orase-zero-deseuri-organizat-la-iasi__trashed/atelier-de-lucru-economia-circulara-la-nivel-de-comunitati-orase-zero-deseuri-organizat-la-iasi/



https://www.bzi.ro/maine-are-loc-la-iasi-dezbaterea-economia-circulara-la-nivel-de-comunitati-orase-zero-deseuri-669652

http://adrnordest.ro/news.php?id=894


Not secure | adrnordest.ro/news.php?id=894
Regiunea Nord-Est
Planificare
Finantare
Formare
Turism
Inovare
Centrul ED Nord-Est
Cooperare
POS CCE
Centrul EEN
Achizitii Publice
Descoperiti Regiunea Nord-Est
Misiunea noastra
Investor's Guide 2017
Invest in North-East
Romania
Ghidul Investitorului pentru Regiunea Nord-Est
Descopera Nord-Estul Romaniei
rubikhub
mix to match
Surse de finantare
Noutati
Atelier de lucru SCREEN 'Economia circulara la nivel de comunitati-Orase ZERO Deseuri', Iasi, 16 octombrie 2018
11/10/2018
Agentia pentru Dezvoltare Regionala Nord-Est va invita marti, 16 octombrie 2018, la atelierul de lucru "Economia circulara la nivel de comunitati - Orase ZERO Deseuri", ce va avea loc la Iasi, Hotel Unirea, incepand cu ora 09:30, conform agendei anexate.
Tranzitia catre o economie circulara orienteaza discursul catre reutilizare, reparare, renovare si reciclarea materialelor si a produselor existente.
Avand in vedere influenta unui bun management (integrat) al deseurilor in tranzitia catre o economie circulara, publicarea Ghidului Zero Waste pentru Comunitati/Orase vine ca un instrument concret, dorit de mult pentru planificarea urbana.
Evenimentul va constitui ocazia unei dezbateri pragmatice cu organizatia promotoare (Zero Waste Romania), privind cele 20 de masuri incluse in schema de certificare Zero Waste, care a produs rezultate intr-un termen foarte scurt in cel putin 3 dintre orasele care au aderat la aceasta schema (Tg. Lapus, Salacea, Sf. Gheorghe), la care se vor adauga Oradea si Iasi, aflate acum in diferite stadii de implementare.
(sursa foto: www.screen-lab.eu)
Lectorii care vor sustine prezentari si vor raspunde intrebarilor dumneavoastra sunt: Elena Rastei, consultant in durabilitate si specialist in economie circulara, co-autor al Ghidului Zero Waste pentru Comunitati/Orase; dr. Pasztay Zoltan-Attila, colaborator al Zero Waste Romania, coordonator de proiect-pilot UAT Salacea (Romania) pentru colectarea separata pe 5 fracti, conducand la depasirea tintelor referitoare la reducerea cantitati de deseuri depozitate la groapa, sortare la sursa 60%, reciclare 40% din cantitatea de deseuri produse
Formare profesionala
CRS
Inovare
enterprise europe network
Citeste newsletter-ul EEN
Ghid
Comunicare Europeana
Acest site foloseste cookies. Prin navigarea pe acest site, va exprimati acordul asupra folosirii cookie-urilor. Citeste mai mult
ACCEPT
Type here to search
ROU
9:53 AM
10/24/2018

28 La Reunion Region workshops 1 and 2

- **General information**

Workshop1 title: How to adapt funding schemes for circular economy projects and initiatives ?

Objectives of Workshop 1

- Establish an overview of existing financing schemes
- Collect feedback on the available tools: identify gaps, difficulties, and success and evolution perspectives
- Organize a public discussion on the expected evolution of the funding instruments to better support circular economy projects, and address users' needs.
- Present and discuss the assessment criteria for circular economy projects developed in the Screen project

Workshop2 title: How to create value chains in circular economy

Objectives of Workshop 2

- **-**Assess the conditions of implementation of the SCREEN methodology on island context
- -Create a working group that will provide methodological support to value-chains animators
- -Develop tools to feed the regional circular economy plan
- -Identify reluctance, potential obstacles and levers in order to draft action plans for the transformation of value chains

Date and location of the two workshop:
4th of July 2018 , Reunion Island Saint-Denis

Number of attendants:
84 participants

Project partner: NEXA

- **Executive summary**

The Regional Council of La Reunion is responsible for the definition and implementation of the Regional Plan for Waste Prevention and Management, which determines the objectives and orientations of waste reduction, reutilisation and treatment for the next 12 years. This document also comprises a Regional Action Plan for Circular Economy that aims at transforming production, distribution and consumption modes to build an ecological economy, which respects the capacities, limits and rythms of local ecosystems. To design this action plan, Nexa has capitalized on the methodology developed during the SCREEN project and adopted a participatory approach, through the organization of several workshops and working groups to identify and address the challenges faced by regional stakeholders. During this consultation, a specific day was organized on July 4th, to discuss the SCREEN methodology and two main questions that are the titles of the two workshops.

- **List of participants**

Workshop 1: How to adapt funding schemes for circular economy projects and initiatives?

Surname	Name	Organisation	Category
		CINOR	public administration
		SICR-GREEN	non profit organization
		REGION REUNION	public administration
		ARCT	non profit organization
		Ademe	public administration
		R2D2	non profit organization
		SAS RVE	companies
		SREPEN-RNE	non profit organization
		DIECCTE Réunion	public administration
		SPL Energies Réunion	public administration
		DIECCTE Réunion	public administration
		Ocean conseil	companies
		ecopal	companies
		Cirad	R&D
		Bourbon Plastiques Bâtiment	companies
		Suez - Maison pour rebondir	companies
		ASES	non profit organization
		ASES	non profit organization
		SREPEN	non profit organization
		Les Rencontres alternatives	non profit organization
		actoi	companies
		Association Ecologie Réunion	non profit organization
		AGORAH	public administration
		CPME	non profit organization
		Fibres Industries Bois	companies
		FRCA/CIRAD	R&D
		Chambre Régionale de l'Economie Sociale et Solidaire	public administration
		Cyberun	non profit organization
		Ileva	non profit organization

		SYDNE (Syndicat des Déchets du Nord et de l'Est de La Réunion)	non profit organization
		Bureau Recyclage	companies
		Micronotes	companies
		Cyberun/Maoteo	non profit organization
		SCIC Vavang'Art	companies
		Association des Solidaires de l'Economie Sociale	non profit organization
		Ileva	non profit organization
		CINOR	public administration
		ASES	non profit organization
		AFD	public administration
		JCER	non profit organization
		Ressourcerie lela Adrie	non profit organization
		Zéro Déchet la Réunion	non profit organization
		cma	public administration
		ATBR AVPUR	non profit organization
		REGION	public administration
		TCO	public administration
		REGION REUNION	public administration
		Institut d'Insertion par l'Innovation	non profit organization
		SERR - SR BTP (SEDDRe)	non profit organization
		Phytoépuration	companies
		Technopole	public administration
		EmRun	companies
		EmRun	companies
		Hubex	companies
		Green Mobility Energy oi	companies
		Green Mobility Energy oi	companies

•

Workshop 2 : how to create circular economy value chains?

Surname	Name	Organisation	Category
		SICR-GFREEN	non profit organization
		Région	public administration
		metal reunion	companies
		Thèse	R&D
		Région	public administration
		SAS RVE	companies
		DIECCTE Réunion	public administration
		SPL Energies Réunion	public administration
		ADIR	non profit organization
		ecopal	companies
		Cirad	R&D
		Bourbon Plastiques Bâtiment	companies
		AFNOR Réunion	non profit organization
		Association Ecologie Réunion	non profit organization
		AGORAH	public administration
		FRBTP	non profit organization
		Fibres Industries Bois	companies
		FRCA/CIRAD	R&D
		Cyberun	non profit organization
		SYDNE (Syndicat des Déchets du Nord et de l'Est de La Réunion)	non profit organization
		Bureau Recyclage	companies
		SCIC Vavang'Art	companies
		CINOR	public administration
		R2D2	companies
		Zéro Déchet la Réunion	non profit organization
		CMA	public administration
		ATBR AVPUR	non profit organization
		TCO	public administration
		REGION REUNION	public administration
		Institut d'Insertion par l'Innovation	public administration
		SERR - SR BTP (SEDDRe)	non profit organization
		EmRun	companies
		EmRun	companies

		Region antenne Est -ESS	public administration
		BIOALGOSTRAL.	companies
		Make sens	non profit organization
		IRT	public administration
		metal reunion	companies

- **Agenda**

Agenda : Circular Economy Workshop, Reunion Island, 4th of July 2018
9:30 _ Registration of participants and Welcome coffee
Workshop 1
10:00 _ Introduction: - The regional circular economy action plan - Funding issues in relation to the circular economy transition - Introduction to the SCREEN project
10:15 _ Ice breaker
10:25 _ Group session 1 : Inventory and feedback on existing financing tools of circular economy available to Reunionese actors
10:50_ Group Session 2 : Expected evolution of local funding schemes and organization; discussion on circular economy assessment criteria.
12:00 _ Collective restitution
NETWORKING LUNCH BREAK
Workshop 2
14:00 _ Introduction to the SCREEN Methodology
14:15 _ Group work: how to create value chains in circular economy?
15:30 _ Collective restitution
16:00 _ Closing session

- **Minutes of the Workshop**

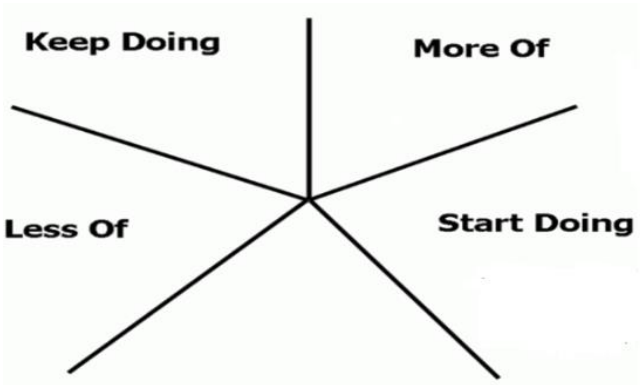
Workshop 1: How to adapt funding schemes for circular economy projects and initiatives ?

To ensure the active implication of each participant, ease the discussion and collect specific inputs, the attendees were first divided into small thematic groups according to their field of intervention: public and private funding organizations, “traditional” firms, waste management structures and stakeholders active in social economy initiatives.

The creativity session began with a 10 minutes ice-breaker to help participants know each other and setup a relaxed and productive atmosphere. Participants were invited to share their best or worst experience in the financing experience.

During the next 25 minutes, each group listed the funding instruments available to their field of activity and rated these tools according to several criteria such as access conditions, ease of use, expenses covered, aid intensity, etc.

The last hour was dedicated to a collective discussion of the regional funding system, through the use of a creativity tool called “starfish”. In each group, the participants were first invited to fill post-its on 5 items to criticize the existing tools and suggest improvement.



These post-its were then shared among participants, and a moderator eased the discussion to build a common vision and concrete propositions. These conclusions were then shared among the groups through 3 minutes presentation.

A specific group, composed of representatives of public institutions and SME’s representative was organized to question the assessment criteria of circular economy project.

Workshop 2 : how to create circular economy value chains ?

The second workshop was dedicated to the construction or transformation of circular economy value chains.

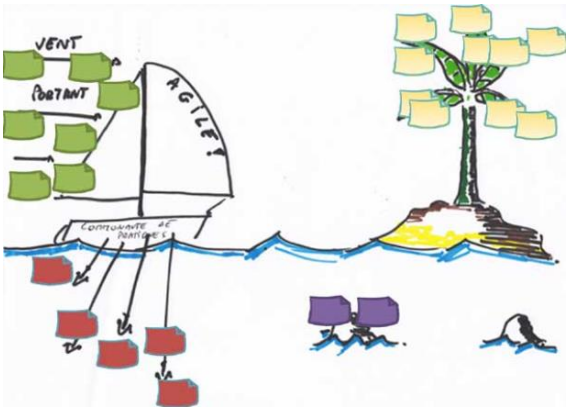
It began with a general overview of the objectives of the regional action plan for circular economy and a specific session on the challenge of building synergies among regional actors, through the presentation of the methodology developed in SCREEN project, task 3.1.

Participants were then divided into small groups, according to their field of activity and interest :

- A first group, composed of economic developers, clusters, and consultants, worked on the adaptation of the “roadmap for building circular values chains” to the island context, characterized by physical isolation, a reduced economy diversity a limited number of stakeholders.

- The second group focused on a particular challenge of the methodology : how to collect and present data related to the value chains, such as stakeholders, energy and material flows, hotspots, and emerging ideas, etc.
- The two last groups brought together representatives of local value chains.

Two main animation methods were then mobilized, during 1h15. For the first group, the different steps and tools of the SCREEN guidelines were printed on large supports, stuck to the walls and participants were invited to walk around, comment and suggest modifications. Their inputs were then collected to re-create a new roadmap, which indicates the pilot of each action. The three other groups engaged on a creative session, supported by a moderator and a visual tool called the "speedboat". This tool allows participants to collectively define their objective, represented by an island, and to identify the driving forces (represented by favourable winds), the internal barriers (anchors) and external limits (currents), which favour or inhibit the progression of the project team toward this end. In our case, the speedboat was used to identify levers and obstacles to build synergies across relevant actors, from the regulatory, technical, environmental and social angles, based on past experiences and perceptions.



- **Output**

At the end of the first workshop, a large number of concrete deliverables were produced :

- a catalogue of the existing funding mechanisms for circular economy projects
- a comprehension of direct users' experiences and expectations, that will be used to improve the funding system

- the foundation of a public funding committee for circular economy, which will be mobilized to coordinate the instruments mobilized, and reinforce the synergy between regional and European funds
- the design of a project support scheme, that will help stakeholders identify and access to the available financing instruments
- a local circular economy assessment methodology based on the criteria developed through the SCREEN project.

The second workshop led to the definition of :

- a regional circular economy observatory, that will define and share methodologies to produce, collect and share data among economic developers and public institutions
- a validated methodology to accompany the transformation of existing value chains
- a support tool to identify challenges and hotspots and establish connections with emerging ideas, through a circular economy project incubator

The outputs of this workshop were then integrated in the regional action for circular economy, which will be implemented in 2019.

ANNEXES

Annex 1 - Primorje-Gorski Kotar

Pictures of the workshop

Annex 2: FRYSLÂN

Pictures from the workshop and title of the presentation from Bart Vol

Annex 3: LODZKIE

Workshop 1

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
1	Pani	[redacted]		Specjalista ds. Współpracy Międzynarodowej	ASM Centrum badań i Analiz Rynku	
2	Pani			Prezes Zarządu	ASM Centrum badań i Analiz Rynku	
3	Pan			Główny Ekolog ds. Klientów Korporacyjnych	Bank Ochrony Środowiska	
4	Pani			-	Centrum Badań i Innowacji Pro-Akademia	
5	Pani			-	Centrum Innowacji i Transferu Technologii Uniwersytet Medyczny w Łodzi	
6	Pani			-	Centrum Innowacji i Transferu Technologii Uniwersytet Medyczny w Łodzi	
7	Pani			-	Centrum Innowacji i Transferu Technologii Uniwersytet Medyczny w Łodzi	
8	dr n. med.			Dyrektor	Centrum Innowacji i Transferu Technologii UM	
9	Pani			Koordynator ds. obsługi administracyjnej i monitoringu Klastra	Centrum Kooperacji Recyklingu – not for profit system sp. z o.o. / Koordynator Klastra	
10	Prof.			Zastępca Dyrektora	Europejskie Regionalne Centrum Ekohydrologii PAN	

Projekt finansowany ze środków programu ramowego Unii europejskiej w zakresie badań naukowych i innowacji

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
11	dr n. farm	[redacted]		Manager ds. organizacji i rozwoju	Fundacja dla Uniwersytetu Medycznego w Łodzi	
12	dr			Prezes	Fundacja Rozwoju Przedsiębiorczości	
13	Prof.			-	Instytut Elektroniki	
14	Pani			Kierownik Działu Zarządzania Projektami, Innowacji i Wdrożeń	Instytut Medycyny Pracy im. Prof. dra med. Jerzego Nofera	
15	Pan			-	Instytut Nauki i Techniki Stipendium	
16	Prof. dr hab.			Zastępca dyrektora ds. naukowych	Instytut Ogrodnictwa	
17	Pan			Dyrektor	Instytut Technologii Bezpieczeństwa „MORATEX"	
18	dr hab. inż.			-	Katedra Fizyki Molekularnej PL	
19	dr			-	Katedra Fizyki Molekularnej PL	
20	dr			-	Kaledra Geografii Regionalnej i Społecznej UŁ	

Projekt finansowany ze środków programu ramowego Unii europejskiej w zakresie badań naukowych i innowacji

Annex 3: LODZKIE

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
21	dr hab.	[redacted]		Dyrektor Instytutu Geografii Społeczno-Ekonomicznej i Organizacji Przestrzeni	Katedra Geografii Regionalnej i Społecznej UŁ	
22	Pan			Dyrektor	Łódzki Rynek Hurtowy " Zjazdowa" SA	
23	Pan			Prezes Zarządu	Łódzki Rynek hurtowy " Zjazdowa" SA	
24	dr			Prezes	NAPIFERYN BIOTECH SP. Z O.O.	
25	Pan			-	OLP Sp. z o.o.	
26	Pani			Prezes Zarządu	OPAL Sp. z o. o.	
27	Pan			-	Przedsiębiorstwo Amepox	
28	dr inż.			-	Przedsiębiorstwo Amepox	
29	Pan			Dyrektor	Przedsiębiorstwo Energetyki Cieplnej sp. Z o. o.	

[redacted]

Al. Piłsudskiego 8 90-051 Łódź

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
30	Pan	[redacted]		Właściciel	STAL-CAR	
31	Pan			Właściciel	STAL-CAR	
32	Pan			Właściciel	STAL-CAR	
33	Pan			Dyrektor Zarządzający	STAL-CAR	
34	Pani			-	Urząd Statystyczny w Łodzi	
35	Pani			-	Urząd Statystyczny w Łodzi	
36	Pani			-	Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej	
37	prof. dr hab.			Wydziałowy Koordynator ds. współpracy z pracodawcami i biznesem	Wydział Biologii i Ochrony Środowiska UŁ	
38	Prof.			Prodziekan Wydziału Chemii ds. Współpracy z zagranicą	Wydział Chemii UŁ	

Projekt finansowany ze środków programu ramowego Unii europejskiej

Annex 3: LODZKIE

Al. Piłsudskiego 8 90-051 Łódź

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
39	dr hab. inż.	[redacted]		Prodziekan ds. Nauki Wydziału Elektrotechniki, Elektroniki, Informatyki i Automatyki Politechniki Łódzkiej	Wydział Elektrotechniki, Elektroniki, Informatyki i Automatyki Politechniki Łódzkiej	
40	dr hab. inż.			Prodziekan ds. Rozwoju i Współpracy z Gospodarką	Wydział Fizyki Technicznej, Informatyki i Matematyki Stosowanej Politechniki Łódzkiej	
41	mgr			-	Wydział Inżynierii Procesowej i Ochrony Środowiska PŁ	
42	dr hab. inż.			Prodziekan ds. Studenckich i Promocji Wydziału	Wydział Inżynierii Procesowej i Ochrony Środowiska PŁ	
43	dr hab. n.med.			Kierownik Pracowni Hodowli Komórkowych i Analiz Genomowych - Pracownia Hodowli Komórkowych i Analiz Genomowych	Wydział Nauk Biomedycznych i Kształcenia Podyplomowego Uniwersytetu Medycznego w Łodzi	
44	Pan			Członek Zarządu	Związek Międzygminny " Bzura"	

Projekt finansowany ze środków programu ramowego Unii europejskiej

Warsztaty regionalne w ramach projektu „Europejskie regiony na rzecz synergii w gospodarce cyrkularnej" (SCREEN)

14 września 2017 r. w godzinach 10.00 – 13.00

Urząd Marszałkowski Województwa Łódzkiego,

Al. Piłsudskiego 8 90-051 Łódź

LP	tytuł	imię	nazwisko	funkcja	nazwa jednostki	podpis
45	dr hab inż	[redacted]		Prodziekan ds. kształcenia	Wydział Chemiczny PŁ	
46				CEO	Heim dll Combi System	
47					UNED	
48					UŁ	
49					Instytut Energetyki	
50					Izba Rzemiosła i Przedsiębiorczości	
51						
52	dr hab					
53						
54						

Projekt finansowany ze środków programu ramowego Unii europejskiej w zakresie badań naukowych i innowacji „Horyzont 2020" na podstawie umowy o udzielenie dotacji

Lodzkie Workshop 2

Annex 3: LODZKIE

LP	imię	nazwisko	funkcja	nazwa jednostki	podpis
1.	[redacted]		Członek Zarządu	A&A Marketing Sp. z o.o.	
2.			International PR Manager Dział Współpracy Międzynarodowej	ASM Centrum Badań i Analiz Rynku	
3.			Prezes Zarządu	ASM Centrum Badań i Analiz Rynku	
4.			-	Centrum Badań i Innowacji Pro-Akademia	
5.				Europejskie Regionalne Centrum Ekohydrologii PAN	
6.			CEO	Hemidal Combat System	
7.				Instytut Geografii Przestrzennego i Zagospodarowania PAN, Zakład Geografii Wsi i Rozwoju Lokalnego	
8.			Dyrektor Instytutu Geografii Społeczno-Ekonomicznej i Organizacji Przestrzeni	Katedra Geografii Regionalnej i Społecznej UŁ	
9.			Prezes	OLP Sp. z o.o.	
10.			Prezes Zarządu	OPAL Sp. z o. o.	
11.			Kierownik	Regionalny Punkt Kontaktowy Programów Badawczych	
12.			Wiceprezes Oddziału Śląskiego	Stowarzyszenie "Polski Ruch Czystej Produkcji"	
13.			Sekretarz Oddziału Śląskiego, koordynatorka studiów podyplomowych dot. GOZ na Politechnice Śląskiej	Stowarzyszenie "Polski Ruch Czystej Produkcji"	
14.			Kierownik Łódzkiego Ośrodka Badań Regionalnych	Łódzki Ośrodek Badań Regionalnych	

		Łódzki Ośrodek Badań Regionalnych	
15.	-		
16.	-	Wydział Inżynierii Procesowej i Ochrony Środowiska PŁ	
17.	-	Wydział Inżynierii Procesowej i Ochrony Środowiska PŁ	
18.	Prodziekan ds. Studenckich i Promocji Wydziału	Wydział Inżynierii Procesowej i Ochrony Środowiska PŁ	
19.	Z-ca Kierownika Projektów	Instytut Włókiennictwa	
20.	-	Instytut Gospodarki Przestrzennej Uniwersytet Łódzki	
21.	Burmistrz	Urząd Miasta Brzeziny	
22.	Prezes	Beyond The Future Sp. z o.o.	
23.	Właściciel	Niezależni Inżynierowie Doradztwo Inwestycyjne	
24.	-	Uniwersytet Łódzki	
25.	Pełnomocnik Prezydenta Pabianic	Urząd Miejski Pabianice	
26.	Prokurent	OLP Sp. z o.o.	
27.	Kierownik	RZGW Warszawa	
28.	Menedżer ds. Klientów Kluczowych	ESRI Polska	
29.	Kierownik Zakładu Fizjologii Pracy i Ergonomii	Instytut Medycyny Pracy	
30.	Zakład Zagrożeń Fizycznych	Instytut Medycyny Pracy	
31.	Kierownik Zakładu Bezpieczeństwa Chemicznego	Instytut Medycyny Pracy	
32.	Kierownik Pracowni Biochemii i Monitoringu Środowiskowego Substancji Organicznych	Instytut Medycyny Pracy	
33.	Krajowe Centrum Promocji Zdrowia w Miejscu Pracy	Instytut Medycyny Pracy	
34.	Kierownik Pracowni Środowiskowych Zagrożeń Reprodukcji	Instytut Medycyny Pracy	
35.	Krajowe Centrum Promocji Zdrowia w Miejscu Pracy	Instytut Medycyny Pracy	
36.	Statystyk	Instytut Medycyny Pracy	

Annex 3: LODZKIE

Annex 3: LODZKIE

37.	[redacted]	Kierownik Krajowego Centrum Promocji Zdrowia w Miejscu Pracy	Instytut Medycyny Pracy	
38.		Zakład Zagrożeń Fizycznych	Instytut Medycyny Pracy	
39.		Dział Zarządzania Projektami, Innowacji i Wdrożeń	Instytut Medycyny Pracy	
40.		Kierownik Zakładu Psychologii Zdrowia i Pracy	Instytut Medycyny Pracy	
41.		Kierownik Zakładu Zagrożeń Fizycznych	Instytut Medycyny Pracy	
42.		Zakład Bezpieczeństwa Chemicznego	Instytut Medycyny Pracy	
43.		Krajowe Centrum Promocji Zdrowia w Miejscu Pracy	Instytut Medycyny Pracy	
44.		Dyrektor Instytutu Medycyny Pracy	Instytut Medycyny Pracy	
45.		Kierownik Zakładu Toksykologii i Kancerogenezy	Instytut Medycyny Pracy	
46.		Kierownik Oddziału Chorób Zawodowych	Instytut Medycyny Pracy	

Annex 3: LODZKIE

Lodzkie Workshop 3

SCREEN Synergic CirculaR Economy across European regioNs

Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji „Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 730313 — SCREEN.

promuje łódzkie

Spotkanie intersariuszy projektu SCREEN
Łódź, 12 września 2018 r.

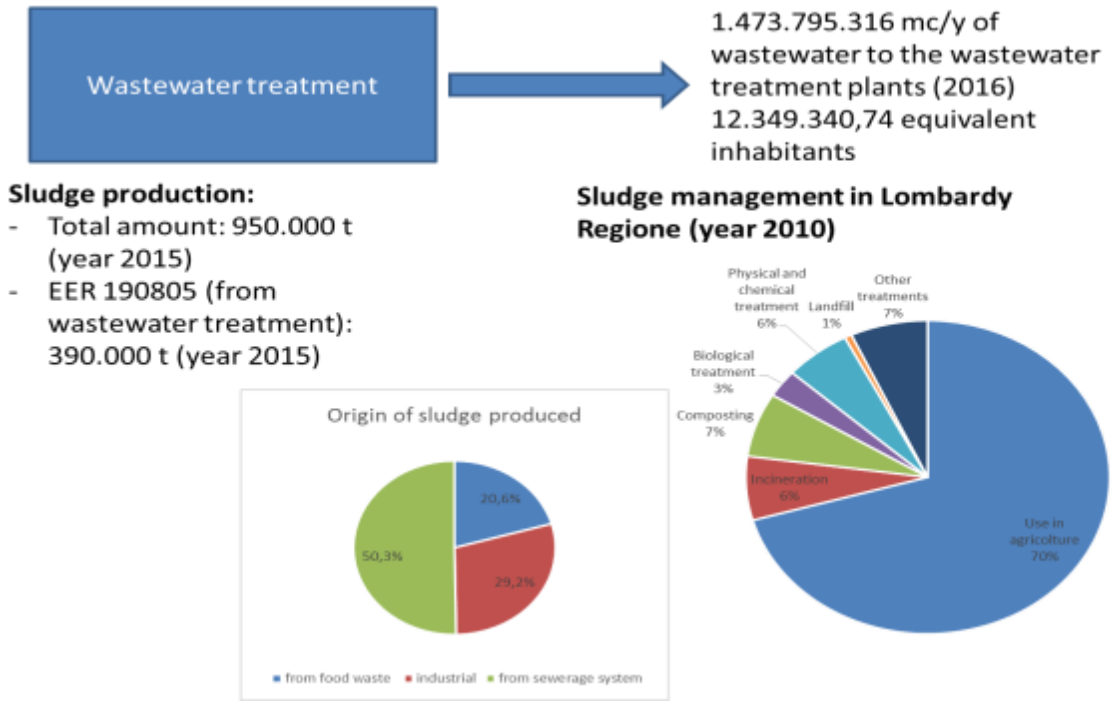
Oświadczam, iż został spełniony wobec mnie obowiązek informacyjny wynikający z art. 13 Rozporządzenia Parlamentu Europejskiego i Rady (UE) 2016/679 z 27.04.2016 r. w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia Dyrektywy 95/46/WE (zwanego potocznie „RODO").

LP	nazwisko	imię	nazwa jednostki	podpis
1	[redacted]		WIPOŚ Politechnika Łódzka	
2	[redacted]		Wydz. Inż. Procesowej i Ochrony Środowiska Politechniki Łódzkiej	
3	[redacted]		UMŁ	
4	[redacted]		UMŁ DPR	
5	[redacted]		Instytut Medycyny Pracy w Łodzi	
6	[redacted]		Urząd Statystyczny w Łodzi	
7	[redacted]		URZĄD STATYSTYCZNY W ŁODZI	
8	[redacted]		UMŁ	
9	[redacted]		BOŚ SA	
10	[redacted]		UŁ Wydział Chemii	
11	[redacted]		BPPWŁ - RO	
12	[redacted]		BPPŁK - 21	
13	[redacted]		BPPWŁ	
14	[redacted]		OBAJDA PNEMO HORIZON	
15	[redacted]		ASM	
16	[redacted]		OLP Sp. z o.o. PNEMO HORIZON	
17				

Annex 3: LODZKIE

Annex 4: LOMBARDIA

Figure 1



VISION

With regard to the circular economy, the value chain of wastewater and sludge must go in the direction of:

- improve the quality of wastewater;
- optimise sludge production compared to wastewater;
- improve the quality of sludge;
- treat sludge by avoiding punctual or widespread pollution;
- allow the recovery of nutrients, in particular phosphorus.

ROADMAP AND CATALOGUE

Action	Typology (P=Policy, I=Innovation)	Stakeholders involved	Needs of cross-regional synergies
Higher control over wastewater to improve sludge quality	P	**Institutional regulators** Regione Lombardia ARPA	No
Review the concentration limits of pollutants in wastewater to improve sludge quality and increase phosphorus	P	**Institutional regulators** Regione Lombardia	No

Annex 4: LOMBARDIA

concentration to facilitate recovery			
Facilitate the authorization of experimental and innovative sludge treatment plants even within water treatment plants	P	**Institutional regulators** Regione Lombardia	No
Deepening sludge theme in the regional waste management plan	P	**Institutional regulators** Regione Lombardia	No
Regulatory and market stabilization	P	**Institutional regulators** Regione Lombardia **Category associations**	No
Study and improvement of sludge quality for use in agriculture	I	**Institutional regulators** ERSAF **Managers of Sludge Treatment Plants** Allevi Alan Acqua e Sole Eli Alpi	No
Experimenting sludge incineration in dedicated plants and recovery of phosphorus from bottom ash	I	**Research centers and universities** Università di Milano Politecnico di Milano Università di Brescia **Managers of Sludge Treatment Plants and of wastewater treatment plants - Technology supplier** REA Dalmine CAP Holding VOMM Impianti WTE Uniacque Padania Acque A2A Ambiente	No
Reduction of smell of sludge and defecation chalks	I	**Research centers and universities** Università di Milano **Managers of Sludge Treatment Plants and of wastewater**	No

Annex 4: LOMBARDIA

		treatment plants WTE Padania Acque Evergreen	
Ensure good sludge stabilization, also through a regional working group aimed at amending regional legislation	I/P	**Institutional regulators** Regione Lombardia ARPA **Research centers and universities** Politecnico di Milano	No
Micropollutants analysis in sludge	I	**Institutional regulators** Regione Lombardia ARPA **Research centers and universities** Politecnico di Milano Istituto Mario Negri **Managers of wastewater Treatment Plants** CAP Holding and others	
Optimization of incineration of sludge in dedicated plants	I	**Research centers and universities** Università di Brescia **Managers of Sludge Treatment Plants** Silea BEA REA Dalmine A2A Ambiente CAP Holding **Managers of wastewater Treatment Plants** Brianza Acque	No
Experimenting anaerobic digestion of sludge	I	**Research centers and universities** Politecnico di Milano **Managers of wastewater Treatment Plants** CAP	No

		Holding Cogeide A2A Ciclo Idrico	
Experimenting new drying technologies and evaluate the optimum drying rate according to fate	I	**Research centers and universities** Politecnico di Milano **Managers of wastewater treatment plants - Technology supplier** Metropolitana Milanese Lario Reti Holding VOMM Impianti Alkematek SECAM Cogeide Uniacque Pavia Acque A2A Ciclo Idrico CAP Holding	No
Criteria for sludge and phosphorus “End of Waste”, not only for agriculture, but also for industrial processes	I/P	**Institutional regulators** Regione Lombardia Ministero dell’Ambiente **Category associations** **Research centers and universities** Università di Milano (for approval of struvite as recovery of phosphorus) Università di Brescia (for approval of recoveries of bottom ash from sludge / MSW co-incineration) **Managers of wastewater treatment plants** Metropolitana Milanese (for approval	No

		of dried and pelletized sludge as fuel) A2A Ambiente	
Informations to citizens	P	**Institutional regulators** Regione Lombardia **Category associations**	No
Coordination with DG Agriculture, also with reference to sludge spreading and RDP	P	**Institutional regulators** Regione Lombardia **Category associations**	No

Annex 5: NAVARRA

Annex 6: AZORES

SCREEN PROJECT – TASKS 2.3 & 3.1 AZORES REGIONAL WORKSHOP REPORT

15/11/2017

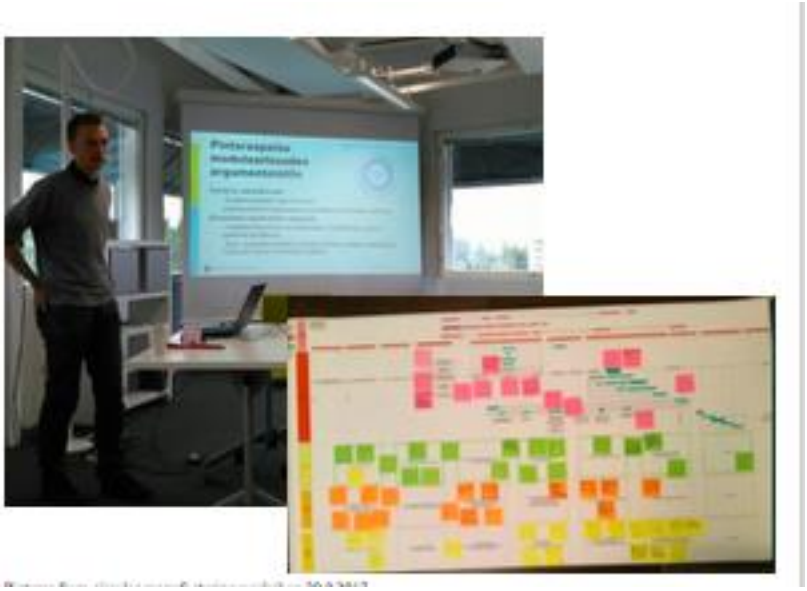
Synergic Circular Economy across European Regions: Cryptomeria japonica value chain

Formulating together a vision for a more circular *Cryptomeria* japonica wood value chain.

Annex 7: EXTREMADURA

Annex 8 : TAMPERE

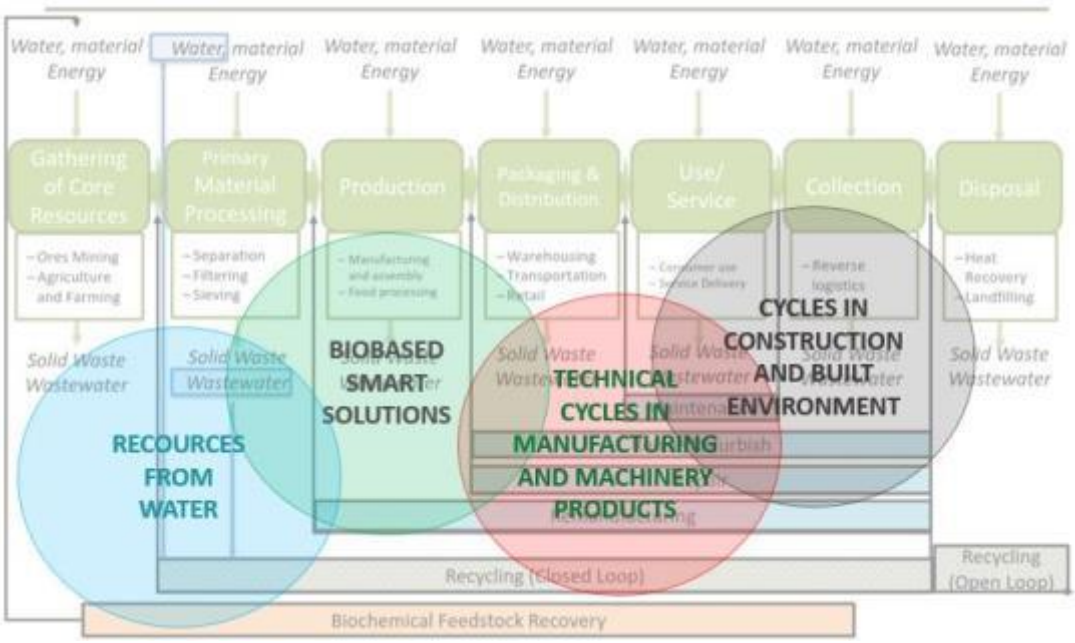
Picture from smart packaging work shop on 8.6.2017.



Summary of the local workshops in Tampere Region during the SCREEN-project.

Annex 8: TAMPERE

Theme of the workshop	Date	Venue	Number of participants
ECO3 – Circular Economy Center/Eco- Industrial Park in Tampere Region	23rd of May 2017	Council of Tampere Region, Kokouskeskus Pellava, Kelloportinkatu 1 B	6
Smart Packaging	9th of June 2017	Tampere University of Technology, Laboratory of Mechanical Engineering and Industrial Systems	11
Circular Construction and Built Environment	9th of June 2017	Tampere University of Technology, Laboratory of Architecture and Laboratory of Civil Engineering	11
Circular manufacturing and Remanufacturing	29th of August 2017	Tampere University of Technology, Campus Arena	17



The chosen themes represent the strategical spearheads identified in Tampere Region during the T2.2 Local baseline analysis. These four spearheads are illustrated in figure 1. In addition they are in align with the identified synergic themes in SCREEN D2.3 Identification of local value chains.

Annex 8: TAMPERE

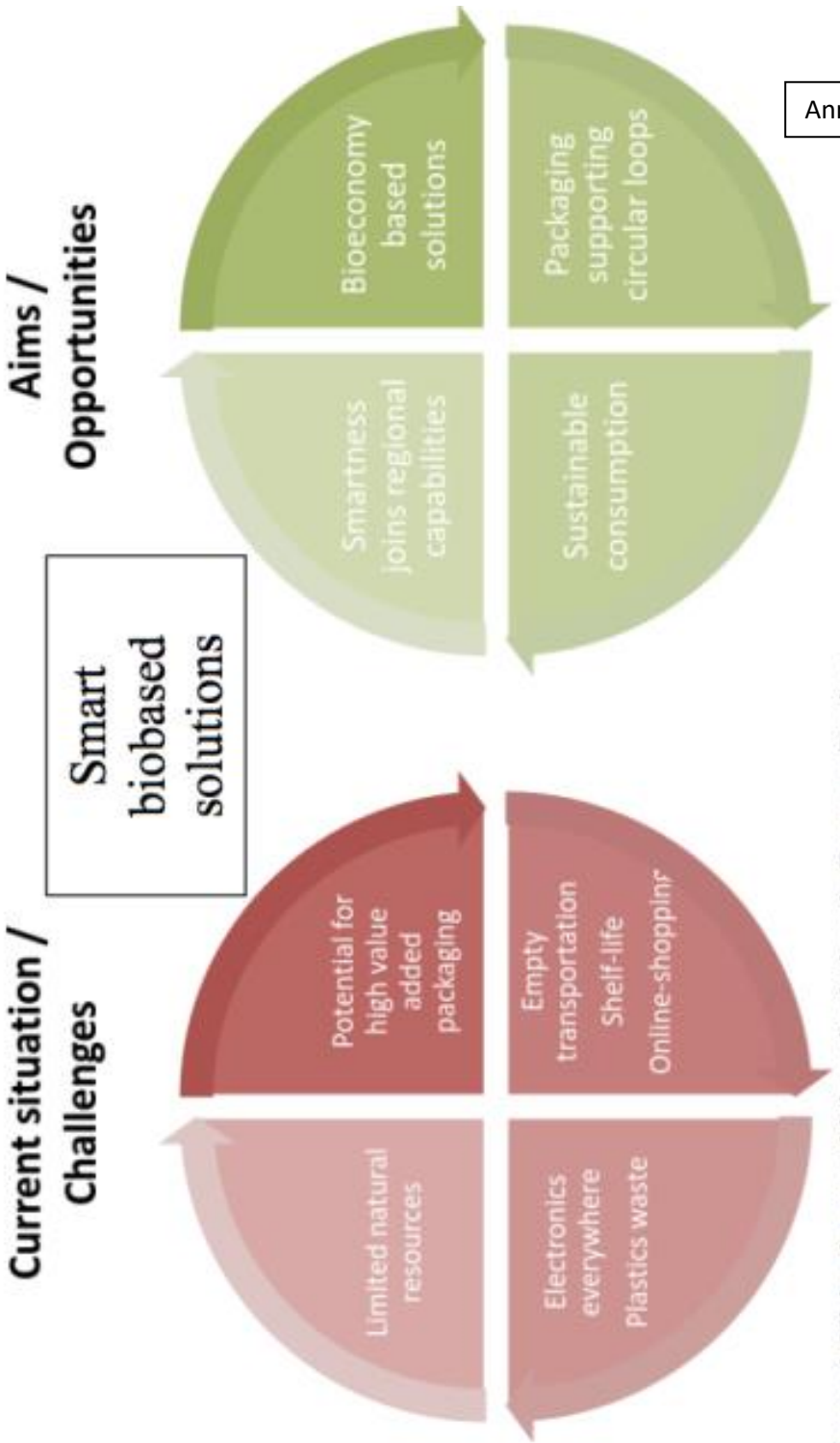


Figure 4. Vision in smart biobased solutions in Tampere Region.

Annex 8: TAMPERE

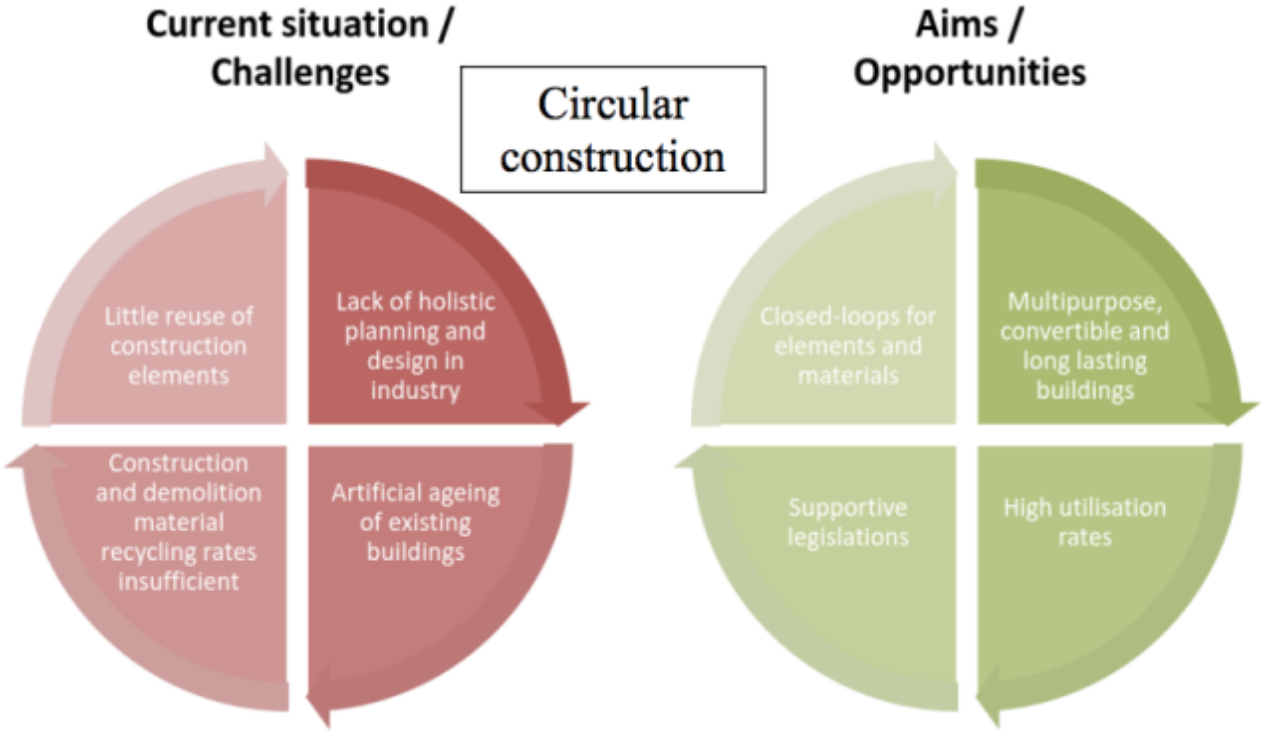


Figure 5. Vision in circular construction in Tampere Region.

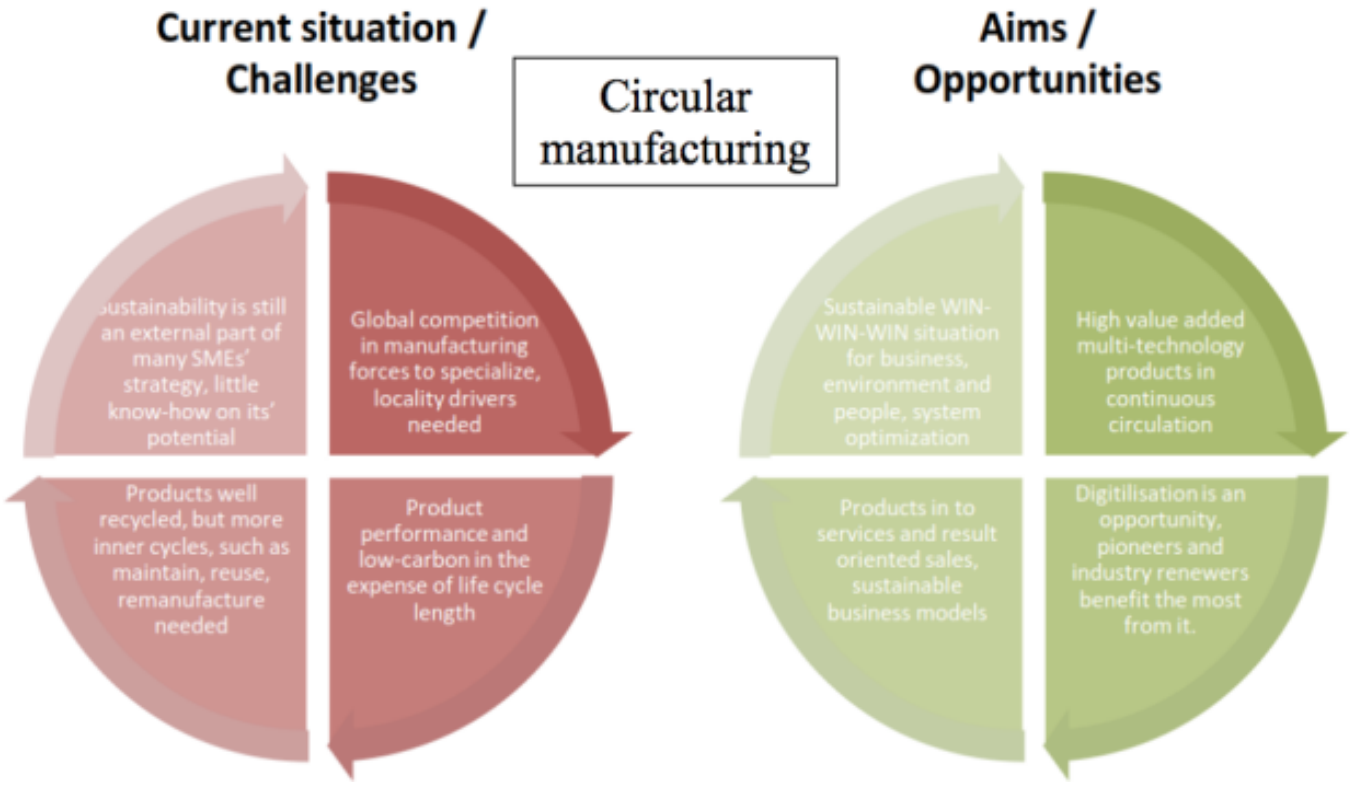


Figure 6. Vision in circular manufacturing and remanufacturing in Tampere Region

Annex 9: LIMBURG

Annex 9: LIMBURG

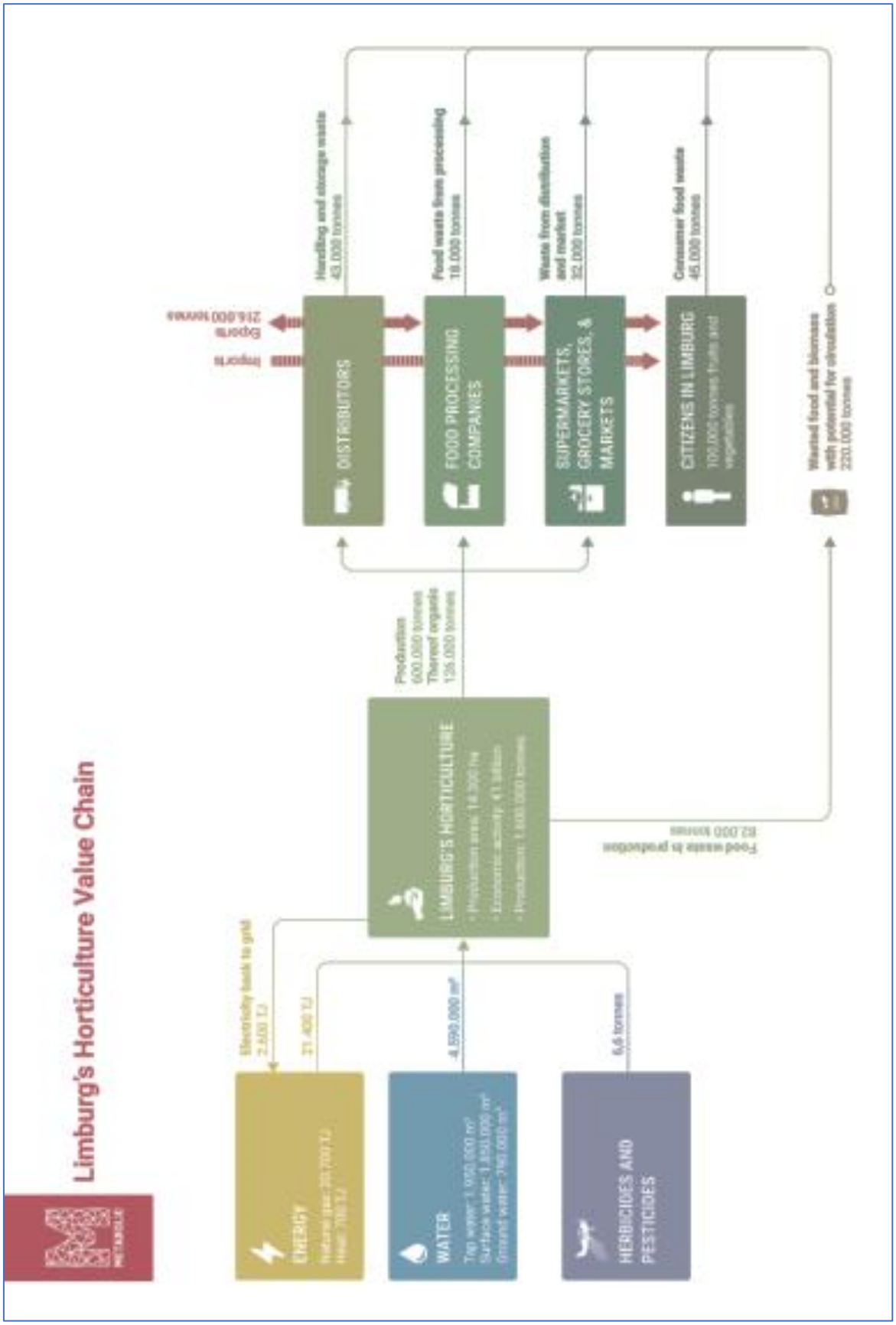


Figure 4: Horticulture value chain

Annex 9: LIMBURG

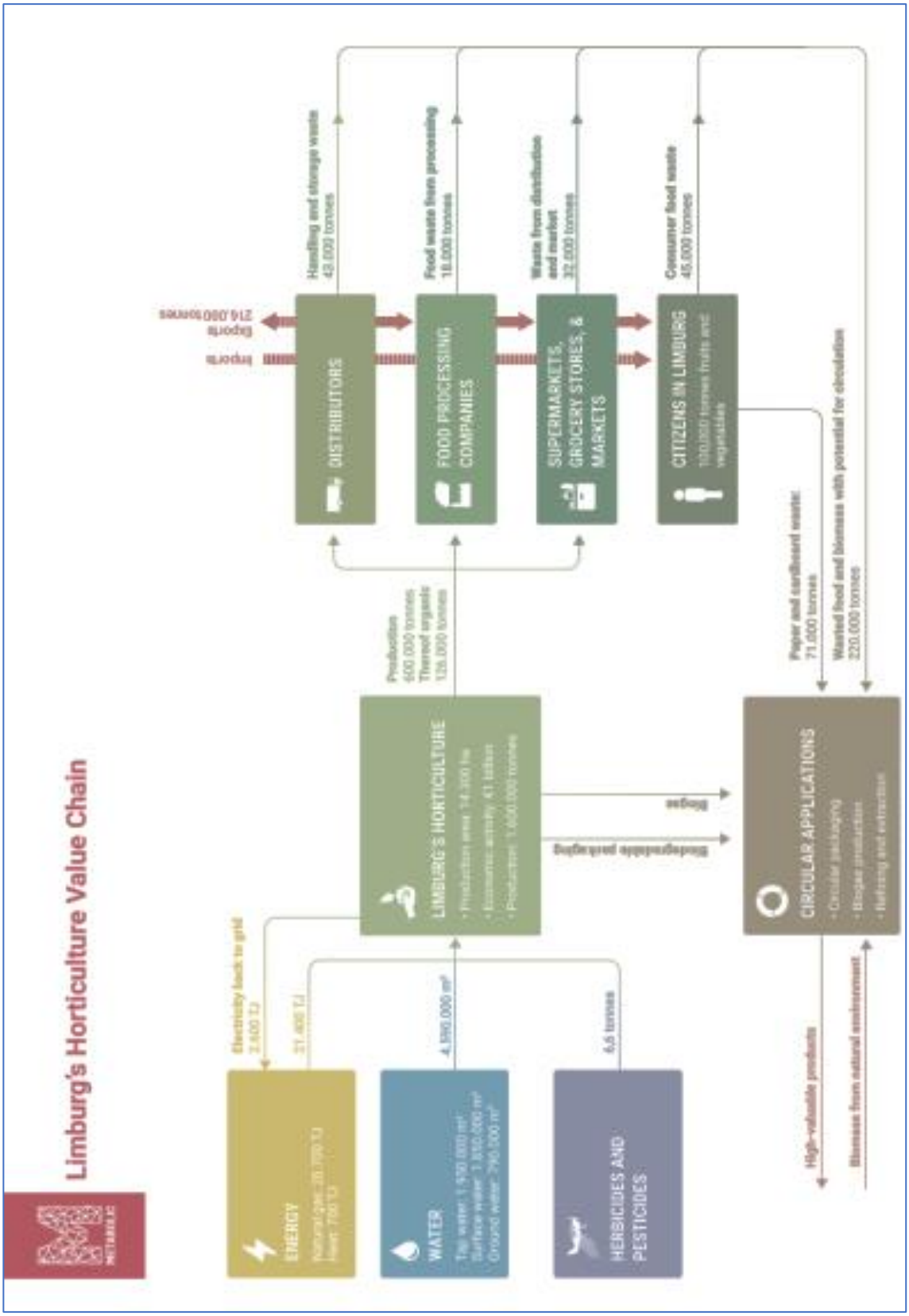


Figure 5: Horticulture value chain, including circular applications

Annex 10: LAZIO

Annex 11: KTN - London Workshop

Further details at:http://www.screen-lab.eu/WS-London3.html

Annex 12: KTN -Manchester Workshop

SCREEN local workshop participants

Amanda Reid, CEC-Manchester

Darren Hill, KTN

Andrea Wyers, KTN / Smart Specialisation Hub

Feedback from round tables

Mark Hilton, Eunomia

Annex 13 : – CENTRO – Two Reports on the Life Cycle and Circular potential of Ceramics and Glass value chains

CENTRO TECNOLÓGICO DA CERÂMICA E DO VIDRO
Parque - Parque Tecnológico de Coimbra - Lotes 6 e 7
3040-540 ANTANHOL | Portugal
Rua Coronel Veiga Simão - Loreto (sede)
3025-307 COIMBRA | Portugal
contr. PT 501 632 174
T +351 239499200
centro@ctcv.pt
www.ctcv.pt

SCREEN

Synergic CirculaR Economy across European regioNs

Work report nº: 532.36731-1/17

Cliente: Comissão de Coordenação e Desenvolvimento Regional do Centro

Contacto no cliente: Drª Alexandra Rodrigues/Engª Teresa Pratas Jorge

Contacto no CTCV: Marisa Almeida

Período de Realização do Trabalho: September 2018

Proj. nº 532.36731 Rel. nº 532.36731-1/17 Revisão: 0 Data: September 2018

http://www.ctcv.pt