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Synergic Circular Economy across European Regions SCREEN

Deliverable D5.3

POLICY RECOMMENDATION MANUAL - OVERVIEW OF BARRIERS AND RECOMMENDATIONS ENCOUNTERED DURING THE SCREEN-PROJECT –

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Table of Contents

1	Introduction	3
2	Identified main difficulties and barriers	5
2.1	Identifying local value chains (mapping)	5
2.2	Identifying local and cross-regional synergies	6
2.3	Financing projects raising from cross-regional synergies	10
2.4	Assessing circularity of project raising form cross-regional synergies.....	13
2.5	Overview of most pressing barriers	14
3	Policy recommendations	16
3.1	Introduction	16
3.2	Empowering regions.....	17
3.2.1	Introduction	17
3.2.2	Data collection & analyses	17
3.2.3	Capacity Building	18
3.2.4	Promotion and awareness raising	18
3.2.5	Stakeholder involvement	19
3.3	Application and optimisation of Tools.....	19
3.3.1	Introduction	19
3.3.2	Applying, evaluation and improving SCREEN tools.....	20
3.3.3	Identifying cross-regional synergies and R&I gaps	21
	Policy Support and Development.....	21
3.4	21
3.4.1	Introduction	21
3.4.2	Common and clear definition (and circular knowledge base).....	22
3.4.3	Strategic Circular Agenda & Action Plans.....	23
3.4.4	Policy Platform	25
3.4.5	Funding projects raising from cross-regional synergies	26
4	Conclusion.....	28
4.1	Introduction	28
4.2	Overview of encountered barriers and difficulties	28
4.3	Indicated recommendations	29
	Annex 1 – Proposed topics for the next Horizon 2020 calls.....	31

1 Introduction

Regions are key players in the transition to a circular economy and can strongly support the creation of new local and cross regional circular economy value chains with critical mass. However these regions may also run up against different kind of difficulties and barriers. In order to facilitate these regions, the partners of the H2020 SCREEN-project developed a replicable systemic approach towards the transition to circular economy in EU regions.

This was done within the context of their Smart Specialization Strategies, through the identification and implementation of operational synergies between R&I investments from H2020 ESIF, thus contributing to novel future eco-innovative and horizontal business models across different value chains.

The concept is to systemically investigate the possible connections and complementarities between different sectors and value chains in European Regions. The implementation of the action is based on 4 different steps: the first one is related to the identification of local potential value chains in each region and the second one deals with cross regional synergies between different value chains.

Such synergies, once identified, lead to different cross-regional projects: the third step deals with the issue of financing them through funding synergies. The agreement between regions about a synergic use of funds implies a common agreement on how to assess specific projects dealing with circular economy: the fourth step is the identification of some criteria to be used in addition of the ones usually adopted by each region.

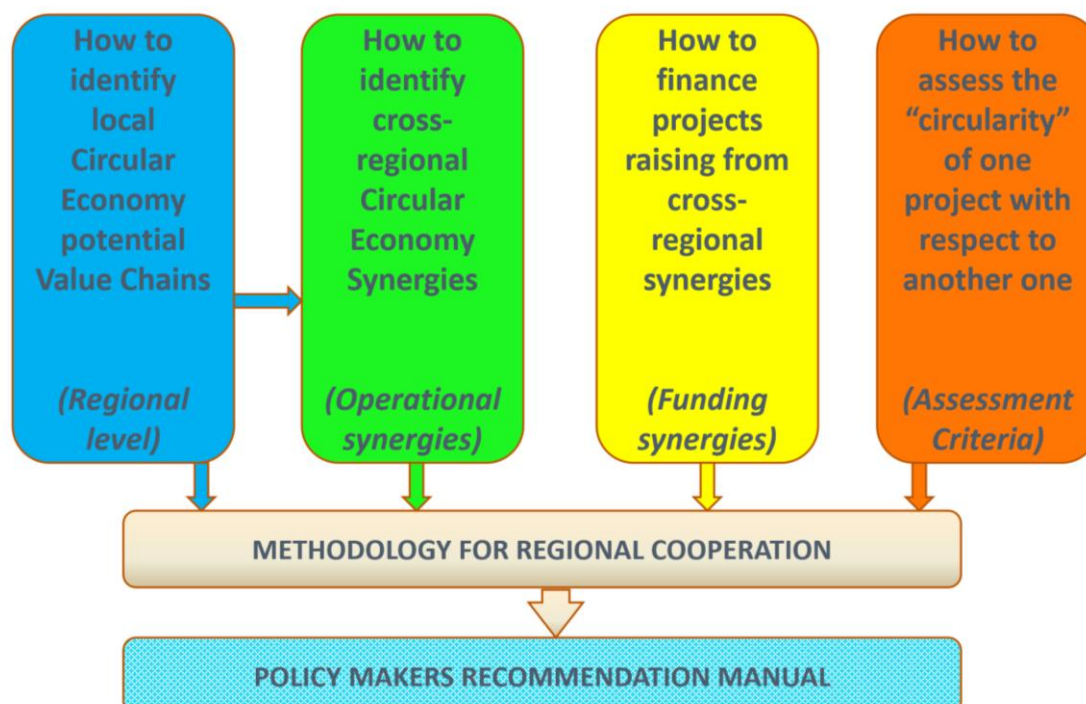


Figure 1 The four steps of the SCREEN project



Figure 2 Third Policy Lab (Brussel: 22/02/2018): Barriers and shortcuts to Circular Economy

The methodology used for this is described in Deliverable 5.1: “Methodology for regional cooperation for circular economy”. Within the H2020 SCREEN-project this methodology has been applied and developed step-by-step and participating regions were discussing, testing, evaluating and improving the methodology in a pilot setting. The outcomes, results, barriers and recommendations were articulated during workshops and project meetings. The results of these workshops reflect in this deliverable.

SCREEN also launched a ‘Policy Lab’ where barriers and recommendations for stimulating cross-regional collaboration were discussed among regional representatives, the SCREEN-advisory board (with 3 key associations in the area of ESIF, H2020 and circular economy), representatives of DG REGIO, DG ENV, DG Grow and the European Institute of Technology, and EASME as observer. The barriers and recommendations are extracted from the discussions in the Policy Lab and described in this report as well.

Furthermore, a questionnaire was used to check and prioritize the identified barriers and recommendations among the SCREEN-partners. The questionnaire was answered by 22 respondents from 14 SCREEN-regions. Appendix 2 summarizes the answers.

This deliverable captures barriers and difficulties that regions were and still are facing in following the developed systematic and replicable approach in order to support the creation of local and cross-regional circular economy value chains with critical mass. The deliverable also provides an overview of indications recommended by the partnership on both Regional and European level.

2 Identified main difficulties and barriers

2.1 Identifying local value chains (mapping)

The first step in the systematic and replicable approach is to basically map the baseline situation in the regions in terms of existing technological, industrial, research and innovation, and education capabilities, as well as emerging Circular Economy Initiatives in line with the RIS3 strategy of the region. For this purpose SCREEN developed the SCREEN Mapping Tool and Guideline, offering a simple information structure for the analysis of the existing regional capabilities and the emerging innovation opportunities in a region.

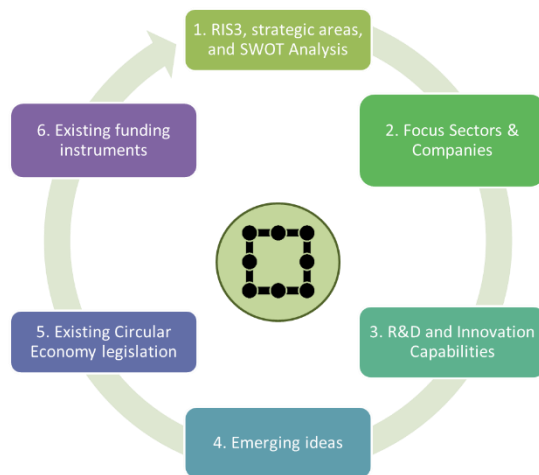


Figure 3 SCREEN Mapping Framework

The usability and effectiveness of the Mapping Tool has been evaluated among the SCREEN partners in web-meetings, workshops and in The Policy Lab. Initially nine regions implemented the Mapping Tool

In general the Mapping Tool is recognized as a useful tool for systemic value-chains identification that can be integrated with other EC initiatives. Especially the process of gathering data about the regional capabilities, emerging ideas and legislation and funding instruments was perceived as very useful. **It is also useful as a continuous review process based on developing insights, additional information and new initiatives. It furthermore triggers to look for and exchange practical examples and best practices.**

Several regions faced different kind of difficulties in collecting all the requested data. For most regions having difficulties, this was related to the availability of data or the desired level of detail/granularity level in order to identify (possible) value chains, companies/company related information and/or public information. Regions were also having troubles in finding data about their regional capabilities and emerging ideas. Consequently, the data gaps and different levels of detail makes it very complicated to automatically analyze the data for identifying cross-regional synergies.

Also the application of NACE codes was sometimes difficult, as it could not be aligned with the value chains and/or Circular Economy. For some regions it was also not possible to reach out to the different sources for data due to the fact not all statistical / data management

organisation were willing or could deliver the requested data. Few regions, were having trouble with finding a precise match between the smart specialisation strategy areas and the focus sectors.

Having a lack of resources, capabilities/expertise to implement the Tool was recognised by a few regions to be a difficulty. The guideline and meetings on the Mapping Tool made it more easy to implement the tool. **This naturally requires adequately-educated staff to properly implement the tool.**

Identified main barriers

*....difficulties in **collecting the requested data**....*

*.....lack of resources, capabilities/expertise for **implementing the Mapping Tool**.....*

2.2 Identifying local and cross-regional synergies

Based on a local/regional analysis of the regions that implemented the Mapping Tool and some workshops, regions were asked to collaborate on specific identified theme's. These themes were initially extracted from the provided data in the Mapping Tool and the regional analysis, and further discussed in workshops.

Due to the fact that regions provided data on different levels of details and that regions were not able to provide all the data, automatically matching of value chains was not possible. But taking a look at the focus sectors, regionals smart specialisation strategies and emerging ideas, it was possible to interactively select some themes (figure 4) with accompanying emerging ideas, within the context of the regions Smart Specialisation. Based on these themes, the consortium analyzed the regions capabilities semi-quantitatively and matched the regions using a synergy grid (figure 5) on both complementarities and needs. This allowed regions to explore their collabora-

Selected themes for potential circular collaboration

- Agriculture & food
- Resource recovery from water
- (Smart) Packaging
- Biobased materials & biotechnology
- (Re)-manufacturing
- (Bio)waste management
- Construction & Build Environment

Figure 4 Selected themes for potential circular collaboration among SCREEN regions

tion and support the development of new or stronger cross regional value chains.

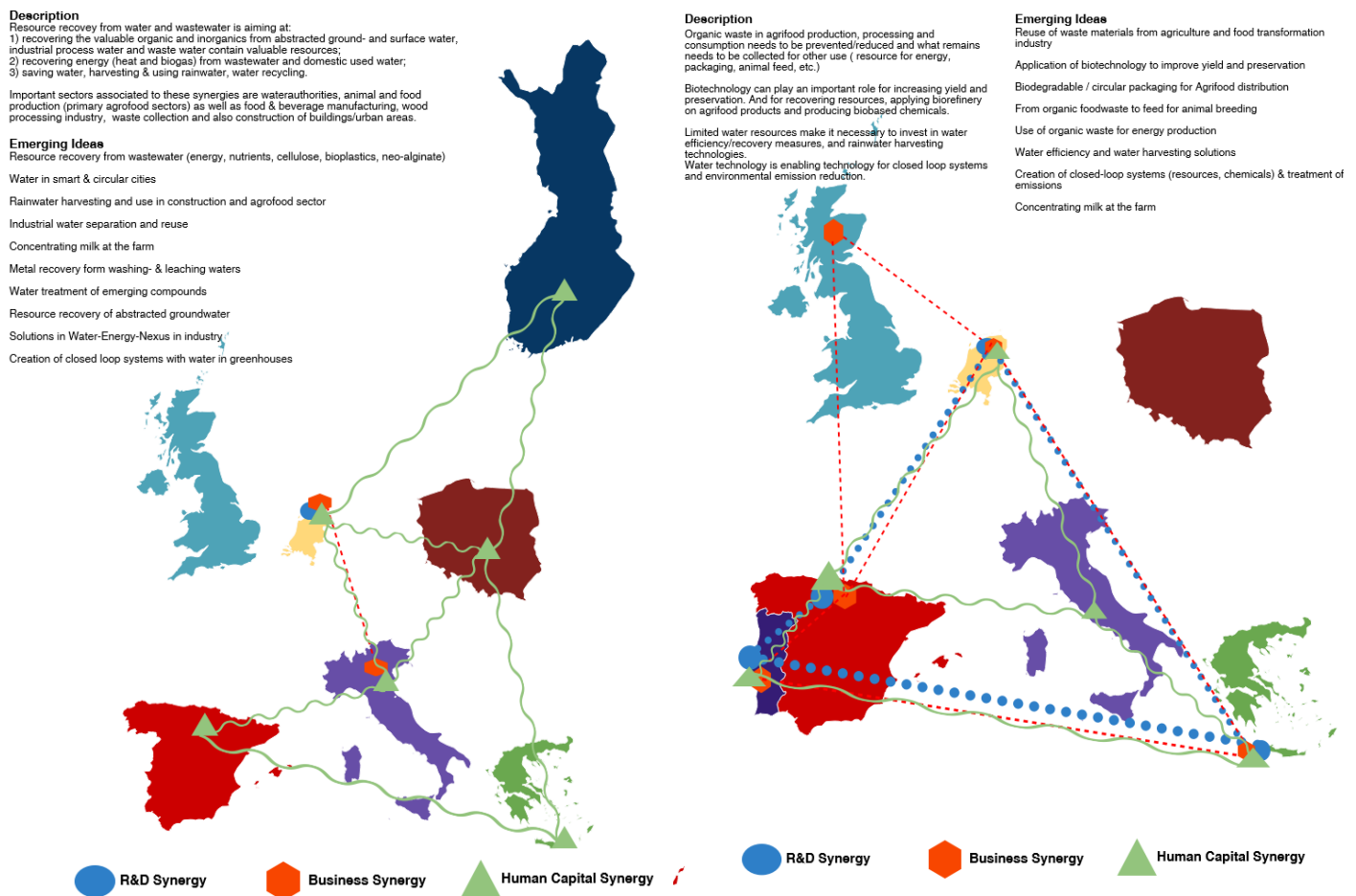


Figure 5 Synergy grids on circular collaboration potentials related to water and agriculture & food

In this phase regions were having difficulties to define possible value chains in detail, to identify the related local needs/capabilities, and choosing the potential thematic partnership. This was strongly related to the low degree of stakeholder involvement or detailed data availability on/for potential stakeholders.

It was widely recognised by the SCREEN regions that a missing common understanding and clear definition about circular economy and value chains in a circular economy, as well as limited knowledge about circular economy business models among public and private stakeholders, is a barrier to really involve the organisations and to stimulate them in participating in open working relationships that requires sharing of information.

Furthermore, as the concept and understanding of circular economy is still very new and not well known by stakeholders, it is hard to involve these stakeholders in an early stage. This barrier is underlined by an investigation by Deloitte and University Utrecht (Breaking the Barriers to the Circular Economy, October 2017), concluding that cultural barriers are more pressing than technical, market and regulatory ones. This makes it difficult to come from a

theoretically selected cross-regional (potential) synergy to a real concrete cross-regional (and/or multi stakeholder) partnership.

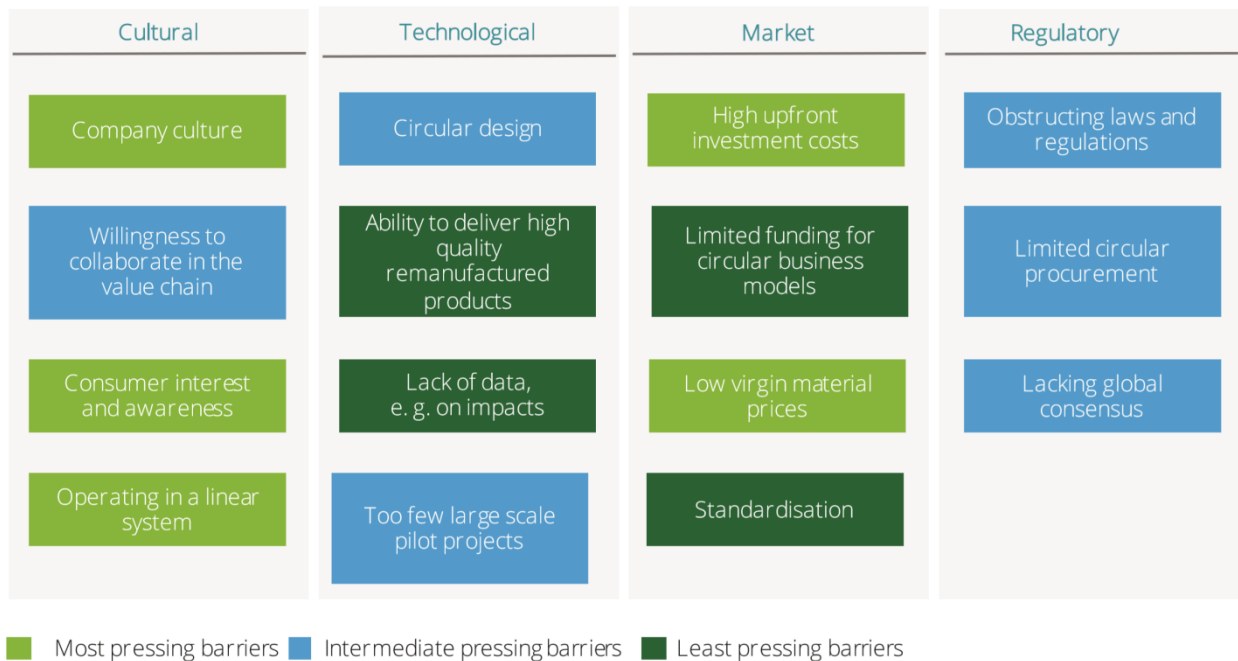


Figure 6: Circular Barriers (Breaking the Barriers to the Circular Economy, October 2017)

In the SCREEN-project defining and selecting the value chains became part of a learning process, based on the available data implemented in the Mapping Tool, cross regional interactive work and offered guidelines for building circular value chains.

These guidelines supported regions to do specific regional research in value chains, to get the right stakeholders involved in a local workshop and to identify cross-regional synergies. Regions emphasized the usability of this guideline.



Figure 7 SCREEN guideline for regional research and identifying synergies (and a synergy example)

Although the guideline was very helpful, **some regions were lacking time, resources and specific expertise** to define and especially follow-up on common actions.

Specifically more interaction and involvement with stakeholders was needed in some regions to really follow-up on the cross-regional synergies.

There is a strong need of well-trained internal staff acting as a focal point within each region, charged to collect questions/issues/requests dealing with circular economy, forward them to the concerned offices and ensure a proper answer in a reasonable time. This way will enhance both internal efficiency and cooperation among different regions

Research gaps

The analyses of regional capabilities and the matching work to define inter-regional value chains highlighted several research gaps that are the “missing rings” of potential value chains: such gaps are defined in Annex 1 together with the suggestion of filling them through a research topic to be launched in the next Horizon 2020 or Horizon Europe calls.

Identified main barriers

Data processing issues

Due to the fact that regions provided data on different levels of details and that regions were not able to provide all the data, automatically matching of value chains was not possible.

Difficulties in defining synergies – low degree of stakeholder involvement

...difficulties to define possible value chains in detail, to identify related local needs/capabilities, and choosing potential thematic partnership. This was strongly related to the low degree of stakeholder involvement or detailed data availability on/for potential stakeholders.

No Common and clear Circular Economy definition

..... a missing common understanding and clear definition about circular economy and value chains in a circular economy, as well as limited knowledge about circular economy business models among public and private stakeholders, is a barrier to really involve the organisations and to stimulate them in participating in open working relationships that requires sharing of information.

Low degree of stakeholder involvement

Next to the previous one: as the concept and understanding of circular economy is still very new and not well known by stakeholders, it is hard to involve these stakeholders in an early stage.

2.3 Financing projects raising from cross-regional synergies

Once cross regional synergies have been identified, they usually lead to several cross-regional projects. These projects should be financed through different synergic funds. Horizon 2020 is the European instrument thought to finance research and innovation implemented by international consortia; however its strong competition and the consequent low success rate does not allow a full support. A synergy between Horizon 2020 and regional funds (plus further instruments) is needed for a proper and effective support. The SCREEN project analyzed and addressed the issue of financing them through funding synergies and particularly through synergies between ESIF and H2020.

The very limited availability of effective funding instruments on regional, national and European level to support cross-regional synergies is appointed as a large barrier. The development of an instrument that could support the circular cross regional synergies is expected to provide a big improvement, although one should take into account that a lot of factors are influencing the successful implementation.

SCREEN initially discussed two existing instruments of public-public partnerships: ERA-NET and Article 185. A description of these possible synergies is provided by the document “Establishing Synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes”. However, even if the proposed solutions are a good step ahead towards synergies, their practical application is still far to being actually achieved, as the complexity of the operation is quite high and depends on a strong “ex-ante” cooperation among regions and concerned stakeholders. A specific solution rising from the document concerns a H2020 proposal well ranked but not financed. The simple suggestion is that a partner may redirect the application to ESIF, without taking into consideration the practical difficulties related to a multi partner RIA/IA (several European partner belonging to different Member States and regions; the proposal may fit with RIS3 in some regions and not in others; synchronization of ESIF calls, etc.) making the suggested solution “de facto”. SCREEN notices that the already existing instruments come from a “top-down approach” not specifically thought for cross-regional projects. One can conclude that existing instruments of public-public partnerships are difficult to apply on the cross regional synergy projects.

SCREEN also discussed the possibility of adapting the existing instruments, together with the possible adoption of new instruments co-designed with a “bottom-up approach”, putting together the main advantages of the existing instruments without the current barriers. With reference to the “bottom-up approach”, a preliminary idea called “Pilot Pot” was examined and described. The idea basically ensures that multi-stakeholder cross regional projects could be funded by a common budget, build up from participating regions (coming from structural funds) and the European Commission. The “pot” will be used in H2020 (societal challenges, SME instrument and LEIT) and/or the future FP9 for those proposals complying with some specific conditions. The MoU is a practical shortcut to define a sort of “Multi-partner Seal of Excellence” and to pave the way to the future synergic application of funds for cross regional projects dealing with Circular Economy.

In order to implement this idea the SCREEN partnership took the initiative to prepare a Memorandum of Understanding (MoU) showing the regions willingness to going ahead with a reinforced cooperation on Circular Economy projects. There is a general agreement about the need of a new approach and the idea of the “Common Pot” (POT) described in the MoU, but there are also several difficulties in its application such as the definition of the money each region should put in the pot, its application and implementation in the near future and its extension to other programmes.

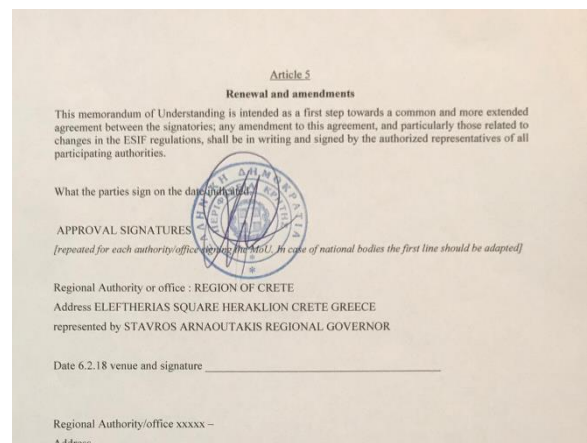


Figure 8 Copy of the signed MoU (by Crete)

Despite their willingness to sign the MoU, some regions ran up against national barriers to sign the MoU due to national law, these barriers were especially related to the use of the ESIF funds (e.g. for allocating money to the common pot - despite the possible shortcuts according to ESIF article 70) and the impossibilities to change the management system, assessment criteria, and programme in the current programming period. In some cases the region is not the authority that decides about the ESIF. Furthermore, for several regions it is very difficult to get more insight in the statistics with the number of projects dealing with circular economy well ranked but not financed, as well as to have the contact project of the coordinator. It therefore is not possible to emphasize the urgency for creating such a pot and for signing a MoU towards decision makers. MoUs already signed by the regions are already available at www.screen-lab.eu/Step3.html.

Identified main barriers

Missing effective funding instruments

The very limited availability of effective funding instruments on regional, national and European level to support cross-regional synergies is appointed as a large barrier. The development of an instrument that could support the circular cross regional synergies is expected to provide a big improvement, although one should take into account that a lot of factors are influencing the successful implementation.

One can conclude that existing instruments of public-public partnerships are difficult to apply on the cross regional synergy projects.

National legislative barriers and inflexibility of ESIF

Despite their willingness to sign the MoU, some regions ran up against national barriers to sign the MoU due to national law, these barriers were especially related to the use of the ESIF funds and the impossibilities to change the management system, assessment criteria, and programme in the current programming period.

Missing statistics on projects – low sense of urgency

.... it is very difficult to get more insight in the statistics with the number of projects dealing with circular economy well ranked but not financed. It is therefore for some regions not possible to emphasize the urgency for creating such a pot and for signing a MoU towards decisionmakers.

2.4 Assessing circularity of project raising form cross-regional synergies

Once cross regional projects have been identified, and an agreement on how to finance them has been achieved, there is the need of a common set of assessment criteria to be adopted by the region. A specific action of the SCREEN project therefore dealt with a common agreement on a specific set of "evaluation criteria for circular economy projects". It was observed that that regions run up against difficulties in having a common and simple definition of Circular economy and therefore to define the circularity of a project (with respect to another one).

Even if each regional authority managing structural funds already has its own assessment criteria for the evaluation and selection of projects, specific criteria for circular economy projects are still missing. The criteria to be defined are therefore the additional ones to be used for the sole purpose of evaluating the "circularity" of one project respect to another one and help the evaluators to make a clear and transparent ranking list.

Some assessment criteria for circular economy projects has been prepared after several discussions between regions and other stakeholders: it is intended for helping evaluators of circular economy projects asking for regional funds, to be used in addition to the usual evaluation criteria. It is to be noted that the European Commission issued on 16th of January 2018 a Communication "on a monitoring framework for the circular economy", containing 10 indicators selected to capture the main elements of a circular economy. Although SCREEN has worked in a completely independent and separate way from the Commission's product, there is a noticeable correspondence between the indicators of the document mentioned and the evaluation criteria proposed for the projects.

In developing these assessment criteria regions were facing the barrier that it is hard to define a common definition of circular economy, and that developing the matching criteria is rather complex. The complexity is in many cases also related to the difficulty to match it with the specific regional context. In relation to this some regions also mention that specific circularity criteria are not yet covered, like: servitization/sharing, reuse, refurbish, remanufacturing, ecodesign, renewable energy consumption, reduction of energy and materials, saving vulnerable/valuable resources (like water), etc.

From regions questions arise how to evaluate the criteria exactly, especially as it is hard to collect the requested data, and the regional context is important but not evaluated, low TRL projects and innovation projects are hard to assess due to the fact that one can only calculate or rationalize the circular impact, the weighting of criteria is a complex factor, and finally what to do with possible and expected differences between declared and evaluated circularity impact, etc.

Identified main barriers

No common definition on Circular Economy

.... regions run up against difficulties in having a common and simple definition of Circular economy and therefore to define the circularity of a project.....

.. developing these assessment criteria regions were facing the barrier that it is hard to define a common definition of circular economy, and that developing the matching criteria is rather complex. The complexity is in many cases also related to the difficulty to match it with the specific regional context.

Missing criteria for assessing circular economy projects

.....specific criteria for circular economy projects are still missing.

Foreseen difficulties in implementing criteria

... how to evaluate the criteria exactly, as it is hard to collect the requested data, and the regional context is important but not evaluated, low TRL projects and innovation projects are hard to assess, the weighting of criteria is a complex factor, and finally what to do with possible and expected differences between declared and evaluated circularity impact, etc.

2.5 Overview of most pressing barriers

Figure 9 presents an overview of the most pressing barriers on the development of a systematic and replicable systemic approach towards the transition to circular economy in EU regions. The barriers presented here are all pressing according to the SCREEN regions and based on the experience in implementing the approach as a pilot action. The most pressing barriers are also classified - based on an evaluation among the SCREEN regions – between issues that – according to the regions - **need** to be solved and issues that **must** be solved.

All barriers and difficulties described in this document are labelled as significant. However, based on the workshops, feedback and questionnaires the significant barriers are labelled as significant barriers that need to be solved, or very significant barriers that must be solved. The barriers of minor significance are not reported here.

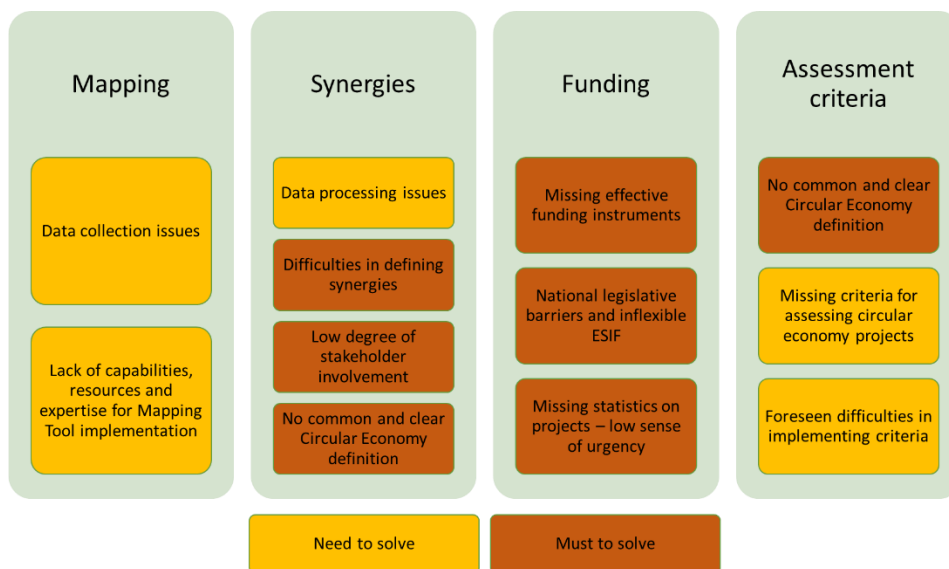


Figure 9 Overview of most pressing barriers

3 Policy recommendations

3.1 Introduction

Within SCREEN a replicable systemic approach towards a transition to Circular Economy in EU regions within the context of the Smart Specialization Strategy is defined and applied in a pilot by several regions. Based on SCREEN, barriers and difficulties that regions were (and still are) facing in following the developed systematic and replicable approach in order to support the creation of local and cross-regional circular economy value chains with critical mass, were captured and indications recommended by the partnership on both Regional and European level. This chapter deals with the recommended indications, being categorized into:

1. Empowering Regions – how to deal with the regional barriers and difficulties?;
2. Implementation of Tools – how to improve the creation of more European cross-regional synergies?;
3. Policy Support and Development – What regional and European policy makers need to do to stimulate the cross-regional collaboration to support a transition to Circular Economy in Europe?

Table 1 presents an overview of the recommended indications. These are described in more detail in this chapter. Each indication can be carried out and/or supported on a European and/or regional level as indicated in table 1. In general the primacy for Empowering Regions and Application & optimalization of Tools should be arranged on a regional level, but requires support on European level. Indications on Policy Support and Development should be carried both on a regional and a European level.

Table 1: Overview of recommended indications

Recommended indications	Regions	Europe
<u>Empowering regions</u>		
Data collection & analyses	Do	Support/Do
Capacity building	Do	Support
Promotion & awareness raising	Do	Support
Stakeholder involvement	Do	Support
<u>Application and optimalization of Tools</u>		
Applying, evaluation and improving SCREEN tools	Do	Support
Identifying cross-regional synergies and R&I gaps	Do	Support
<u>Policy Support and Development</u>		
Common and clear definition	Do	Do
Strategic Circular Transition Agenda & Action Plans	Do	Do
Policy Platform	Do	Do
Funding synergies	Do	Do

3.2 Empowering regions

3.2.1 Introduction

In some extent the difficulties and barriers in relation to Mapping and finding Synergies were related to the capacities and expertise available in the regions for collecting and analyzing data, for stakeholder involvement and for organizing partnerships to find synergies. The following recommended indications relate to the barriers in the transparent yellow area below in the overview of barriers.

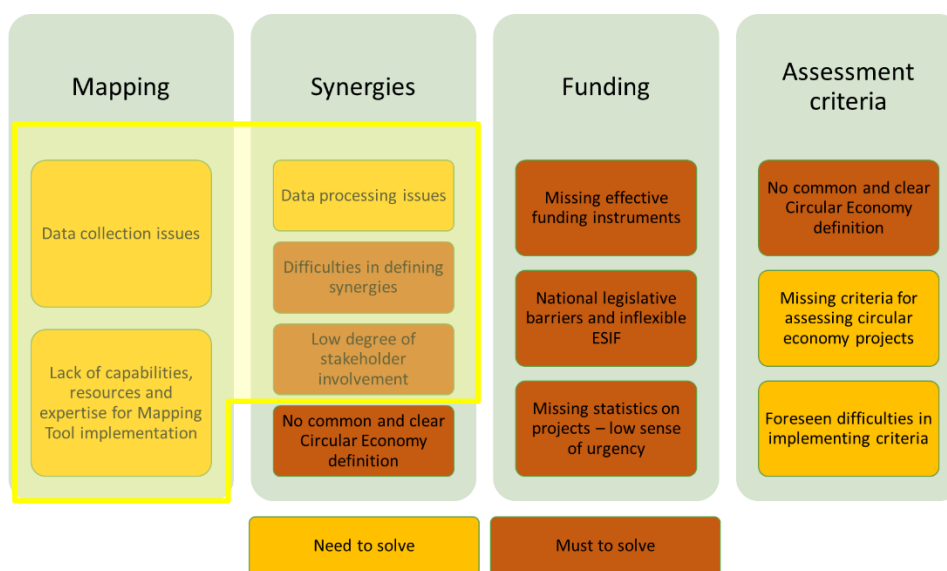


Figure 10 Recommended indications in Empowering Regions in relation to barrier overview (yellow area)

3.2.2 Data collection & analyses

In order to collect the requested data for the Mapping Tool and further analysis on cross-regional value chains, regions need to be able to access different kind of data sources.

It is widely recognized that more homogeneity is needed between existing statistical data-bases. However, as this requires a more structural and systematic change of data collection and storage among different kind of statistical and data collecting organizations it is expected that this change is too difficult in the short period and regions should look for other ways. **Homogenization of statistical data bases on EU level, in a way that regions can easily use, would be extremely beneficial for value chains mapping.**

In order to collect the desired data to map and analyze the regional and/or cross-regional circular economy, multiple level collaboration is necessary. **On international level it is sug-**

gested to create a common platform for data, information and knowledge sharing. In order to use international data and national data, regions should be able to request the needed information and motivate the statistical and data collection organizations to provide the information.

On a regional level it is recommended to create a more intensive and open working relationship with stakeholders, like companies, universities, education, etc. in order to stimulate the circular economy and as a necessary step to receive the desired information. For regions with cluster organizations (or similar existing platforms facilitating the open working relationship in a Triple Helix structure) it was easier to collect the desired information, including the company based information. For regions without existing open working relationships, it was harder to collect all the information.

3.2.3 Capacity Building

The capabilities and skills of public administrators on this kind of research should be better developed: basic education about circular economy on all education levels could be considered, next to specific courses and (in-house) training for public administrators. The capacity to collect and analyze data in a region is crucial to inform policy makers in an effective way, if they are going to create instruments fostering the regional circular economy. Furthermore, with these data, a region could facilitate the creating of new value chains more easily. A professional on this matter will create trust among stakeholders and is able to analyze and facilitate the value chain synergies in a regions, and across regions.

As an alternative a region could choose to outsource data collection, research and/or value chain stimulation/facilitation. However regions should make sure to be able to understand and check their proceedings and results, and to support the initiated/coordinated follow-up actions.

Investing in knowledge, skills and capabilities of public administrators to do statistical and political research is unavoidable if a region wants to stimulate their circular economy.

3.2.4 Promotion and awareness raising

Circular Economy is still a new development in a lot of regions. As a consequence regions need to do a lot of promotion and awareness raising. The private sector is indicated as an important target sector as regions believe that the private sector is key to implement circular economy in the regions. **Therefore, significant efforts should focus on promotional and awareness raising actions in the private sector.**

Several type of actions are explicitly advised: capacity building/training sessions, information sessions, circular economy platforms, business-to-business meetings, clustering activities,

stimulation and dissemination of good-practices, promotion of new business models, and supporting regulatory frameworks. It is mentioned that it is important to bring circular economy to the production sectors, and not only be related to the waste sectors that are more focused on recycling.

It is also recommended for regions to support and invest in new pilot actions and having these as inspiring success stories for regional as well as cross regional cooperation. It is recommended for existing success stories to be promoted and shared more. This could be part of regions policy developing actions and regulatory framework development.

3.2.5 Stakeholder involvement

The private sector and knowledge institutes are important regional stakeholders in the transition to a circular economy. Involving these private stakeholders is essential. The promotion and awareness raising activities described in the previous paragraph would support this, but in the end the stakeholders should organize themselves in order to identify or develop new value chains.

Just like the recommended indication in 3.2.2, this requires a more intensive and open working relationship with and among stakeholders, like companies, universities, education, etc. Regions could participate in these working groups in order to deal with new upcoming barriers: like introducing circular procurement, addressing legislative barriers in Innovation Deals, consulting on Intellectual Property issues, introducing policy frameworks for pricing of circular products and materials, etc. These kind of issues were addressed as leverage points in the guidelines for regional research and identifying synergies (deliverable 3.1). **It is strongly recommended to follow these guidelines for creating stakeholder involvement.**

The experience of the regions is that the stakeholder involvement could be done by dedicated organizations/clusters, also taking care of promotion and awareness raising and creating/facilitating the open working relationship.

3.3 Application and optimization of Tools

3.3.1 Introduction

The replicable systemic approach towards a transition to Circular Economy has been developed and tested as a pilot within the SCREEN-project. The tools were evaluated by the regions as very useful, and some technical improvements were suggested to increase their usability and functionality.

At this point it is recommended to further apply, evaluate and improve the developed Tools and allow more regions to take advantage of the tools. As a result of this indication it is expected that more cross regional EU synergies and R&I gaps will come forward.

This recommendation relates to all the barriers and difficulties encountered during the pilot action. Naturally it addresses the tools that were developed within the SCREEN-project:

- Mapping Tool (Deliverable 2.1) – related to barriers and difficulties on ‘Mapping’
- Guideline for regional research and identification of synergies (Deliverable 3.1) – related to barriers and difficulties on ‘Synergies’
- Circularity Assessment Criteria (Deliverable 3.3) – related to barriers and difficulties on ‘Assessment criteria’
- Regional Portfolio (Deliverable 3.4) – related to barriers and difficulties on ‘Funding’

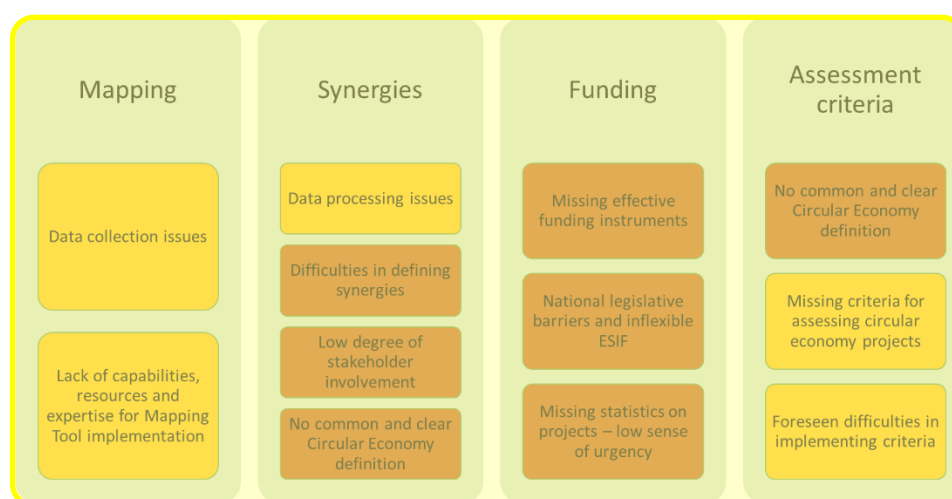


Figure 11 Recommended indications in Implementation of Tools in relation to barrier overview (yellow area)

The recommended indications described here could be primarily taken care of by the regions themselves, but have to be supported on cross-regional coordination actions, technical improvements to the Tools, and knowledge exchange.

3.3.2 Applying, evaluation and improving SCREEN tools

In general, the developed and tested tools for mapping and creating synergies were evaluated by the regions as very useful. Now the pilot within the SCREEN-project has been finished and the concrete results has been achieved, it is recommended to get more regions involved to use the tools and the regions that already applied the tools to update the data. **It is expected that a larger amount of regions and more actual data at the desired granularity level, will increase the visibility of regional Circular Economy Initiatives and also makes it possible to identify more synergies, if this is a coordinated action on European level.**

The use and evaluation of the tools make it also possible to further improve the tools and align it with the diversity on conditions in the different regions. Some specific technical indications have already been reported in the deliverables on the tools itself, and are recommended to take into consideration for the improved tools.

3.3.3 Identifying cross-regional synergies and R&I gaps

More **guidance and training of public administrators** (or facilitators of open working relationships) for data collection & processing, helps to get the comparable data on the same granularity level of different regions and therefor enables finding synergies more easy. In relation to the recommendations on 'empowering regions' regions need more time and investment to follow-up on the actions identified in the synergies.

Generally speaking, the interactive sessions between regions were very useful in order to raise understanding between the regions and come up with common approaches and solutions, and to find and initiate cocreation of synergies for the transition to a Circular Economy. The R&I gaps already identified during the SCREEN workshop are resumed in Annex 1.

It is expected that more involvement of interested stakeholders in the workshops, would lead to more cross-regional initiatives and projects. This recommendation is based on the fact that the clustering workshop with stakeholders led to several new ideas on cross-regional synergies. **By organizing a follow-up on these ideas, one could expect more cross-regional R&I-projects to be initiated.**

It is also suggested **to develop a more automated (ICT) synergy creation tool**, that analyzes the data and suggest the cross-regional synergies. In the SCREEN-project this was done manually by some regional experts and evaluated based on interaction in workshops and meeting.

In order to guarantee an effective follow up on the use of Tool, a coordinated action on identifying cross-regional synergies and knowledge/information sharing has to be in place. This could be done by creating a network, starting a working group under existing networks and/or creating a granted follow-up project for the upcoming years. Without a coordinated follow-up actions, the tools are only expected to support the regional synergies and not the cross-regional ones.

3.4 Policy Support and Development

3.4.1 Introduction

In order to stimulate the transition from a linear to a circular economy, regions need to support the regional transition by developing policy that match the needs of the stakeholders

and create shortcuts to the identified barriers. But as circular economy is rather new for most regions and their stakeholders, they should also invest in knowledge development and knowledge exchange. The regions also need to scale up their policies to national and European level for the alignment and coordination of regional, national and European programming, in order to help harmonization of policies, instruments and actions.

The recommended indications in this paragraph reflect on the barriers and difficulties under Synergies, Funding and Assessment criteria.

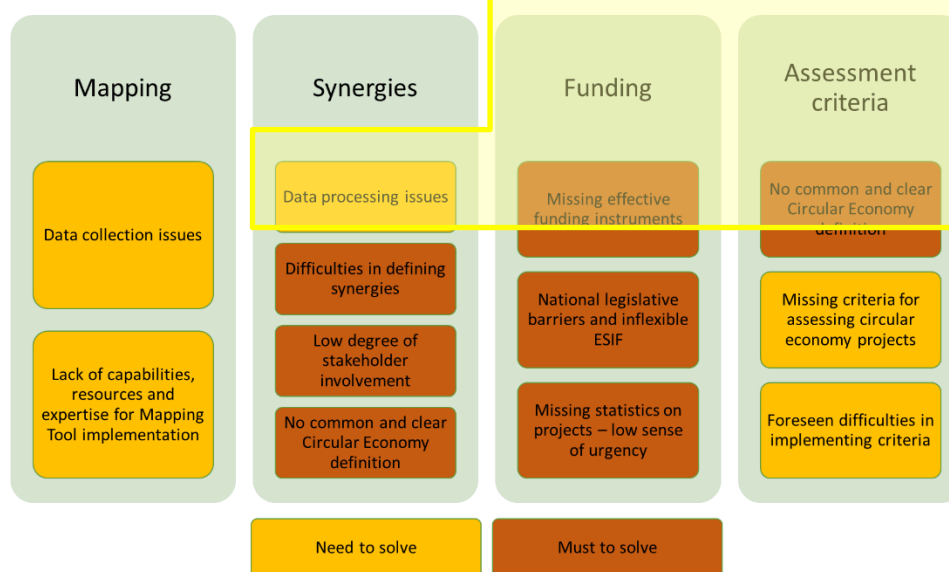


Figure 12 Recommended indications in Policy Support and Development in relation to barrier overview (yellow area)

3.4.2 Common and clear definition (and circular knowledge base)

A common knowledge base about circular economy (and the related definitions) among all regions is necessary to ensure that there is mutual understanding of the input and outcomes, and data could be cross-regionally interpreted more easily.

At the present there are more than 100 definitions of circular economy, making it hard to define a common approach for both internal policies and cross-regional cooperation; on the other hand circular economy definition cannot be forced within too narrow limits, because of the risk of jeopardizing the important progresses that it can generate.

Therefore, while the definition given in the circular economy action plan¹ should be maintained as a general guideline, regions (duly supported by the European Commission) should work on a common knowledge base and common instruments for comparing the “circularity” of different projects. It is to be underlined that a common instrument allowing regions to

¹ [COM(2015) 614], where circular economy is explained as an economy “where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimized”

make clear and transparent ranking list of projects applying to regional funds and claiming to be circular does not limit the definition of circular economy, but at the same time gives clear indications on circular economy policies and strategies, by providing the indicators that will be used to define the priorities in the list of projects to be financed.

In order to stimulate regions to collaborate in circular economy, also the European Commission should adopt the same approach in the current and future financing programmes: for this reason the SCREEN methodology for assessing projects' circularity is also recommended for any international project dealing with circular economy, including Horizon 2020 and the future Horizon Europe. The SCREEN partners are available also after the end of the project for a discussion targeted to enhance and further fine tune the proposed methodology.

The common knowledge base is also recommended, in order to make a more clear request on circular economy related data to statistical/data collection organizations. **Developing this common knowledge base should be part of regional policy development, in order to make sure the regions 'speaks the same language' and understands one another when talking about circular economy.** A region could also facilitate this common knowledge base by regional intermediate organizations or clusters in order to better involve the regional stakeholders.

The development of a IT-platform to store and search for information on circular economy approaches of different regions in a public accessible knowledge repository is indicated as an instrument support the exchange between regions. This IT-platform should also enable to show and inform about good practices, emerging ideas and cross regional collaboration on circular economy. Other ways for this exchange could be the participation in network or platforms like the Circular Europe Network, Circular Economy Stakeholder Platform, ACR+, Vanguard Network, etc.

It should be noted here that a missing common knowledge base should be no excuse not to initiate new regional and cross-regional projects. **Although the whole concept of circular economy is not locked into most regions yet, regions are still able to learn from each other and to undertake/stimulate and evaluate pilot-actions that support the transition.** This will enhance the learning and development of the regions undertaking/stimulating the pilot-actions.

3.4.3 Strategic Circular Agenda & Action Plans

In order to stimulate and give guidance for the transition towards a circular economy, **a strategic agenda and action plan on circular economy should be developed with a direct involvement of the regions that are the territories where circular economy "happens" in practice** and where needs and research gaps can better and faster be identified: in this way the "circular economy ecosystem" will become closer to the national and European policy makers, by shortcutting the bidirectional information flow.

Several regions participating in SCREEN are developing or already have established a Regional Policy/Strategic Agenda on Circular Economy. At this point there are naturally differences in these policies and agendas. By knowledge exchange the regions could further improve their regional policies, and with this also prepare their policies to stimulate and/or foster cross regional collaboration. **The regional policies should capture and support the regional needs for the transition to a circular economy – some regions have experienced a positive impact on the development of regional (thematic) Transition Agendas in close collaboration with regional stakeholders.**

It is also recommended to continue the work initiated by the European Commission with the Communication “*on a monitoring framework for the circular economy*”² by providing a further version of the same document containing **a benchmarking tool as an instrument for regions to compare their policy instruments and regional impact and facilitate learning from one another.**

The SCREEN network is available to contribute to this strategic purpose with the experiences gained during the project. In some situations the regions need to align their regional policy to existing national circular economy frameworks. In the next figure an overview of the regions and countries developing/establishing policy – based on the SCREEN-partner input - on circular economy is presented.

² COM(2018) 29 final

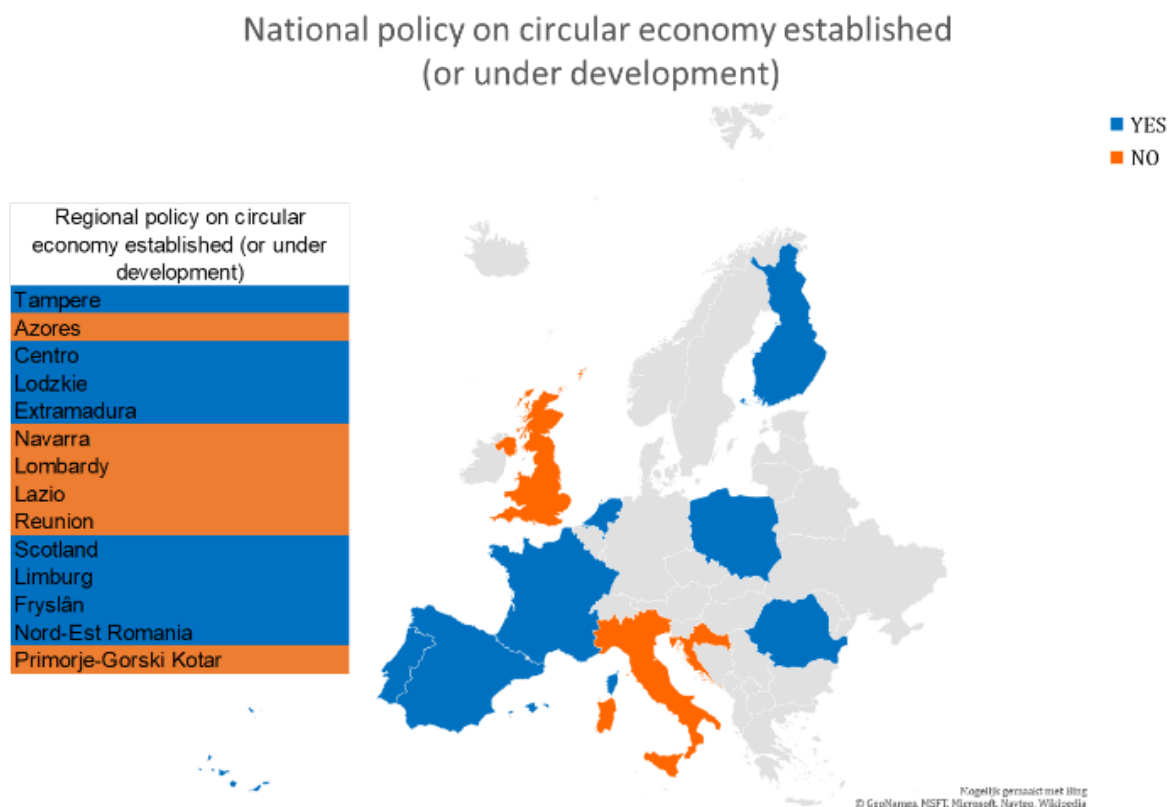


Figure 13 Overview of the regions and countries developing/establishing policy on circular economy (d.d. June 2018)

3.4.4 Policy Platform

The Policy lab in SCREEN was very successful and asks for a continuation. It is recommended to scale up the already existing joint platform (Policy Lab) up to more than 100 actors on the EU territory, by inserting further national and regional programme owners, a technical network of 90 members made mostly of cities and regions (ACR+), as well as technical Universities and association of Industries and SMEs. **The platform will therefore represent European areas with a large diversity of conditions and approaches towards Circular Economy, able to provide the bottom-up approach needed for a coherent transition towards a circular economy.**

The Policy Lab should provide inputs for coordinated programming and funding mechanisms, assessment criteria for circular economy projects and all the other “policy” inputs coming from the different partners and their associated networks. Furthermore, the Policy Lab should act as *intermediator* between the regions and the European Union both stimulating the transition to a circular economy. The Policy Lab should also have a specific task “*Scaling-up to national and EU level*” for the alignment and coordination of regional, national and European programming, in order to help defining an actual harmonized Strategic Agenda and Action Plan.

3.4.5 Funding projects raising from cross-regional synergies

Policy Lab discussions in SCREEN focused on the effective needs of the programme owners and their difficulties in an effective and coordinate use of Structural Funds together with H2020 funds. **A solution developed on the basis of the Policy Lab discussions is a pilot action for the synergic application of different EU and Regional Funds in the field of Circular Economy ("Common Pot")**: the aim is to promote multinational research and innovation actions within national and regional programmes. The pilot is being done in alignment with the ongoing structural funds programme and lessons learned will be taken into consideration when preparing the next programming period by both the Regions and the European Commission Services.

The pilot action is described in a Memorandum of Understanding currently being signed by several SCREEN regions for the common financing of H2020 projects well ranked but not financed by the Commission due to a lack of funds, based on the ESIF article 70 : it is a practical and effective shortcut to define a sort of "Multi-partner Seal of Excellence" and to pave the way to the future synergic application of funds for cross regional projects dealing with Circular Economy. Moreover, its article 4 expressly allows the participation of further regional or national programme owners. The Memorandum of Understanding is currently signed and/or supported by nine European regions (status: June 2018) and is open to other regions as well.

It is advised to continue the work on the MoU to improve the alignment with other regions and establish shortcuts to existing barriers. The MoU and follow-up actions should also contribute to the programming of the new ERDF funds.

Some specific recommendations are reported in the Portfolio of Tools to stimulate cross regional circular economy collaboration projects, like: addressing a Fund-of Fund/Common Pot or a ERA-NET like fund on circular economy, introducing the Seal of Excellence approach on cross-regional collaboration projects, a ERDF-instrument to de-risk future industrial investments in circular economy. The application of a mission oriented approach, as suggested by M. Mazzucato, on circular economy could also be evaluated here. In the field of water technology in the province of Friesland (The Netherlands) it proved to be a very successful approach to get ERDF and H2020 funding aligned, this could be seen as a mission based approach 'avant-la-lettre'.

Once an agreement on how to finance the cross-regional circular economy projects has been achieved, there is the need of a common set of assessment criteria to be adopted by the region. A specific action of the SCREEN project therefore dealt with a common agreement on a specific set of "evaluation criteria for circular economy projects". **At this point further work on the assessment criteria is needed, specific criteria are still missing or existing cri-**

teria are too difficult to apply. The application of the criteria should also be tested, prior to their wider implementation.

One of the issues that arise on available data on EU projects well ranked but not financed could be easily solved by adopting a simple solution consisting in an additional option to be chosen by the applicants in the proposals' administrative form. Such a box, only when selected by the applicant, allows the Commission to put on the Cordis public database the abstract of the project and the list of consortium partners (as currently done for financed projects), with the text "*above threshold*" or "*below threshold*" only. This solution will facilitate the information flow about research initiatives and is strategic for a wider development of the "Common Pot" described in the previous section, as well as other cross regional cooperation initiatives. In fact, even if not financed, a project proposal gives information about research initiatives, possible value chains, concerned stakeholders that are fully lost when the project is not financed. Also projects proposal below the threshold have an information value that should be made available for a possible exploitation.

4 Conclusion

4.1 Introduction

Regions are key players in the transition to a circular economy and can strongly support the creation of new local and cross regional circular economy value chains with critical mass. However these regions may also run up against different kind of difficulties and barriers. In order to facilitate these regions, the partners of the H2020 SCREEN-project developed a replicable systemic approach towards the transition to circular economy in EU regions. This deliverable captures barriers and difficulties that regions were and still are facing in following the developed systematic and replicable approach in order to support the creation of local and cross-regional circular economy value chains with critical mass. The deliverable also provides an overview of indications recommended by the partnership on both Regional and European level.

4.2 Overview of encountered barriers and difficulties

The encountered barriers and difficulties are described in this report. Figure 14 presents an overview of the most pressing barriers on the development of a systematic and replicable systemic approach towards the transition to circular economy in EU regions. The barriers presented here are all pressing according to the SCREEN regions and based on the experience in implementing the approach as a pilot action. The most pressing barriers are also classified - based on an evaluation among the SCREEN regions – between issues that – according to the regions - **need** to be solved and issues that **must** be solved. The barriers of minor significance are not reported here. For a more detailed description on the barriers and difficulties it is advised to read chapter 2 of this report.

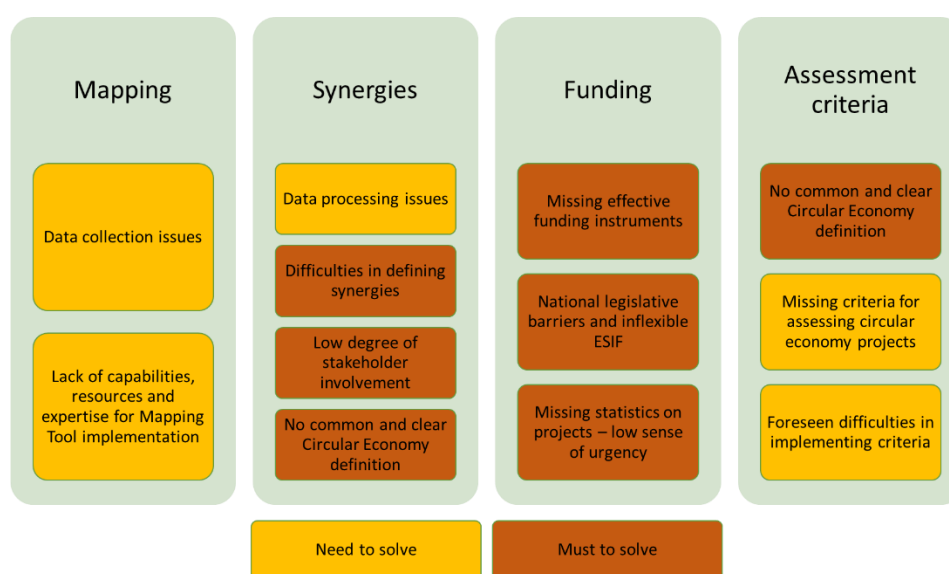


Figure 14 Overview of most pressing barriers

4.3 Indicated recommendations

Within SCREEN a replicable systemic approach towards a transition to Circular Economy in EU regions within the context of the Smart Specialization Strategy is defined and applied in a pilot by several regions. Based on SCREEN, barriers and difficulties that regions were (and still are) facing in following the developed systematic and replicable approach in order to support the creation of local and cross-regional circular economy value chains with critical mass, were captured and indications recommended by the partnership on both Regional and European level. The recommended indications are categorized into:

1. Empowering Regions – how to deal with the regional barriers and difficulties?;
2. Implementation of Tools – how to improve the creation of more European cross-regional synergies?;
3. Policy Support and Development – What regional and European policy makers need to do to stimulate the cross-regional collaboration to support a transition to Circular Economy in Europe?

Table 2 presents an overview of the recommended indications. These are described in more detail in chapter 3, and summarized below.

Table 2: Overview and summary of recommended indications

Recommended indications	Description
<u>Empowering regions</u>	
Data collection & analyses	<ul style="list-style-type: none"> • Homogenization of statistical data bases on EU level; • Creation of international platform for data, information and knowledge sharing; • Creation of open working relationship with stakeholders on regional level.
Capacity building	<ul style="list-style-type: none"> • Investing in knowledge, skills and capabilities of public administrators to do statistical and political research.
Promotion & awareness raising	<ul style="list-style-type: none"> • Significant regional efforts on promotional and awareness raising actions in the private sector; • Support and invest in new pilot actions and use these as inspiring success stories. • Use dedicated organizations, clusters or stakeholder facilitating platforms for promotion and awareness raising activities.
Stakeholder involvement	<ul style="list-style-type: none"> • Involve the private sector and knowledge institutes in the transition to a circular economy by following the SCREEN- guidelines for creating stakeholder involvement; • Use dedicated organizations, clusters or stakeholder facilitating platforms to involve the stakeholders.
<u>Application and optimization of Tools</u>	
Applying, evaluation and improving SCREEN tools	<ul style="list-style-type: none"> • Involve a larger amount of regions and update the existing data at the desired granularity level, to increase the visibility of regional Circular Economy Initiatives and enabling identification of more synergies;

	<ul style="list-style-type: none"> • Use and evaluate the tools to further improve them and align them with the diversity on conditions in the different regions • Coordinate these actions on a European level.
Identifying cross-regional synergies and R&I gaps	<ul style="list-style-type: none"> • Use capacity building measures to get more comparable data on the same granularity level of different regions, for finding synergies more easy; • Organizing a follow-up on the identified R&I-gaps and involve the stakeholders in the process; • Develop a more automated (ICT) synergy creation tool; • Coordinate actions on identifying cross-regional synergies and knowledge/information sharing on a European level.
Policy Support and Development	
Common and clear definition	<ul style="list-style-type: none"> • Continue, evaluate and improve the work on a common knowledge base and common instruments for comparing the “circularity” of different projects. • Use the SCREEN methodology as a basis for assessing projects’ circularity for any international project dealing with circular economy, including Horizon 2020 and the future Horizon Europe. • Stimulate learning across regions and undertake/stimulate and evaluate pilot-actions that support the transition, even though the whole concept of circular economy is not locked into most regions yet.
Strategic Circular Transition Agenda & Action Plans	<ul style="list-style-type: none"> • Develop a European strategic agenda and action plan on circular economy directly involving the regions; • Capture and support the regional needs by developing thematic regional Transition Agenda’s in close collaboration with regional stakeholders; • Develop a benchmarking tool as an instrument for regions to compare their policy instruments and regional impact and facilitate learning;
Policy Platform	<ul style="list-style-type: none"> • Continue and scale-up the SCREEN Policy Lab as a representation of the European areas with a large diversity of conditions and bottom-up approaches towards Circular Economy.
Funding synergies	<ul style="list-style-type: none"> • Develop a pilot action for the synergic application of different EU and Regional Funds in the field of Circular Economy (“Common Pot”); • Continue the work on the MoU between regions to improve the alignment with other regions, to establish shortcuts to existing barriers, and to contribute to the programming of the new ERDF funds. • Develop instruments to overcome barriers for cross regional circular economy projects; • Consider a mission based approach on circular economy projects like M. Mazzucato is suggesting for the new programming period. • Continue the work on the assessment criteria by improving and testing the criteria.

Annex 1 – Proposed topics for the next Horizon 2020 calls

Enabling technologies for circular value chains

Circular value chains enact symbiosis across different business organizations which exchange by-products and waste applying circular economy principles, and also requires cooperation from the final customer. Besides the exchange flows of materials these value chains involve also exchange flows of information and of value. Furthermore they require the set-up of adequate levels of trust among the entities partaking. Circular value chains are currently limited in size (few number of subjects involved and deeply committed), have difficulties to scale up, and currently generate a limited amount of value for few subjects. Proposals addressing this topic should investigate the design, development, and test of a supporting platform for circular value chains, abstract from specific symbiosis, but validated in empirical settings, integrating enabling technologies to ensure trust, cooperation, and value sharing among participants, including also citizens or final customers.

Draft topics listed below where cross-regional synergies have been found

Water

- 1) Prevention and management of waste water sludge, and the recovery and valorization of useful substances from sludge like nutrients, organic compounds and others.
Current gaps: collection of sludge, competitive market for sludge-based substances (need of low-prices, quality and supply security), exchange of best-practices and innovative approaches/technologies, barriers for sludge reuse in for example agriculture for hygienic reasons, need for large-scale pilot projects
- 2) Smart water solutions to save water and not to waste water in industry, agriculture, built environment, etc. Also alternative water sources, like rainwater, could be applied.
Current gaps: pricing of fresh water is very low, exchange of best-practices and innovative approaches/technologies, legislative limitation of use of rain water as an alternative to potable water, promotion of best-practices and stimulation of new examples. No real technological barriers, mostly social, cultural, legislative and economic barriers.

Smart packaging -

- 1) Replacement of plastics used to agriculture and livestock (mulching and bag silos) by biodegradable plastics or biodegradable by-products from cellulose.
Current gaps: Competitive price, skepticism and lack of training in farmers, need of demonstrative projects, lack of laws which encourage its use.
- 2) Improved reuse and recycling of glass related packaging, also plastic
Recycle perspectives: More sense, capabilities for people to recycle (education, recycling options, financial incentives)

Construction and built environment

Reuse and recycle of construction elements and demolition waste; potential synergy with the glass value chain (production); nanomaterials to be used in the construction sector (less energy consumption); potential industrial symbiosis (ceramics + cement): life cycle extended, shared resources (e.g. water and energy). To avoid the disposal of waste from building and demolition; reintroduction of recycled arid in new product; to reduce the use of natural resources.

Current gaps: Compliance of the specifications in materials used for construction; construction management; low prices of new materials versus recycled; legal barriers.

Synergies within the Ceramics value chain

Reuse and recycle of sludge from waste water treatment plants from ceramic industry into another ceramics industry or cement industry; potential synergy with the ceramics and cement value chain (production); potential industrial symbiosis (ceramics + cement) and with the tiles industry, potential synergies with the pesticides production: life cycle extended, shared resources (e.g. water and energy).

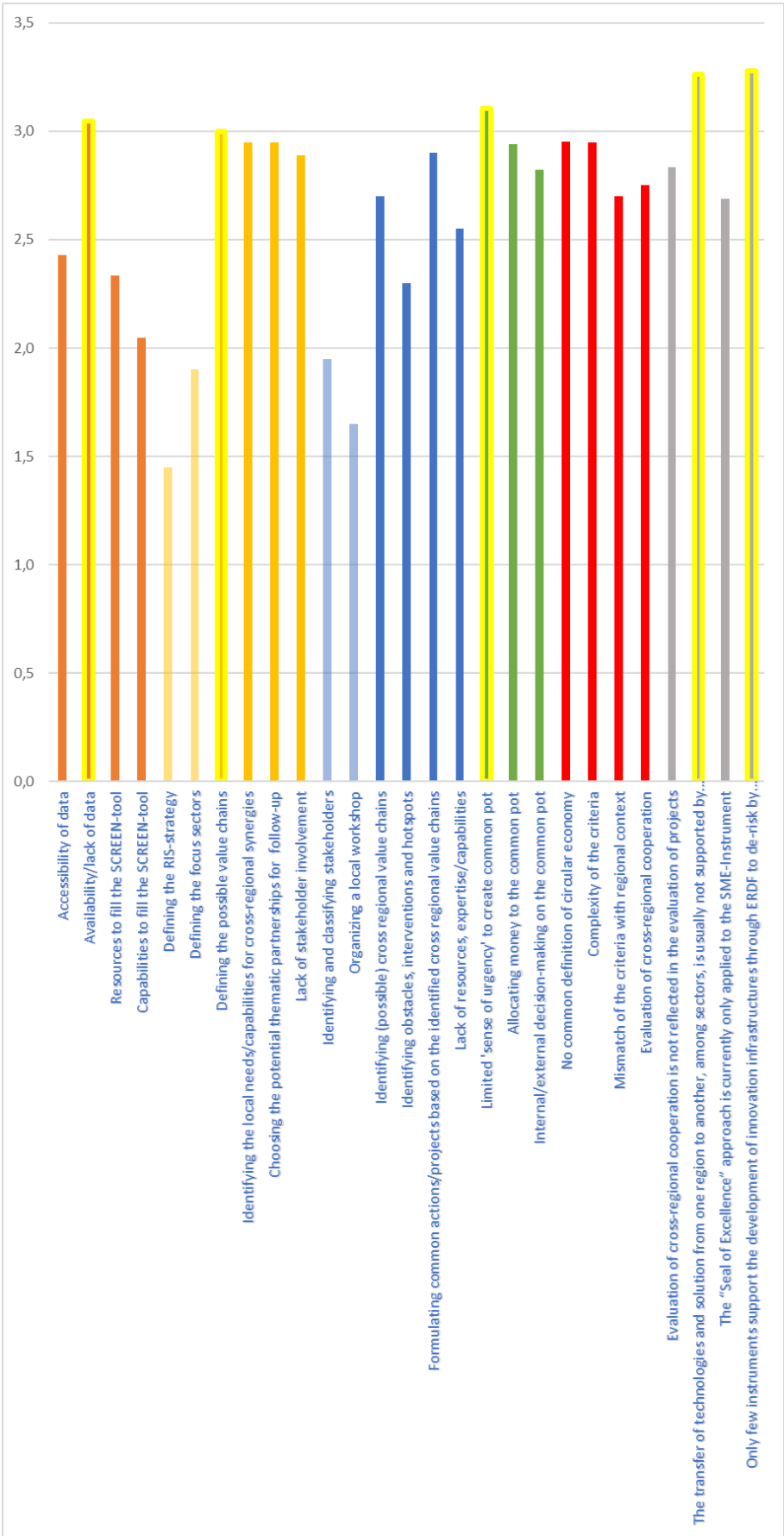
Current gaps: Difficult to segregate, reused and recycled material performance uncertain, Traceability, documentation, waste's without authorization, legal requirements, possible contaminants in sludge.

Harmonization of methodologies for evaluating and ranking circular economy projects.

The SCREEN project has demonstrated how circular economy value chains can be enhanced through a European cross regional cooperation, not necessarily involving a physical flow of materials but including exchange of experiences, technologies and best practices like eco-design made in one region and production, refurbishment and/or re/manufacturing in other regions. This virtuous cycle need a common agreement across European regions on how to assess , rank and finance with regional funds circular economy projects with partners coming from different European regions. The table of common assessment criteria developed by SCREEN can be already used as “additional” criteria to establish a clear and transparent “circularity” ranking list. In order to use these criteria as “primary” ones, the different categories of projects foreseen in the table should be integrated by a specific Life Cycle Analysis.

Proposals should develop a standard and “easy to use” LCA to be applied to CE projects according to the different categories mentioned above: a methodology to integrate the outputs of the LCA in the ranking system should be also developed.

Annex 2 – Questionnaire answer summary



This diagram represents the answers of 22 respondents from 14 SCREEN regions, reflecting on and prioritizing the identified barriers and recommendation during the SCREEN-project. Regions were asked to indicate the significance from level 1: minor significance up to level 4: very significant. The average scores are presented in this diagram. The barriers with an average score of 3 or higher are addressed in this document as very significant and labelled with a 'must to solve' action. The barriers with an average score between 2,0 and 3,0 are indicated as significant barriers and labelled with a 'need to solve' action. Other barriers are interpreted as not very significant and are not described in this report.