



SCREEN-Lab

Synergic Circular
Economy across
European regioNs

ASSESSMENT CRITERIA FOR CIRCULAR ECONOMY PROJECTS



Rev 4.0- March 2019

*SCREEN-Lab, is an informal cooperation network between European regions,
open to other regions and stakeholders in the field of circular economy*

Introduction

SCREEN was an H2020 coordinating and supporting action, implemented between November 2016 and October 2018 by 17 European regions: the project defined a replicable systemic approach towards a transition to Circular Economy in EU regions within the context of the Smart Specialization Strategy. More details on the project are provided in the annex 2 to this document.

During the implementation of the project, the need of having a clear and transparent methodology to assess project's circularity became more and more important, because several funding institutions, including regions, plan to finance circular economy projects but their funds' management procedures still lack of specific assessment criteria for the circularity of a project.

SCREEN therefore delivered a set of assessment criteria to evaluate the projects' circularity by taking into consideration both environmental and socio-economic dimensions; the definition of such criteria was commonly agreed among the SCREEN partner through 3 rounds of "Plan-do-check-correct" that took more than 14 months, up to the definition of the Version 3.0 described in the deliverable submitted to the European Commission and available through the link provided in Annex 2. Such a deliverable gives also details on the co-creation procedure adopted and the involvement of external stakeholders.

Given the large and still increasing number of Circular economy definitions¹ that sometime generates confusion and uncertainties, the assessment criteria are **an useful complementing instrument for all those programme managers dealing with circular economy projects.** A noticeable advantage and novelty of the SCREEN methodology is the possibility to use it as additional assessment criteria in different kind of programmes such as ERDF, HORIZON, INTERREG, LIFE, as well as national and regional ones.

Since November 2018 SCREEN is continuing as SCREEN-Lab, an informal cooperation network between European regions open to other regions and stakeholders in the field of circular economy (more details in annex 2). SCREEN Lab continued to work on the Assessment Criteria on the basis of further comments received by relevant stakeholders and some European Commission's services.

In the current Version 4.0:

- The assessment criteria are based on the explanation given in the circular economy action plan [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 minimised'***.
- The final assessment value expressed in €/year is an intermediate indicator adopted as a mean for harmonizing the different metrics to easily arrive at a coherent and transparent ranking list.
- The weights in Column F should be intended as "suggested ones" and were defined by taking into account the discussion raised during the SCREEN Policy Lab (such as an higher weight for project implying higher investments) and the opinion of the more than 160 Stakeholders that answered to the specific online questionnaire. *Regions and other programme owners may assign, according to its own policies and specific needs, different weights to each criterion;* however, it is strongly suggested to read the minutes of the Policy Lab meetings and the detailed results of the above mentioned questionnaire before changing the weights, in order to have a more clear idea on how such weights was built. In the following pages there is an explanation on:
 - the assessment criteria table;
 - the assessment procedure;
 - a practical example of comparing the circularity of the really different projects;
 - a draft version of the form to be filled in by the applicants with the data needed for the assessment.

¹ Annex 2 provides a link to a study that analysed 114 circular economy different definitions

Table of assessment criteria for circular economy projects Rev4.0

		A	B	C	D	E	F
N.		CRITERION	Description	Metrics	Additional parameters	Assessment indicator	Suggested weight
PRODUCTION	1	Circular Design	Re-shaping the first stage of an industrial process (Product design) in order to reduce the waste generated AND/OR increase the life of the final product	Kg/year of virgin material avoided through the new process AND/OR by the prolongation of the product's life	Economic value of the virgin material (€/Kg)	Metrics x additional parameter (€/year)	10 for products NOT falling into the Directive 2009/125/EC . Otherwise the suggested weight is 5
	2	New production process accepting "secondary raw material"	Replacement , total or partial, of virgin material with "secondary raw material"	Kg/year of virgin material avoided through the new process	Economic value of the virgin material (€/Kg)	Metrics x additional parameter (€/year)	8
CONSUMPTION	3	RE-Use, Re-Manufacturing, Refurbishment, Repair	Prolongation of the life of a certain product that otherwise will be disposed	Kg/year of virgin material avoided by the prolongation of the product's life	Economic value of the virgin material (€/Kg)	Metrics x additional parameter (€/year)	8
	4	Waste reduction	The new process generates less waste	Kg/year	Cost of disposal (€/Kg)	Metrics x additional parameter (€/year)	10
DISPOSAL	5	Industrial symbiosis: mass of waste resources recovered and re-introduced in a production cycle as secondary raw material	The new process generates waste that can be re-used in the same process or in another production process	Kg/year	Economic value of the secondary raw material(€/Kg) minus Cost of its transport to the production site (€/Kg) (*)	Metrics x additional parameter (€/year)	8 (*)
	6	Project promoting waste recycling	Promotional campaign with a specific target producing a specific waste	Waste collected by the target Kg/year	Cost of disposal (€/Kg)	Metrics x additional parameter (€/year)	6
CLIMATE	7	"Net Energy balance respect to the previous system" or "Amount of energy recovered"	Energy (KWh) used in the old process <u>per unit of product</u> divided by energy used in the new process for the same unit of product	Number that can be lower or higher than 1		Metrics (the number in column C)	1 (the assessment indicator is "per se" a weight)
	8	Reduction of emissions	Emissions of CO2 (**) generated by the old process <u>per unit of product</u> divided by emissions used in the new process for the same unit of product	Number that can be lower or higher than 1		Metrics (the number in column C)	
EMPLOYMENT	9	Net balance of jobs	Number of new jobs created by the circular economy project, minus the number of jobs lost in the previous linear process	N = Number of full time NEW working units in the new process; it is negative in case of reduction of personnel	P = Number of full time working units in the old process	$1 + \frac{N}{P}$	
Applicants may select only		Implementation of "CIRCULAR PROCUREMENT" (***) in the project (tick the box if relevant)		The suggested weight of the related project is increased by 20%			
		Educational projects targeted to relevant stakeholders (tick the box if relevant)		The suggested weight of the related project is increased by 10%			

(*) In case the secondary raw material does not have a final destination but is just "put on the market", the weight is reduced from 8 to 7

(**) In case of other pollutants, a table of equivalence should be used to convert them into CO2 equivalent emissions - <https://climatechangeconnection.org/emissions/co2-equivalents/>

(***) as for the definition given at http://ec.europa.eu/environment/gpp/circular_procurement_en.htm

Assessment Procedure

How to prepare the circularity application

- 1) Applicants should select the item in which their project falls - **only one among the options from 1 to 6**; and provide a project description with enough details to prove the compliance with the descriptions in Column B and all the data and details needed to prove the statements given in the following points 2) and 3). If relevant, applicants should also provide the information requested in the following point 4) or 5)
- 2) With reference to the row corresponding to the above selection (*a specific form to be filled-in will be soon available*), the following data should be provided:
 - a) **Metrics**, as requested in column C, in Kg/year
 - b) **Additional parameter** (the economic value of the materials/cost of disposal by using current market prices,) as requested in column D, in €/Kg
- 3) Provide the information (“metrics”) related to the “Climate” and “Employment” criteria, as requested in rows 7, 8 and 9. These data are expressed by a number that can be lower, equal or higher than 1
- 4) If the project, falling in one of the options from 1 to 6, also deals with Circular Procurement, as defined by the European Commission web site http://ec.europa.eu/environment/gpp/circular_procurement_en.htm “Circular procurement sets out an approach to green public procurement which pays special attention to “the purchase of works, goods or services that seek to contribute to the closed energy and material loops within supply chains, whilst minimising, and in the best case avoiding, negative environmental impacts and waste creation across the whole life-cycle”, applicant should tick the related box in the lower left corner. *This selection cannot be added to the following one*
- 5) If the project falling in one of the options from 1 to 6 also deals with an educational campaign targeted to a single relevant stakeholder (e.g. public administration or large companies) able to directly influence the behaviour of more than 2,000 persons, applicant should tick the related box. *This selection cannot be added to the previous one*

How to assess projects’ circularity

The assessment of the project is given by the formula:

$$\text{Assessment value (€/year) } \mathbf{Av} = \mathbf{Cn} \times \mathbf{Dn} \times \mathbf{Fn} \times \mathbf{C7} \times \mathbf{C8} \times \mathbf{E9}$$

Where:

n is the row (from 1 to 6) chosen by the applicant,

Cn and **Dn** are the values inserted by the applicant in the columns C and D of the selected row

F_n is the weight assigned to the selected row: It can be increased by 10% or 20% in one of the boxes in the lower left corner are selected and the conditions defined under the previous points 4) and 5) are adequately proven.

C₇ and **C₈** are the values inserted by the applicant in the column C of the rows 7 and 8

E₉ is the result of the formula in the column E of the row 9, calculated with the data provided by the applicant on the employment situation before and after the project.

Assessors should:

- a) Verify the compliance to the above instructions and the congruence of the metrics declared with respect to the project description;
- b) Verify that the data provided in columns B and C are adequately proven.
- c) Calculate the assessment indicator in the row chosen by the applicant: (only one among 1-6) **C x D** obtaining a value in terms of €/year
- d) Multiply the above result of the per weight in column F of the selected row, eventually increased according to the above **F_n** description. The results is still in €/year
- e) Multiply the above result for the numbers resulting in the cells C₇, C₈, and E₉, obtaining a final value in €/year;

Comparing/ranking the circularity of several projects

The assessment value expressed in €/year is an “intermediate” indicator only used to harmonize different metrics, thus allowing to compare different kinds of projects and disappearing in the final step; in fact, two projects (Project 1 and Project 2) assessed with the above procedure can be easily compared as a ratio:

$$\frac{\text{Assessment value Av1 of Project 1}}{\text{Assessment value Av2 of Project 2}}$$

if the result is greater than 1, Project 1 is more “circular” than Project 2 (*and vice-versa in case the result is lower than 1*). **Such result is a pure number showing how many times one project is more circular than the other, as for the example in the following section**

In case of several projects, their assessment values Av₁, Av₂,.... Av_n, will be placed in an ordered list starting from the higher value, then each value will be divided by the higher one, thus obtaining an ordered list of pure numbers starting from 1. As for example, if e.g. five projects after the assessment have their Assessment values placed in the following decreasing order: Av₅, Av₁, Av₄, Av₂, Av₃ the final ranking list for the “circularity” criterion will be:

$$\begin{aligned} \text{Av}_5 / \text{Av}_5 &= 1,000 \\ \text{Av}_1 / \text{Av}_5 &= x,xxxx \\ \text{Av}_4 / \text{Av}_5 &= y,yyyy \\ \text{Av}_2 / \text{Av}_5 &= z,zzzz \\ \text{Av}_3 / \text{Av}_5 &= w,www \end{aligned}$$

Thus allowing the assessors to assign, in the framework of the overall evaluation, a “circularity score” to each project in a proportional way. In fact, if the programme procedure assigns e.g. max 15 points, Project 5 will have the maximum score and the other a lower one proportional to their circularity assessment

In the following section there is a practical example of assessment.

Example of Application

The following example shows how the “*intermediate*” cost indicator is used only to harmonize different metrics and therefore allows to compare different kinds of projects; it disappears at the end, where the circularity of one project respect one or more others is expressed by a pure number.

Project 1

A company producing a product X has a current annual production of 1500 units and 19 workers. The company submits a project for a re-design of its products in order to reduce the amount of raw materials needed for the production. The row to be chosen is the N.1 “Circular Design”

The project contains a detailed list of the raw materials avoided through the new design process, together with their value at the current market prices (that are adequately proven). Such a list shows, for each new unit, a total of 4 kg of material avoided respect to the previous project, having a value of 10,05€.

The amount of energy used in the new process will be 250 Kwh per unit, while the current process needs 275 Kwh per unit

The current amount of equivalent CO2 generated per each unit produced is 12,432 Kg, while the new process will generate 11,025 Kg.

The new process will imply the reduction of personnel from 19 to 18, for the same amount of production, thus Number of new employees N=-1, Number of current employees P=19.

Assessment of project 1

Row chosen = 1

- **C₁** Metrics (row 1, column C): 1500 units/year X 4Kg of raw materials avoided = 6000Kg/year
- **D₁** Additional parameter: The average value of the material avoided is 10.05/4 = 2,512 €/kg
- Assessment indicator **C₁ x D₁** = 6000Kg/year X 2,512 €/kg = 15.072,00 €/year
- **F₁** Weight of criterion 1 = 10
- Climate criterion **C₇** = 275 Kwh/250 Kwh = 1,100
- Climate criterion **C₈** = 12,432 Kg / 11,025 Kg = 1,127
- Employment criterion **E₉** = 1 + (-1/19) = 0,947
- Circular Procurement NO
- Educational Project NO
- Assessment value **Av1** = **C₁ x D₁ x F₁ x C₇ x C₈ x E₉** 15.072,00€/year x 10 x 1,100 x 1,127 x 0,947 = 176.944,70 €/year

Project 2

A not-for profit organisation submit a project foreseeing a promotional campaign targeted to the public authorities of the Region XX to collect the obsolete/damaged furniture of their offices usually disposed in landfills, that will be partially (the obsolete ones) put in a second-hand furniture market and partially (the damaged ones) put in the market of the secondary raw materials. The project also foresees a specific training targeted to the officers of public authorities on how to launch public calls for the re-use their other obsolete materials before disposing them.

The application contains a study showing that all the public offices in the Region XX change in average 825 furniture pieces per year, the average weight of the single piece is 17,74 Kg for a total disposed mass of $825 \times 17,74 = 14.635,50$ Kg per year. The study also demonstrates that in the Region XX the average total cost of disposal of office furniture is € 0,87/Kg.

The not-for profit organisation has currently 3 full time employees and with the new project will hire 3 new full time employees. $P = \text{current full time personnel} = 3$; $N = \text{number of new employees} = 3$

The box “Educational project targeted to relevant stakeholders” is marked and the proof that Region XX has more than 2.000 employees is provided. Criteria 7 and 8 are not applicable and have the “neutral” value 1.

Assessment of project 2

The row chosen is the N.6 “Project promoting waste recycling”

- **C₆** Metrics (row 6, column C): 14.635,50Kg/year avoided to be disposed in landfills
- **D₆** Additional parameter: Cost of disposal = 0,87 €/kg
- Assessment indicator **C₆ x D₆** = 14.635,50 Kg/year X 0,87 €/kg = 12.732,89 €/year
- **F₆** Weight of criterion 6 = 6
- Climate criterion **C₇** = not applicable = 1
- Climate criterion **C₈** = not applicable = 1
- Employment criterion **E₉** = $1 + (3/3) = 2$
- Circular Procurement NO
- Educational Project targeted to relevant stakeholders YES, thus the value of **F₆** is increased by 10% and **F₆** = 6,6
- Assessment value **Av2** = **C₆ x D₆ x F₆ x C₇ x C₈ x E₉** = 12.732,89 €/year x 6,6 x 1,00 x 1,00 x 2,00 = 168.074,10 €/yea

Comparing the circularity of the two projects: Av1/Av2

$$\text{Project 1 is } \frac{176.944,70 \text{ €/year}}{168.074,10 \text{ €/year}} = 1,053 \text{ times more circular than Project 2}$$

ANNEX 1 – Draft Form to be filled by the applicant

Project short description

Row chosen =

Cn value

Justification of Cn value in the second sheet box 1

Dn Value

Justification of Cn value in the second sheet box 2

C7 value

Justification of C7 value in the third sheet box 3

C8 value

Justification of C8 value in the third sheet box 4

E9 value

Justification of E9 value in the fourth sheet box 5

Project addressing a relevant stakeholder ?

yes no *If "yes", justification in the fourth sheet box 6*

Circular Procurement ?

yes no *If "yes", justification in the fourth sheet box 6**(The scheme of the other sheets will be provided in the next version)*

ANNEX 2



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

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Presentation of the project, its results and follow-up

SCREEN is an H2020 coordinating and supporting action participated 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 was implemented from November 2016 up to October 2018 through four different steps, all related to each other:

The *first step* was a common procedure for mapping both real and potential value chains in each region. Such a procedure was amended several times following the indications given by each region's stakeholders; It is to be underlined that SCREEN was participated by regions with extremely different characteristics and therefore the identification of a common methodology is the first success of the project.

The *second step* is the synergic approach among different regions to find common value chains and particularly to find in a certain region the "missing ring" allowing the development of a value chain in another one and vice-versa. This approach will allow a considerable strengthening of the cohesion policy, thanks to its "bottom-up" approach generated by the real needs detected on the field by each region.

Financing interregional circular value chains through the structural funds of each involved region is extremely difficult, if not impossible, due to several administrative barriers; to overcome such barriers, the SCREEN "Laboratory on Policies" (Policy Lab) analysed the existing financing instruments, together with their characteristics and their limits, and then proposed an innovative one that allows to use in a truly synergic way both the structural

The four steps of the SCREEN project












funds and the European research funds (*third step*).

After one year of internal discussions and thanks to the external support of DG REGIO, an instrument called "Common Pot" has been defined (based on Art. 70 of the structural funds). It has been formalized through a "**Memorandum of Understanding**" having as first signatory Lazio and at the present already signed by further 10 European regions; others regions are going to sign, too. Furthermore, this new instrument goes beyond "Seal of Excellence" of the European Commission, that can actually be exploited in very few occasions and for projects with only one partner. **The procedure defined by the Memorandum of Understanding is open to any other region.**

To foster the joint financing of projects by different regions, the Screen Policy Lab worked on a common agreement on how the project's "circularity" should be evaluated (*fourth step*). This is also a relevant need for every single region willing to finance circular economy projects through its structural funds: in fact, since the circular economy is a new "transversal" matter having more than 100 different definitions², the ordinary tools for evaluating projects cannot determine if and how much a project is more "circular" than another one. SCREEN elaborated a comparative methodology with a "bottom-up" approach, tested on some already financed regional projects and then discussed and refined for the next 10 months; the result was really consistent (even if elaborated in a completely independent way) with the indicators contained in the EC document "*monitoring framework for the circular economy*" [COM(2018) 29 final]. This methodology has been submitted to the judgment of the main European stakeholders, receiving 160 very positive answers and over 40 suggestions, which led to a further version, complete with instructions for both applicants and assessors, as well as a practical example of its application.

SCREEN RESULTS

Guidelines for the local analysis	
www.screen-lab.eu/deliverables/SCREEN-D2.1.pdf	
Roadmap for building Circular Value Chains www.screen-lab.eu/deliverables/D3.1.pdf	
How to finance cross regional projects: Common Pot, Memorandum of Understanding and the 11 documents already signed by the Regions, www.screen-lab.eu/Step3.html	
Guidelines for assessing projects' circularity www.screen-lab.eu/deliverables/D3.3.pdf	
Methodology for regional cooperation www.screen-lab.eu/deliverables/D5.1_BL.pdf	
Policy makers recommendation manual www.screen-lab.eu/deliverables/D5.3.pdf	
All the project deliverables and excel tools www.screen-lab.eu/deliverables	

	17	European Regions
	12	European Countries
	+30	International and local workshops
	6	Policy lab meetings
	+20	Circular economy value chains
	+200	Identified emerging ideas
	+20	Potential operational synergies
	+100	cross-regional funding synergies
	11	Signed Memorandum of understandings, Letter of Intent

² J. Kirchherr et Al. - *Conceptualizing the circular economy: An analysis of 114 definitions* - *Resources, Conservation and Recycling* Volume 127, December 2017, Pages 221-232, - <https://doi.org/10.1016/j.resconrec.2017.09.005>

SCREEN Follow-Up

Considering the results obtained, which went far beyond what was expected at the beginning, and the enthusiasm expressed by the partners, SCREEN is continuing as an informal cooperation network between European regions open to other regions and stakeholders in the field of circular economy. The SCREEN network is coordinated by the Policy Lab through a LinkedIn Group www.linkedin.com/groups/13531065/

SCREEN network's motivation comes from its ability to **connect** technologically advanced regions with runner ups providing a possibility for regions and their local stakeholders to increase their innovation capabilities regardless of their starting point. Common **circular economy** goals are important both for the regional smart specialisations and for finding common opportunities

Cross-regional synergies, both innovation synergies and policy synergies are important fuel for the network. The SCREEN methodology enables focus in finding fit between cross-regional capabilities. The SCREEN Network is exploiting the project results and has already presented the following circular economy projects, still under evaluation:

- INTERREG EUROPE “**Replace**”;
- INTERREG MED “**CircMed**”;
- Erasmus+ KA2 Skills Alliance “**Circular Economy in Public Administration**”;
- Erasmus+ KA2 Capacity Building “**Circular Economy Sustainable Nutrition**”.

Moreover, the internal project **SCAVENGER** www.screen-lab.eu/Scavenger.html was launched by the SCREEN partner Veltha to:

- Identify H2020 projects results with circularity potential and define the state-of-the-art of the Circular Economy in Europe
- Check them against the SCREEN circularity assessment criteria
- Matching with the value chains already identified in SCREEN



More info? Visit www.screen-lab.eu or send a mail to info@screen-lab.eu