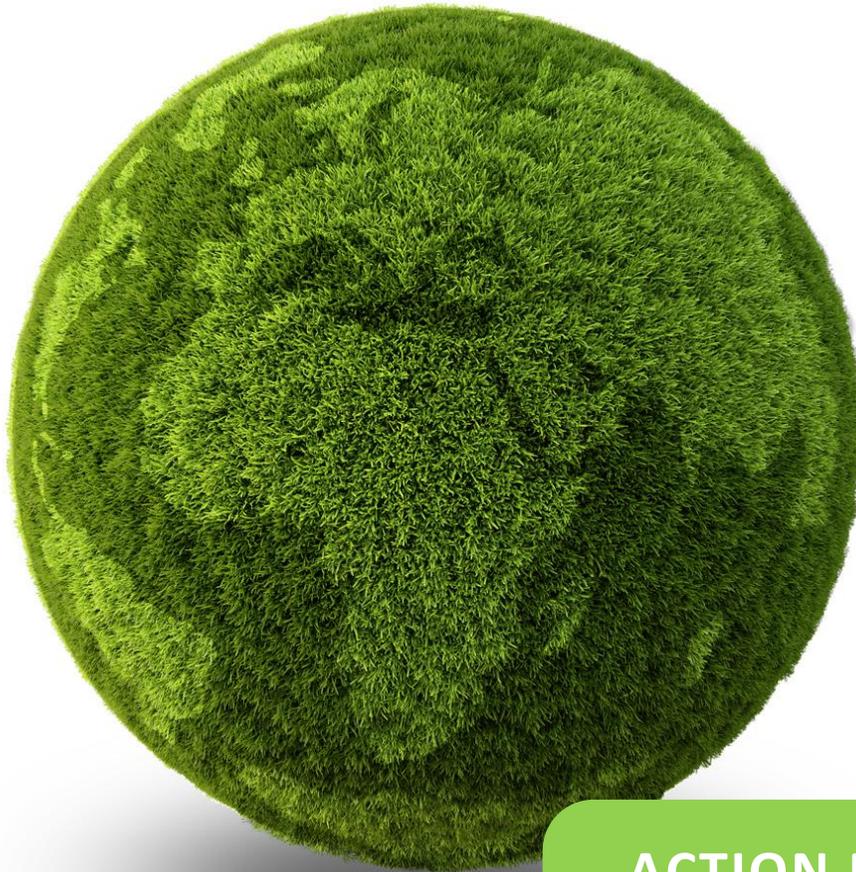


**Industrial Symbiosis for Regional Sustainable Growth and a
Resource Efficient Circular Economy**



ACTION PLAN

EXTREMADURA

March 2019



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1. GENERAL INFORMATION

Project SYMBI (PGI 00291): Industrial Symbiosis for Regional Sustainable Growth and a Resource Efficient Circular Economy

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NUTS2 region: Extremadura

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The Action Plan aims to impact: ✓ **Investment for Growth and Jobs programme**
European Territorial Cooperation programme
Other regional development policy instrument

Name of the policy instrument addressed: ERDF Operational Programme of Extremadura 2014-2020. Investment priority 6.1 Investment in the waste sector to meet the environmental requirements of the EU and to address the needs for an investment that goes beyond these requirements.

2. INTRODUCTION

2.1 Industrial Symbiosis for Regional Sustainable Growth and a Resource Efficient Circular Economy - The SYMBI project

SYMBI project aims to create or improve the implementation of regional development policies and measures related to the promotion and dissemination of **Industrial Symbiosis** and the **Circular Economy** from 7 participating countries faced to regional policies alignment with the Circular Economy strategy of the European Commission to transform Europe into a more competitive resource-efficient economy. The overall improvement is anticipated to positively contribute in **regional sustainable development** and job creation.

Figure 1: SYMBI regions



Circular Economy is an economic system where products and services are traded in closed loops or 'cycles'. A circular economy is characterized as an economy which is regenerative by design, with the aim to retain as much value as possible of products, parts and materials. This means that the aim should be to create a system that allows for the long life, optimal reuse, refurbishment, remanufacturing and recycling of products and materials.



In a more specific way, industrial symbiosis, involves territorial synergies to manage waste and share services, energy utilities, and by-product resources. The **territorial aspect of industrial symbiosis** brings regions to the forefront of the transition towards circular economy.

Industrial symbiosis requires policy reforms measures at different levels. EU regions show very different levels of performance on each area relevant to industrial symbiosis, and advance at a different pace towards green growth models.

Over the past three years, different exchanges of experiences activities between partners have been carried out to achieve the objectives, we can highlight the following:

- Comparative study of existing regional and national policies on industrial symbiosis and circular economy.
- Analysis of regional investment potential in industrial symbiosis.
- Identification of good practices and benchmarking of by-product and energy exchanges eco-systems.
- Prescribing green public procurement as an enabler of industrial symbiosis.

In particular, to guarantee and facilitate a deep Exchange of experiences and Public dialogue, both at interregional and regional level, four thematic Workshops and three Study Visits with partners' organizations, regional authorities and key stakeholders have been held.

2.2 Regional Action Plans

Produced by each region, the Action plan is a document providing details on how the **lessons learnt** from the cooperation will be developed in order to improve the policy instrument addressed within their region. It specifies the nature of the Activities to be implemented, their timeframe, the players involved, the costs and funding sources.

Based on the *Exchange of Experiences activities*, which have been carried out to facilitate the process of interregional learning, knowledge transfer and dialogue between internal and external stakeholders, as well as facilitate active involvement of regional stakeholders (meetings, workshops, interviews) along last three years, we have identified a set of activities that will impact in the development of industrial symbiosis and circular economy practices in the participating regions.

3. REGIONAL CONTEXT

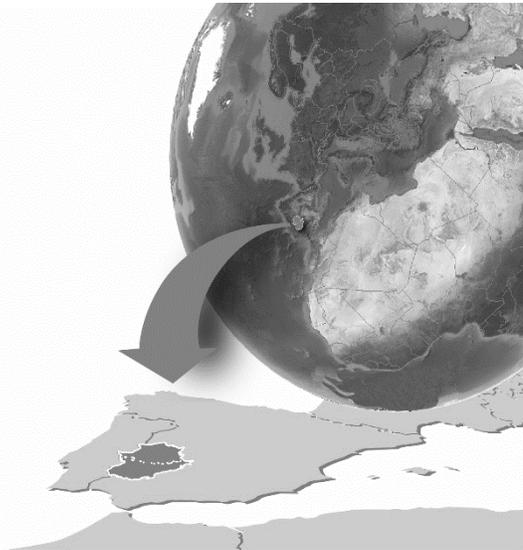
3.1 General Information

Extremadura is located in the southwest of the Iberian Peninsula and borders with Portugal. The total territory covers an area of 41.634 km², roughly 8% of the Spanish surface (European Commission, 2018). Extremadura is one of the 17 Regions that compose the Spanish state. It is divided into 2 Provinces: Cáceres and Badajoz, being Mérida its regional capital.

In total approximately 1.072.000 inhabitants live in the region, accounting for 2,3% of the total Spanish population (IEEX, 2018). At the moment, Extremadura is one of the least populated zones of the country, roughly 26 inhabitants / km² live in the region compared to the average of 92 inhabitants / km² in Spain (IEEX, 2018). Consequently, the territory is considered predominantly rural.

As two important rivers cross the region, the land is productive for agriculture, livestock, forestry and fishing. In 2015, 61 % of the total surface was used for agriculture (Eurostat, 2018). The region is renowned for its environmental diversity providing different habitats to various animal species. Types of habitats include: the ecosystem of Dehesa, open plains, reservoirs, wetlands and crags.

Currently, Extremadura remains one of the least developed regions of Spain with an economy lagging behind the rest of the country. The Gross Domestic Product (GDP) of the region was the 1,6% of the national GDP. The main contributing sectors were services (69,2%), industry (14,5% of which 7,6% manufacturing) and agriculture, livestock, forestry & fishing (8,93%) (Eurostat, 2018). In addition, unemployment is relatively high, especially amongst the youth.



3.2 Circular Economy in Extremadura

The region Extremadura is rich in its human and natural resources and is renowned for its environmental biodiversity. Yet, at the same time the economy is lagging and a low standard of living is perceived. To exploit the economic potential in a sustainable manner, the Regional Government of Extremadura developed a new Strategy for a Green and Circular Economy: **Extremadura 2030**. The strategy born aimed to align regional policies with European Commission Circular Economy Package (Dec. 2015) to generate a sustainable development model based on the green and circular economy, conjugating environment, economy and society around the regional environmental potential and promoting the transition of the regional business fabric towards the new model, mainly in the agri- food sector, services, industrial and construction. This by placing a focus on:

- changing the productive model of Extremadura;
- training citizens in green leadership;
- creating new green and circular jobs/businesses;
- become leading in agro ecological technology;
- improve green citizen participation;
- adapt the region to climate change by concentration on 11 sectors including energy and waste



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Collaboration between citizens, businesses, civil society, public administration and the scientific community is central in this process (Junta de Extremadura, 2017).

Finally, it is important to mention the Regional Integrated Waste Management Plan 2016-2022, published on December 2016. This plan is totally aligned with the National Framework Waste Management Plan 2016-2022. When SYMBI project started this plan was in public information stage, so FUNDECYT PCTEX suggested to explicit the concept Circular Economy that was not mentioned initially but was implicit in the context, so finally as part of the objectives in the Plan it is mentioned to be aligned with the Circular Economy Package.

4. ACTION PLAN

4.1 Policy Instrument

The main goal of this Action Plan is the elaboration of a common framework for the improvement of the ERDF Operational Program for Extremadura in its Investment Priority 6.1, for initiatives specifically addressing the circular economy and the industrial symbiosis.

ERDF program for Extremadura (2014-2020):

Priority Axis 6	Investment Priority 6.1	Specific Objective 6.1.1
To conserve and protect the environment and to promote resource efficiency	Investment in the waste sector to meet the environmental requirements of the EU and to address the needs for an investment that goes beyond these requirements.	To develop the separation, selective collection and treatment of wastes, <u>including Activities to close the cycle</u> ; contemplating both management plans and investments in infrastructure.

The SYMBI Action Plan includes specific actions based on BP identified during the first phase of the project that try to help the overcoming of key regional barriers in the efficient implementation of the ERDF OP for Extremadura.

The ERDF OP, in its Priority Axis 6, Investment Priority 6.1 an Specific Objective 6.1.1, seeks the development of efficient wastes management plans and systems, and includes the promotion of activities to close the cycle of products. But actions to promote the closing of such cycle are vaguely described and therefore ERDF investments in this sense are not being implemented efficiently.

In this sense, This Action Plan will implement specific activities that will serve as pilot experiences for the Regional Government to make investments in circular economy and industrial symbiosis plans and programs using ERDF funds.

Apart from the direct influence in the OP, this Action Plan is in line with the Regional Strategy for a Green and Circular Economy “**Extremadura 2030**”. This strategy is coordinated by the 2030 OFFICE of the Regional Government that has participated as stakeholder of the SYMBI project and has been involved in the elaboration and validation of this Plan. The SYMBI Action Plan will therefore have a positive impact in both, the ERDF OP and the Strategy Extremadura 2030

4.2 Regional analysis of the current situation

Key stakeholders that take part of promotion of industrial symbiosis and circular economy in the region:

ENTITY	NATURE (SME, Authority, NGO, ...)	FIELD OF ACTIVITY/COMPETENCES
DG MEDIO AMBIENTE	MANAGING AUTHORITY	Environmental affairs
SG DE CIENCIA TECNOLOGÍA E INNOVACIÓN	MANAGING AUTHORITY	Promotion of Science, Technology and innovation
DG DE EMPRESA Y ACTIVIDAD EMPREDEDORA	MANAGING AUTHORITY	SME and entrepreneurs promotion
EXTREMADURA 2030	REGIONAL GOVERNMENT	Circular Economy Strategy
AVANTE	PUBLIC ADMINISTRATION	Regional Agency for industrial development
PROMEDIO	PUBLIC ADMINISTRATION	Environmental and Waste management in local areas
INTROMAC	RESEARCH CENTER	Research Institute Construction Materials
CTAEX	RESEARCH CENTER	Research Center on agrifood
CICYTEX	RESEARCH CENTER	Regional Research Center
UNIVERSIDAD DE EXTREMADURA	UNIVERSITY	Research and Training
AGENEX	PUBLIC AGENCY	Regional Energy Agency
CÁMARA DE COMERCIO DE BADAJOZ	SME REPRESENTATIVES	Chamber of Commerce of Badajoz

Main barriers that hinder industrial symbiosis or circular economy development

In order to analyze why the Region needs an Action Plan to improve the implementation of ERDF funds for the promotion of the circular economy and the symbiosis industrial, participatory sessions and meetings with stakeholders were implemented during the first phase of the SYMBI project in order to detect barriers to be overcome. In this section different barriers have been identified:

A. Barriers related to the development of Green Public Procurement as an enabler of Circular Economy

Administrative reasons:

- Failure to integrate the life cycle cost method.
- Sustainability criteria have not yet been integrated in the internal procurement system of public entities.
- Lack of an effective training in environmental criteria of citizens/ employees and public civil servants
- There is a widespread belief that the acquisition of sustainable products and services entails higher costs, to the detriment of institutional benefits.

Legal reasons:

- Legal barriers. Often public institutions legal regulations constitute a brake on the procurement process because it is too complicated or bureaucratic, which makes it difficult to insert these sustainability criteria.

Technical reasons:

- Lack of clear definitions: In GPP processes, there is often technical confusion in the identification of whether or not a product is environmentally sustainable or socially responsible.
- Lack of sustainable products and services in the local and regional market. Local and regional markets may not have enough variety of green-certified products or do not meet sustainability criteria.
- Insufficient monitoring of environmental impact of green procurement processes
- Insufficient development of green technical criteria for products or services acquired through public procurement.
- Lack of knowledge about the use of tools to determine the Life Cycle Cost of products and services
- Lack of research for the identification of opportunities for the development of industrial symbiosis projects, which limits in an important way the development of GPP and Industrial Symbiosis.
- Lack of personnel capable of constructing the infrastructure of industrial symbiosis projects is also a technical barrier, being this a factor of low impact for the companies.

B. Barrier related to the lack of effective Communication among administrations towards the promotion and effective implementation of the circular economy and industrial symbiosis:

Administrative reasons:

- Lack of internal structures to promote the cooperation among different public administrations or different departments within the same public administration
- Lack of transversal programs for an effective and fluent communication among administrations
- Lack of common protocols for communication between different administrations working in the same field
- Changes at political level usually entails changes at administrative level and this might affect cooperation among administrations managed by different political groups

Legal reasons:

- Different Bureaucracy processes and internal regulations in different administrations is a barrier for a more effective communication and cooperation

Technical reasons:

- Lack of tools for an effective and fluent communication among administrations. Transversal shared tools for communication such as common platforms are not properly implemented in the administration

C. Barriers connected to current limitations for the implementation of Circular economy related programs

Administrative reasons:

- Lack of public-private cooperation structures
- Lack of financing programs for the promotion of the circular economy
- Lack of criteria and indicators to define circular economy activities for industries and companies
- There is not a regional catalogue of entities implementing or promoting the circular economy
- Lack of effective coordination structures to promote and monitor circular economy activities within the administration

Legal reasons:

- The legal regulations for the classification of wastes needs to be revised and updated

Technical reasons:

- lack of knowledge regarding the state of the art in the recovery and valorisation of products in industries and in the administration
- lack of information regarding best practises and technologies with regard to the circular economy
- Lack of sustainable products and services in the local and regional market. Local and regional markets may not have enough variety of green-certified products or do not meet sustainability criteria.
- Insufficient monitoring of circular economy activities in the region
- Lack of research for the identification of opportunities for the development of circular economy projects.

D. Barriers connected to the lack of experiences of industrial symbiosis in the Region

Administrative reasons:

- The LCA of products and services is not widespread and well integrated in industries at regional level
- Lack of an effective training and information campaign addressed to industries
- Lack of public-private cooperation structures
- Lack of financing programs for the promotion of the industrial symbiosis
- Lack of a database of industry-wastes at regional level to study industrial symbiosis options from an integrated perspective

Legal reasons:

- The legal regulations for the classification of wastes or by-product need to be revised and updated
- Legal limitations to manage wastes as raw materials for other industries
- Lack of clear regional regulation to define and promote the industrial symbiosis

Technical reasons:

- lack of knowledge regarding the state of the art in the recovery and valorisation of products in industries and in the administration
- Lack of staff specialised in industrial symbiosis processes both in the administration and in the private sector
- Lack of programs for financing technical equipment acquisition or infrastructures for the updating and modernization of industries with regard to wastes management and recovery
- Lack of tools (platforms, networks, etc...) to facilitate cooperation and communication among industries
- Lack of research for the identification of opportunities for the development of industrial symbiosis projects,
- Lack of staff specialised in circular economy processes both in the administration and in the private sector

4.3 Identification of best practices in the implementation of industrial symbiosis and circular economy promoting activities:

Along project lifetime, the activities based on exchange of experiences favoured the process of learning through the exchange of experiences related to circular economy and more specifically to industrial symbiosis:

- The preparation of different studies related to identification of policies, from this analysis we can highlight, the list of policy recommendations to achieve the advancement of Circular Economy (A1.1).
- The map of investment potential in industrial symbiosis, to find out the willingness and capacity of relevant stakeholders to make investments in developing industrial symbiosis in partners' regions. Results showed that many companies invest in industrial symbiosis at the SYMBI partner's region especially in the field of sharing secondary resources (A1.2)
- The identification of Good Practices, where partners learned directly what Industrial Symbiosis means, not only from small scale projects in the private sector, but also as a strategical point of view in industrial areas promoted from the public sector, through the awareness creation, the research and mapping related to waste in companies, and the support of exchange through different tools as networking sessions, platform, etc. (A1.3)
- The analysis of Green Public Procurement as an enabler of Industrial Symbiosis, as it can help public authorities to achieve environmental targets but at the same time it provides social, political and economic benefits. (A1.4).

On the other hand, through the participation in interregional activities such as Workshops and Study Visits, that helped us to learn directly from real examples related to different topics as how the private-public partnerships can foster industrial symbiosis, how to stimulate the emergence of secondary raw materials market and how to launch industrial symbiosis demonstration projects.

To complete the process of learning aimed to get the inspiration for preparing this Action Plan in order to impact the Policy Instrument mentioned before, we have biannual meetings with regional stakeholders to identify the Good Practices with the highest potential to be transferred to the project partner territory:

Example 1:

NAME	FISS – Finnish Industrial Symbiosis System is an operation model and a tool to create cooperation between different entities to achieve mutual benefits.
DESCRIPTION	<p>FISS – Finnish Industrial Symbiosis System is based on active facilitation of symbiosis and co-development. It aims to promote, in particular those symbiosis, which would not otherwise be materialized.</p> <p>The core of the action is to bring together regional actors in a network. Regional organizers take care of the symbiosis promotion in practice. Their tasks include business activation and commitment, exchange of resource information and networking. FISS-workshops are a focal tool in businesses activation, resource data collection and the identification of synergies. The resource information and identified opportunities for synergies are collected in a common SYNERGie® database. The database is used to monitor the progress of the synergies and achieved benefits. The system is based on British National Industrial Symbiosis Programme (NISP) methodology adapted to the Finnish operational environment. The FISS website also showcases industrial symbiosis in Finland.</p> <p>Over 700 companies are involved in the operation and over 5000 resources are registered in the database resulting in over 2500 synergy opportunities (FISS 2018).</p> <p>FISS aims at promoting new business opportunities, re-use of waste and reducing use of natural resources. The goal is to advance the implementation of waste hierarchy. FISS activities promote resource efficiency of different actors in the regions and can be seen as an important tool in regional development and circular economy.</p>
INTEREST	The idea of mapping companies and promoting resource efficiency

Example 2:

NAME	MANRESA EN SIMBIOSI
DESCRIPTION	<p>The first industrial symbiosis initiative of the Council of Manresa (Catalonia) with the participation of Simbiosy with the purpose of creating the basis for promoting synergies between companies / entities, thereby maximising the efficient use of available resources.</p> <p>The key characteristic of “Manresa en Simbiosi” is that it is an open industrial symbiosis eco-system that aims to encourage exchanges of all types of by-products. This system aims at creating the infrastructures and implement in Manresa an industrial ecosystem that allows firms to identify potential partners with which they can create synergies, exchange their by-products and maximise their efficiency. “Manresa en Simbiosi” helps companies in this industrial area to learn on how to take advantage of synergies with other companies, reduce their costs and increase their competitiveness, thereby strengthening the industrial base of the area, promoting innovation and creating new companies and jobs. Other positive effect of this ecosystem is that it opens the way for future innovation and applied research projects for companies and therefore, it will contribute to the territorial development and to raise awareness about the process of adaptation to a circular economy.</p> <p>“Manresa en Simbiosi” has managed to help companies to develop synergies by making available the following tools:</p> <ul style="list-style-type: none"> • An on-line platform is a data management tool that allows identifying synergies and helps managing the networks of companies to implement them. • Work sessions with other entrepreneurs to bring forth the synergies detected • Advice to participating companies about how to increase the efficiency in the use of their resources
INTEREST	The awareness creation about Industrial Symbiosis and matching about offer and demand

Example 3:

NAME	ROADMAP OF TRANSITION TOWARDS A CIRCULAR ECONOMY IN POLAND
DESCRIPTION	<p>Roadmap is one of strategic projects of the Responsible Development Strategy created at the national level in Poland.</p> <p>Roadmap of transition towards a circular economy (CE) was prepared by the Interdepartmental Circular Economy Group established by the Polish Ministry of Development. The idea of CE was introduced to all appointed group members from various areas: environment, education, energy, infrastructure, social policy, agriculture and public health. Four working groups were established regarding: waste; education and promotion; bioeconomy; new business models. Next the draft version of this roadmap was presented to the public consultation and waits for the approval of the Council of Ministers.</p>
INTEREST	The idea of approaching Circular Economy as an transversal area

Example 4:

NAME	VALORISATION OF BY-PRODUCTS GENERATED DURING THE PRODUCTION OF OLIVE OIL
DESCRIPTION	<p>Olive oil by-products recovery produces some high quality products, improving the cost/benefice balance in olive oil and olive pomace oil production.</p> <p>The traditional system, or three phases of obtaining olive oil, produced three types of by-products: alpechín (It is a highly polluting residual liquid), oil pomace oil and residuals water.</p> <p>It is currently being replaced by a two-phase system, more advantageous, which generates oil, wastewater and wet fatty pomace.</p> <p>The advantages of the two-phase system compared to the traditional one are clear:</p> <ul style="list-style-type: none"> • It is more efficient • It generates less waste • It consumes less water and therefore produces less amount of residual water <p>The wet fatty pomace is a by-product that companies have managed to valorise, if they were spilled, they would cause environmental problems such as: the coloration of the waters, the threat of aquatic life, the formation of a film that does not let sun rays pass, soil deterioration, phytotoxicity, unpleasant odours.</p>
INTEREST	The idea of generating a new business from zero waste and resource efficiency in a traditional sector

4.4 Identification of Activities to be implemented:

In order to improve the Policy instrument selected for Extremadura, and to support the implementation of the new Regional Strategy for a Green and Circular Economy “Extremadura 2030”, the region needs to take into account and overcome specific **key barriers**. These barriers have been identified in section 4.2 and have been evaluated through an analysis with local stakeholders and key actors during the first phase of the SYMBI project. In summary, these barriers can be categorized in 4 main action that will have a direct connection with proposed actions for the Action Plan:

- A. Barriers connected to the effective implementation of the **Green Procurement**: Civil servants working in different departments that are involved in the design and implementation of procurements processes identified the need of common guides and tools to facilitate the implementation of the green procurement in the administration

- B. Barriers connected to the **lack of effective Communication among administrations** towards the promotion and effective implementation of the circular economy and industrial symbiosis. Stakeholders demand a protocol of communication among different administrations as well as tools to facilitate a fluent and structured communication.

- C. Barriers connected to **current limitations for the implementation of Circular economy** related programs. Programs for the promotion of the circular economy in the region needs to identify prior to their efficient design and implementation:
 - Definition of Criteria and indicators to asses if a company or industry is implementing the circular economy in its activities and products. The definition of such criteria is key for the design of support and financing public programs directed to companies

 - Identification of industries implementing the circular economy in Extremadura (Official catalogue). Related to the first need, a catalogue of industries (and their wastes, byproducts or services) would facilitate the identification of opportunities and the cooperation among different entities.

 - A Training and information campaign for companies prior to the launch of programs for the promotion of the circular economy (taxation, financing opportunities, regulations, technical solutions, wastes management and the concept of end of waste...). Te lack of information, technological knowledge, taxation and financing opportunities, etc... among private and public entities hinders the promotion of the circular economy in our Region.

- D. Barriers connected to the **lack of experiences of industrial symbiosis** in the Region. Stakeholders demand, based on best practices identified during the first phase of the Symbi project, programs for an effective communication and collaboration among industries, training for private and public actors, and tools for the identification of industry-wastes and industries with potential and interest in the industrial symbiosis

In order to answer to the four identified actions of barriers and needs, this Action Plan will implement four Actions based on BP identified during the SYMBI project:

Action 1: Green Procurement:

- ✓ Activity 1.1 **Green guide** for public procurement
- ✓ Activity 1.3 **Information and training program** for civil servants

Action 2: Communication among administrations

- ✓ Activity 2.1 **Protocol** for the efficient communication among different administrations with regard to the implementation of Activities towards the circular economy and industrial symbiosis, in special when using structural funds.
- ✓ Activity 2.2 **Protocol for the participatory design of the ERDF OP Program** with a focus on the Circular economy.

Action 3: Support to the transition to Circular Economy in Extremadura

- ✓ Activity 3.1 Identification of **criteria** (list) to decide if an industry or company is implementing the circular economy in their activities for the design of subsidies programs.
- ✓ Activity 3.2 Elaboration of a **catalogue** of industries implementing the circular economy in Extremadura.
- ✓ Activity 3.3 **Training and information campaign** for the promotion of the circular economy for companies (taxation, financing opportunities, regulations, technical solutions, wastes management...)

Action 4: Promotion of Industrial Symbiosis in Extremadura

- ✓ Activity 4.1 **Program** for the promotion of collaboration among different industries allocated in the same industrial Area (Pilot Activity in a selected Industrial Area)
- ✓ Activity 4.2 **Training and information** program for civil servants and companies towards the Industrial Symbiosis (one pilot Activity-Workshop)
- ✓ Activity 4.3 Elaboration of a **data base** of industry-wastes generated in the Region and location.

ACTION 1: Promotion of Green Public Procurement

- ✓ Activity 1.1 **Green guide** for public procurement
- ✓ Activity 1.2 **Information and training program** for civil servants

a) The Background

LESSON LEARNT: How to capitalise Green Public Procurement as enabler of industrial symbiosis.

SOURCE OF INSPIRATION:

- Activity A.1.4: Guidelines on how to capitalise green procurement as an enabler of industrial symbiosis;
- Activity A3.4 - Study Visit to share national practices on waste recovery, separation and processing system held in Ljubljana (Slovenia) on 21st and 22nd November 2017; Good practices from Slovenia - GPP by Mrs Alenka Burja.
- Activity A3.2 - Interregional Workshop on “How to Stimulate Secondary Raw Material Markets” held in Campobasso (Italy) on 20th and 21st March 2018; The Green public procurement in Italy by Mrs Patrizia de Luca

According to the results of Activity A.1.4, two important features of GPP can be seen as advantages that can help make firms move towards industrial symbiosis:

- GPP is very flexible and dynamic compared to other regulatory instruments.
- GPP works on market conditions, particularly on the demand side, which is much better accepted by firms than taxes and legislation.

GPP helps public authorities to achieve environmental targets but at the same time it provides social, political and economic benefits. What that means is that, by creating demand for greener goods and services, GPP also provides incentives to industry to innovate, i.e. to produce and supply environmentally sustainable and socially responsible products in order to be more competitive and lay the foundations for industrial symbiosis projects.

After analyzing the regional results of questionnaires carried out during activity 1.4 to civil servants and companies and also through sharing the learning gained with stakeholders during different sessions, we detected the civil servants in charge of public procurement often lack the proper knowledge to include sustainability criteria that stimulate green procurement

b) Activities

- ✓ **ACTIVITY 1.1 Development of a Green public procurement Guide:** During the second phase of the SYMBI project, FUNDECYT-PCTEX will collaborate with the DG for Environment of the Regional Government of Extremadura in the elaboration of a Green Guide for public procurement. Different departments in charge of public procurement from other DGs will be involved in the process. The Activity will include a participatory table in which the Guide is revised and validated by key actors in the Administration. Synergies with the Interreg POCTEP ECO2CIR project, in which the Regional Government is involved and the circular economy is the main focus, will be studied in order to identify stakeholders to be involved and resources for the guide. The process will include the following steps:
 - The elaboration of the Guide by the Regional DG for Environment with the support of FUNDECYT-PCTEX
 - The design and implementation of a validation table with key actors to validate the content of the Guide by FUNDECYT-PCTEX, with the support of the Regional DG for Environment and the 2030 Office.
 - The dissemination of the Guide among stakeholders by FUNDECYT-PCTEX, with the support of the Regional DG for Environment and the 2030 Office.

- ✓ **ACTIVITY 1.2 Information and training program for civil servants towards the promotion of the Green Procurement:** A Workshop for the presentation of the Guide for Green procurement and its correct application will be organized and implemented by FUNDECYT-PCTEX in collaboration with the 2030 Office of the Regional Government of Extremadura and the DG for Environment. This workshop will be implemented once the guide is elaborated and validated by key actors. The objective of this Activity is the correct application of green procurement criteria by staff involved in public procurement within the Regional Government and associated entities. the process will include the following steps:
 - Identification of main entities, departments and key staff involved in public procurement within the Regional Government
 - Design of a training session
 - Presentation of the guide and Implementation of a training session
 - Evaluation of the session
 - Monitoring of the application of the guide during 2020

c) **Players involved**

- FUNDECYT-PCTEX: Support in the elaboration and dissemination of the Guide (Activity 1.1). Coordination and organisation of the training and information workshops (Activity 1.2); monitoring of the implementation of both Activities.
- DG for Environment of the Regional Government of Extremadura: Support in the organisation of workshops (Activity 1.2); Coordinating the elaboration of the guide (Activity 1.1)
- 2030 Office of the regional Government of Extremadura: support in the implementation and dissemination of both Activities
- Financial and Technical staff from the main DGs implementing public procurement where green criteria will have an important impact
 - DG for Infrastructures
 - DG for Education
 - DG for Health
 - DG for Energy
 - DG for Economy and innovation

Their role is the validation of the guide and participation in workshops

d) **Timeframe**

- ACTIVITY 1.1: Expected duration: 5 months; Expected deadline November 2019
- ACTIVITY 1.2: Expected month for the implementation of workshops: November/December 2019; monitoring of the implementation of the Guide for Green Procurement during the year 2020.

e) **Costs and funding sources**

- 12.000 euro for the elaboration of the guide from the DG for Environment (ERDF)
- 200 euro for the implementation of the validation table from (FUNDECYT-PCTEX own resources)
- 350 euro for the implementation of a training workshop (FUNDECYT-PCTEX own resources)

ACTION 2: Communication among public administrations

- ✓ Activity 2.1 **Protocol** for the efficient communication among different administrations with regard to circular economy
- ✓ Activity 2.2 **Protocol and Technical table for the participatory design of the ERDF OP Program** with a focus on the Circular economy.

a) The Background

LESSON LEARNT: Establishment of an integrated approach to the Circular Economy

SOURCE OF INSPIRATION:

- Activity A1.1 - Comparative analysis study of regional and national policies on industrial symbiosis and circular economy
- Activity A3.2 - Interregional Workshop on “How to Stimulate Secondary Raw Material Markets” held in Campobasso (Italy) on 20th and 21st March 2018; The Italian Framework – Fabio Eboli
- Activity A3.4 - Study Visit in Cracow – 30th and 31st January 2019 - Roadmap of transition towards a circular economy in Poland- Mrs. Karolina Laszczak

According to SYMBI Project findings, lack of a regulatory and strategic framework can result as a huge barrier for the transition towards Circular Economy and, as a subsequent effect, it can prevent the development of Industrial Symbiosis, therefore the development of an integrated policy approach is a crucial issue to move from the current linear economy model to the circular.

Based on presentations and discussion with stakeholders from Extremadura we came to conclusion that unified and harmonized legal frame contributes to comprehensive solutions. To ensure the fulfilment of the regional strategy, coordination and communication among regional departments dealing with circular economy plays crucial role, which can only be built during longer period and in cooperation with all stakeholders (companies, public institutions, NGOs, other interested groups of stakeholders, as well as political parties.

b) Activities

- ✓ **ACTIVITY 2.1 Protocol for the efficient communication among different administrations:** This Activity consists on the design of a validated protocol for the effective coordination and communication of the different departments and entities within the Regional Government with regard to the promotion and implementation of Activities related to the circular economy

Since different levels of authorities (DGs, Services, bodies, ...) are sharing the competences related to the promotion and implementation of the circular economy in the Region, it is mandatory, to be really efficient, that they cooperate and coordinate themselves. To make it real, we need to create light and agile, but well defined, coordination structures. In this sense the Strategy 2030 includes the creation of the 2030 Office with the aim to promote the circular economy and integrate related Activities. Activity 2.1 will involve the participation of such Office in collaboration with FUNDECYT-PCTEX. The following steps will be implemented

- Identifying the different entities and departments within the Regional Government to be involved in the Protocol
- Designating one referent per entity (or department) as “circular economy agent” and creation of a coordination committee, headed by the 2030 Office.
- Networking: in order to collaborate effectively, different players have to know each other personally (who is who) and institutionally (institutional specificities in terms of competences, prerogatives, limitations, roles, functions...). To manage this reciprocal knowledge, the coordination committee members need to meet each other regularly (at least yearly). The 2030 Office of the Regional government will coordinate the network and will organize meetings
- Defining a common protocol for the communication among different agents and the 2030 Office: taking the opportunity of the networking meetings, a common dynamic strategy and protocol for communication can be designed, defining clearly the steps to follow, tools to be used, objectives, roles and tasks of each agent. the 2030 OFFICE and FUNDECYT-PCTEX will elaborate a draft of the protocol to be validated by all agent during a validation session.
- Collective evaluation: at the end of each year, the coordination committee will proceed to a collective evaluation and feedback, that will serve to improve the protocol.
- Monitoring of the implementation of the protocol by FUNDECYT-PCTEX and the 2030 OFFICE

- ✓ **ACTIVITY 2.2 Protocol and Technical table for the participatory design of the ERDF OP in Extremadura with a focus on the Circular Economy:** The objective of this Activity is to create an agile structure and a participatory process for the design of the ERDF Operational Program for Extremadura so that the concepts and objectives of industrial symbiosis and the circular economy are evaluated and included in the elaboration of program objectives. This process will include:
- Creation of a coordinating structure within the Regional government to ensure the implementation of a participatory process within the Regional Government. This structure will be coordinated by the 2030 OFFICE and will include the circular economy agents identified in Activity 2.1.
 - Analysis of priority strategies for the development of the Region (RIS3, ...) and creation of synergies. This task will be coordinated by FUNDECYT-PCTEX
 - Design of a participatory process to ensure the involvement of key actors in the design of the ERDF OP from each DG and representatives of the society (companies and associations) for each sector. The design of Sectoral tables will be included.
 - Elaboration of a protocol or guide to implement the participatory process with a focus on the circular economy and the monitoring and evaluation of results

c) Players involved

- 2030 Office of the Regional Government of Extremadura: this entity will coordinate the elaboration of the protocols and the structures to be created
- FUNDECYT PCTEX: this entity will support the elaboration of the protocols and the involvement of agents
- DGs of the Regional government: each selected DG will name an Agent to participate in the network for Activity 2.1 and people directly involved in the design of ERDF OP for Activity 2.2

d) Timeframe

- Expected deadline for the definition of both protocols: May 2020; but the monitoring and evaluation of both Activities will last until December 2020

e) Costs and funding sources

- No relevant costs are foreseen apart from staff dedication of involved entities

ACTION 3: Support to the transition to Circular Economy in Extremadura

- ✓ Activity 3.1 Identification of **criteria** to decide if an industry or company is implementing the circular economy in the Region
- ✓ Activity 3.2 Elaboration of a **catalogue** of industries implementing the circular economy in Extremadura.
- ✓ Activity 3.3 **Training and information campaign** to incentive the circular economy among companies

a) The Background

LESSON LEARNT: The need to adapt policies to promote the Circular Economy

SOURCE OF INSPIRATION:

- Activity A1.1 - Comparative analysis study of regional and national policies on industrial symbiosis and circular economy
- Activity A3.1 - Interregional workshop on how to create attractive market conditions for private sector investments held in Győr (Hungary) on the 15th and 16th November 2016. Input Study
- Activity A3.3 – Interregional Workshop on Industrial Symbiosis Demonstration projects held in Seville (Spain) on the 19th and 20th June 2018. Political and financial instruments to launch Circular Economy projects. Mr. Alfred Vara

The European Union (EU) considers the circular economy as part of a strategy to develop a sustainable, low carbon, resource efficient and competitive economy that will boost global competitiveness, foster sustainable economic growth and generate new jobs.

Transition to a more circular economy requires changes throughout value chains, from product design to new business and market models, from new ways of turning waste into a resource to new modes of consumer behaviour. This implies full systemic change, and innovation not only in technologies, but also in organisation, society, finance methods and policies.

According to Policy recommendations resulted from the analysis carried out in activity A1.1 we would like to highlight the use of financial incentives to foster the initialisation circular economy projects and awareness raising about the benefits of circular economy to adapt policies to the promotion of Circular Economy.

b) Activities

- ✓ ACTIVITY 3.1 Identification of **criteria** to decide if an industry or company is implementing the circular economy in their activities for the design of subsidies programs: the objective of this Activity is to define a methodology with indicators in order to determine if a company is implementing circular economy activities. The following issues will be considered:
 - Study and analysis of different contrasted methodologies related to environmental management, wastes management, LCA, Eco-design, etc.
 - Study and analysis of other experiences in Spain (Andalucía, the Basque country, ...)
 - Design of a methodology to assess the performance of a company with regard to the circular economy
 - Identification/elaboration of indicators and criteria to be considered in such methodology
 - Validation of the methodology with experts and key actors
 - Publication of a Regional list of criteria to be considered when assessing the circular economy in a company or industry
- ✓ ACTIVITY 3.2 Elaboration of a **catalogue** of industries implementing the circular economy in Extremadura. The objective of this Activity is to identify circular economy companies in the region taking into consideration the results of Activity 4.1; the following steps will be implemented:
 - Study of other catalogues in Spain (Andalucía, the Basque country, ...)
 - Identification of potential companies performing in line with the circular economy principles
 - Application of criteria (from Activity 4.2) to the study of each selected company
 - Maintenance and updating of the catalogue
- ✓ ACTIVITY 3.3 **Training and information campaign** to promote the circular economy in the Region: The objective of this Activity is to raise awareness and to promote the potential of the circular economy in the regional context. A training session (pilot experience) will be organized with experts and key stakeholders to facilitate the transition towards a circular economy. Topics such as taxation, financing opportunities, regulations, technical solutions, wastes management, collaborative agreements, etc. will be included. The campaign will be directed to both public and private entities as well as intermediary bodies for the transference of knowledge such as technological centers, agencies, associations, etc...; The following steps will be considered:

- Design of the information campaign (strategy, tools, contents, public, financing sources...) and elaboration of a communication plan
- Design of a pilot workshop in line with the elaborated plan
- Identification and involvement of experts as speakers
- Identification of the objective public and dissemination
- Implementation of the workshop
- Evaluation of the workshop and conclusions for replication

c) Players involved

- Activity 3.1 Identification of criteria: This Activity will be coordinated by FUNDECYT-PCTEX with the support of the 2030 OFFICE
- Activity 3.2 Elaboration of a catalogue of industries implementing the circular economy in Extremadura: This Activity will be coordinated by FUNDECYT-PCTEX with the support of the 2030 OFFICE
- Activity 3.3 Training and information campaign to promote the circular economy in the Region: This Activity will be coordinated by FUNDECYT-PCTEX with the support of the 2030 OFFICE

d) Timeframe

- Activity 3.1: Sept 2019 – Dec 2020
- Activity 3.2: March 2020 – Dec 2020
- Activity 3.3: Sept 2020 – Dec. 2020

e) Costs and funding sources

- Activity 3.1: 9.000 euro for the subcontracting of a specialized consultancy; staff dedication from FUNDECYT-PCTEX and the 2030 OFFICE.
- Activity 3.2: Interreg Europe pilot action funding – see annex 1
- Activity 3.3: No relevant costs are foreseen for the Activity apart from staff dedication from FUNDECYT-PCTEX and the 2030 OFFICE, and 500 euro for the organization of the pilot workshop (FUNDECYT-PCTEX own resources)

ACTION 4: Promotion of Industrial Symbiosis in Extremadura

- ✓ Activity 4.1 **Program** for the collaboration among different industries allocated in the same industrial Area
- ✓ Activity 4.2 **Training and information** program for civil servants and companies towards the Industrial Symbiosis
- ✓ Activity 4.3 Elaboration of a **data base** of industry-wastes and location.

a) The Background

LESSON LEARNT: The importance of environmental, economic and social benefits Industrial Symbiosis in the way to Circular Economy.

SOURCE OF INSPIRATION:

- Activity A1.3 – Good Practice Guide:
 - FISS – Finnish Industrial Symbiosis System is an operation model and a tool to create cooperation between different entities to achieve mutual benefits
 - Manresa en Simbiosi
- Activity 3.4: Study Visit to share national practices on waste recovery, separation and processing system held in Ljubljana (Slovenia) on 21st and 22nd November 2017. Visit the industrial symbiosis case between Atlantic and Aquafil.
- Activity A3.2 - Interregional Workshop on “How to Stimulate Secondary Raw Material Markets” held in Campobasso (Italy) on 20th and 21st March 2018. Stimulating the supply and demand for secondary raw materials by Mrs Laura Cutaia

The biggest project learning for partners and regional stakeholders is related to Industrial Symbiosis and the significant positive impact on sustainability of the surrounding territory.

The presentation of inspiring experiences such as FISS and Manresa en Simbiosi, where companies started to be aware about the alternative use for waste and the possibility of valorising by-product is an important advance in the way to Circular Economy.

We highlight the methodologies carried out, related to the training, creation of network and external experts advising about the best use to valorise waste. We can't forget the importance of using supporting tools as the electronic platform used to make easier the process of matching offer and demand.

b) Activities

- ✓ **ACTIVITY 4.1 Program for the promotion of collaboration among different industries allocated in the same industrial Area:** the objective of this Activity is to design and implement a pilot experience in which industries sharing a territory meet and analyze their options for implementing industrial symbiosis experiences. This pilot experience will be coordinated by FUNDECYT-PCTEX with the support of the 2030 Office and will include the following steps:
 - Selection of an industrial state in the region with potential for industrial symbiosis experiences
 - Creation of a technical office to design the pilot experience
 - Identification and contact with industries
 - Diagnosis of each industry to identify needs and generated wastes or residual energy
 - Implementation of a workshop and matching experience among industries
 - monitoring of collaborative agreement among participant industries
 - Evaluation of the Activity and conclusions for replication

- ✓ **ACTIVITY 4.2 Training and information program for administrations and companies towards the Industrial Symbiosis:** the objective of this Activity is to involve public and private entities in a workshop to promote the implementation of the Industrial symbiosis in the Region. The idea is also to promote public-private partnerships. The session will include technical information by regional technological centers, good practices, limitations for the implementation of the industrial symbiosis (wastes management, wastes classification, ...) , incentives, etc...; The Activity will include the following steps:
 - Design of the workshop
 - Identification and involvement of experts as speakers
 - Identification of the objective public and invitation
 - Implementation of the workshop
 - Evaluation of the workshop and conclusions for replication

- ✓ **ACTIVITY 4.3 Elaboration of a data base of industry-wastes:** the objective of this Activity is to implement a study at regional level to identify and analyze industry wastes with a re-use potential for other industries. The final product is a dynamic database where identified wastes,

their origin, location and quantity is registered. In order to implement this Activity, the following steps will be considered:

- Study of identification and selection of industries in the Region
- Study of identification and description of industry-wastes from selected industries and mapping
- Design of the fields to be included in the Regional Database
- Questionnaire for industries with regard to their wastes
- Visits to industries
- Elaboration of the database and uploading of data
- Maintenance and updating of the database

This Activity is directly related to a Pilot Activity to be submitted by FUNDECYT-PCTEX in the framework of the SYMBI project. The Database is a product of interest to be used and improved during such pilot Activity

c) Players involved

- FUNDECYT-PCTEX will coordinate the implementation of Activity 3.1, Activity 3.2 ad Activity 3.3
- The 2030 OFFICE of the Regional Government of Extremadura will support FUNDECYT-PCTEX in the design and implementation of Activity 3.1, Activity 3.2 ad Activity 3.3

d) Timeframe

- Activity 4.1 Program for the promotion of collaboration among different industries allocated in the same industrial Area: Sept 2019 – Dec 2020
- Activity 4.2 Training and information program for administrations and companies towards the Industrial Symbiosis: Sept 2020 – Nov. 2020
- Activity 4.3 Elaboration of a data base of industry-wastes: Sept 2019 – Dec 2020

e) Costs and funding sources

- Activity 4.1 Program for the promotion of collaboration among different industries allocated in the same industrial Area: Interreg Europe pilot action funding – see annex 1
- Activity 4.2 Training and information program for administrations and companies towards the Industrial Symbiosis: Sept 2020 – Nov. 2020: No relevant costs are foreseen for the Activity apart

from staff dedication and 500 euro for the organization of the workshop. (FUNDECYT-PCTEX own resources for the workshop; staff dedication from FUNDECYT-PCTEX and the 2030 OFFICE)

- Activity 4.3 Elaboration of a data base of industry-wastes: Interreg Europe pilot action funding – see annex 1

4.5 Monitoring of the Action Plan

Monitoring Structure:

A **Monitoring Committee** will be set up at the beginning of the implementation phase of the Action Plan. This Committee will include one representative of at least each of the following entities:

1. FUNDECYT-PCTEX (Coordinator of the LAP)
2. 2030 OFFICE of the Regional Government of Extremadura
3. DG for Environment of the Regional Government

The Committee will meet every six months to evaluate the progress of each Activity and the potential risks for its correct implementation. Every important decision that might affect the correct implementation of the Plan has to be evaluated and approved by this Committee. Each of the entities have the right to one vote and in case of a tie, the Project Coordinator has the right to decide.

RAP Coordination team: the RAP Coordinator will be named by FUNDECYT-PCTEX and will be supported in the monitoring of the RAP by a representative of the 2030 OFFICE. Their mission is to ensure the correct implementation of the RAP.

Activity Leaders: one Activity leader (AL) will be named as direct responsible for each specific Activity. This AL will also keep the coordination team informed of the evolution in the design and implementation of each Activity and will report to them with the results of the activity.

Monitoring and Assessment Plan

The Monitoring and Assessment of the RAP will be based on two pillars

1. The Monitoring and assessment of **specific Activities**
2. The monitoring and review of the selected policy **instrument** and other **policies and programs** that include references to the SYMBI project, the RAP or keywords connected to SYMBI.

1. The monitoring and assessment of specific Activities will be coordinated by the coordination team. It will consist in regular direct meetings (virtual or face to face) with Activity Leaders to check the implementation of Activities. The results of the Activities will be included in a annual report for the implementation of the RAP

2. The monitoring and review of policies and programs that include references to the SYMBI project, the RAP or keywords connected to SYMBI consists of an annual benchmarking study of main policies and programs connected with the circular economy in the region of Extremadura.

Performance Indicators per Activity

Activity 1.1 Development of a Green public procurement Guide:

- Nº of copies of the Guide distributed electronically
- Nº of key actors validating the guide
- Nº of stakeholders that receive the Guide

Activity 1.2 Information and training program for civil servants towards the promotion of the Green Procurement

- Nº of departments (DGs) of the Regional Government participating in the workshop
- Nº of people attending the workshop

Activity 2.1 Protocol for the efficient communication among different administrations

- Nº of circular economy agents named
- Nº of meetings with agents
- Protocol elaborated

Activity 2.2 Protocol and Technical table for the participatory design of the ERDF OP in Extremadura with a focus on the Circular Economy

- Nº of priority strategies for the development of the Region analyzed
- Protocol elaborated

Activity 3.1 Identification of criteria to decide if an industry

- Nº of contrasted methodologies analyzed
- Nº of previous experiences analyzed
- Nº of indicators and criteria to be considered

Activity 3.2 **Elaboration of a catalogue** of industries implementing the circular economy in Extremadura

- Nº of companies analyzed
- Nº of companies in the catalogue

Activity 3.3 **Training and information campaign** to promote the circular economy in the Region:

- Nº of private entities attending the workshop
- Nº of public entities attending the workshop
- Nº of people attending the workshop

Activity 4.1 **Program for the promotion of collaboration among different industries allocated in the same industrial Area:**

- Nº of industries involved
- Nº of collaborative agreements between industries

Activity 4.2 **Training and information program for administrations and companies towards the Industrial Symbiosis**

- Nº of experts involved in the workshop
- Nº of participants in the workshop

Activity 4.3 **Elaboration of a data base of industry-wastes**

- Nº of industries selected
- Nº of Questionnaires for industries answered
- Nº of wastes in the database

4.6 Calendar for planned Activities and Resources

ACTIVITY	EXPECTED BUDGET	2019												2020											
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
1.1 Green guide for public procurement	12.500 €																								
1.3 Information and training program	- €																								
2.1 Communication Protocol	- €														P										
2.2 Protocol for the participatory design of the ERDF OP Program	- €														P										
3.1 Criteria for the circular economy	9.000 €																								
3.2 Catalogue of industries implementing the circular economy	- €																								
3.3 Training and information campaign	500€																								
4.1 Program for industries	300 €																								
4.2 Training and information program for civil servants and companies	500 €																								
4.3 Industry-wastes data base	2.000 €																								

Signature

Date: _____

Signature: _____

Stamp of the organisation (if available):

ANEX 1.- SIMBIEX 2030 – Pilot Action

On 02 July 2019, the Interreg Europe monitoring committee approved the request for a pilot action submitted by FUNDECYT PCTEX, to be implemented in phase 2 in Extremadura region.

***Pilot actions** are implementation-related activities dedicated to testing a new approach. This usually refers to the transfer of existing practices between partner regions. But it can also relate to a new initiative jointly designed by the partner regions during phase 1 and jointly implemented in phase 2.*

The Pilot Action is closely related to Actions 3 and 4 developed in this Action Plan. Below we describe the activities to be carried out during the Pilot Action:

Semester 1
<p>First semester of this initiative would be dedicated to preparatory tasks to develop the project:</p> <ul style="list-style-type: none"> - Development of questionnaires aimed to identify companies and classify the type of by-waste - Design and development of the supporting geolocalized database to gather the information collected (contact FISS) Training of staff in charge of visiting companies in industrial symbiosis projects: 12 people will be equipped with skills that help them to identify companies with symbiotic potential. The training course will have a duration of 30 hours distributed in 5 days. The training will be carried out by different experts in the field of Circular Economy and Industrial Symbiosis. - Design of awareness campaign to reach the companies: beyond the direct contact to companies to engage and give them the appropriate knowledge about how Industrial Symbiosis can make their businesses more competitive. This campaign will consist of the development of promotional tools (website, social media, leaflet) oriented to regional companies to create awareness about the importance of Circular Economy and Industrial Symbiosis
Semester 2
<p>Second semester activities are related to the field work with companies in order to be included in the map:</p> <ul style="list-style-type: none"> - Direct Visits to companies to complete questionnaires, identifying waste and by-products. During this period at least 40 companies will be visited. Before the site visits, the staff in charge

of the visits, based on their knowledge of the regional industry, will select these companies, taking into account their symbiotic potential.

- The results from the collected questionnaires will be included in the geolocalized database that will feed the regional map of by-products available in the region.
- Development of 2 sectoral reports for using by-products, this reports will be based on innovation, trends, technology and research about the use of waste. The specific subject of the reports will be decided taking into account the needs of the participating companies, but taking into account the type of companies we have in the region, they will be related to agri-food sector
- Analysis of the potential on-line tool to be tested as a marketplace for the exchange of by product (supply/demand).

Semester 3

The last semester would be related to the industrial symbiosis process:

- Organization of at least 3 workshops for companies dedicated to exchange of by-products. The idea behind these workshops is to bring together companies with the idea of showing them the advantages of participating in industrial symbiosis processes, through examples of successful experiences. The same workshop, planned for around 15 companies, would be celebrated in different towns due to the distances in the region with the aim creating mutual trust among companies and getting successful connections. The workshop should the workshop will last around 6 hours, first part with a theoretical approach, and second part more dynamic and oriented to networking.
- Test of the on-line tool supporting by-product exchange: the idea of testing this tool is to know if it is appropriate or not for the regional needs.
- Preparation of a report containing conclusions and analysis of the results obtained of the pilot action and preparation of a roadmap aimed to define policy instruments that help companies to start industrial symbiosis projects.