



Information dossier

TheCircularLab



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INTRODUCTION: WHAT IS THE CIRCULAR ECONOMY?

In recent years, we have witnessed a change in systems of production and consumption. From a take-make-dispose model, we have been moving towards a paradigm that leaves behind this attitude and substitutes it for a real concept of reducing, recycling and reusing. This is what is called the Circular Economy, which is underpinned by values of collaborative ecology and responsible consumption to establish a new alternative in which care for the environment has become the protagonist. It also prioritises awareness and sensitisation in order to produce an understanding of the relationship between sustainability and economic growth.

In this way, there is a shift towards a production system that makes use of waste, converts it into resources, fosters prevention and commits to innovation when promoting the industrial fabric and green employment. This encourages long-term sustainable development in which there is investment in products and services that are also green.

In this regard, it is worth noting that at present this option contributes to Spain's economy to the tune of 25 billion euros a year i.e. 2.4% of GDP. This confirms the efficiency of the alternative.

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THECIRCULARLAB

This is the context that has led to creation of TheCircularLab. This is a pioneering project in Europe that is born with the vocation of bringing together all the proposals that, framed within the concept of the Circular Economy, seek to promote the best lines of innovation in the field of packaging and its subsequent recycling.

Based in the region of La Rioja, TheCircularLab aims to become a world reference being it alone on this field. It will turn the region into a great centre for experimentation as it will enable innovations to be tested at real scale.

In this way, cities and municipalities will serve as the testing ground for researching into concepts such as the packaging of the future, the importance of smart waste management within smart cities, responsible consumption or the development of new techniques and processes that make recycling easier for the citizen, among other initiatives.

In essence, this is a space for innovation in packaging that seeks to study, conceive, test and apply the best practices in a real environment. All this takes place in a framework

of close collaboration between companies, Public Administrations and citizens.

The project, which enjoys the institutional support of La Rioja's Regional Government and the Directorate-General for the Environment of the

European Commission, will be launch in the spring of 2017 and will require an investment of about 10 million euros. It will involve the creation of 40 jobs in situ and over 200 more through open innovation programmes and the integration of companies and the different entrepreneurship ecosystems.

AIM

At Ecoembes, we work to implement the measures necessary to enable us all to reach the recycling society. The future of our planet requires this. To do this, we must integrate the principles of the Circular Economy in our day-to-day activities, an aim to which this laboratory will contribute.

More specifically, TheCircularLab will be involved in all the phases of the life cycle

of packaging: from their creation, via ecodesign, up to their reintroduction into the consumption cycle through our products. All this will enjoy the commitment of the public when recycling and the application of the finest technologies in waste management, which will be developed not just through each centre's activity but also through the entrepreneurial ecosystem.



LA RIOJA, THE EPICENTRE OF THE CIRCULAR ECONOMY IN SPAIN

La Rioja is one of the most committed European regions with regard to the environment and is in the vanguard in the selective collection of packaging waste for subsequent recycling. In fact, it is a benchmark for the rest of the country thanks to, among other factors, the commitment and collaboration of all the social agents in this field.

However, this is not the only reason why TheCircularLab is located in this region. Multivariate analysis makes this environment an optimal space for developing experiences that may subsequently be transferred to other areas in Spain and Europe.

Excellence in waste management

La Rioja currently boasts a recycling rate for household packaging of 84%, which is above the national average (74.8% in 2015) and is in line with other European leaders in recycling. This figure reflects the huge commitment both of the public and local bodies and companies that work hand in hand to continue growing each year in a perfect balance of the collaborative economy based on public-private collaboration.

In this context, La Rioja's Regional Government presented in October 2016 the Plan Director de Residuos de La Rioja 2016-2026 (Waste Master Plan 2016-2026), which argues for extending responsibility, reducing waste and introducing

the principles of the Circular Economy. In total, La Rioja's administration will invest 11.8 million euros to promote the recovery and reuse of materials, as well as to eliminate the dumping of materials as much as possible.

Committed citizens

La Rioja's demographics set the best condition to host this project, both from the operational and the citizen interaction point of view. In fact, its involvement in care for the environment is evident. In the Study of Spaniards' Recycling Habits conducted by the Apolda Institute on behalf of Ecoembes, 94.7% of La Rioja's population say they have more than one space in their homes in which to deposit their waste, one of which is reserved for the household packaging that is earmarked for the yellow container. Accordingly, each person in La Rioja deposited 14.7 kg in this type of container last year, over 2kg more than the Spanish average.

Benchmarks in innovation

The region also boasts an important technological structure channelled through a network of technical universities and highly important technological innovation centres that, due to their experience and know-how, will be key collaborators in this project. This has provided the Region with an innovation ratio (0.53 points out of 1) that exceeds the national average (0.45 points out of 1), according to figures from the



Observatory on Competitiveness 2016 of the Spanish Chamber of Commerce.

Furthermore, 30.2% of the GDP of La Rioja comes from the industrial sector, figures that

are similar to Germany, and this will foster the development of collaboration projects with this sector. This is a channel for connecting innovation and industry in a real space for idea conceptualization.

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INNOVATION AREAS

TheCircularLab will have an impact on all the phases of the product's life cycle: from its conception via ecodesign up to its reintroduction into the consumption cycle through our products. All this will be achieved through the application of state-of-the-art technologies to

waste management that results both from the centre's activity and the collaboration of the entrepreneurial environment.

More specifically, there will be work on seven strategic lines:





ECODESIGN

The best waste is the one not produced. For this reason, there will be collaboration with companies and manufacturers so that packaging is made increasingly more sustainable. As a society, our aspiration must be to reduce the consumption of non-renewable raw materials. This line of action will pursue this aim through:

- The promotion of the effectiveness of ecodesign measures and the assessment of prevention plans and the measures introduced.
- The search for new sustainable materials, together with the introduction of recycled materials into production processes that reduce the environmental footprint of packaging.
- The fostering of recyclability of the new packaging placed on the market.
- The responsibility of companies when engaged in production and of citizens when opting for products with more sustainable packaging. This is achieved through the promotion of responsible consumption.
- The validation of the integral design of packaging (recyclability, sustainability, smartness etc.) and its impact on citizens (user experience, eco-labelling etc.).



CITIZEN

Citizens are key actors in recycling as they are the ones who start the process throwing their waste into the right container. For this reason, it is vital to establish a direct, continuous and efficient communication system with them in order to improve their involvement in the area of recycling through raising awareness. This will increase their contribution to selective collection and reduce inappropriate behaviour.

For this reason, TheCircularLab:

- Will create a social information platform that will benefit from all the opportunities offered by Big Data with the intention of segmenting and learning a citizen's habits and beliefs in the area of recycling.
- Will create solutions that facilitate understanding and the increase in recycling.
- Will test the effectiveness of campaigns and environmental education plans to find the most effective messages and channels.
- Will evaluate the various social initiatives that involve an improvement of recycling.



COLLECTION

The collection process is other field in which TheCircularLab will focus its activity, with the aim of promoting the efficiency of the process and increasing the recycling rate.

With the aim of making progress towards the smart city, it is essential to validate new technologies and systems for data collection as well as their impact on waste management. To do so, an integral platform will be implemented in the waste management chain that coordinates:

- Smart, located and connected containers.
- Trucks connected by GPS and that determines weight and routes.
- Smart route management in real time.
- The use of hybrid or electric vehicles to reduce emissions.
- The implementation and assessment of the different ways to use the data generated and management of the information.



SORTING

Spain currently disposes of 95 sorting plants, which receive the packaging deposited in the yellow containers and turns it into secondary raw material from which new products are manufactured. With the aim of optimising this phase in the process and helping these centres to follow the paradigms of industry 4.0, this laboratory will work on the following lines:

- Development of new technologies that control and optimise the treatment cycle.
- Improvement of efficiency in the identification and automatic routing of incoming waste and flows control in the sorting plants.
- Analysis of the logistic chain to optimise the processes.
- Design of artificial vision systems and artificial intelligence.
- Inclusion of robotic selection systems.



RECYCLING

Ecoembes has targeted a recycling rate of 80% by 2020, a feasible figure but one that requires work to continue with the aim of attaining the recycling society. This aim will lead to the implementing of different lines of innovation:

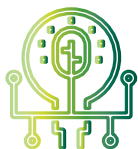
- Automatic quality control of outgoing materials.
- Seal of quality for materials.
- Logistic digital management systems for recyclers.



LIFE-CYCLE ASSESSMENT

Environmental innovation is contributing new lines of development in the methodology of Life-Cycle Assessment (LCA), an essential tool for calculating the environmental benefit represented by the proper management of waste.

Consequently, we will develop new models that pay attention to all kind of variable, upon which a detailed analysis of the whole life cycle of the packaging will be made: from its origin up to when it is given a new life, via the collection model or the technology used in its recycling.



ENTREPRENEURSHIP

Ecoembes, through its open innovation programme, aims to develop new solutions that enable collaborative work on new services and/or products related to the Circular Economy.

This laboratory seeks to promote innovation through the creation of ideas, incubation and acceleration of projects, ensuring their success through a series of Ecoembes entrepreneurship programmes. We aim to generate or identify business ideas in order to support and develop them within the framework of the Circular Economy, incubating them to verify their technical and financial viability. Likewise, we intend to accelerate the projects or start-ups that begin their entrepreneurial adventure through the acceleration of minimum viable products that are checked and validated by the market.

TheCircularLab will be the meeting point for environmental entrepreneurship. A space where any type of entrepreneur who comes from university, together with start-ups, SME's, already-established companies and investors from all over the world, can share their ideas and projects.

The companies that work within this laboratory will have the chance to use a whole package of tools, which include information technology systems to validate their idea and to check the value generation associated with the development of their services and product.

In addition, the resources available will also include:

- Work spaces.
- Consultancy.
- Mentoring, both by Ecoembes and externally.
- Integration into the Ecoembes ecosystem.
- Training.
- Smart Capital.

Ultimately, TheCircularLab will be the showcase for innovations for companies operating in the field of recycling and the environment. Moreover, it will offer them a meeting point from which they can give their products and services visibility, enabling the generation of partnerships with all the sector players and the integration of every type of experience at European level.



4 ECOEMBES AS A DRIVER OF SUSTAINABLE DEVELOPMENT THROUGH INNOVATION

Ecoembes is a non-profit environmental organisation that promotes sustainability through the recycling of packaging in Spain. As such, our mission is to implement a model of social and economic development that respects the environment, encouraging the recycling of this type of waste to give it a new life, as well as through prevention and ecodesign. To do so, we centre our work on four cornerstones: effective waste management, commitment to innovation throughout the chain, the promotion of education and environmental training, and the creation of green employment.

Thanks to this system, since 1988 –the year we began our work– the recycling of packaging has experienced exponential growth and now exceeds the current objectives set by Europe by 20 points, making Spain as one of the leading countries in this field.

Our main aim is promote a lifestyle in which commitment to the environment, responsible consumption and recycling are transversal values that involve all the social actors.

Therefore, we work on the promotion of a Circular Economy that establishes sustainable development. In this manner, we have set the goal to continue increasing the recycling rate for household packaging in Spain efficiently and sustainably, with the aim of attaining 80% by 2020.

To do so, environmental innovation is positioned as an essential element as it is vital in the fight against climate change and to promote the transition towards a long-term development model. In this regard, Ecoembes has taken over the open and collaborative innovation as a principal vector of our strategy. The aim: to undertake the most disruptive projects in the area of the Circular Economy and enable the culture of recycling to keep advancing in our society thanks to our solutions.

We all form part of Ecoembes; those who are committed to the conservation of the environment and who believe that recycling is a small gesture that has major benefits for our society.

