Valencia, Spain 2020

Regional Circular Economy Status Quo

REDUCES – Rethinking Sustainable Development in European Regions by Using Circular Economy Business Models

REDUCES
Interreg Europe

European Union
European Regional Development Fund

Writers: Writers: Begoña Serrano Lanzarote (IVE), Cristina Jareño Escudero (IVE), Elena de la Poza Plaza (UPV), Javier Orozco Messana (UPV), Leticia Ortega Madrigal (IVE), Nuria Matarredona Desantes (GVA), Miriam Navarro Escudero (IVE), Teresa Soto Vicario (IVE), Vera Valero Escribano (IVE)

Photos: Jaser Cervantes/Unsplash (cover), Will Myers/Unsplash (p. 13), Dave Heere/Unsplash (p. 24)

This report has been reviewed and validated by the Valencia Regional Stakeholder group created within the REDUCES project framework.

Content

1 Background and context

Circular economy changes the methods and revenue models of business. Instead of traditional ownership, consumption is based on the use of services: sharing, leasing and reusing. The new method challenges countries and regions to develop and construct new business models that can be used to respond to the global climate crisis, among other things.

REDUCES contributes to the EU2020 strategy by advocating the priorities of Sustainable, Inclusive and Smart Growth. In addition, improving resource efficiency by sharing experiences on circular economy practices will translate into lower GHG emissions and give a much-needed boost to economic growth in the regional context. The project will also contribute to the vision of "Resource-efficient Europe" via inter- and intraregional cooperation and learning processes. This kind of interaction is vital in order to reach the EU2020 strategy goals. REDUCES also supports the fundamental objectives of decoupling economic growth from the use of resources and increasing the use of renewable energy sources which are underlying themes in the EU2020 strategy. The EU action plan of the circular economy also accentuates the need to create the conditions under which a circular economy can flourish and resources be mobilised. It is recognised in the plan that new business models are needed to enable us to rethink our ways of producing and consuming.

REDUCES brings together six European regions:

- Southwest Finland
- Utrecht, Netherlands
- Greater Manchester, UK
- Valencia, Spain
- Bulgaria
- Maramures, Romania

The overall objective of the project is to improve the implementation of regional policies in order to enable regions to adopt more environmentally sustainable ways of production and to reduce the negative environmental impacts of economic development. Circular business models can be used to help companies achieve resource efficiency and subsequent net revenue gains, and by doing so help regions achieve a more innovative, resilient and productive economy. Although circular

business models are often viewed as sustainable by nature, it is recognised that there are uncertainties about their potential impacts, such as externalities and rebound effects. REDUCES results will facilitate and better enable the adoption of environmentally sustainable circular business models with the support of improved regional policies.

Sub-objectives of the REDUCES project are:

1. To increase the knowledge and capacity of regional and European policymakers and stakeholders on circular economy business models
2. To improve the competence of partners and involved stakeholders to make informed decisions on promoting the transition to the circular economy in regions
3. To discover innovative and the most feasible circular economy business models in each region, which are instrumental to transforming production value chains towards environmental sustainability
4. To improve the competence of regional actors to assess the environmental impacts of circular economy business models in order to choose the most feasible and environmentally sustainable models recognizing regional assets, barriers, needs and strengths necessary for the circular economy transition
5. To improve policy instruments (4 ERDF policies and 2 regional plans) via 6 action plans to better introduce or integrate circular economy business models into the policy instruments and supporting the theme by proposing new project ideas or funding.

The purpose of this Status Quo report is to summarize the results of the studies carried out about the existing circular economy business and actions, strengths, opportunities, threats and weaknesses in Valencia, Spain. The Status Quo report provides the basis for the development work planned in the REDUCES project.

2 Definitions and methods

2.1 Circular economy

"Circular economy" can mean a lot of different things in different sectors. Common denominators include designing out waste and pollution (reduction of waste), keeping products and materials in use (quality improvement and value retention), regenerating natural systems (loops, transition) and social aspects, such as creating well-being. (Ellen MacArthur Foundation 2017b.)

A circular economy refers to an economic system that is based on business models that replace the current linear economic model. These business models replace the conventional model with reuse, recycling and alternative production, distribution and consumption processes. A new business context aiming at sustainable development requires extensive action at several levels, ranging from the micro-level (products, businesses and consumers) to the meso-level (eco-industrial parks) and even up to the macro-level (cities, regions, states and even more extensive entities). All of these share a common view and goal of more sustainable business that takes into account the environment, economic well-being and social justice at different operational levels. (Kirchherr et al. 2017, 224–225.)

According to the Ellen MacArthur Foundation, the aim of a circular economy is to look beyond the current take-make-waste extractive industrial model. The idea is to gradually decouple economic activity from the consumption of finite natural resources. At the same time, the amount of waste is reduced and finally it is designed out of the entire system. The focus is on positive, society-wide benefits. The circular economy builds economic, natural and social capital, supported by the transition to renewable energy sources. (Ellen MacArthur Foundation 2017b.) The Finnish Innovation Fund Sitra defines the circular economy as a future economic model in which natural resources are used within the Earth's carrying capacity. (Sitra 2019a).

Based on the knowledge and understanding of the REDUCES project partners, the circular economy refers to socially sustainable business that creates well-being. The objective of the economy is to maintain and restore the value of our natural resources. Even though the objective is full circulation, the number and level of loops can vary. The transition to a circular economy, as well as business in a circular economy, requires extensive cooperation between different parties.

2.1 Circular economy business models

The corporate world is shifting from the traditional model of a linear economy towards a circular economy. In the circular economy, production and consumption are increasingly based on services instead of owning. The operating methods and

earning models of companies change, and operations need to be updated so that they will support the mitigation of climate change. (Sitra 2019b.

The themes of the circular economy business models investigated in the REDUCES project are based on the definitions of the Finnish Innovation Fund Sitra. The themes are renewability, sharing platforms, product as a service, product-life extension and resource efficiency and recycling. (Sitra 2019a.)

The circular economy business model is an economic model in which business is largely based on the forms of business mentioned above, i.e. consumption is based on the use of services – sharing, renting and recycling – instead of owning and increasing production of goods. Materials are not destroyed at the end but used over and over again for making new products. (Sitra 2019a).

Design plays a crucial role in ensuring that products are durable and environmentally friendly and that the materials can be reused at the end of the product life cycle. The circular economy requires us to redesign our ways of working: our products, business models, cities and the linear systems that have lasted for the past centuries. Choices made at the start of the life cycle have impacts on each phase during the product life cycle. (Ellen MacArthur Foundation 2020a.)

2.3 Multi-stakeholder governance model

The multi-stakeholder governance model is a governance structure that comprises institutional ways of involving non-governmental actors, i.e. internal and external stakeholders in the dialogue, decision-making and implementation of solutions to common problems or goals. It relies on the principle that if enough input is provided by all actors involved in a question, the eventual consensual decisions gain more legitimacy and therefore better reflect the set of perspectives rather than a single source of validation. Unlike in multilateralism, in which governments, as representative of their citizens, take the final decisions on global issues and direct international organizations to implement them, in multi-stakeholderism stakeholders become the central actors. Multi-stakeholderism often disconnects decision-making and the implementation of these decisions from the interngovernmental sphere, having no obligation to either report to or take instructions from the interngovernmental community. (Lin 2018, Gleckman 2018, Szuppinger & Kállay 2017)

In the REDUCES project, the multi-stakeholder governance model appears in involvement and engagement of the stakeholders from the different sectors and levels in all the regions in the project. Circular economy is not an individual game, and this gives a crucial role to wide cooperation between different stakeholders. Involvement appears in different ways for different project regions depending on the policy instrument and its role and activities in the field of business and circular economy activities.

2.4 Policy instrument

In general, a policy instrument is a means for public intervention in local, national or international economies, referring to any policy, strategy, instrument or law developed by government/public

authorities and applied on the ground in order to improve a specific territorial situation. Policy instruments are linkages between policy formulation and policy implementation, intended to achieve outcomes which conform to the objectives of public policy. They can take many forms, ranging from regulatory régimes to the provision of services to help improve the performance of businesses, and in most cases, financial resources are associated. However, an instrument can sometimes refer to a legislative framework with no specific funding. (Interreg Europe 2020, Saublens 2012.)

Policy instruments are often known as governing tools as well, particularly when they are applied to all conditions associated with them. The implementation of governing tools is usually meant to achieve policy targets of resource management but adjusted to social, political, economic, and administrative concerns. Concerns of sustainability largely depend not only on what instruments are selected but also on how they have been applied. Assessment of policy instruments can therefore be an important component of policy sustainability. (Ali 2013)

In the context of Interreg Europe, "operational programmes for Investment for Growth and Jobs as well as Cooperation Programmes from European Territorial Cooperation are considered policy instruments. Beyond EU Cohesion policy, local, regional or national public authorities also develop their own policy instruments. Macroregional strategies can also be considered policy instruments in the context of Interreg Europe. However, considering the characteristics of these strategies, it may be easier for projects to influence the corresponding transnational cooperation programmes than the macroregional strategy itself." (Interreg Europe 2020.)

3 Status quo of the regional circular economy: Valencia, Spain

3.1 Main characteristics of the region

The Valencian Community is a Spanish autonomous region with 4,946,233 inhabitants in 2018 (Eurostat, 2019), which represents 10.6% of the total Spanish population. With a total area of 23,255 km², it is the eighth region in Spain by area and represents 4.60% of the national extension. It is located in the east and southeast of the Iberian Peninsula, on the coast of the Mediterranean Sea, and is divided into three provinces – Alicante, Castellón and Valencia – 34 countries and 542 municipalities. The official languages are Spanish and Valencian.

The gross domestic product (GDP) of the Valencian Community has increased in recent years and stands at 108.6 billion euros in 2017 (Eurostat, 2019), which represents 9.3% of Spanish GDP. According to Eurostat, the latest available figure for GDP per capita in the Purchasing Power Standards (PPS) was 24,300 in 2017, a figure that has steadily increased since 2013 (20,900). This classifies the Valencian Community in position 12 among the 17 Spanish autonomous communities, below the national averages (27,600) and (30,000) of the EU-28.

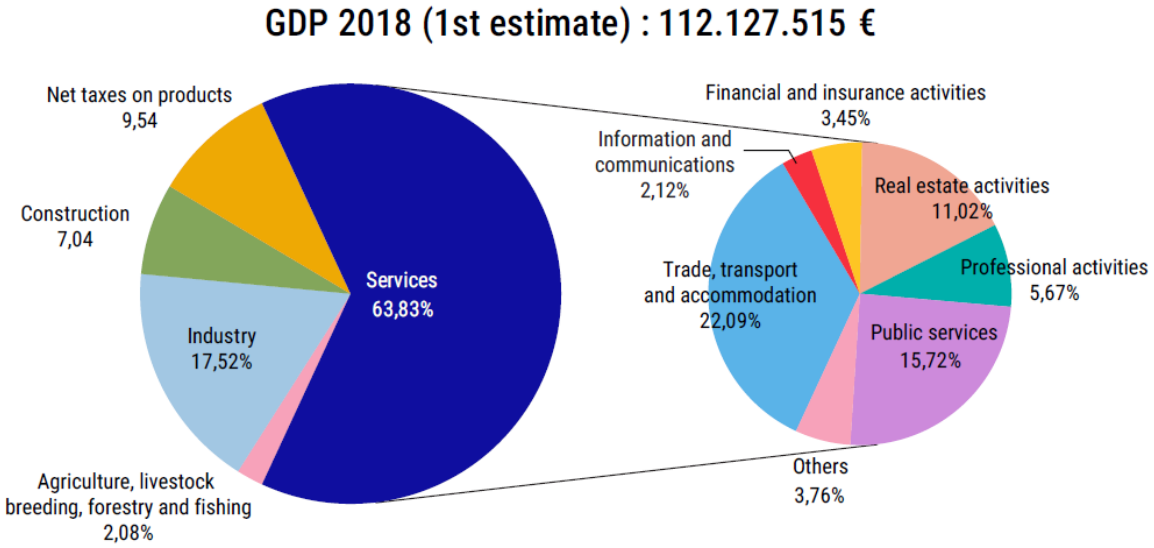

Figure 1. Gross Domestic Product of the Valencian Community. Basic statistical data of the Valencian Community, September 2019. Statistical Portal of the Valencian Generalitat. Ministry of Sustainable Economy, Productive Sectors, Trade and Labor

The Valencian economy is strongly service-based, according to the latest published data, the service sector represents 71% of the regional gross value added (GVA) in 2018, which represents approximately 64% of the regional GDP. The activities with the greatest weight are those related to commerce, transport and hospitality (22.09%) and real estate activities (11.02%), together represent more than 50% of activities related to the service sector in the Valencian Community.

The tourism sector, which began to develop widely in the 1960s and early 1970s, has progressively become one of the main wealth-generating activities of the Valencian Community, not only for its direct contribution to it, but for the expansive effect it has had on a large group of related activities. According to the latest data published (2018), the Community welcomes 28.7 million tourists each year (residents and international), with 177.3 million overnight stays, and 12,580 million spending (includes origin and destination), which represents an economic impact of 14.6% participation in GDP and 15.1% participation in employment.

The strategic industrial sectors in the Valencian Community, those that are important for the general economy in Spain, are the following:

- Tiles and ceramics;
- Leather and shoe industry;
- Toys and games;
- Wood and furniture;
- Textile and clothes; and
- Automotive industry.

The former is of great importance because there are many companies in these sectors in the region, which represents a high percentage in the country in general. The automobile industry is a strategic sector because a multinational company has a plant in this region, backed by a large number of medium and small auxiliary companies. As a result of the financial and economic crisis that started in 2008, and which has had an impact on the global economy, some of these sectors, such as ceramics and furniture (very directly related to construction), have been particularly affected.

The active population in the Valencian Community during 2018 was 2.04 million people, with the Services sector standing out from the rest of sectors with 73.5% of the regional total, with industry lagging behind with 17.1%, followed by construction with 6.4% and agriculture with 3% (INE, 2019).

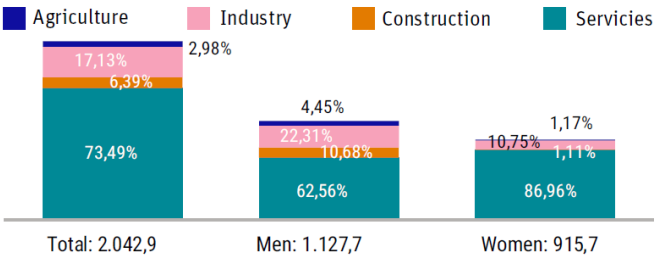

Figure 2. Employed population (thousands). Basic statistical data of the Valencian Community, September 2019. Statistical Portal of the Valencian Generalitat. Ministry of Sustainable Economy, Productive Sectors, Trade and Labor

The unemployment rate in the region in 2018 was 15.6%, which is slightly higher than the national unemployment rate of 15.3% and also higher than the EU average 28 (6.9%) (Eurostat, 2019), which classifies the autonomous community in 12th position compared to the other 17. Despite this, unemployment rates have decreased in recent years, since in 2013 a maximum of 28.1% was reached (Eurostat, 2019)

Regarding the number of active companies based in the Valencian Community, the latest published data (2018) show that of the total number of companies, 80.7% belong to the service sector, 12.2% to construction and 7.2% to industry, representing growth compared to the previous year above the average for industrial companies (4.69% more) and construction companies (4.44% more) while the service sector it grows below the average (1.23%). The average in the Valencian Community shows a growth close to 2%.

Regarding the size of the companies, measured in number of employees, more than half (53.7%) are companies without employees, 41.7% have between 1 and 9 employees, 3.9% between 10 and 49 employees and only 0.7% (2,381 companies) have 50 or more employees. The strata of companies that have increased the most are those of the largest size. Thus, the group that has grown the most, in relative terms, during 2017, is that of companies with 50 or more employees, which increase by 6.97%, followed by 10 to 49 employees, which increases by 5, 82%. Companies with between 1 and 9 employees and without employees grew by 1.88% and 1.49% respectively.

The three sectors have increased in the three provinces, specifically, the industry has increased to a greater extent in the province of Castellon (3.90%) and in Valencia (5.58%), while in Alicante the sector that has increased the most is that of construction (6.56%).

As regards the construction sector in the Valencian Community, during the 2000s, it suffered exorbitant and unsustainable growth. Thus, its weight increased to represent in 2008 more than 12% of regional GDP. The end of the real estate boom from 2008 translated into a decline in the weight of this activity in the Valencian economy as a whole, reaching a low in 2014 with 5.8% of regional GDP, a percentage similar to the national average (5.1 %) in that same year. As of that year, the weight of the construction sector has increased slowly and steadily, but without reaching the values prior to the crisis. The economic forecasts published by different organizations for the coming years augur an increase in production, although with lower growth rates, data that are also being revised more and more downward.

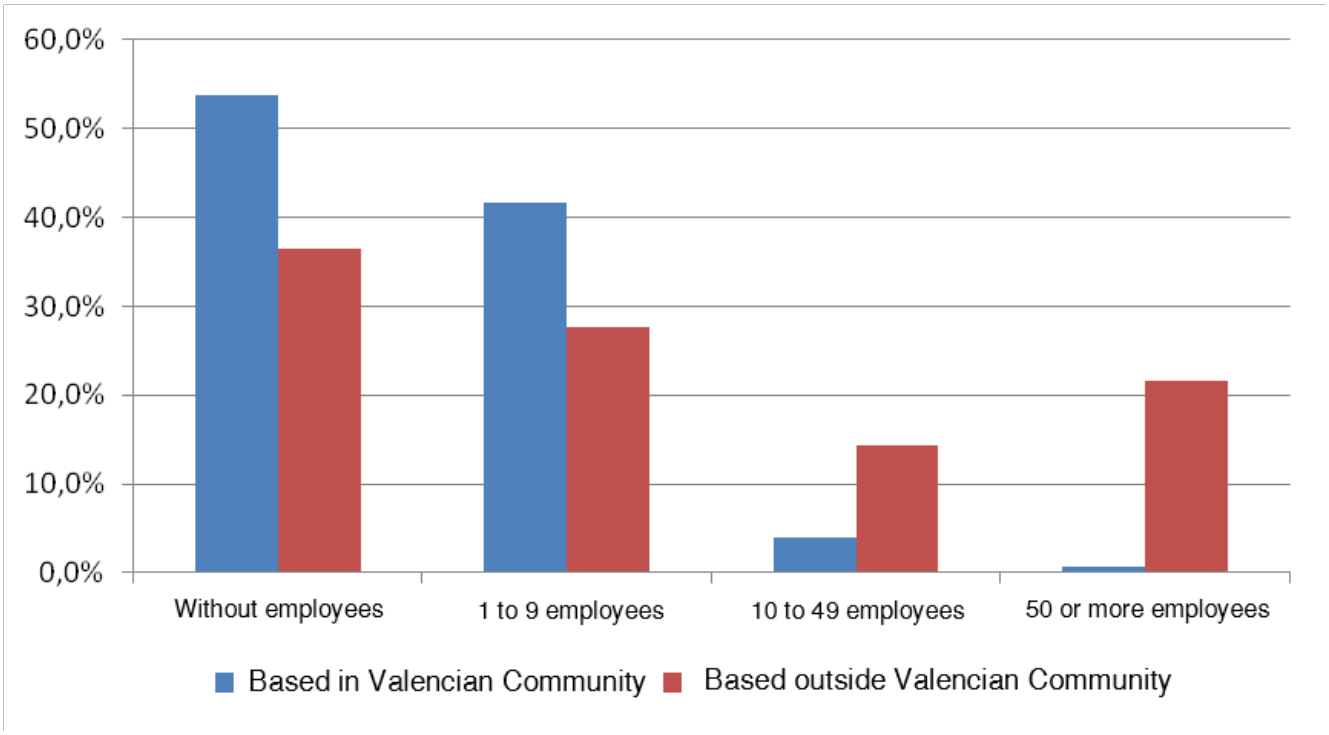

Figure 3. % Companies according to size and location of their headquarters. Statistical directory of companies in the Valencian Community. 2018. Latest figures, October 10, 2019. Statistical Portal of the Generalitat Valenciana. Ministry of Sustainable Economy, Productive Sectors, Trade and Labor

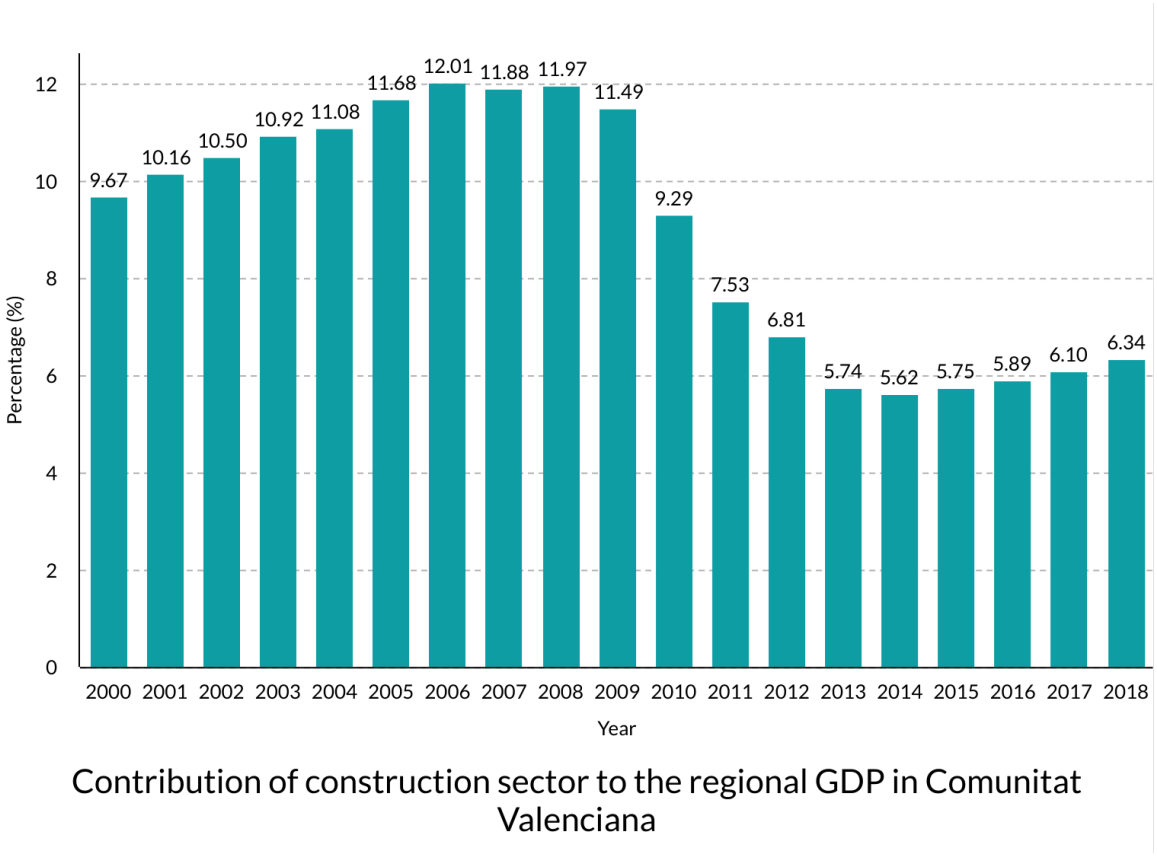

Figure 4. Contribution of the construction sector to regional GDP in the CV. INE. Regional Accounting of Spain.

All the statistical data of the construction sector for the year 2019 can be consulted at the following link: Annual data for 2019 on the Valencian Community from the Observatory of Construction Labour Foundation.

3.2 Regional circular economy profile

To get an idea of the state of the Circular Economy in our region, it is essential to start by making a brief overview of the current regulatory framework and the initiatives promoted by the different administrations (national, regional and local) with the objective to redirect the economy and production and consumption models towards circular models.

At the national level, the recently approved Spanish Strategy for Circuit Economy (Council of Ministers June 2, 2020), its successive three-year action plans to be developed, and the Pact for a Circular Economy should be highlighted.

The Spanish Circular Economy Strategy (EEEC), Spain Circular 2030, lays the foundations for promoting a new production and consumption model in which the value of products, materials and resources remain in the economy for as long as possible, in which waste generation is minimized and those that cannot be avoided are used to the greatest extent possible. The strategy aligns with the objectives of the European Union circular economy action plans, in addition to the European Green Pact and the 2030 Agenda for sustainable development.

Its implementation will materialize through successive triennial action plans. The first of them will be presented at the end of 2020 and will cover the period 2021–2023.

The strategy marks the following quantitative objectives to be achieved by 2030:

- Reduce national consumption of materials by 30% in relation to GDP, taking 2010 as the reference year.
- Reduce the generation of waste by 15% compared to that generated in 2010.
- Reduce the generation of food waste throughout the food chain: 50% reduction per capita at the household and retail consumption level and 20% in the production and supply chains from 2020.
- Increase reuse and prepare for reuse until reaching 10% of the municipal waste generated.
- Improve the efficiency in the use of water by 10%.
- Reduce the emission of greenhouse gases below 10 million tons of CO_2 equivalent.

The EEEC identifies six priority sectors of activity in which to incorporate this challenge for a circular Spain: the construction, agri-food, fishing and forestry, industrial, consumer goods, tourism and textile and clothing sectors. And he mentions as key policies to advance circular economy the economic, tax, employment, R & D & I, consumer, industrial, water, agricultural and development policies in rural areas.

On the other hand, the Pact for the Circular Economy, signed by more than three hundred entities, is an initiative promoted by the Ministries of Agriculture and Fisheries, Food and Environment, and of Economy, Industry and Competitiveness that seeks to involve the main economic and social agents of Spain in the transition towards this new economic model.

In addition, it is worth mentioning other plans that indirectly address the circular economy given its importance at the cross-cutting level. This is the case of the "National Plan for Adaptation to Climate Change 2021-2030", which is currently under consultation until June 30, 2020, which will be the basic planning instrument to promote coordinated action against the effects of climate change in Spain in the next decade. Within the framework of this Plan, strategies and program plans that could incorporate aspects related to climate change will be actively identified.

Regarding data analysis and the system of indicators, on the report "Situation and evolution of the Circular Economy in Spain 2019" of COTEC Foundation, collects resource productivity indicators as well as the specific circular economy indicators currently available, with the aim of establishing the outlook for the circular economy in Spain, in contrast to the European Union averages. In general, the data shows a clear improvement at the beginning of the crisis in 2008, with an unfavorable rebound from 2014 with the economic recovery, a symptom of the strong economic-environmental coupling of the Spanish economy.

The Valencian Community has not yet started the procedure to prepare a Circular Economy Strategy. However, in October 2018 the president of the Generalitat Valenciana (regional government) announced the will to promote a pact for

the Circular Economy participated by administrations, business organizations and citizens.

Likewise, the Generalitat Valenciana has other plans and programs that contribute to the fulfillment of the objectives of the EU in terms of Circular Economy, among which we can highlight:

- Document d'ELX: Base document and guiding elements for the transformation of the economic model of the Valencian Community, approved by the Consell Agreement of April 15, 2016, whose objective is to lay the foundations for the Valencian Community to advance towards an economic model based on knowledge, innovation, openness and outside connection, articulated on the principle of sustainability, both environmental, productive and social. It defined ten strategic lines that later generated the structure of the Action Plan for the Transformation of the Economic Model 2017-2027.
- Action Plan for the Transformation of the Economic Model 2017–2027: consists of an economic diagnosis, objectives and key strategic initiatives, as well as a monitoring and evaluation system. The proposed action plan is aligned with the Sustainable Development Goals and with the principles of the Europe 2020 Strategy.

Both line 2 (Promoting a modernising transformation of the Valencian productive structure) and line 5 (Promoting the creation of sustainable employment and the social economy) contain objectives related to the Circular Economy, such as: O2.2: Development of new activities aimed at a sustainable and circular economy, O5. 1: Boosting the generation of sustainable, quality employment, O5.2: Implementing social responsibility policies and actions in the Valencian economy, O5.3: Promoting the economy of the common good, O5.4: Increasing the number and size of social economy organisations.

Line 1 (Developing the innovative capacity of the productive fabric by strengthening the Valencian innovation system), focuses on developing initiatives related to innovation as a key element for promoting economic growth, trying to take advantage of the resources available in universities, technology centres and knowledge-intensive companies. Within

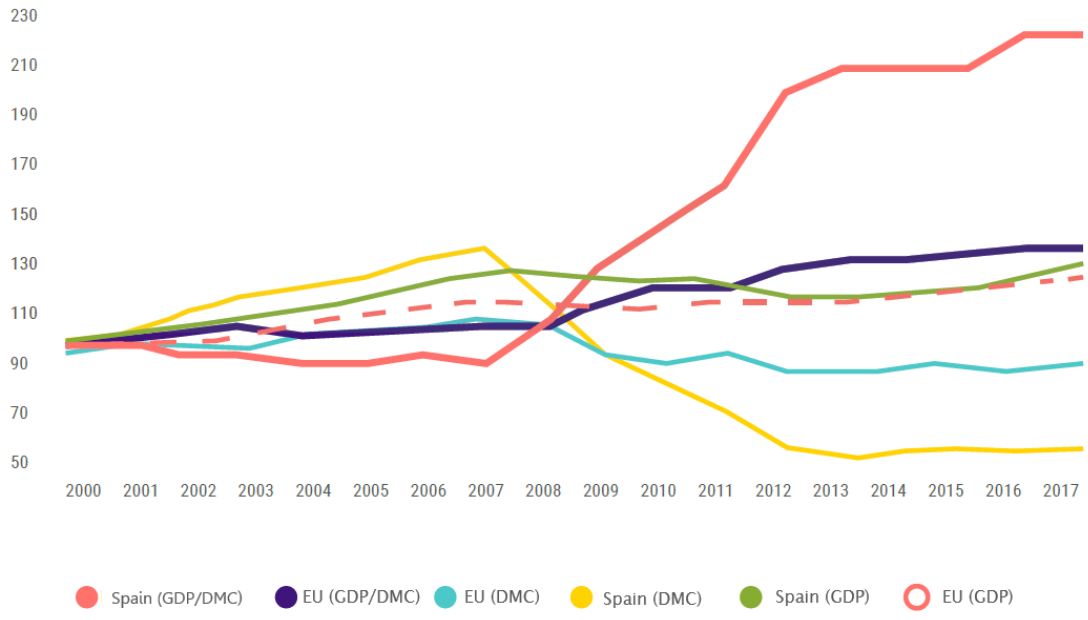

Figure 5. Evolution of material productivity, GDP and domestic material consumption for Spain and the EU, 2000–2017 (2000 = 100). Report on the situation and evolution of the circular economy in Spain 2019. COTEC Foundation.

this framework, the Valencian Innovation Agency was created in 2017 to coordinate the Innovation Strategy of the Valencian Community and to promote the strengthening and development of the Valencian Innovation System (SVI). Along the same lines, the execution of the Intelligent Specialisation Strategy for the VC (RIS3-CV) is specifically included as one of its objectives.

- Intelligent Specialization Strategy of the Valencian Community (RIS3-CV). It constitutes the strategic agenda to contribute to the transformation of the Valencian production model from research and innovation, for the 2014–2020 programming period. Based on the specific context of the Valencian economy, the result of a SWOT analysis, a strategic framework is built, which is expressed in a vision, a mission and some values. This framework culminates in the prioritisation matrix, which synthesise the analysis processes and proposals made by the agents involved. The matrix includes the main options for regional development based on research and innovation.

The matrix integrates the transversal axis of sustainability, which is essential to promote a low-carbon economy, in line with European policies that advocate development that is sensitive to climate change, efficiency in the use and movement of resources, and care for the environment. It is subsequently specified in objectives, which will frame the expected results and indicators for their monitoring.

In the specific case that concerns this report, and given the political instrument of application in the Valencian Community, as will be explained later in this document, Axis 2 is especially noteworthy. Innovative Product - 2.2 Habitat: housing and its environment, This axis includes the manufacture of consumer goods linked to the habitat and its surroundings, such as ceramic and natural stone coatings and materials for the home, lighting, furniture, home textiles, architecture, home automation, urban environment, in which its Growth and competitiveness necessarily pass, and as a priority, through the generation of innovations focused on the product, aimed at adding value to

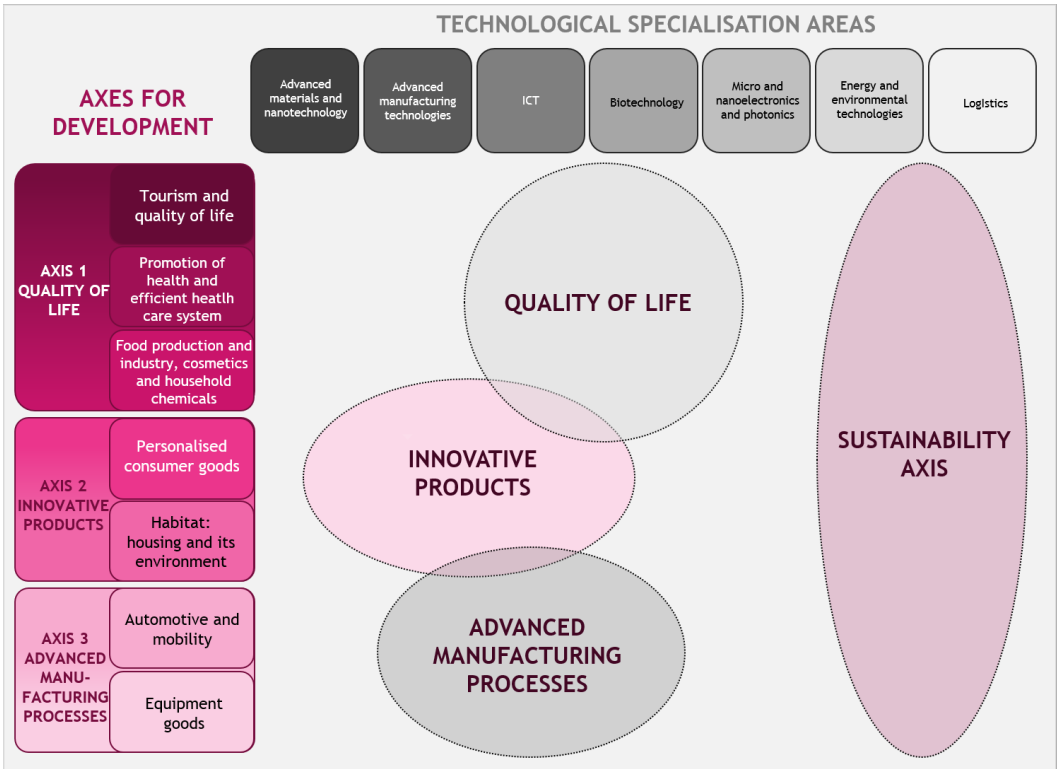

Figure 6. Matrix of RIS3-CV priorities. http://ris3cv.gva.es/es/matriz-de-prioridades

its customers based on their use, and additionally, by innovation in production processes.

The environment of HABITAT stands out for the demand for the development of new materials and advanced, sustainable products and with new applications of added value, together with the need for collaborative processes in production and distribution systems, mainly international, for which the use of technologies ICT and logistics, along with materials and environmental appear as relevant:

- June, 2019, Acord del Botànic, that axis 1 includes the objective of promoting a Law for the Circular Economy, in line with the principles of the European Union.
- Strategy of the Industrial Policy of the Valencian Community 2020 (EPI-2020) and Strategic Plan of the Valencian industry 2018–2023 (PEIV), the latter is framed and based on the EPI-2020, translating it into a set of specific actions for sector, making it operational, sectorized and with an orientation towards the reality of the industry and the territory.
- Energy Savings and Efficiency Plan, Promotion of Renewable Energies and Self-consumption in buildings, infrastructures and equipment of the public sector of the Generalitat (PAEEG)
- Valencian Ecological Production Plan
- Valencian Strategy for Climate Change and Energy 2030
- Rural Development Plan 2014–2020
- Territorial Action Plan for the Green Infrastructure of the Coast of the Valencian Community (PATIVEL).
- Revision and update of the Comprehensive Waste Plan of the Valencian Community (PIRCVA), covering the period 2019–2022. The modification of the Plan is based on a transition towards a new waste management model, according to the management options hierarchically. prevailing according to the European Directives (prevention in generation, reduction in origin, repair for reuse, quality recycling), as the basis for a new autonomous waste planning completely based on the principles of the circular economy, according to the circular economy package approved by the EU through Directives 2018/849, 2018/850, 2018/851 and 2018/852 of May 30, 2018.

We consider the following documents to be especially relevant due to their direct relationship with the political instrument of application in the Valencian Community within the framework of the REDUCES project:

- White paper on housing establishes the guidelines for the future housing policy of the Generalitat Valenciana (regional government). It is a long-term structural and strategic plan that includes a wide range of recommendations (creation of management bodies, intervention in the housing stock, social and financial measures, etc.) to address the housing problem. in today's society as a whole. It has been conceived as a tool that fosters social cohesion, housing justice and the sustainable occupation of the territory. It is structured with an analysis and diagnosis section, a strategic framework and a final proposal block with lines of action. The proposed lines of action are framed in 9 strategic axes (guaranteeing access to housing, promoting rental housing, mobilizing empty housing, promoting a social model of rehabilitation, promoting an inclusive environment, establishing a circular economy model in housing, orienting housing to the challenges of the future, improving the quality of housing and adapting management in the field of housing), among these two should be highlighted:

    - Establish a circular economy model in housing.
    - Orient housing to the challenges of the future.

in which lines of action are defined, especially linked to the circular economy and the promotion of innovation through research and experimentation on new housing models. However, we can find underlying circular economy principles in most of the proposed axes and lines of action, such as mobilizing empty homes or promoting a social model of rehabilitation, strategies aligned with the principles of maintaining and prolonging useful life of an asset, or reuse before producing a new good.

- "Habitat 2030" Strategic Plan, an operational instrument to guarantee the social function of housing in the Valencian Community and provide a quality public service that is comparable to European benchmarks. This is a ten-year plan in which the right to housing is understood as inseparable from the right to the city, therefore it postulates the right to a habitat. In addition, it is a participatory plan, starting from a base document an ambitious participation process started in collaboration with all the agents involved. Of the challenges posed, the Green Transition should be especially highlighted, in which the following objectives are proposed through *the Green Transition and Circularity Pact on Habitat*:
    - Reduce the consumption of primary energy in conditions of comfort in the social housing stock to achieve the Objectives of the Valencian Strategy for Climate Change and Energy by 2030.
    - Promote final energy consumption from renewable energy sources, for example, through the implementation of self-consumption systems.
    - Promote the renaturalisation of urban spaces and their connection with natural environments to develop the continuity of ecosystems.
    - Promote refurbishment and renovation against new construction, urban regeneration and redensification (sustainable habitat).
    - Adapt circular economy criteria to the real estate sector through innovative practices.
    - Promotion of green employment through education and training.

Actors or entities (within the public administration) relevant to transform the Valencian economic system towards a more circular model include the Valencian Agency for Innovation (AVI) and Valencian Institute of Business Competitiveness (IVACE):

Valencian Agency for Innovation:

The Agència Valenciana de la Innovació (from now on AVI) is the meeting place for all the agents of the Valencian Innovation System (SVI), universities and research centres, technological institutes, health research centres, financial entities and venture capital funds, the Public Administrations and the whole business network of the Comunitat Valenciana. Its mission is to improve the region's productive model through knowledge and innovation, in order to achieve intelligent, sustainable and socially cohesive economic growth. The AVI is in charge of designing and coordinating the innovation strategy of the Comunitat Valenciana and promoting the strengthening and development of the Valencian Innovation System as a whole. All this in collaboration with the rest of the related organizations and entities. The participation of the agents of the Valencian Innovation System (SVI) is directly articulated in its organs: Board of Directors, Valencian Innovation Council (CVI), Strategic Innovation Committee (CEI) and Specialized Strategic Innovation Committees (CEIE). The latter are the specialised groups of the Strategic Innovation Committee (CEI) responsible for offering a response to each of the challenges of the productive fabric with innovative

technological solutions. In 2019, two new priority areas were defined, sustainable habitat and emergencies, in addition to health, agrifood, enabling technologies for the new economy, the automotive industry and sustainable mobility and the circular economy, which already exist.

The work teams of these committees, made up of scientists, businessmen and technologists, identify the main challenges in each area, establish the short-medium term priorities, propose innovative solutions and define the necessary actions for their implementation in the region's business fabric, suggesting tools and incentives to maximize their impact. Both the UPV and the IVE (the two partners of the REDUCES project in the VC) are present in the CEIE Habitat sostenible, in which the following challenges have been prioritized:

1. Optimisation of the real behaviour of buildings and dwellings to improve their performance and maintenance, their interoperability and/or their adaptability. (link with Product life-extension business model)
2. Implementation of more sustainable building materials and systems (link with Renewability, Resource efficiency & recycling)
3. Nearly zero energy buildings ((link with Renewability, Resource efficiency & recycling)
4. Improved integration of the changing demands and needs of building and housing users. (link with Product life-extension)

Challenges 1 and 4, with their solutions and actions are connected to the business models, proposed in REDUCES, of Product life-extension, while challenges 2 and 3, are associated to the business models of Renewability and Resource Efficiency and Recycling.

The CEIE in Circular Economy prioritized the following three challenges:

1. Ecodesign
2. More sustainable consumer goods
3. Waste recovery and use of reclaimed water

Challenges, connected to the business models of: Product life-extension, Renewability and Resource efficiency and recycling.

The AVI has different instruments and lines of action to transform the productive system, among other programs and lines of action it grants aid through competitive calls, directed to the valuation and transference of research results to companies, the promotion of talent, impulse to the innovative public purchase, strategic projects in cooperation, consolidation of the chain of business value, complementary actions of impulse and strengthening of the innovation, in which the challenges and solutions proposed in the CEIE are prioritized.

In addition, the AVI, in collaboration with the Valencian Institute of Finance (IVF) and through the Sociedad de Garantía Reciproca (SGR), supports the granting of guarantees to projects of Valencian companies that have an innovative character, offering solutions to the challenges identified by the specialized strategic committees or bringing to the market innovations previously supported by the AVI, within the framework of its R+D+i calls.

Valencian Institute of Business Competitiveness (IVACE):

The Institut Valencià de Competitivitat Empresarial (IVACE) is a public body belonging to the Valencian Government, attached to the Ministry of Sustainable Economy, Productive Sectors, Commerce and Labour of the Valencian Government. It is the regional development agency in charge of promoting a new economic, sustainable and inclusive model in the Valencian Community, promoting the competitiveness of

companies through R&D and innovation, internationalization and entrepreneurship, promoting energy development sustainable and promoting infrastructures, industrial services and attracting investments.

The IVACE is organized around 4 areas: Innovation, Energy, Internationalization and Business Parks.

Among its functions, it is especially worth mentioning:

- To establish, manage and process lines of aid and incentives aimed at the creation, modernisation and internationalisation of Valencian companies, as well as for the purposes of conservation, savings, diversification and energy efficiency.
- To promote, establish and implement technical assistance, advice and training systems aimed at the creation, maintenance, modernisation and internationalisation of companies and their activity.
- To facilitate and contribute to the financing of Valencian companies.
- To promote, manage and coordinate research, development and innovation infrastructures, scientific and technological parks and institutes and technological development and innovation business centres.
- To analyse, advise, propose and implement measures for energy conservation, saving and diversification in all business sectors.
- To promote sustainable mobility and rational use of energy, through new technologies and renewable sources.
- To analyse, propose and promote energy infrastructures to guarantee supply and quality throughout the region, applying active energy demand management policies.
- Carry out energy management of the Valencia Government buildings, as well as managing the register of energy certification of buildings and other regulatory aspects related to thermal installations in buildings (RITE).
- Exchange knowledge and technologies with other countries and represent the Valencian Community in the different regional, national or international bodies related to energy issues.

Next figures summarizes the main funding programmes from IVACE on 2020:

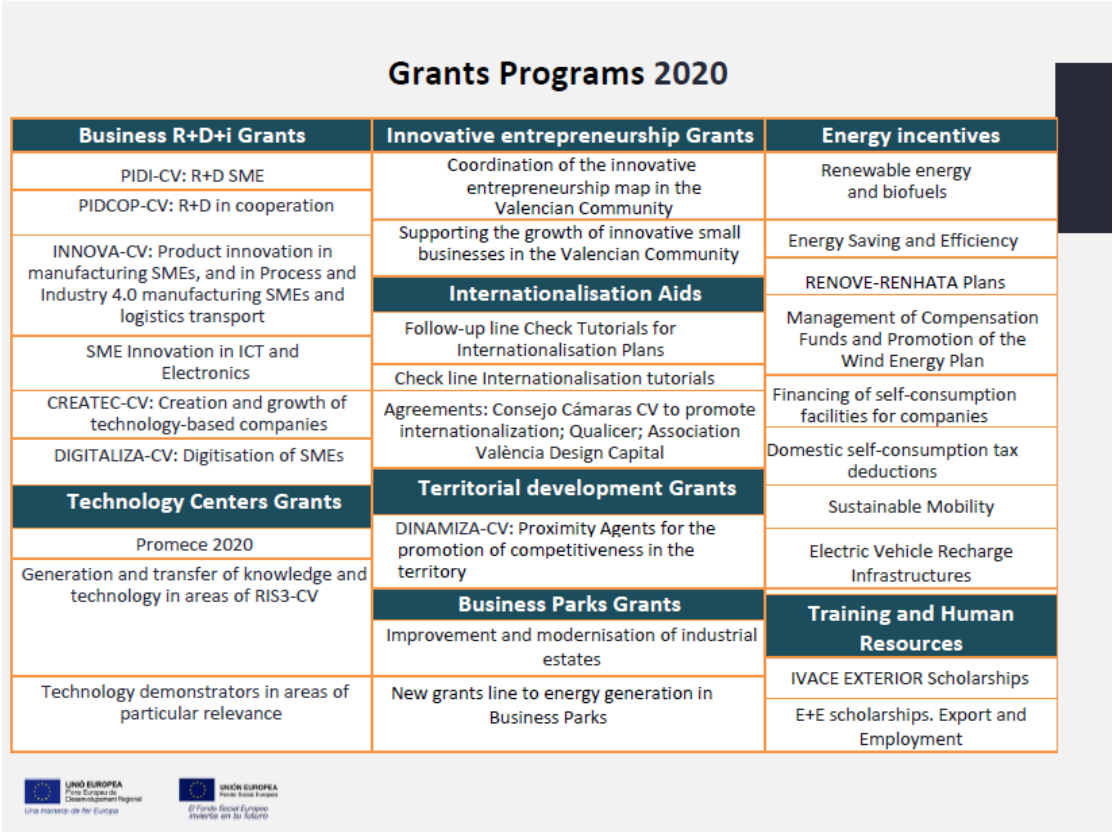

Figure7. IVACE 2020 aid programmes. Annual plan of activities for the year 2020. Approved by the Board of Directors on 17 December 2019 http://www.ivace.es/images/informacion/Plan_anual_de_actividades_2020_IVACE.pdf

A more detailed list can be found in: http://www.ivace.es/PDFs/FOLLETO-IDi-cs.pdf

Finally, in the section on references and additional material, a table is included in which a list of projects related to the circular economy in the construction sector and other related sectors (ceramic or furniture sector) in the Valencia Region has been compiled. The table includes information related to their financing, project objectives, participating partners in the region, as well as their connections with the REDUCES project. From the analysis carried out, it can be seen that there are a large number of initiatives related to Resource efficiency and recycling in the Comunitat Valenciana. We also found quite a few initiatives related to the introduction of environmental criteria in product design, such as the use of renewable materials, product life cycle analysis, etc. However, we miss initiatives related to consumption patterns that promote the development of platforms or services that encourages the intensive use of products and goods, related to the business models of Product as a service and Sharing Platforms, considered in the REDUCES project.

3.2.1 Regional CE drivers, strengths and opportunities

Strengths and opportunities in the Comunitat Valenciana:

- **Importance of the social economy and cooperative tradition**. Within the Valencian business fabric, social economy companies such as cooperatives or associations (special employment centers, insertion companies, mutual societies, etc.) stand out for their importance. The growth of the number of cooperatives in the Valencian Community has stagnated since

the beginning of the century. However, the importance of associations has been growing since the recent economic crisis, betting on an increasingly social economy. In any case, the importance of cooperatives in the productive structure of the Valencian Community is still limited. Currently, Valencian cooperatives have 45,000 workers, just over 2% of the total number of employed Valencians.

- **Powerful network of Technological Institutes to provide advanced services**. The Valencian Community has an important Network of Technological Institutes (REDIT) that allows meeting the specific needs of 11 major hypersectors: footwear, ceramics, textiles, toys, wood-furniture-metal, food, plastic, logistics, energy, biomechanics and TIC.
- **Consolidated industrial fabric with the presence of regional clusters**. The Community has industrial clusters, technologically powerful at the level corresponding to the branch of activity, and there is still ample space to carry out cooperative actions in multiple directions: technological, commercial, purchasing, branding, marketing, etc.
- **Signs of recovery in the construction of new construction and in rehabilitation activities**. The decline has stopped with the arrival of the recovery, but its current growth should not make us think that the construction sector will recover its activity levels from the past. Its new dimensioning should be more sustainable in the long term and for this it should be less than what it had at the beginning of the century. Along with the new construction, the construction sector has relied on the rehabilitation activity to absorb the excess productive capacity that bequeathed the very strong crisis.
- **Strong capacity of the tourist activity as a generator of employment**. A favorable international environment has been joined by a technological revolution in the way of contracting tourist activities that have promoted and transformed the sector in the Valencian Community, establishing itself as one of the main engines of activity and employment. Tourism continues to demonstrate enormous capacity to generate employment and added value and is confirmed as a strength of Valencian specialization. Despite these advantages, it also faces challenges such as saturation problems and environmental impact in coastal areas, which account for the largest market share, although the growth of these activities towards the interior of the territory and towards the cities, especially Valencia, it is clear.

3.2.2 Regional CE barriers, weaknesses and threats (possible bottlenecks)

In general, the main barriers that we can find to the development of the circular economy are of 5 types (COTEC Report - Situation of the Circular Economy in Spain 2017):

- Legislation and regulations. related to vertical integration and harmonization between policies, with the aim of constituting a legislative body that normalizes and integrates the different European legislative levels with national, regional / autonomous and local levels.
- Economy / finance. The Circular Economy requires a comprehensive tax reform in the medium term, which includes measures to direct society towards sustainability, such as the reduction of taxes on work and the increase in taxes on the consumption of non-renewable resources in the form of fossil fuels and materials.
- Education and training. A profound change is necessary, not only in production systems, but also in consumer systems. The education system at all levels has a central role in supporting the constitution of more responsible users / consumers / citizens, who can make daily decisions with a focus on preserving resources

from cradle to cradle and who are more informed of their own consumption patterns.

- Technology. It is necessary to encourage the development of cutting-edge technologies that can favor the reduction in the consumption of raw materials and also promote the reuse and recycling of these materials at the end of their life cycle, through upcycling processes, recycling raw materials in an improved way ..
- Business models. The transition to the Circular Economy also requires the promotion and development of new business models, both for the transformation of existing economic activities and for the creation of new ones. In this sense, the business-to-business and business-to-consumer models have a particular interest in the provision of advanced services, either to companies or to consumers based on the provision of services and not on the provision of material products.

In the specific case of the Valencian Community we also find the following weaknesses and threats specific to our region:

- **Low productivity:** The labor productivity of the Valencian economy is low if we compare it with the Spanish average. The Valencian industrial fabric is wide and diverse, but nevertheless its productivity is below that of the Spanish industry as a whole. The advantages associated with specialization are best exploited when companies in the sectors in which a territory is more specialized are more productive, something that does not generally happen in the Valencian Community. In general, productivity per hour worked is lower in most sectors, and it should be noted that it does not excel in footwear, wood, textile or plastic, while productivity exceeds the Spanish average in food, ceramics and, above all, material Of transport. The challenge is to extend the good results in productivity of the companies that allow the Valencian sectors to position themselves above the average in certain activities to other companies and to the rest of the sectors.
- **Little intensive specialization in more sophisticated production segments:** The decline of the Valencian industry is largely due to the loss of competitive advantages based on a specialization in low-cost products and the limited use of new sources of competitiveness based on adding value through knowledge and innovation. The specialization of the Valencian industry continues to stand out for the greater weight of six sectors in production when compared to that of the whole of Spain: footwear and ceramic-tiles, very prominent, and also textile, plastic, wood and transport material. On the other hand, the weight of highly knowledge and innovation intensive industrial sectors, such as machinery and equipment, electrical and electronic, computer and optical material and equipment, chemistry and pharmaceutical products, is, on the other hand, clearly less in the Valencian economy.
- **Shortage of large companies:** The Valencian business fabric continues to be characterized by a decisive weight for micro and small companies. Businesses without employees or with less than ten workers (micro-businesses) represent 46% of employment and only 25% of workers are employed in large companies. Traditionally, size has positively influenced the professionalization of management, the use of human capital, investment in R+D+i and internationalization, traits in which the Valencian company has weaknesses. These traits condition his specialization in knowledge-intensive activities and the productivity of the factors he uses.
- **Powerful university R+D+i system little linked to business advancement:** The Valencian innovation system has a powerful university environment that, despite having improved its connections with the productive fabric, can go much further in that direction. Valencian R&D activities are highly

concentrated in universities, especially public ones. Its intensity of spending on these activities and the production of patents exceeds the national average, while the expenditure of Administrations and companies is below the Spanish average, already low in comparison with the most advanced economies. The percentage of Valencian companies that innovate is higher than in other communities, but the intensity of spending on innovation is lower. One of the reasons for this situation is that the R & D & I spending per innovative company is much lower in the Community than in other communities. The Valencian Community stands out for the innovative effort of SMEs and for the orientation of large companies to technological innovation. Even so, the innovative intensity of the Valencian business fabric continues far from the Basque Country, Navarra and Catalonia.

3.2.3 Vision of the CE development in the region

In general, we can consider that we are in an incipient state with regard to the implementation of a circular economy model in the region. However, we have seen that there are many initiatives aimed at implementing circular economy criteria in practically all strategic economic sectors in the Valencian Community. Most of the initiatives are focused on increasing resource efficiency, improving waste management, and to a lesser extent on incorporating eco-design criteria into product development. Public administrations are making an effort to improve green procurement and tendering processes, incorporating environmental and innovative criteria, in order to encourage the private sector to move towards more circular production and consumption models.

Probably what is needed is the definition of a general framework, which coordinates and directs the efforts being made in the region from different sectors and administrations, while allowing the identification of new niches or potential sectors to be developed in the Valencian Community, in the process of diversifying the economy.

As far as initiatives at municipal level are concerned, the integration of aspects related to the circular economy is even more scarce. It is worth highlighting the Declaration of Seville, an initiative launched by the Spanish Federation of Municipalities and Provinces, in which the signatory municipalities undertake to promote and encourage the Circular Economy in their territories. There are currently more than 230 municipalities throughout Spain, 24 of which are in the Valencian Community. Within this framework, the Local Strategy for the Circular Economy has been developed. This is a set of actions proposed as practical recommendations, aimed at Local Bodies, to facilitate the adoption and implementation of the principles of the circular economy in their areas of action, within their capacities and competences.

Finally, as far as citizenship and social awareness is concerned, it is still far from incorporating the criteria of the circular economy into their consumption habits. An effort must be made to communicate with citizens and convince them of the need to change mainly their way of consuming.

Policy instrument: DC09 Regulations on Habitability in Housing

The political instrument of application in the Valencian Community is Decree 151/2009 of October 2, of the Consell, which approves the basic design and quality requirements in housing and accommodation buildings.

The Order approves the design and quality conditions that must be met by new buildings intended for housing, those that contain adapted housing,

accommodation buildings or those that are subjected to refurbishment in any of these cases.

The regulations regulate functional aspects of the dwellings and the buildings: such as the minimum surfaces of the spaces, the relationship between the different spaces or enclosures, the conditions that the circulation spaces (horizontal and vertical) must fulfill within the dwellings and buildings, minimum and / or mandatory equipment that a dwelling and building must have, also regulates certain aspects of habitability such as lighting and ventilation conditions, the specific conditions that an adapted dwelling must meet (for people with functional diversity/disability) or accommodation buildings (consisting of spaces for private use, in the form of accommodation units, and common services for collective use), as well as the conditions to be met in the event of a refurbishment of the dwellings and / or buildings in any of the above cases.

This regulation is the responsibility of the Ministry with housing competencies, currently the Second Vice Presidency and Ministry of Housing and Bioclimatic Architecture.

This Ministry already has a series of documents, regulations and initiatives that converge with the objectives and interests foreseen in the REDUCES project, so it is essential to keep them in mind in order to join efforts and synergies.

As already defined in the previous section (Profile of circular economy in the Valencian Community), the White Paper on Housing establishes the guidelines for the future housing policy of the Valencian Government, this plan already establishes a series of actions to establish a model of circular economy in housing, developed in more detail in the document, such as:

- Development of advanced materials, products and processes with low environmental impact.
- Reduction of the environmental impact of housing construction.
- Sustainable, inclusive and resilient urban development.
- Promotion of the secondary raw materials market.
- New models of tenure, use and maintenance of residential buildings.
- Circular metabolism of cities.
- Establishment of a comprehensive strategy for waste management.
- Continuous regeneration of housing.
- Intensive use of built heritage.

It is also important to take into account the challenges posed in the Strategic Plan “Habitat 2030”, especially that of the Green Transition, in which it is proposed through the Green Transition and Circular Pact in the Habitat, to reduce the consumption of primary energy in comfort conditions in the social housing stock, favoring final energy consumption from renewable energy sources, promoting the renaturation of urban spaces and their connection with natural environments to promote the continuity of ecosystems, promoting rehabilitation compared to new construction, urban regeneration and redensification (sustainable habitat), adapting circular economy criteria to the real estate sector through innovative practices,

and promoting green employment through education and training.

It is essential to review the role of the Observatory of Habitat and Urban Segregation (hereinafter OHSU), established in February 2019. Its creation, provided for in Law 2/2017, of February 3, of the Generalitat by the Social Function of the Housing in the Valencian Community, serves the purpose of knowing, among other aspects, the situation in quantitative and qualitative terms of housing in general and public housing in particular, the territorial distribution of housing and the indicators determined in the public housing and urban regeneration policies of the Generalitat, dependent on the Ministry responsible for housing. Decree 9/2019, of February 1, creating the Habitat and Urban Segregation Observatory of the Valencian Community, establishes its main functions, among others that of advising on planning regulatory action in the area of housing and the city , and articulates its structure and composition, as well as the members (among them the IVE) that make up the plenary session of the Observatory (maximum organ of decision, control, planning, follow-up and supervision of the OHSU activity).

Finally, from the General Directorate for Ecological Innovation for Construction and in collaboration with the Valencia Institute of Building (IVE), the "Guide to environmental measures in service contracts and building works of the Generalitat" is prepared. The environmental measures included in the guide are based on the ecological public procurement criteria developed by the European Commission and the Ecological Public Procurement Plan of the General State Administration, to which additional criteria are added. Thus, a first edition of the guide includes passive design measures for energy saving, active design measures for energy saving and water saving, as well as measures related to products, waste management and environmental certifications. However, the guide is intended to be a repository of environmental measures that are continuously updated, with the conviction that promoting the consideration of sustainability criteria in public procurement, in addition to serving to obtain more environmentally friendly buildings, has a high exemplary value, while it can be a relevant element of influence in the market, encouraging the private sector towards new forms of production and more responsible consumption.

Updating housing design and quality standards will provide an adequate framework to promote the integration of the circular economy model in activities related to residential housing use. Entities and professionals involved in this activity have great potential to contribute to making buildings of higher quality, functional and safe, effective and affordable, that they last longer and are designed to be repaired, rehabilitated and recycled. Thus, these standards will facilitate the practical implementation of action measures in accordance with this model. In housing, like other sectors, the current linear, unsustainable system of material use and waste production has to be transformed into another system based on optimizing resources, in order to minimize environmental impact and create social sustainability.

4 Regional conclusion

Most of the EC actions developed in the Valencian Community refer to the generation and saving of energy, as well as the treatment, reuse and saving of water. The Valencian Community is a pioneer in some of the issues considered by the circular economy, especially the treatment and reuse of urban wastewater. However, there are many issues that need to be addressed to optimize, preserve and revalue all the existing urban capital, such as the use of recycled materials within the urban infrastructure, low-impact and locally sourced materials and reusable, recycled and renewable construction materials, regeneration of urban areas, management and recycling of urban waste, shared use of service networks, building renovation, revaluation of built heritage, use of environmental labelling for construction materials (such as WTP, Environmental Product Declaration), decentralized water treatment systems, etc.

In addition, the theme “business models for a circular economy” is not really explored in the region. There is a great need to work on economic models of intervention that should seek economic sustainability of the action, in the sense that an action that generates an investment, whether public, private or mixed, should generate a return on investment. This can be a monetary return or an improvement in social, environmental, or local conditions. In any case, the economic aspects of the action must be taken into account at all stages of the circular economy processes.

The project will contribute to the improvement of basic design and quality requirements in residential buildings by identifying and sharing scalable circular business initiatives and addressing the challenges to implement them. The commitment of the circular economy offers the opportunity to reinvent our economy, which will benefit businesses, industries, and citizens alike through economic savings for companies, the creation of new jobs and the reduction of CO2 emissions to the environment.

References and additional material

Acord del Botànic2os. http://intra.pre.gva.es/convera/docpdf_castellano/monografias/Consell/Pacte-Botanic21.pdf

Ali, M. 2013. Sustainability Assessment.

Decreto 151/2009 de 2 de octubre, del Consell, por el que se aprueban las exigencias básicas de diseño y calidad en edificios de vivienda y alojamiento. http://www.habitatge.gva.es/documents/20558636/90492723/TEXTO_+INTEGRADO_ORDEN_+DC09/5318acd9-47bb-4bba-8d17-5f06df1ca75c?version=1.0

Document d'ELX. Bases y Elementos Orientadores para la Transformación del Modelo Económico de la Comunidad Valenciana. http://www.hisenda.gva.es/documents/164158153/164158322/BEOTME+cas.pdf/cbeff964-ae22-42c1-b7db-b3f40c016e91

Ellen MacArthur Foundation. (2017). *Learning path - Circular design*. https://www.ellenmacarthurfoundation.org/explore/circular-design

Ellen MacArthur Foundation. (2017). *The concept of a circular economy*. https://www.ellenmacarthurfoundation.org/circular-economy/concept

Estrategia de Especialización Inteligente de la CV (RIS3-CV). http://ris3cv.gva.es/es

Estrategia Española de Economía Circular, España Circular 2030. https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/estrategia/

Estrategia Local de Economía Circular – FEMP. http://www.femp.es/sites/default/files/multimedia/estrategia_local_ec_170x240_definitiva_compressed.pdf

Explotación del directorio estadístico de empresas de la Comunitat Valenciana http://www.pegv.gva.es/es/explotacio-del-directori-estadistic-d-empreses-de-la-comunitat-valencian.a

Gleckman, H. 2018. Multistakeholder Governance and Democracy: A Global Challenge. New York: Routledge.

Herrero, Luis M. & Morato, Jordi & Tollin, Nicola & Villanueva, Brent & Leiva, José & Pérez Lagüela, Elena & Montoya, Atalya & López, Duván. (2019). Situación y evolución de la economía circular en España. Informe 2019. 10.13140/RG.2.2.25929.29288. https://cotec.es/media/informe-cotec-economia-circular-2019.pdf

Informe Económico. Presupuestos de la Generalitat Valenciana 2020. http://www.indi.gva.es/documents/161328139/166740260/Informe+Econ%C3%B2mic+de+Pressupostos+2020/60983c5f-1fae-43fe-9ac7-819c821056af

Interreg Europe 2020. Help - FAQs - Policy instrument / Focus on Structural Funds. https://www.interregeurope.eu/help/faqs/12/.

Kirchherr, J.; Reike, D. & Hekkert, M. 2017. Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling. Volume 127. https://www.sciencedirect.com/science/article/pii/S0921344917302835

La Economía Circular y la Normalización. https://www.une.org/normalizacion_documentos/La%20Econom%C3%ADa%20Circular%20y%20la%20Normalizaci%C3%B3n.pdf

Libro Blanco de la Vivienda - Comunitat Valenciana. http://www.habitatge.gva.es/documents/20558636/0/LBV-CV-cas-2019_WEB%281%29.pdf/0354a741-08d1-4377-88d4-bbec50ee0b9b

Lin, T. 2018. Incorporating Social Activism. Philadelphia: Temple University - James E. Beasley School of Law.

Mapa Agentes del Sistema Valenciano de Innovacion. AVI. http://innoavi.es/es/agentes-svi Universidades, centros de investigacion cientifica, centros de investigacion sanitaria, administraciones publicas, instituto valenciano de finanzas y entorno financiero, institutos tecnologicos, otros agentes

Mapa de Entidades y Servicios al Emprendimiento de la Comunitat Valenciana. https://www.emprenemjunts.es/mapa-ecosistema-emprendedor-cv/

Morato, Jordi & Tollin, Nicola & Herrero, Luis M. & Villanueva, Brent & Plà, Mireia & Betancourth, Carlos & Leiva, José & Pérez Lagüela, Elena. (2017). Situación y evolución de la Economía circular en España. http://cotec.es/media/informe-CotecISBN-1.pdf

Observatorio del Hábitat y la Segregación Urbana. https://calab.es/observatorio-del-habitat/

Observatorio. Fundación Laboral de la Construcción. http://www.observatoriodelaconstruccion.com/uploads/media/8Ro9Qhxirj.pdf

Pacto por una economía circular: el compromiso de los agentes económicos y sociales 2018-2020. https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/pacto/

Pla Estratègic de la Indústria Valenciana. http://www.indi.gva.es/documents/161328133/164106546/Documento+Basico+PEIV+2018-2023.pdf/809836a7-4ba7-4931-9cf9-4e3fa9f5b8f0

Plan de Acción para la Transformación del Modelo Económico 2017-2027. http://www.hisenda.gva.es/es/web/modelo-economico/plan-de-accion-para-la-transformacion-del-modelo-economico-valenciano

Plan Habitat 20.30. https://calab.es/pla-habitat-20-30/

Plan Nacional de Adaptación al Cambio Climático 2021-2030. https://www.miteco.gob.es/es/cambio-climatico/participacion-publica/PNACC.aspx

Regional Innovation Monitor Plus (RIM Plus) -Valencian Community. https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/valencian-community

Saublens, C. 2012. Policy instruments. http://www.know-hub.eu/knowledge-base/videos/policy-instruments.html.

Statistical Website of the Generalitat Valenciana. Ministry of Sustainable Economy, Productive Sectors, Trade and Work. http://www.pegv.gva.es/en/dbcv

SITRA. (2019). *Dictionary - The circular economy*. https://www.sitra.fi/en/dictionary/the-circular-economy/

SITRA. (2019). *The critical move - Finland's roadmap to circular economy 2.0*. https://www.sitra.fi/en/projects/critical-move-finnish-road-map-circular-economy-2-0/#summary

SITRA. (2019). *The most interesting companies in the circular economy in Finland*. https://www.sitra.fi/en/projects/interesting-companies-circular-economy-finland/#business-examples

Szuppinger, P. & Kállay, T. 2017. Multi-Stakeholder Governance Model. Interreg Central Europe.

PROJECTS RELATED TO CIRCULAR ECONOMY IN THE VALENCIA REGION (Circular Economy in the Construction sector and other related sectors)

Project	Program	Brief description	Valencia Partners	Dates	Webpage	Link REDUCES
DRIVE 0	H2020	The aim of the DRIVE 0 project is to accelerate deep renovation processes by improving the consumer-centred circular renovation process to make deep renovation environmentally friendly, cost-effective and more attractive to consumers and investors.	IVE	2019–2023	link	It is related to business models that encourage product life-extension in buildings.
Life Future	LIFE	LIFE FUTURE is a European project that involves the development and validation of the GUF Tool, which is an online tool to support public bodies on the decision making related to the purchase of more environmentally friendly urban furniture. LIFE FUTURE aims to promote green public procurement, focusing on the urban furniture sector.	Aimplas, AIJU, Las Naves, Unversitat Jaume I	2015–2018	link	Green purchasing is promoted, through resource efficiency criteria, recycled, reused, renewable materials, etc.
WoodRuB	LIFE	The objective of the WOODRUB project is the development, testing and demonstration of innovative environmental friendly products made from recycled wood and recycled tyre rubber. Conventional construction materials will be designed and demonstrated.	AIDIMA	2010–13	link	Recycling of materials for the production of new building materials.
Planet-Design	MED	Planet Design partners first focused their efforts on developing innovative roadmaps with different potential innovation paths addressing environmental issues that could represent opportunities for furniture companies to differentiate their offer and to maintain competitiveness by achieving sustainability.	AIDIMA, UPV	2009–12	link	on the introduction of ecodesign in companies in the wood-furniture sector in Spain, Italy and Portugal.
SIMBYNET	IVACE	The project aims to develop an intelligent digital ecosystem portal/ prototype to promote Industrial Symbiosis Initiatives in companies in the Valencian Community, as one of the key tools to support the circular economy.	AIDIMME,AICE ITC, AINIA, ITI	2020–21	link	Related to the implementation of resource efficiency strategies in the companies of CV region.
PLACE	IVACE	The PLACE project- Ecological Purchasing PLATFORM / Collaborative Ecodesign PLATFORM - consists in the development of a collaborative platform that promotes ECOLOGICAL PUBLIC PURCHASING by administrations or large buyers (demand) and facilitates the incorporation of said environmental requirements –a through ecodesign- in companies (the offer).	AIDIMME, IVACE, RIPAY, AICE ITC, , HIDALGOS GROUP, VICENT MARTINEZ DISSENY, INDUSTRIAS SALUDES, AGOLAR GESTIÓN, S.L.	2020–21	link	It is connected to the business models of renewability, resource efficiency, recycling and extending the life of products.

INSYLAY 3 19-20	IVACE	The INSYLAY project aims to implement models of sustainable cooperation between industrial companies, in order to obtain a more efficient production with less environmental impact, by applying a methodology based on the concept of industrial symbiosis.	AIDIMME	2019–20	link	Industrial symbiosis project, related to the resource efficiency business models
CIRCULARIZA	IVACE	The main objective of this project is to create a tool that allows manufacturing companies to identify the key aspects related to the circular economy and qualitatively assess their level of maturity in relation to them.	AIDIMME	2019–20	link	Comprehensive approach covering all EC business models.
NIMBLE	H2020	NIMBLE will develop the infrastructure for a cloud-based, Industrie 4.0, Internet-of-things-enabled B2B platform on which European manufacturing firms can register, publish machine-readable catalogues for products and services, search for suitable supply chain partners, negotiate contracts and supply logistics, and develop private and secure B2B and M2M information exchange channels to optimise business work flows.	AIDIMME, MICUNA, FEVAMA	2016–20	link	Industrial symbiosis. They have created the platform "B2B Marketplace for the Habitat sector"
TRIS	Interreg Europe	TRANSITION REGIONS TOWARDS INDUSTRIAL SYMBIOSIS	AIDIMME, IVACE	2016–21	link	Industrial symbiosis
SPS-CIRC	IVACE	The SPS-CIRC project aims to identify possible solutions (good practices and technological and management advances) that can be adapted to the wood-furniture sector to improve its sustainability and facilitate companies' transition to a Circular Economy model.	AIDIMME	2018–19	link	Comprehensive approach covering all EC business models.
URBANREC	H2020	URBANREC has designed an eco-innovative waste management system capable of improving prevention and reuse models, optimizing logistics, as well as implementing new waste treatment technologies. Fragmentation by 3D cutting and catalytic hydrogasification with plasma will be applied for the first time in the management of bulky waste, to achieve the valorization of 80% of the waste treated.	AIMPLAS, Diputación Valencia, Consorcio Valencia Interior, Elastic Confort	2016–19	link link 2	Project related to the recycling of bulky waste, and creation of new materials.
PLASTICIRCLE	H2020	PlastiCircle is rolling out innovations in waste collection, transport, sorting and recycling, and aims to transform plastic packaging waste into valuable products. We are developing: smart containers to increase collection rates of plastic waste; cost-effective waste transport systems connected to IoT cloud platforms; innovative optical sorting technologies to improve sorting, and; new value-added recycled plastic products. Plastic packaging is too valuable to waste - so follow our journey and find out more as we work towards a real circular economy for plastics!	ITENE, Las Naves, SAV, ecoembes,	2017–21	link 1 link 2	Project related to the recycling of plastics.

SHAREBOX	H2020	Project that promotes industrial symbiosis to improve the competitiveness of companies, favoring the exchange of resources between them in order to reduce production costs and industrial consumption, among other aspects.	ITC, KEROS CERÁMICA S.L., KERAFRIT, S.A., Ibérica de Suspensiones S.L , GUZMAN GLOBAL S.L.	2015–19	link	Project that promotes industrial symbiosis and therefore resource efficiency.
SIMVAL	AVI (2018), IVACE (2019)	Our objective is to implant the industrial symbiosis between productive sectors of the entire Valencian Community, so that they can be aligned with the principles of the Circular Economy and with the initiatives that mark the governmental entities both at autonomous and national and European level.	ITC	2018–19	link	Project that promotes industrial symbiosis and therefore resource efficiency.
C-SERVEES		C-SERVEES aims to boost a resource-efficient circular economy in the electrical and electronic (E&E) sector through the development, testing, validation and transfer of new circular economic business models (CEBMs) based on systemic eco-innovative services that include: eco-leasing of EEE, product customization, improved WEEE management, and ICT services to support the other eco-services.	AIMPLAS			Comprehensive approach covering all EC business models in the electrical and electronics sector.
ECONOMÍA CIRCULAR (Año 1, 2 y 3)	IVACE	The general objective of the project is research for the development of new materials and technologies in the framework of the circular economy for their transfer and diffusion in the plastics sector of the Valencian Community to obtain a more competitive business fabric and with better environmental behavior. related to both its materials and its products.	AIMPLAS	2017–2019	link	It promotes initiatives related to product life-extension, resource efficiency and recycling.
SurplusMall	Climate-KIC	The SURPLUS MALL project aims to develop an e-commerce web platform aimed at managing the sustainable commercialization of industrial surpluses and associated services. This electronic commerce platform will bring together companies that generate and demand surpluses and third parties that support logistics, management and control, among other value-added services such as technical-legal advice or R&D.	ITE, FEPEVAL	2017–18	link	industrial symbiosis
CONDEREFF	Interreg Europe	Construction & demolition waste management policies for improved resource efficiency	UPV (Ingenieria edificación)	2018–2023	link	Resource efficiency and recycling
CIRCULARCARBÓN	IVACE	CircularCarbon aims to develop a demonstrator within the concept of circular economy, which allows the use of abundant waste in the Valencian Community for the production of activated carbons and its application in energy devices (batteries) and water and gas treatment processes by promoting the circular use of renewable energy in production processes.	AICE, ITE	2020–2021		Resource efficiency and recycling.

PUCO2	IVACE	PUCO2 is committed to the development of systems for converting CO2, captured from industrial emissions, into isocyanate-free polyurethanes, as well as polyol-based polyurethanes. These materials will later be validated as paints, varnishes and adhesives in the footwear and furniture industry.	AIDIMME, AIMPLAS, INESCOP	2020–2021		Resource efficiency and recycling.
CIRCULAR INDUSTRY CV	IVACE	CIRCULAR INDUSTRY-CV has the objective of developing a demonstrator that allows the revaluation of waste generated by the footwear, toy and textile industries for its later successful use as a raw material in intra- and inter-sectorial applications.	AIJU, AITEX, INESCOP	2020–2021		Resource efficiency and recycling.
CEROH! STRATEGIES	IVACE	CerOh! Strategies - Circular economy strategies for a hypocarbon ceramic industry	AICE	2018–2020		Resource efficiency and recycling.
COBAT	IVACE	Cobalt recovery from waste from electronic devices and their use in the synthesis of ceramic pigments	AICE	2019–2020		Resource efficiency and recycling.
CIRCLE	IVACE	The aim of the CIRCLE project is to research strategies for the revaluation of waste generated by the different industrial sectors in Valencia, and thus be able to achieve the maximum added value from the waste or products that have finished their time on the market.	AITEX	2018–2019		Resource efficiency and recycling.
ECO&TECNO CARPET	IVACE	The main objective of the ECO&TECNO CARPET II project is to give added value to carpets, by incorporating new properties, as well as increasing the sustainability of the product by using materials with an ecological component and/or recycling the waste generated in their manufacture.	AITEX	2018–2019		Resource efficiency and recycling, renewability, product life-extension.
RECURPIEL	IVACE	The main objective of RECURPIEL is to extract the protein fraction (collagen) from the leather, and to separate it from the chrome and other metals coming from the tanning and finishing treatments to which the leather is subjected in the tanneries. This protein product (mostly hydrolysed collagen) can be used in the tanning process of new skins, specifically in the retanning stage, closing the circle based on the concept of circular economy and bringing benefits to both the environment and the economy of these industrial sectors, footwear and tanning	INESCOP	2018–2019		Resource efficiency and recycling.
BIO3	IVACE	The BIO3 project is aimed at the sustainable management of resources (waste and biomass) to obtain high added value bioproducts, within the framework of the circular economy by implementing best practices towards the transition of sustainable districts. In this sense, sustainable activated carbons will be obtained for application in water purification from waste such as pruning remains. The management of waste as pruning remains from parks and gardens is a problem, so its use as a raw material for obtaining high added value carbon materials would allow the development of advanced and economically viable purification systems for water treatment in order to eliminate the pollutants present.	ITE	2019–2020		Resource efficiency and recycling.

REDUCES
Interreg Europe

European Union
European Regional
Development Fund