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## ***Handbook about Circular Economy Opportunities for SMEs and companies***

### **RBM PROJECT**

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## 1 INTRODUCTION

An eco-industrial park is an area where companies work together to optimize the use of resources. This synergy between industries promotes economic benefits and contributes to sustainable development.

The main objective of the Project Recycling Business Models (RBM) is to investigate and analyse the possibility of transforming traditional science and technology parks into more sustainable areas, in order to establish the basis for eco-science models and technology parks, including the creation of circular maps of companies within science and technology parks.

Our goal is to create a specific methodology and strategy to drive the creation of new business opportunities for SMEs and the creation of new companies, based on the revaluation of waste, equipment and its reincorporation in the life cycle of companies located in science and technology parks.

This research is carried out within the scope of Activity 1 of the RBM Project and is aimed at specialists in Circular Economy (CE), to learn about the good practices implemented in this field, as well as the opportunities that this model can bring to the development and competitiveness of companies.

For that, we created a survey to interview experts in Circular Economy in each participating region (partners and associates) to know about good practices and activities implemented in this field, as well as the opportunities that the Circular Economy concept can bring for the development and competitiveness of the companies.

The collected data was analysed and compiled in the present document.



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## 2 RESULTS OF THE RBM SURVEY

### 2.1 Participants/experts characterization

Several specialists located in Portugal, Spain, and Sweden participated in this survey, mainly from I&D institutions, Environmental services and Government and Public Administration. More than a third of the respondents are involved in activities related to Circular Economy, such as business model's adaptation to keep products in economic use for example, recycling of products in their company or reduction of the carbon footprint.

### 2.2 Circular Economy and Science and Technology Parks

#### 2.2.1 Barriers and opportunities

Most of the experts consider that the main barrier in the implementation of Circular Economy in Science and Technology Parks is structural (lack of exchange of information and unclear responsibility distribution).

However, attitudinal difficulties were also mentioned such as the lack of knowledge about sustainability issues and risk aversion, technological (need for changing and re-designing products and production processes/ take-back systems) as well the lack of vision and leadership.

Reducing impact on the environment is the biggest opportunity viewed by the participants, followed by improving the products and savings on production costs. The interviewees mentioned opportunities as well related to image and reputation, the enhancement of the business competitiveness and the creation of jobs.

The promotion of the Circular Economy can be an important first step to encourage companies and Science and Technology Parks to adopt the concept. According to the experts, this promotion can be done by:

- Increasing the awareness and the creation of information campaigns, creation of working groups in Circular Economy, design of new curriculum and education programs; Education of entrepreneurs, formation of "facilitators" that help companies of Science



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and Technology Parks to form cooperative models of management of resources, energy and waste

- Establishing a legal/regulatory framework that requires a standard of business circularity (example: system of tax incentives)
- Creating a centralized waste management system, in which it is necessary to share the needs and offers existing in the market, to provide solutions to all companies
- Guaranteeing the financial sustainability of the model
- Creating collaboration between companies from different business areas, promoting economic development, improving resource efficiency
- Educating and start concrete projects where Science Parks help traditional companies transform into a circular economy-based business (or vice-versa)

### 2.2.2 The role of the governmental entities

To facilitate this transition, and given its strategic and transversal nature, the governance model should include components which convey: (i) a political commitment to the theme and (ii) effective support and action on transition progress. According to the experts, the government and regional entities can help companies in the transition to a more “green model” by:

- Inform, train, and encourage the companies, through the creation of platforms for the exchange of knowledge and experiences (projects) and dissemination on good practices
- Legislate to ensure that environmental impacts are mitigated, minimized, and eliminated, promoting change, and reward those who transition to a more circular model (or who are in the process of transition) through incentives
- Report the benefits of the economy's recirculation, in addition to ensuring that changes in the recirculation of the economy generate economic advantages for companies
- Provide facilities for introducing circular economy entrepreneurs to the market and conduct sector studies on waste generation when the offer of recirculation services is not



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on the market - the administrations themselves proactively offer solutions that are not available on the market

However, critical factors for this future development must be considered, such as:

- **Regulation** (for example, the Circular Economy is based on the material value chain, but in Portugal the classification of waste is based on the origin and the principle of producer responsibility)
- **European declaration:** presence in the discussions of metrics defined by the European Union for the European Commission
- **Reduce bureaucracy and streamline processes:**
- **Investment and financing.** increase the reduced incentives to invest in the Circular Economy
- **Technology:** investing in research and development in nanotechnologies (in recent years, advanced nanomaterials and nanotechnology have enabled sustainable designs for a circular economy)
- **Logistics:** lack of treatment systems in the countries to cope with the waste, and mass flows of bioproducts.

### 2.2.3 Competitive advantage

Circular Economy could bring savings to businesses and consumers through improved resource efficiency. In 2015, the Ellen MacArthur Foundation report estimate that by 2030, a shift towards a Circular Economy could reduce net resource spending in the EU by €600 billion annually, bringing total benefits estimated at €1.8 trillion per year once multiplier effects are accounted for. Additionally, research suggests that stricter environmental legislation can provide a competitive advantage to businesses.<sup>1</sup>

In that in mind, a large majority of the experts interviewed believe that the adoption of a Circular Economy strategy will bring a competitive advantage to companies and Science and



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Technology Parks. In addition, nowadays society in general is very aware of sustainability and environmental issues; therefore, companies that focus their activities and products in this direction will have a competitive advantage, as well as a greater level of reputation and prestige. Nonetheless, the focus should not only be in the competitiveness as a price quality (bringing economic savings to businesses and consumers), but in sustainability and efficiency in the use of raw materials as main benefit.

For Science Parks, this competitive advantage can exist by being a pioneer and facilitate the interaction with and between companies, society, and academia. They can mediate and influence other parts of the triple helix regarding the Circular Economy topic.

An approach toward the transition of the future of Science and Technology Parks could be based on a collaborative strategy and the creation of living laboratories that guarantee and improve the launch of proofs of concept and demonstration projects at national level, and with an international impact. The objective of this action plan will be based on:

- The sustainable exploration of essential and strategic primary raw materials
- The development and testing of knowledge and technologies for the development of renewable materials
- The development and adoption of more efficient production processes in the use and share of resources
- The adoption of policies and tools that induce the circularity of goods and services, processes, and activities
- The adoption of policies that promote the cohesion of territories and the economy
- The change of society's behaviour.



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### 3 NATIONAL & EUROPEAN FRAMEWORKS

#### 3.1 EU Circular Economy Action Plan

The European Commission has adopted recently a new Circular Economy Action Plan - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value. The new Circular Economy Action presents measures to:

- Make sustainable products the norm in the EU
- Empower consumers and public buyers
- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients
- Ensure less waste
- Make circularity work for people, regions, and cities
- Lead global efforts on circular economy

Official link:

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0098&from=EN>



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### 3.2 The European Green Deal

Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, Europe needs a new growth strategy that transforms the Union into a modern, resource-efficient, and competitive economy where:

- there are no net emissions of greenhouse gases by 2050
- economic growth is decoupled from resource use
- no person and no place is left behind

[The European Green Deal](#) is a roadmap for **making the EU's economy sustainable**. This will happen by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all.

Official link:

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640&from=EN>



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### 3.3 Spanish Circular Economy Strategy

The Spanish Strategy for Circular Economy, **Spain Circular 2030** lays the foundation for promoting a new model of production and consumption in which the value of products, materials and resources remain in the economy as long as possible, in which waste generation is minimized and those that cannot be avoided are used with a broader scope. The Strategy thus contributes to Spain's efforts to achieve a sustainable, decarbonized, resource-efficient and competitive economy.

The Spanish Circular Economy Strategy (EEEC) is aligned with the objectives of the European Union's circular economy action plans, "Closing the loop: An EU action plan for the Circular Economy" of 2015 and "A new Circular Economy Action Plan for a Cleaner and More Competitive Europe" of 2020, in addition to the European Green Deal and the 2030 Agenda for Sustainable Development.

The policies and instruments of the Spanish Circular Economic Strategy focus on eight lines of actions. Five of them are related to the closure of the loop: production, consumption, waste management, secondary raw materials, and water reuse. And the remaining three are cross-cutting lines: Awareness-raising and participation, research, innovation and competitiveness, and Employment and training.

The EEEEC has identified six priority sectors of activity in which to incorporate this challenge for a circular Spain: construction, agri-food, fisheries, and forestry, industrial, consumer goods, tourism, textiles and clothing sectors.

Official link: [https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030\\_def1\\_tcm30-509532.PDF](https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030_def1_tcm30-509532.PDF)



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### 3.4 Action Plan for the Circular Economy in Portugal: 2017-2020

In the Action Plan for the Circular Economy in Portugal (PAEC) 2017-2020 (RCM 190-A / 2017), the European Commission (EC) established the priorities, actions and goals that must be implemented to ensure that Portugal is on the path of circularity. The government should reinforce the PAEC strategy, creating conditions to:

- a) Promote the reorganization of the economic model, through the coordination of production and consumption systems in closed circuits
- b) Maintain the process dynamically, which requires technical and economic compatibility (capacities and productive activities), but also requires social and institutional structure (incentives and values)
- c) Go beyond the scope and restricted focus of waste management actions, such as recycling, aiming at a broader action, from the redesign of processes, products and business models to the optimization of the use of resources, “circulating” the products, components and materials in the technical and / or biological cycles as efficiently as possible

The Action Plan for the Circular Economy (PAEC) was prepared by the Portuguese Council of Ministers and is aligned with the Action Plan for the Circular Economy of the EU.

The Plan presents 7 actions aligned with the European Pillars of Action for the Circular Economy, and assumes 3 levels of operationalization:

- **Macro:** structural actions that produce transversal and systemic effects that enhance the appropriation of principles of circular economy by society, with dedicated policy instruments (e.g. green taxation, voluntary agreements, Portugal 2020 environmental network);
- **Sectorial:** actions or initiatives defined and assumed by the set of players in the value chain of sectors relevant to increasing productivity and efficient use of the country's resources, capturing economic, social and environmental benefits (focused on particularly intensive sectors in resource use (e.g. construction, distribution and logistics,



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public procurement) or particularly important in the Portuguese business fabric (e.g. tourism, textiles and footwear));

- **Micro** (or local/regional): actions or initiatives defined and assumed by the set of governmental, economic, and social, regional and/or local agents, which incorporate the local economic profile and value it in addressing social challenges.

Considering the evolution of the theme in the national and international agenda, in which policies and knowledge will succeed at a high pace, a more flexible approach was chosen, that is, starting from seven macro actions that are substantiated by actions dynamized at scale sectoral and regional:

1. Design, repair, reuse: extended producer responsibility
2. Encourage a circular market
3. Educate for the circular economy
4. Food without excess: sustainable production for sustainable consumption
5. New life to waste
6. Regenerate resources: water and nutrients
7. Research and innovate for a circular economy

It seeks to ensure a long-term political commitment on an issue that has substantial impacts in terms of the efficient and productive use of resources and contributions to mitigate emissions of greenhouse gases. Through this action plan, Portugal intends to boost the transition to an economy less dependent on intensive consumption of raw materials. The aim is to minimize the extraction of material resources, ensuring their regeneration and that of the underlying natural systems, maximizing reuse, increasing efficiency, and developing new business models.

Official link: <https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=71fc795e-90a7-48ab-acd8-e49cbbb83d1f>

Official link: <https://eco.nomia.pt/contents/ficheiros/paec-pt.pdf>



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### 3.5 The Green Growth Commitment in Portugal

The Green Growth Commitment (GGC), approved by the Resolution of the Council of Ministers no. 28/2015, of April 30, is a strategic document that aims to promote a structural transformation of the development model capable of, on the one hand, to reconcile economic growth with the efficient use of resources, environmental protection and social justice and, on the other, to position Portugal as one of the main world references for green growth. The transition process intended involves structural reforms and should take advantage of the economic and job creation opportunities associated with green growth at national and global levels.

For this purpose, the GGC defines a strategic framework, supported by three key dimensions: growth, efficiency and sustainability; defines 14 goals for 2020 and 2030 and formulates 111 initiatives spread over 10 thematic sectors (water, waste, agriculture and forest, climate and energy, Mobility and Transport, Manufacturing and Extractive Industry, Biodiversity and Ecosystem Services, Cities and Territory, sea and tourism) and 6 transversal catalysts that are the basis of the commitment to Green Growth vision. The structural transformation, to which the execution of the Commitment will contribute, involves the Government and the public administration, as well as representatives of the most diverse economic sectors in the business, scientific and financial areas, as well as public bodies, foundations and non-governmental organizations (NGO). The Commitment has undergone updates as a result of the reformulation of the Commitment initiatives approved at the 7th and 8th Coalition for Green Growth Meeting, held on April 28, 2017 and December 14, 2017, respectively.

You can see these changes at <https://www.crescimentoverde.gov.pt/wp-content/uploads/2014/10/Atualizacao-Iniciativas-CCV-dezembro2017.pdf>

Official link:

[https://www.greengrowthknowledge.org/sites/default/files/CrescimentoVerde\\_EN\\_Portugal.pdf](https://www.greengrowthknowledge.org/sites/default/files/CrescimentoVerde_EN_Portugal.pdf)

Official link: <https://www.crescimentoverde.gov.pt/wp-content/uploads/2014/10/Atualizacao-Iniciativas-CCV-dezembro2017.pdf>



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### 3.6 A new Swedish strategy for implementing Circular Economy in Sweden

In July 2020, the Swedish government decided on a national strategy for the circular economy that points out the direction and ambition for a long-term and sustainable transformation of society. This is an important part for Sweden to become the world's first fossil-free welfare state.

The pace of work on the transition to a circular economy needs to increase to achieve the environmental and climate goals, as well as several global sustainability goals within Agenda 2030. By using materials more efficiently, their lifespan and value can increase. At the same time, both the extraction of new raw materials and the disposal of waste are reduced.

During the spring of 2020, the spread of infection and the economic crisis as a result of the new coronavirus have strongly affected society. The world after the corona pandemic will not look like it did before the crisis.

The core of the strategy is a vision: "A society where resources are used efficiently in non-toxic circular flows and replace virgin materials". The national work for a circular economy will focus on sustainable production and product design; sustainable ways of consuming and using materials, products and services; non-toxic and circular cycles as well as the circular economy as a driving force for business and other actors through measures that promote innovation and circular business models.

Focus areas:

- Circular economy through sustainable production and product design
- Circular economy through sustainable ways of consuming and using materials, products and services
- Circular economy through non-toxic and circular cycles
- Circular economy as a driving force for business and other actors through measures that promote innovation and circular business models.



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Each area contains several more concrete initiatives that the work will focus on. These include:

- Steer towards products being designed for a long service life.
- Promote increased use of non-toxic recycled materials in new products.
- Strengthen the innovation and business climate so that more circular companies can grow.
- Promote the development of Sweden's bioeconomy so that bio-based, renewable and sustainably produced raw materials can replace fossil-based raw materials in products and production processes.
- Improve consumer information to make it easier for the individual consumer to make sustainable and circular choices in everyday life.
- Make it easy and profitable for traders and individuals to share, repair and reuse products.
- Contribute to resource efficiency, recycling and circular business models through public procurement.
- Design instruments that contribute to increased supply and demand for circular products, services, recycling and recycled materials.
- Set high demands on non-toxicity for both recycled material and virgin raw material.
- Promote research, innovation and technological development in areas such as material recycling, digitization and traceability.

Official link: <https://www.government.se/government-of-sweden/ministry-of-the-environment/>



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### 3.7 The global 10-year framework of programmes in Sweden

The 10-year framework of programmes on sustainable consumption and production patterns (10YFP) is a global framework of action to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP) in both developed and developing countries.

The goals of 10YFP are to:

- Encourage sustainable consumption and production
- Increase knowledge in society in general about the need to ensure sustainable consumption and production
- Increase cooperation and exchange of experience between actors and regions, especially in view of the needs of developing countries
- Encourage public-private partnerships
- Encourage public and private decisions that benefit sustainable consumption and production.

The Swedish Environmental Protection Agency is Sweden's contact point in One Planet Network. This means being a focal point for Sweden's work to implement 10YFP, among other things by reporting what the government and Swedish authorities are doing to catalyze the transition to sustainable consumption and production. The Agency highlights good examples of instruments and measures and share Swedish experiences within One Planet Network.

You will find more information about 10YFP by clicking on the next link : <https://www.sei.org/projects-and-tools/projects/10yfp-sustainable-lifestyles-and-education-programme/>



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### 3.7.1 Global collaboration programs within One Planet Network

Collaboration between countries, business, NGOs, authorities, regions, municipalities is ongoing within the framework of six global programs:

- Consumer information
- Sustainable lifestyles and education
- Sustainable public procurement
- Sustainable buildings and construction
- Sustainable tourism
- Sustainable food systems

The Swedish government, together with Japan, is leading the program on sustainable lifestyles and education. SEI (Stockholm Environment Institute) and IGES (Institute for Global Environmental Strategies) have Sweden's and Japan's assignments to coordinate implementation. The Swedish Environmental Protection Agency represents Sweden in the programme's steering group. Among other things, the collaboration has resulted in Good Life Goals, which links sustainability goals with private lifestyle and consumption choices.



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### 3.8 The Swedish environmental objectives system

Environmental problems are something we need to tackle now, and not pass on to future generations. That is the thinking behind Sweden's environmental objectives – goals that are crucial to our welfare, and that are intended to guide the sum total of Swedish efforts to safeguard the environment. The environmental objectives are of three different types. The generational goal defines the overall direction of environmental efforts. To facilitate these efforts, and to make the generational goal more tangible, there are also 16 environmental quality objectives and a number of milestone targets.

**Generational goal:** The generational goal is intended to guide environmental action at every level of society. It indicates the sorts of changes in society that need to occur within one generation to bring about a clean, healthy environment. It focuses environmental efforts on recovery of ecosystems, conserving biodiversity and the natural and cultural environment, good human health, efficient material cycles free from dangerous substances, sustainable use of natural resources, efficient energy use, and patterns of consumption.

**Environmental quality objectives:** The environmental quality objectives describe the quality of the environment that Sweden wishes to achieve. There are 16 of them, covering different areas – from unpolluted air and lakes free from eutrophication and acidification, to functioning forest and farmland ecosystems. For each objective there are several 'specifications', clarifying the state of the environment to be attained.

**Milestone targets:** To facilitate progress towards the generational goal and the environmental quality objectives, the Government adopts milestone targets in priority areas. These are designed to set out the changes in society needed to meet the environmental quality objectives and the generational goal.

**Tracking progress:** The idea of the environmental quality objectives is that they should be followed up on a regular basis, with annual reports to the Government and an in-depth evaluation once every parliamentary term. A number of government agencies are responsible for following up and evaluating specific environmental quality objectives. The Swedish Environmental Protection Agency, working with all the agencies with responsibilities within the environmental objectives system, prepares an overall report to the Government. The results of this follow-up are presented on the web site [sverigesmiljomal.se](http://sverigesmiljomal.se).

For an introduction to the environmental objectives system, see:

<http://www.swedishepa.se/About-us/Publikationer/ISBN/8800/978-91-620-8820-0/>



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### 3.9 The 2030 Agenda in Sweden

The Swedish government aims to be a leader in implementing the 2030 Agenda – both at home and through contributing to its global implementation. Sweden sees the 2030 Agenda and the global goals, the legally binding climate agreement concluded in Paris in December 2015, the outcome document from the International Conference on Financing for Development, the Addis Ababa Action Agenda in July 2015, and the Sendai Framework for Disaster Risk Reduction 2015-2030 as coherent parts of the new global framework for sustainable development.

In March 2016, the Government appointed a national delegation with a commission to support and stimulate the work with Sweden's implementation of the 2030 Agenda, both nationally and internationally. On 1 June 2017, the delegation presented its proposals for an action plan and an overview of the extent to which Sweden is fulfilling goals and targets of the 2030 Agenda. Extensive work is being done in Sweden that has a direct or indirect bearing on the implementation of the 2030 Agenda. Since their adoption in September 2015, the Agenda and the 17 goals for sustainable development have been met by curiosity and a growing interest at different levels in society. Many stakeholders are in the process of learning more, and doing more, individually, and together, to help Sweden meet its commitment by 2030.

The anchoring of the 2030 Agenda in the Riksdag (national parliament) is decisive for being able to implement the Agenda in Sweden and for contributing to its global implementation. The Riksdag has taken note of, processed and adopted several Government's communications and bills that have a particular bearing on the Agenda. These include the communications Policy for Global Development in the implementation of the 2030 Agenda; Policy for sustainable business (CSR); Democracy, human rights and the rule of law; The Government's strategy for the national work on human rights; the Policy framework for Swedish development cooperation and humanitarian aid; and the communication Power, goals and agency – a feminist policy for a gender equal future as well as the bills A food strategy for Sweden – more jobs and sustainable growth in the entire country ; Knowledge in collaboration – for society's challenges and strengthened competitiveness; and the bill on Cultural heritage policy.

Official link: <https://www.government.se/government-policy/the-global-goals-and-the-2030-Agenda-for-sustainable-development/>



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## 4 FUNDING OPPORTUNITIES

In 2015, the European Commission adopted an action plan to contribute to accelerate Europe's transition toward a circular economy, to boost global competitiveness, to promote sustainable economic growth and to generate new jobs. This transition has been financially supported through different programs at European level: [European structural and investment funds](#), [Horizon 2020](#), [European Fund for Strategic Investments](#) and [Life Program](#).

The governments from Spain, Portugal, and Sweden, which are the countries participating in the RBM European project, have as well specific programs and financing initiatives for SMEs and companies in the field of Circular Economy, as described in present section.

### 4.1 European structural and investment funds

Over half of EU funding is channelled through the five European structural and investment funds (ESIF). They are jointly managed by the European Commission and the EU countries. The purpose of all these funds is to invest in job creation and a sustainable and healthy European economy and environment. The ESIF mainly focus on five areas: research and innovation, digital technologies, supporting the low-carbon economy, sustainable management of natural resources and small businesses. The European structural and investment funds are:

- [European regional development fund \(ERDF\)](#) – promotes balanced development in the different regions of the EU.
- [European social fund \(ESF\)](#) - supports employment-related projects throughout Europe and invests in Europe's human capital – its workers, its young people and all those seeking a job.
- [Cohesion fund \(CF\)](#) – funds transport and environment projects in countries where the gross national income (GNI) per inhabitant is less than 90% of the EU average. In 2014-20, these are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, and Slovenia.
- [European agricultural fund for rural development \(EAFRD\)](#) – focuses on resolving the challenges facing EU's rural areas.
- [European maritime and fisheries fund \(EMFF\)](#) – helps fishermen to adopt sustainable fishing practices and coastal communities to diversify their economies, improving quality of life along European coasts.



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## 4.2 Horizon 2020

The 2018-2020 Work Programme focused efforts on topics with large budgets, directly supporting the Commission's political priorities in the field of Circular Economy. Four Focus Areas represented a combined budget over €7.6 billion in (1) Building a low-carbon, climate resilient future, (2) Connecting economic and environmental gains – the Circular Economy, (3) Digitising and transforming European industry and services, and (4) Boosting the effectiveness of the Security Union.

In the spring of 2019, the European Parliament and the Council reached a political agreement for the European Union Framework Programme for Research and Innovation 2021–2027 (Horizon Europe). According to this agreement, the next program Horizon Europe will be structured in three Pillars, (1) Excellent Science, (2) Global Challenges and European Industrial Competitiveness and (3) Innovative Europe.

**Investments in research and innovation** concerning **digital, industry and space** (Pillar II, Cluster 4) will contribute to transforming the EU to a climate-neutral and circular economy, and target impacts especially in the following fields:

- **Climate-neutral, circular and clean EU industries**, for instance by creating plants with zero emissions and zero waste, to make decisive contributions to the fight against climate change and the protection of the environment; and develop and demonstrate breakthrough low-carbon processes, especially in the energy-intensive industries, and sustainable products
- Increased autonomy in **critical raw materials**, through substitution, resource efficiency and recycling and primary production
- **Greening ICT**, for instance by developing low energy consumption components and combination of approaches, to enhance the efficiency of computing by several orders of magnitude
- **Technological and digital solutions contributing to the decarbonisation** of key economic sectors (e.g. energy, construction, transport) **and enabling sustainability**
- **Space services** that contribute to climate mitigation and environmental protection, mobility, and security

Official link [here](#).



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### 4.3 European Fund for Strategic Investments

The European Fund for Strategic Investments (EFSI) is an initiative launched jointly by the EIB Group – the European Investment Bank and European Investment Fund – and the European Commission to help overcome the current investment gap in the EU. EFSI is one of the three pillars of the Investment Plan for Europe that aims to revive investment in strategic projects around the continent to ensure that money reaches the real economy.

The EFSI embraces the potential of a circular economy and supports the public and private sector in their circular transition. In this sense, In May 2020, the EFSI released the [EIB Circular Economy Guide](#) which aims to promote a common understanding of circular economy and raise awareness about and promote circular solutions. The Guide provides information about EIB's lending and advisory activities in this field and communicates its vision of how the EIB can further support the transition to a circular economy. The Guide is a living document that will be updated in response to our evolving understanding of circular economy needs, opportunities and risks, and growing experience with the appraisal and financing of circular economy projects.

Oficial link: <https://www.eib.org/en/efsi/index.htm>



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#### 4.4 Life Program

The LIFE programme, launched in 1992, is the only EU fund entirely dedicated to environmental and climate objectives. To date, it has co-financed, mainly through grants, over 4.500 projects with total EU contribution amounting to about €5.9 billion. Enterprises, SMEs, public bodies, and private non-commercial organisations are beneficiaries of these projects. The overall objective for the period 2014-2020 has been to contribute to sustainable development and the achievement of the objectives and targets of the Europe 2020 strategy and relevant strategies and plans from the EU on environment and climate.

The program supports small-scale projects aiming to share best practices, to test technologies, and to speed up the implementation of relevant EU legislation and policy. LIFE also acts as a catalyst for investment, notably through integrated projects, and facilitates the implementation of large-scale actions.

The European Commission is now working on the establishment of a new LIFE programme for 2021-2027 which aims to design an enhanced programme in order:

- to contribute to the shift towards a clean, circular, energy-efficient, low-carbon and climate-resilient economy, including through the transition to clean energy
- to protect and improve the quality of the environment
- to halt and reverse biodiversity loss, thereby contributing to sustainable development
- To these ends, the Commission proposes €5.45 billion in current prices (0.43% of total EU spending) to be earmarked to the new programme containing two main portfolios, Environment and Climate Action, and covering four sub-programmes (1) Nature and Biodiversity, (2) Circular Economy and Quality of Life, (3) Climate Change Mitigation and Adaptation and (3) Clean Energy Transition

Regarding the transition to circular economy, LIFE funding would target projects related to best technologies, practices and solutions developed at local, regional, or national level. This also includes integrated approaches for implementing waste management and prevention plans and addressing marine litter.

Official link: <https://ec.europa.eu/easme/en/life>



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#### 4.5 Andalusia Environment Award (XXIV Edition)

The regional Government of Andalusia is rewarding every year the entrepreneurial work of Andalusian society, thus encouraging companies, scientists, administrations, associations, foundations and also individuals, to play an active role in the Green Revolution and in the fight against climate change in Andalusia. In its XXIV call, the following modalities have been established: (1) **Conservation, Biodiversity and Sustainable Development**, (2) **Climate Change**, (3) **Circular Economy**, (4) **Sustainable Water Management** and (5) **Environmental Commitment**.

Andalusian works, actions or initiatives that promote the transition to a circular economy, through the reduction and recovery of waste, the reuse of products and recycling will be analyzed and the best one will be rewarded.

Official link [here](#).

#### 4.6 BASF Award for the Best practice of Circular Economy in Spain

Recently the call for the second edition of the awards for the best practice of Circular Economy in Spain was opened, with the aim of reward those projects that contribute to circulate Economy Initiatives that face the challenge of limited natural resources through different models of circular businesses: Circular supply, Recovery of resources through innovative processes that allow to positively impact in the value chain , Product Life Extension, Product Sharing Platforms, Products as Services, Process Innovation.

Official link [here](#).

#### 4.7 R&D financing programs to impulse collaborative initiatives in Circular Economy (ERDF Funds)

The regional Government of Andalusia has opened several grants to promote business R&D&I in a competitive tendering process with a budget of 43 million euros. These grants are part of Industrial Research, Experimental Development and Business Innovation (R&D&I) Andalusian Program endowed with ERDF funding.

Official link [here](#).



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#### 4.8 COMPETE 2020 in Portugal

The Competitiveness and Internationalization Operational Program (COMPETE 2020) aims to improve the competitiveness and internationalization of the Portuguese economy. Being mainly oriented towards the less developed regions of the Continent - North, Center and Alentejo (it is of national scope in the projects of the Cohesion Fund), it forms with the Regional Operational Programs of the Continent a diversified network of public policy instruments with common rules and objectives covering the entire national territory. COMPETE 2020 instruments include an investment opportunity in the green and circular economy. Support for companies is concentrated in the "Business Incentive System (SI)", composed of three incentive systems and in all of them there are opportunities to leverage the participation of companies in the green and circular economy, namely:

- 1) Incentive System for Research and Technological Development in Companies (SI I&DT) - aims to increase national investment in research and technological development for the creation of new goods, services and processes that respond to current and future economic, social and environmental challenges, and to broaden the knowledge base that can increase the competitiveness of companies.
- 2) Innovation Incentive System (SI Inovação) - supports investment projects in productive innovation promoted by companies, individually or in cooperation. Its objectives are to promote innovation in the business sector, through the production of new goods and services, the introduction of technological improvements and the strengthening of its orientation towards international markets, and to stimulate qualified entrepreneurship and structuring investment in new areas with potential growth.
- 3) The Innovation Incentive System covers projects in the areas of non-SME productive innovation, SME productive innovation area and qualified and creative entrepreneurship area.
- 4) Incentive System for Innovation in SMEs (SI Qualificação PME) aims to promote the competitiveness of SMEs by increasing their productivity, flexibility and responsiveness and active presence in the global market. The Program supports investments that contribute to the qualification of SME strategies in different activities such as protection of industrial property, creation, fashion & design, development and engineering of products, services and processes, Information and Communication Technologies (ICT), quality, environment, innovation, diversification and energy efficiency or digital economy among others.

Official link <https://www.compete2020.gov.pt/>



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#### 4.9 IAPMEI in Portugal

The Support Institute for Small and Medium Enterprises and Innovation (ISMEI, in Portuguese IAPMEI), as a partner of companies in development and innovation, offers a set of incentive systems that aim to significantly increase the competitiveness of companies through the modernization and innovation of its processes and products, services and business models, making them more efficient in the context of the circular economy. These measures can be divided into (1) Incentive System for SME Qualification (which includes the Circular Economy Valley and SME Qualification), (2) Research & Development (R&D) and Productive innovation.

**1) Circular Economy Voucher:** The Circular Economy Voucher (in Portuguese, *Vale Economia Circular*) aims at acquiring consulting services by companies in the creation and implementation of a Circular Economy strategy. (*Beneficiaries: SMEs of any nature and in any legal form*).

**2) SME qualification:** An incentive to strengthen SME business training by supporting immaterial investments in the area of competitiveness, related to organizational innovation and management, the digital economy, the creation of brands and design, the development and engineering of products, services and processes, protection industrial property, quality, knowledge transfer, distribution and logistics, eco-innovation, professional training or hiring Human Resources (HR). (*Beneficiaries: SMEs of any nature and in any legal form*).

**3) Research & development (R&D):** This measure support projects comprising industrial research activities and experimental development, leading to the creation of new products, processes or more sustainable systems, which allow the valuation of ecosystems in certain sectors or regions and encourage the reduction of waste production. (*Beneficiaries: companies of any nature and in any legal form and non-corporate entities*).

#### 4) Productive innovation

Finally, IAPMEI also provides economic support for projects related to innovation in production, through the adoption of new processes and methods of manufacture, logistics and distribution and optimization of existing ones, to fit them into the concept of Circular Economy. There are two types: SME Productive Innovation and Non-SME Productive Innovation.

Companies of any nature and in any legal form wishing to develop construction projects, construction equipment or engineering services, studies and projects are eligible.

Official link <https://www.iapmei.pt/>



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#### 4.10 FITEC Line - Decarbonization and Circular Economy in Portugal

The FITEC Line - Fund for Innovation, Technology and Circular Economy - for Decarbonization and Circular Economy is aimed at micro and SMEs active in industry and tourism, and its main objectives are to accelerate the transition to a Circular Economy and make these companies more modern and competitive by implementing measures capable of reducing energy consumption and allowing the switch from fossil energy sources to renewable sources.

The line is aimed at medium and long-term operations, with a maximum amount of 2 million.

You can get more information about this line at <https://eco.nomia.pt/>.

Through the eco-nomia.pt portal you can also obtain information on actions and opportunities for support and incentives for the implementation of initiatives for the transition to the Circular Economy.

##### Useful links:

- <https://www.santander.pt/empresas/financiamento/linhas-especiais-credito/linha-descarbonizacao-economia-circular>
- <https://www.creditoagricola.pt/404?item=para-a-minha-empresa%2fca-empreededores&user=default%5cAnonymous&site=cabullet>
- <https://www.spgm.pt/pt/catalogo/linha-de-credito-para-a-descarbonizacao-e-economia-circular/>



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#### 4.11 PO SEUR in Portugal

The Operational Program Sustainability and Efficiency in the Use of Resources (PO SEUR) is one of the programs created for the operationalization of the Portugal 2020 Strategy, which aims to contribute especially in the priority of sustainable growth, responding to the challenges of transition to a low carbon economy, based on more efficient use of resources and the promotion of greater resilience in the face of climate risks and disasters. It is the program, par excellence, for the themes of green economy and sustainability.

The SEUR PO is essentially destined to empower the public sector, financing the development of activities that catalyze the green economy, such as:

- development of projects for the enhancement of ecosystem services
- implementation of sustainable mobility strategies
- implementation of practices and equipment to promote energy efficiency in public buildings
- development of green infrastructure
- development of action plans to promote adaptation to climate change at national and regional levels
- educational projects on the green economy.

The PO SEUR's areas of activity are divided into 18 sections that respond to the Program's three investment axes:

- i) Axis I - Support the transition to a low carbon economy in all sectors
- ii) Axis II - Promote adaptation to climate change and risk prevention and management
- iii) Axis III - Protect the environment and promote resource efficiency

Official link: <https://poseur.portugal2020.pt/pt/eixos-de-investimento/apresenta%C3%A7%C3%A3o/>



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#### 4.12 The Swedish Energy Agency

The Swedish Energy Agency supports research and development about the supply, conversion, distribution and use of energy. Assistance is also provided to development of new technologies. The overriding goal is to accelerate the transfer to a sustainable energy system and society. The Agency is involved in broader international energy research cooperation, which among other things, is about the increased use of renewable energy sources and development of new technologies and systems for energy supply. Support is offered to companies and organizations for research and innovation projects in several areas, including energy efficiency, renewable energy sources, electromobility, carbon capture.

Official link: <http://www.energimyndigheten.se/en/>

#### 4.13 Mistra - The Swedish Foundation for Strategic Environmental Research

The purpose of Mistra's research is to promote the development of strong environmental research environments with the aim of creating a good living environment for all. The investments Mistra makes are also intended to assist in enabling companies, public stakeholders, and users to develop new products, services and working methods with a view to meeting society's environmental challenges. Another, simultaneous aim is for the initiatives to strengthen Swedish competitiveness.

Every year, Mistra invests a sum of around SEK 200 million in various research initiatives. They involve collaboration among academic disciplines, as well as between research on the one hand and companies, public agencies, and other stakeholders on the other. Programs range from Societal Transformation for Climate Action through Sustainable Sports and Outdoors to Sustainable consumption.

Official link: <https://www.mistra.org/en/about-mistra/how-we-work/>



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#### 4.14 The Swedish Environment Protection Agency

The Environmental Protection Agency is making local investments for the greatest possible climate gain. The main aim of the Climate Leap initiative is to reduce the emissions that affect the climate. The Environmental Protection Agency has been commissioned, along with other central government agencies and the county administrative boards to support local climate investments. Klimatklivet (“the Climate Leap”) has supported over 3 000 local climate investments with totally above 6 billion SEK (600 MEUR). Investments include bio-based fuels, energy efficient infrastructure, material and waste management, e-mobility and much more.

Oficial link: <http://www.swedishepa.se/>

#### 4.15 European Regional Development Fund - ERDF

Tillväxtverket, the Swedish Agency for Economic and Regional Growth is a government agency that works to promote sustainable growth and competitive companies in all parts of Sweden. Tillväxtverket manages the ERDF funds in Sweden, and there are regular calls within the current programming period 2017-2020. Many of these calls are targeted towards sustainability and climate issues.

Oficial link: <https://tillvaxtverket.se/english.html>

#### 4.16 Regional funding instruments

The Västra Götaland region wants to accelerate an economically, environmentally, and socially long-term sustainable development in Västra Götaland. The region has launched programs that state the focus and prioritization of initiatives and support in the regional growth and development work. Through the programs, there is a budget that can be applied for by projects and initiatives that lead to meeting the goals of the regional development strategy VG2020.



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The programs include development initiatives that are based on collaboration to solve current societal challenges and that thus create opportunities for sustainable regional development. The programs for sustainable development include topics such as:

- Circular fashion and sustainable environments
- Sustainable energy and bioinnovation
- Sustainable maritime industries
- Sustainable transports

Oficial link: <https://www.vgregion.se/regional-utveckling/program/>



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## 5 NEW BUSINESS MODELS

In recent years, the European Commission has adopted various policies and regulations, while boosting research and innovation, as well as investments and financing of projects and actions that support the Circular Economy. These measures are focusing on the development of new business models, as well as on the transition of production systems and forms of consumption.

The Circular Economy, with the consequent change of the predominant linear model, is a reality that entails great economic opportunities (for saving raw materials, competitiveness, and business opportunities), and social (creation of new jobs). The Circular Economy, in addition to a greater security in the supply chain, presents numerous opportunities for companies, such as the emergence of new models of business and services, as well as the reduction of inputs and raw materials, the reuse of the waste produced and lower costs of managing them.

The transition toward the Circular Economy model requires indeed 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, 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.

A business model (BM) is the way in which the creation of value is organized by entities.

In 2010, Osterwalder and Pigneur offer a widely adopted definition of what a business model is: "A business model describes the rationale of how an organization creates, delivers, and captures value."

The most used business model (Canvas) point to nine basic elements of a business model. The nine building blocks are: Customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. These building blocks can be combined in numerous ways, allowing for the creation of unique business models.

Since the Industrial Revolution in the late 18th century, the dominant economic model is based on a linear consumption model of "consume–use–waste" (Figure 1). In this linear model natural resources and raw materials are extracted, processed into final goods and then become waste after they have been consumed (Su et al. 2013 in Calvo-Porrá, C, Lévy-Mangin, JP, 2020). The disposed products are landfilled or incinerated, mostly with little or no attempt to recover the products or the embedded materials.



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Figure 1: The linear consumption model.

In an economy like this, raw material is in continuous demand, but the material scarcity is not the only consequence of the linear production paradigm. The negative environmental impacts are also considerable, including climate change, destruction of natural habitats, and generation of waste just to mention a few.

The notion of Circular Economy provides an alternative model of consumption which is a closed production model - the Circular Business Model (or BCM).

### 5.1 Circular Business Model and Model Types

In a Circular Business Model (Figure 2), the resources are reused and kept in a loop of production and usage, allowing the generation of more value (Su et al. 2013; Urbinati et al. 2017 in Calvo-Porrá, C., Lévy-Mangin, J.P., 2020). Therefore, products and materials continuously circulate in so-called loops as long as they can provide value.



Figure 2: Closed production model

Circular business models use already existing materials and products as inputs, and therefore their environmental footprint tends to be considerably smaller than that for traditional business models (linear model) (OECD, 2019).



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They represent the key activities required to transition to a more resource efficient and circular economy.

Accenture, in its report Circular Advantage, has identified five key circular business models that could facilitate a transition towards a more resource efficient and circular economy: (i) circular supply model, (ii) resource recovery, (iii) product life extension, (iv) sharing platforms and (v) product as a service (Table 1).

Table 1: Circular business models (OECD, 2019).

	Circular supply	Resource recovery	Product life extension	Sharing	Product service system
Key characteristic	Replace traditional material inputs with renewable, bio-based, recovered ones	Produce secondary raw materials from waste	Extend product lives	Increase utilisation of existing products and assets	Provision of services rather than products. Product ownership remains with supplier
Resource efficiency driver	Close material loops	Close material loops	Slow material loops	Narrow resource flows	Narrow resource flows
Business model sub-types	Cradle to cradle	Industrial symbiosis	Classic long life	Co-ownership	Product-oriented
		Recycling	Direct reuse	Co-access	User-oriented
		Upcycling	Repair		Result-oriented
		Downcycling	Refurbishment		
Main sectors currently applied in	Diverse consumer product sectors	Metals	Automotive	Short term lodging	Transport
		Paper and pulp	Heavy machinery	Transport	Chemicals
		Plastics	Electronics	Machinery	Energy
				Consumer products	

Companies can use these models (singly or in combination) to generate resource productivity improvements in innovative ways that also cut costs, generate revenue and enhance customer value and differentiation (Accenture strategy, 2014; <https://www.greenbiz.com/article/5-business-models-put-circular-economy-work>).

### 5.1.1 Circular supply model

Circular supply business models involve the replacement of traditional production inputs with bio-based, renewable, or recovered materials. By making strategic sourcing decisions at the outset of product development, adopting firms can reduce the environmental pressures



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emanating from their supply chains, while ensuring that the materials embedded in their products do not eventually become waste.

The circular supplies business model is particularly relevant for companies dealing with scarce commodities, in which scarce resources are replaced with fully renewable, recyclable or biodegradable resource inputs.

The philosophy underlying the circular supply model is often referred to as “cradle to cradle” product design, and its value proposition focuses on the substitution of fossil, critical and scarce materials.

Some examples of companies that have implemented a “cradle to cradle” strategy and a circular supply model, are: Tarkett, Advance Nonwoven and Twofold.

### 5.1.2 Resource recovery model

Resource recovery business models involve the production of secondary raw materials from waste streams. The model recycle waste into secondary raw materials, thereby diverting waste from final disposal while also displacing the extraction and processing of virgin natural resources.

There are three main activities involved, each of which is typically undertaken by different market actors (Gaillochet and Chalmin, 2009):

- i) collection of waste materials generated by businesses and industry
- ii) sorting of the waste (separation of a particular waste stream into its constituent materials)
- iii) transformation of sorted waste material back into finished raw materials (which will later be sold)

The resource recovery business model, or recycling as it is better known, has several variants:

- Downcycling - process of converting materials into new materials of lesser quality and reduced functionality. Because of this, the recovered materials can only be used as an input in a limited subset of applications
- Upcycling – process of converting materials into new materials of higher quality and increased functionality (the opposite of downcycling)
- Industrial symbiosis - process where wastes produced by one company are used as inputs by other companies. Promotes the valorization of waste, the improvement of resource



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efficiency as well as the reduction of environmental impact (Ellen MacArthur Foundation, 2013; OECD, 2019; Ellen MacArthur Foundation, 2019; Yazan, D. M., Fraccascia, L., 2020)

### 5.1.3 Product life extension model

The product life extension model helps companies extend the lifecycle of their products and assets to ensure they remain economically useful. Material that otherwise would be wasted is maintained or even improved, such as through remanufacturing, repairing, upgrading or re-marketing. By extending the lifespan of the product for as long as possible, companies can keep material out of the landfill and discover new sources of revenue (<https://www.greenbiz.com/article/5-business-models-put-circular-economy-work>).

There are three mechanisms involved:

- i) design - manufacturers can extend the service life of their products by designing them in a way that increases durability
- ii) reuse and repair activities to ensure that products actually attain their intended service life (rather than being prematurely discarded)
- iii) remanufacturing extends the life of products by “resetting the clock” – remanufactured products attain an entirely new service life (OECD, 2019)

These business model sub-types can be characterized and summarized in:

- i) Classic long life, where the expected life of a product is extended through changes in product design
- ii) Direct reuse, which involves the redistribution and reuse of products that would have otherwise been discarded before reaching their expected end of life
- iii) Maintenance and repair, by fixing or replacing defective components, maintenance and repair allows degraded products to reach their full expected life
- iv) Refurbishment and remanufacturing, that gives products a "new life" by restoring them to their original working condition

The product life extension models allow the valorization of waste by repairing, upgrading, refurbishing, remanufacturing, or remarketing products.



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#### 5.1.4 Sharing platforms model

The sharing platform model is centered on the sharing of products and assets that have a low ownership or use rate. Companies that leverage this model can maximize the use of the products they sell, enhance productivity and value creation.

This model can be applied by co-ownership (involves the lending of physical goods) or co-access (involves allowing others to take part in an activity that would have taken place anyway).

Examples of the sharing economy abound, including transportation (Lyft, [RelayRides](#), [BlaBlaCar](#)), lodging ([Airbnb](#)), and neighbors helping neighbors (TaskRabbit, NeighborGoods).

#### 5.1.5 Product as a service model

Product service system (PSS) models combine a physical product with a service component. Through the product as a service business model, customers use products through a lease or pay-for-use arrangement versus the conventional buy-to-own approach. This model is attractive for companies that have high operational costs and ability to manage maintenance of that service and recapture residual value at the end of life.

There are several variations, some of which place more emphasis on the physical product, and others that focus more on the service aspect. Tukker, A. (2004), separates product service system models into three main variants: product-oriented, user-oriented, and result oriented PSS models.

The value proposition includes the offering of Product-Service-Systems, a combination of products and services that seek to provide functionality for customers.

### 5.2 Observations on Circular Business Models

The Circular Business Models aims to transform in depth the traditional economic model replacing the existing linear production model with a closed production model (Figure 3). This shift has a great potential to reduce the associated negative environmental impacts, and for that the CBM is perceived as a business model that implements sustainability (Selvfors et al. 2019 and Brennan et al. 2015, in Calvo-Porrà, C., Lévy-Mangin, J.P., 2020).



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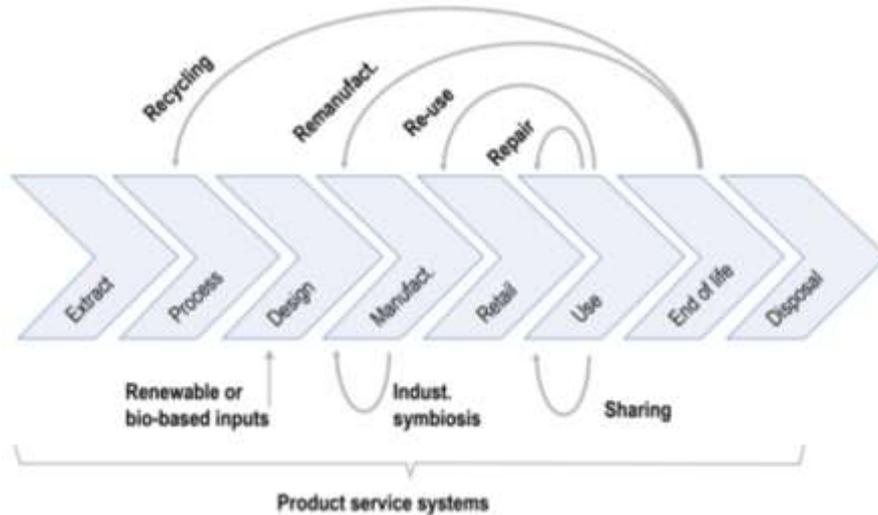


Figure 3: The impact of circular business models on the linear economy (OECD, 2019).

Circular business models do not operate in isolation, and in some cases, companies can adopt combinations of business models.

For example, the adoption of product service system model – and the retention of a product ownership that goes with it – may serve to encourage the parallel adoption of product repair or remanufacturing. In other cases, the decision to adopt a particular circular business model by a firm or group of firms can facilitate the adoption of a related business model by others (OECD, 2019).

Not all the business models included in this typology are necessarily new or novel. Recycling, reuse, and repair have existed for millennia; similarly, ensuring that products attain their intended service life through reuse and repair has probably been widespread since the emergence of manufacturing; and sharing of underutilized household possessions also has a long history, and the provision of access to products, rather than ownership of them, is not so different from traditional product leasing.

What is new is the growing diversity and sophistication of these business models, as well as the range of sectors they are adopted in. In the context of personal transport, vehicles containing a significant proportion of recycled materials or remanufactured parts are now available.



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Alternatively, where access to mobility is preferred to ownership, ride sharing, car sharing, or short-term car rental have become potential solutions (OECD, 2019).

The diversity of circular business model examples indicate that individually tailored circular business models can be successfully implemented in most business contexts.

The Circular Business Models can operate in both young and mature firms, small and large, which points to the fact that circular business models can be successfully implemented in a wide range of business settings as long as they are individually tailored to each company (Guldman, Eva., 2017).



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## 6 OBSERVATIONS/CONCLUSIONS

Circular Economy goes beyond the scope and strict focus of waste management actions, such as recycling, aiming at a broader action, from the redesign of processes, products and new business models to the optimization of the use of resources - «circulating» the as efficiently as possible products, components and materials in technical and / or biological cycles.

The circularity in a technological park needs an industry / territory symbiosis and promotes the circular ecosystem in the area of incidence (interior), a public debate involving public administrations, foundations, waste management companies and companies that generate waste must be raised , so that the activities and actions necessary to jointly design a circular economy model can be designed in each province or region appropriate for each area. It would be very appropriate to face the technological challenges posed by a technology observatory available to citizens, entrepreneurs of the circular economy and companies, so that these technologies can be implemented whenever possible (home, business, start-ups).

The most important thing for Science Parks in relation to Circular Economy is to help others in the transition, by becoming a bridge between research and business / public sector and can support processes and projects for implementation.



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