

# The Circular Economy in Catalonia

May 2018

**Sector snapshot**

## The Circular Economy in Catalonia: sector snapshot

**ACCIÓ**  
Government of Catalonia



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# 1. The Circular Economy sector



# Definition of the Circular Economy

- The Circular Economy is restorative and regenerative and aims for products, components and resources in general to keep their usefulness and value at all times. This concept distinguishes between technical and biological cycles.

- The **Circular Economy** is a trend of cross-cutting scope with a potential for application in many sectors whose goals are:
  - **To conserve** the value of products, materials and resources **for as long as possible** within the economy.
  - That they generate the **least possible waste**.
  - To head towards the goal of **maximum efficiency in the use of resources**, reducing the consumption of raw materials and energy, and waste and emissions in the production processes.

## NEW APPROACH

- Waste → Nutrients
- Diversity → Advantage
- Energy → Renewables
- Thinking systemically

- The application of the Circular Economy requires a **change of vision both at enterprise and individual level** rethinking how to produce and consume.

Source: authors' own based on Laboratorio Ecoinnovacióni Fundació para la Economia Circular, Ellen MacArthur Foundation and Eco Intelligent Growth

# Goals of the Circular Economy *From linear to circular: Six areas of action*

## REGENERATE

- Shift towards renewable energies and materials
- Look at, recover, retain and restore the health of the ecosystems
- Return recovered biological resources to the biosphere

## SHARE

- Share property (cars, housing, devices, etc.)
- Reuse/second hand
- Extend life: maintenance, design for durability, updating, etc.

## OPTIMIZE

- Increase product activity and efficiency
- Remove the waste from production and the supply chain
- Promote Big Data, automation, control and remote driving

## LOOP

- Re-manufacture products or components
- Recycle materials
- “Digest anaerobically”
- Extract biochemicals from organic waste

## VIRTUALIZE

- Directly dematerialize (books, CDs, DVDs, travel)
- Indirectly dematerialize (online shopping)

## EXCHANGE

- Replace old materials with non-renewable materials
- Apply new technologies (e.g., 3D printing)
- Choose new product or service (e.g. multimodal transport)

Source: The RESOLVE framework. Ellen Mac Arthur Foundation Toolkit

## 2. The Circular Economy in Catalonia



# Mapping of the Circular Economy in Catalonia

In Catalonia there are a number of initiatives and organizations related to the Circular Economy: public authorities that drive projects and initiatives, organized clusters, universities, technology centres and other stakeholders, trade shows and International networks.



**391**  
COMPANIES (2014)



**70,419**  
EMPLOYEES (2014)



**€4,090 M** of  
TURNOVER  
(2015)

91% of the companies identified are **SMEs** (under 250 employees) and **83% are companies incorporated before 2007** (companies over 10 years of age).

52.2% of the companies in the sector **export** and **12.2% have a subsidiary abroad**.

76% of companies are **concentrated in Barcelona**.

**Waste** includes **67.3% of companies**.

**Waste** includes **76.4% of employees**, and of these, **82.5% are involved in the waste management subsector**.

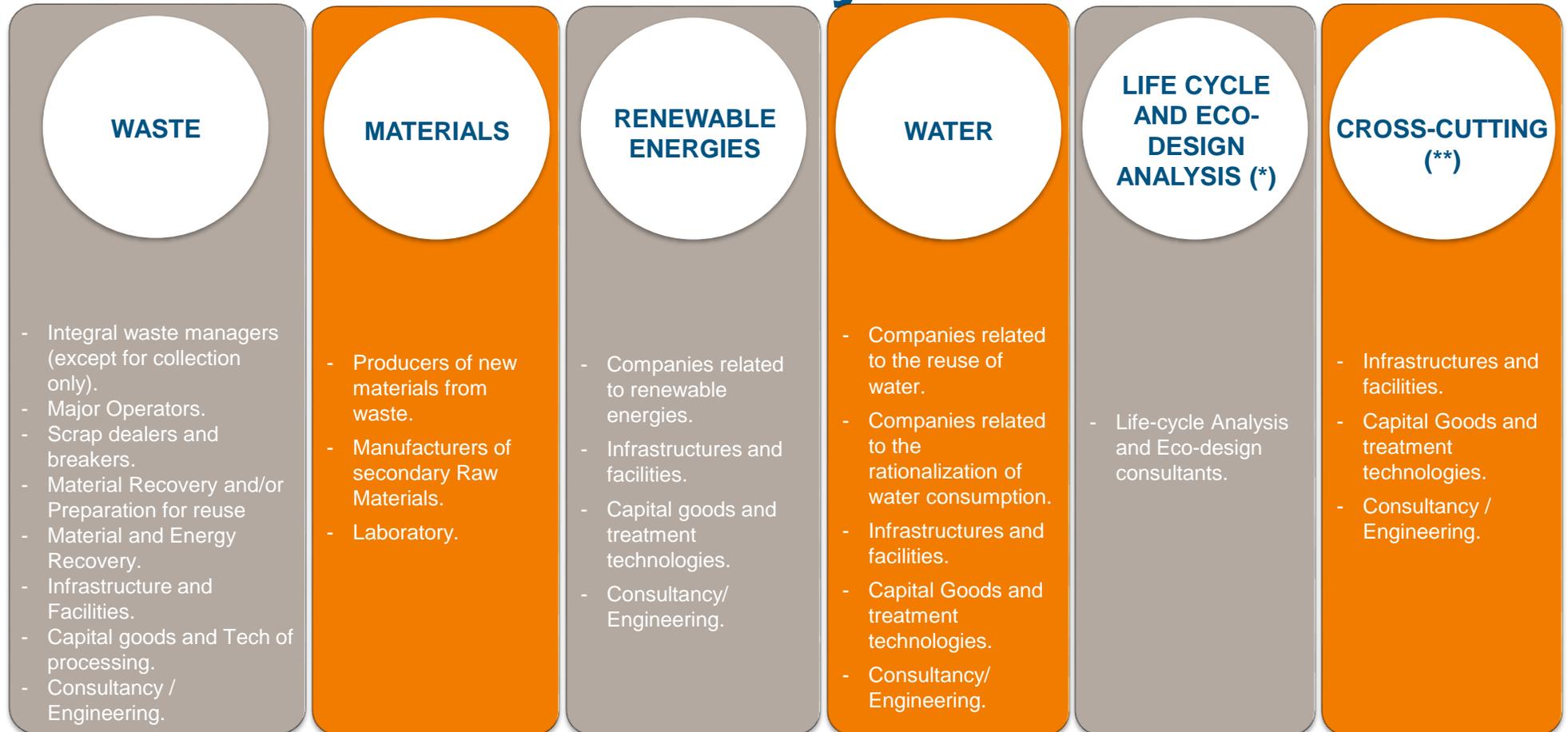
The 391 companies identified **have an aggregate turnover of €11,038 M**, of which **€4,090 M is exclusively linked to the Circular Economy**.

The €4,090 M accounts for **2% of the total Catalan GDP (2014)**.

**6 major operators** of waste concentrate **more than a third of the total estimated business volume** in Circular Economy.

**IMPORTANT NOTE:** The Circular Economy includes segments that make up part of the industries referred to in the Chemicals, Energy and Resources Promotion Programme (PIQER). Sectors such as chemicals (with an associated turnover of €14,000M) or companies that carry out activities related to energy or resources not linked to the Circular Economy are not included in this quantification and therefore the figures presented do not coincide with those of the PIQER.

# Scope of the mapping. Segments of the companies that offer Circular Economy solutions in Catalonia



(\*) The list of consultancy firms related to the segment are reclassified according to the categories in which they are most specialized, whether waste, water, renewable energy or not specialists. Separated into a different category are companies dedicated solely to providing solutions for life-cycle analysis and eco-design. (\*\*) The companies of the Cross-cutting category are those that offer services pertaining to two or more categories and thus not specialized.

# Ecosystem of the Circular Economy in Catalonia

\*partially illustrational



**Note:** The use of these brands is for information purposes only. The brands mentioned in this report belong to their respective owners and under no circumstances are they the property of ACCIÓ. This is a partial representation for the purpose of illustrating the companies that belong to the ICT ecosystem in Catalonia, but other companies may exist that have not been included in the study.

Source: Cluster Development, Tecnio, SABI and interviews

# Catalonia, the best location for the Circular Economy



## INNOVATION AND ENTREPRENEURSHIP

- With **important technology and research centres**, Catalonia is well positioned for **research, development, and to promote technology transfer and collaboration between the university, industry and the Public administration.**
- A **leading region for startups in Europe**, Catalonia has more than 1,300 startups and has business incubators and accelerators of the first order.



## POLE OF ATTRACTION FOR LOCAL AND INTERNATIONAL TALENT

- Presence of **talent from all over the world** thanks to its high quality of life, its cosmopolitan atmosphere, its entrepreneurial track record and the availability of qualified, multilingual personnel.
- An excellent academic support system with **top-tier universities and prestigious business schools.**
- Companies wishing to enter **European and Latin American markets** will see that Catalonia has a wide range of competent multilingual talent in various industries.



## CIRCULAR ECONOMY EUROPEAN SUMMIT AND OTHER TRADE FAIRS

- The **Circular Economy European Summit** is held at the Smart City Expo World Congress.
- Catalonia is home to some of the most outstanding international technology events, such as the **Mobile World Congress**, which makes Barcelona the permanent global centre for mobile technologies.
- Barcelona is the third city in the world** for international conferences, only behind Berlin and Paris (ICCA, 2016).



## ECOSYSTEM OF COMPANIES AND STAKEHOLDERS

- Business ecosystem rich in Circular Economy solutions.
- Public administrations** that promote Circular Economy projects and initiatives, **organized clusters, universities, technology centres** and other stakeholders, **trade fairs and international networks.**
- Important industries in Catalonia** (food, chemicals, logistics, etc.) with the potential to apply Circular Economy measures.



## STRATEGIC LOCATION AND ACCESS TO MARKETS

- Catalonia is **well connected** with the world and is **easily accessible.**
- With **200 international destinations in 57 countries**, Barcelona airport is just 15 km from the city centre, has **100 operating airlines** and is regarded as the **best airport in the South of Europe.**



## BUSINESS MINDSET

- Catalonia is **always open to business** and has active government policies that support and complement the strength of the private sector.

Source: EIC (ACCIÓ)

# 3. Opportunities for the Circular Economy sector



# Trends and opportunities for innovation

 Advanced recycling technology	 Modular design technology	 Machine-to-machine communication
 Materials sciences	 Life sciences, Bio processes and Biotech	 Cloud computing
 Tracking and return systems	 Mobile technology	 Social networks for business
 Big Data analysis	 3D Printing	

## MAIN CIRCULAR ECONOMY TECHNOLOGY TRENDS FROM THE HORIZON 2020 PROJECTS

Most of the projects are related to the **improvement and/or adaptation of existing technologies** rather than the development of new technologies. They are in their early stages and therefore results and information are still lacking.



Source: Cluster Development. CircularAdvantage. Accenture. 2015

# Internationalization opportunities



## FRANCE

France is a leading country in the collaborative economy in Europe, with 36% of users of collaborative platforms (Spain: 19%). According to sources in the French government, the market could multiply by 20 over the next 10 years. In France, over 50 companies are established every year in this sector, which generated a turnover of more than 3,500 million euros in 2015.



## NETHERLANDS

The Netherlands is a pioneer country in the cross-cutting introduction of the concept of circular economy in public policy. With an ambitious strategy, the Dutch Government is committed to a long-term strategy (up to 2050).



## POLAND

The cities are looking for technological solutions to improve public transport and urban traffic, optimize energy consumption, and to make urban water and waste management systems more efficient. Also of interest are issues related to water purification and waste recycling which present opportunities for suppliers of innovative machinery and technologies.



## GHANA

The challenges of access to affordable electricity and waste management arouse great interest by Ghana in waste-to-energy technologies and industrial symbiosis. The transformation of the Ghanaian industrial sector in a circular economy model is an area of opportunity to which to propose Catalan innovations. The need for the treatment of both industrial and urban wastewater should be highlighted.



## KENYA

Kenya is the second African country to have banned the manufacture, sale and use of plastic bags. The recycling of waste, though in its very early stages in Kenya, presents business opportunities for suppliers of machinery and innovative technologies. The country's current decentralization process is also generating opportunities via local and county authorities.

## EUROPE

## AFRICA

## ASIA AND OCEANIA



## CHINA

China's new Five-Year Plan (2015-2020) has looks to invest more than 2,300 million euros in the environment. waste treatment, energy-saving to the establishment of a green, circular economy. There is a broad range of opportunities from general planning, consultancy and engineering to environmental protection equipment, etc.



## HONG KONG

The Government is committed to actively promoting the protection of the environment with the adoption of smart technologies, environmental solutions and renewable energy. All this translates into a business opportunities for green technology environmental companies and the like.



## RUSSIA

The lack of state investment in circular economy projects makes foreign presence key, especially due to the need for technological innovation to generate new processes that allow managing the high volume of waste generated by industry, mainly from metal.



## SINGAPORE

Despite having the most advanced systems in the region, both the collection and the treatment of waste continue to be critical areas of action for the country's government. The national environment agency seeks partnerships with industry for the lateral collection of containers, pneumatic collection systems and systems to recycle plastics, organic waste and e-waste (electronic waste).



## IRAN:

Although still a growth sector in Iran, the Government expects that between now and 2022, 10% of the electricity consumed in the country will come from a renewable source. There is also significant demand for seawater desalination plants and water treatment plants. In addition, there are opportunities for solid urban waste recycling plants and solutions for soil decontamination.

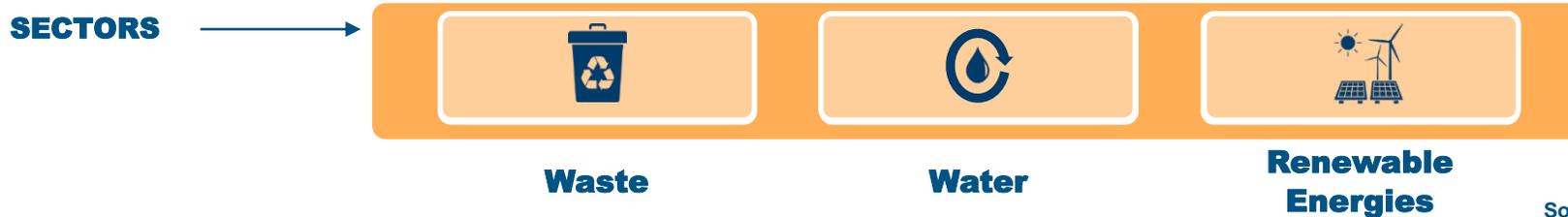
Source: ACCIÓ

# Business investment opportunities



## THE IDEAL PROFILE OF THE COMPANIES THAT CAN GET THE MOST OUT OF THESE INVESTMENT OPPORTUNITIES

- Companies without the presence of Circular Economy in Catalonia:
  - Companies without offices or subsidiaries in Catalonia.
  - Companies established in Catalonia but do not sell Circular Economy solutions from their global portfolio.
  - Companies that are creating R&D centres related to the world of the Circular Economy but have not chosen Catalonia.
- Technological development of the company.
- Companies that have made investments in international projects in the past four years.



Source: EIC (ACCIÓ)

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## Consulta l'informe complet aquí:

<http://catalonia.com/.content/documents/circular-economy-in-catalonia.pdf>



## Més informació sobre el sector, notícies i oportunitats:

<http://catalonia.com/trade-with-catalonia/circular-economy.jsp>