RESOURCE

Regional project development assistance
for the uptake of an Aragonese circular economy

D 1.1 Stakeholder mapping

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Abstract	This document describes the main categories of stakeholders in the circular economy in Aragon, analysing their implication in the development of this new economic model, especially in the case of financial agents and possible final beneficiaries, and identifies the main subjects that form part of each of these

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	categories, among which are the collaborators with RESOURCE.
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EXECUTIVE SUMMARY

This document describes the main categories of stakeholders in the circular economy in Aragon, analysing their implication in the development of this new economic model, especially in the case of financial agents and possible final beneficiaries, and identifies the main subjects that form part of each of these categories, among which are the collaborators with RESOURCE.

In the first part of this deliverable, we can see that Aragon has a development in the circular economy activity that we can qualify as emerging, but that it is necessary to promote because it is perhaps limited to repair, reuse and recycling activities, especially vehicle repair.

This offers a field in which the RESOURCE tool can contribute to creating a circular economy culture in Aragon and help this sector to become strategic and not merely emerging. But in return, Aragon offers a wide range of interested entities (especially from calls for grants for the implementation of circular economy projects, referred to below) that can interact with RESOURCE to achieve the proposed objective.

For this purpose, this document provides a brief description of the territory of the Autonomous Community of Aragon and the main aspects of its economic structure, followed by an analysis of the weight of the circular economy in this region. Specifically, it studies the number of companies, workers and the amount of Aragon economy. In this way, it can be seen that in Aragon there are more than 1500 companies dedicated to circular activities, that the number of people working in this sector exceeds 15,000 (2.61% of total employment) and that the GVA represents almost 2% of the total of Aragon, showing itself to be a sector resilient to economic crisis situations.

The second part identifies more than 230 stakeholders in the circular economy in Aragon, grouped into four categories. The first includes institutional agents, mainly public administrations and dependent bodies, among which a high number of local entities stands out as a result of the administrative structure of the region. The second includes intermediate organizations and facilitators, among which the regional clusters and research centres stand out, as well as the social agents with whom the Government of Aragon discusses proposals for economic development. The third category is that of financial agents interested in investing in the circular economy, which includes public/private agents and traditional credit institutions, as well as other types of possible alternative investors. The fourth and last category, related to the possible beneficiaries of private investment, identifies 125 companies that develop circular economy projects. In the case of these last two categories, a mention of the main advantages and the main risks involved in investing in the circular economy is included, as well as the advantages and barriers that companies encounter when developing their projects.

The document ends with a mention of the next phases in the development of the project, in which at least 50 interviews will be carried out with the stakeholders mentioned, and a series of pilot projects will be developed that will allow working on a protocol to articulate the relationship between investors and companies in need of funding.

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ABBREVIATIONS

ANCES .... Asociación Nacional de CEEIs, Red de Centros Europeos de Empresas e Innovación (partner)

BOA .... Boletín Oficial de Aragón (Official Journal of Aragon)

CCOO .... Comisiones Obreras

CEEI................ Centro Europeo de Empresas e Innovación (BIC: Business Innovation Center)

CEOE ARAGON Confederation of Aragon Businessmen

CEPYME .... Confederation of Small and Medium-sized Enterprises of Aragon

CIRCE .... Research Centre for Energy Resources and Consumption

CRECE.............. Center for Economic Renewal, Growth and Excellence

CSIC .... Spanish National Research Council

FAMCP .... Federacion Aragones de Municipios, Comarcas y Provincias (Aragon Federation of Municipalities, Counties and Provinces)

GoA .... Government of Aragon (project partner)

GVA .... Gross Value Added

IAEST............... Instituto Aragonés de Estadística (Aragon Institute of Statistics)

IAF................... Instituto Aragonés de Fomento (Aragon Institute of Promotion)

ICO .... Official Credit Institute

ICT .... Information and Communications Technology

IP .... Internet Protocol

ITAINNOVA ..... Aragon Institute of Technology

ITGS .... International Trade in Goods Statistics

NACE............... Nomenclature of Economic Activities

PDA .... Project Development Assistance

R&D .... Research and Development

SABI .... Iberian Balance Sheet Analysis System

SDGs .... Sustainable Development Goals

SODIAR .... Sociedad para el Desarrollo Industrial de Aragón

TCP .... Transmission Control Protocol

UGT .... Unión General de Trabajadores

....

1 Introduction and overall strategy

1.1 Context and background

Circularity is an essential aspect of the industry transformation towards resource-efficiency, climate neutrality and long-term competitiveness.

The RESOURCE project will study the private funding opportunities needed in circular projects and facilitate their development.

RESOURCE overarching objective is to develop new Project Development Assistance (PDA) services to fund regional circular economy investment projects. More precisely RESOURCE will:

- build an integrated expertise pool to support technically, economically, and legally the regional circular economy pilots SMEs,
- develop innovative financing schemes and business models;
- launch concrete investments.

The project is designed to ensure a high degree of replicability of the PDA and related services. Results will be disseminated to maximize the project's impact in Aragon and beyond.

Circular economy is a priority for the Region of Aragon. The Region has launched a manifestation of interest and identified a portfolio of circular projects in need of funding. Nine of these projects will serve as pilots in the RESOURCE project.

The methodology, that will be developed for the RESOURCE project, will ensure the sustainability of those circular economy projects by potentially completing their private funding, with other sources of financing (European, national, regional public funds).

The RESOURCE methodology consists of seven steps:

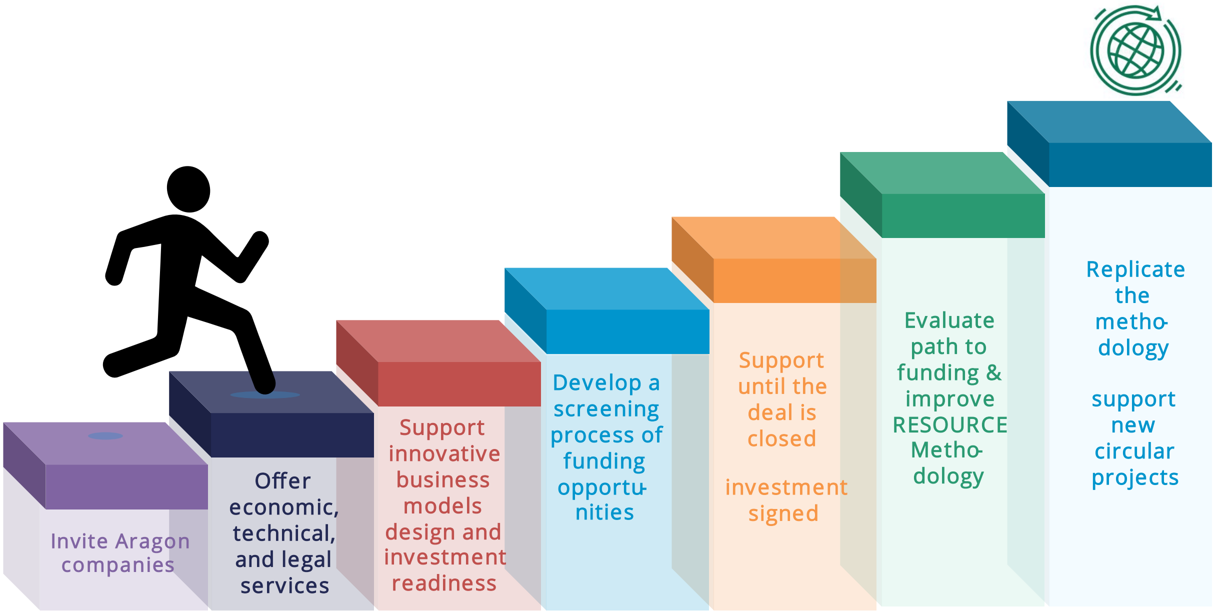

Figure 1: The RESOURCE methodology in 7 steps

The final and overall objective of the RESOURCE project is the creation of a portfolio of project development assistance services to accelerate the development of circular economy in Aragon and to reach €20M direct private investment in 9 circular projects over a period of 36 months, until end of June 2025.

1.2 Stakeholder engagement's purpose

To develop the RESOURCE methodology, aligning and engaging stakeholders is a fundamental step that constitutes task 1.1 (stakeholder engagement) which is developed in months 1 to 6 of the project.

This report is intended as an operational tool that will support the deployment of the RESOURCE project. Therefore, the first step consists in carrying out a systemic mapping of all stakeholders whose involvement is necessary for the implementation of the project. They will be mainly from the Aragon region. The aim is to identify all the actors that can be involved and provide a wide range of options to ensure, in the second part of the task, a minimum of 50 interviews carried out. Those interviews will help analysing and understanding how all these actors can support the RESOURCE project, what they can bring and what they need to better support circular projects raise funding. Subsequently, it will be necessary to engage these actors effectively to design and carry out the project activities.

2 CIRCULAR ECONOMY IN ARAGON

The RESOURCE solution aims to study the private funding opportunities that circular projects in Aragon may need, and to facilitate their development thanks to private funds, and/or public where appropriate.

Why Aragon? The Government of Aragon is actively committed to the Circular Economy. The approval of the "Aragón Circular" Strategy (see 2.2-Landscape of the circular economy in Some data on circular economy in Aragon), and the actions carried out in its development, make it possible to have a database of projects and companies willing to collaborate for a better access to private funding. It also includes other agents interested in the development of the circular economy. It reflects a strong interest from the Aragon Ecosystem to shift to circular economy and guarantees a sustainable pipeline of projects to test the RESOURCE methodology. Importantly, the most strategic value chains in Aragon coincide, for the most part, with the priority value chains listed by the Commission in the new "Circular Economy Action Plan"[1].

This deliverable will describe the state of play of the main stakeholders in the circular economy in Aragon ("stakeholders mapping"). But previously it is appropriate to situate and briefly describe the region of Aragon and the current situation, with the latest available data, of the circular economy in its territory.

2.1 Aragon's socio-cultural and economic background

First administrative division in the country, Aragon has a high level of autonomy for implementing economic development actions and cohesion in the region. Aragon is a

[1] https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

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European NUTS 2 region[2] (in the group of "basic regions for the application of regional policies") and one of the 17 Spanish Autonomous Communities. Located in the north-east of Spain, it occupies the central part of the Ebro Valley and is made up of three provinces: Huesca, Zaragoza and Teruel.

It has 1,326,261 inhabitants (data year 2021)[3] and an area[4] of 47,720.3 km2.It is the fourth largest region in Spain, representing 9.43% of the national territory. In terms of population, it ranks eleventh, accounting for 2.80% of the national total.

Figure 2: Aragon in the European Union[5]

[2] NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU and the UK: https://ec.europa.eu/eurostat/web/nuts/background

[3] https://www.ine.es/jaxiT3/Datos.htm?t=2915

[4] https://www.ine.es/inebaseweb/pdfDispacher.do?td=154090&L=0

[5] Source: Datos Básicos Aragón – IAEST: https://www.aragon.es/documents/20127/6347051/DBA_2022.pdf/f3149a13-da8a-20af-19ae-732687f26043?t=1650616165055

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Aragon represents different European socio-cultural and economic realities and gather all the elements to be a reference in the effective transition of a European territory towards a Circular Economy.

Aragon has a highly diversified economic structure, with some relative specialisation in the manufacturing industry and the agri-food sector, compared to the national average. Nevertheless, as in any advanced economy, the service sector represents around 65% of the GVA and employment in Aragon. Within industry, branches such as **the automobile industry, metallurgy, machinery and capital goods, chemicals and pharmaceuticals, as well as paper, have a special importance and tradition. The strength of the agri-food industry also stands out, especially in the pig, wine and fruit subsectors.**

In the services sector, tourism is particularly relevant, especially linked to winter sports, logistics, driven by the creation of several logistics platforms that highlight the privileged geostrategic location of Aragon, and advanced R&D centres and universities, which favour the accumulation of human capital and the development of a competitive productive fabric. To all this it is necessary to add a high export capacity, since Aragon is systematically more open to the outside world than the national average, in a context of stable prices and lower labour costs.

The variety of economic activities carried out in Aragon offers great complementarities and synergies between industries, that can be highly supported by public policies and new governance models with continuous creation of innovative governance solutions based on multi-party coalitions. In this sense, the circular activities are strategic to foster such cooperation and here RESOURCE can contribute.

Aragon generates a rich mix of industrial, urban and rural wastes with the ideal volume and seasonality to implement effective Circular Economy. In this sense, Aragon is in its track to transform its territory in climate-neutral with public and private entities **leading innovative initiatives for recycling these wastes and using the community talent** (farmers, consumers, entrepreneurs, innovators, etc.) to co-design and co-construct reusing and remanufacturing schemes. Although these solutions have shown great potential for improving circularity, they were still isolated initiatives that do not reach 2% GVA in Aragon[6].

Therefore, the collaboration among reference entities on Circular Economy was defined as **the main priority by the Aragon Government, creating the "Aragón Circular"[7] initiative,** unanimously endorsed by all political forces.

Now it is necessary to support this community in the design and effective implementation of systemic circular solutions. To this end, the RESOURCE project can play an essential role in bringing all stakeholder groups into contact and reaching agreements, which will be referred to below.

2.2 Landscape of the circular economy in Aragon

There is a first legal definition of the circular economy in the Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework

[6] Source: IAEST according to data from the Spanish Regional Accounts Base 2010 (INE). https://www.aragon.es/documents/20127/1670581/Resultados_Sectores_Estrategicos20.pdf/5c4fb5ec-e54e-10de-3adf-3c4ade5c188f?t=1650529142397

[7] https://aragoncircular.es/

to facilitate sustainable investment and amending Regulation (EU) 2019/2088[8]. Specifically, Article 2.9 defines the circular economy as "an economic system whereby the value of products, materials and other resources in the economy is maintained for as long as possible, enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use, minimizing waste and the release of hazardous substances at all stages of their life cycle, including through the application of the waste hierarchy". Furthermore, Article 13 of this Regulation details the activities that are included in the circular economy.

In line with this framework, **the "Aragón Circular" Strategy was signed on 30 January 2020,** with the impetus of the Government of Aragon and with the participation of Socio-Economic Networks and the main companies and research institutes involved in its implementation.

The aim of this strategy is to create a political, economic and social framework that enables the transition to an innovative circular economy in Aragon, efficient in the use of resources, with low carbon emissions, generating quality employment and structuring the territory. In short, **the "Aragón Circular" Strategy aims to promote the transition to the circular economy in Aragon, supporting this emerging economic sector for its consolidation as a strategic sector within the Aragon Community**. To this end, it defines the following strategic objectives:

- Encourage economic activity and employment generation in the circular economy in Aragon.
- Promote the circular economy sector as a strategic economic sector in Aragon, which is configured as a dynamic and driving force for the economic and social development of the Autonomous Community.
- Promote entrepreneurship in the new niches of activity derived from the circular economy, as well as intra-entrepreneurship in existing innovative companies.
- Recognition and enhancement of the value of leading companies in the transition to the new economic model.
- Encourage specialisation in the sector.

For an approximation of the importance of the circular economy in Aragon at the time of the approval of the "Aragon Circular" Strategy, and as a first approach for the identification of the different stakeholder groups in the circular economy in Aragon, the following indicators can be analysed, in which data corresponding to the year 2020 are considered, as they are the latest available:

1. Number of companies, workers and turnover of companies in the Circular Economy sector in Aragon.
2. Trade in recyclable raw materials.
3. Private investments.

2.2.1 Number of companies, workers and turnover

An objective way of identifying the companies that are part of the circular economy sector can be done by following the Nomenclature of Economic Activities (NACE), which are all considered to be part of the circular economy. Obviously, it is not enough, as the circular

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2020.198.01.0013.01.ENG&toc=OJ%3AL%3A2020%3A198%3ATOC

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economy, given its cross-cutting nature, goes much further those NACE codes. But it gives at least a broad image of the ecosystem.

And, according to EUROSTAT[9], the NACE activities included in the circular economy are those mentioned in the following table[10], all of which are related to recycling, repair and reuse.

As can be seen, it is sometimes necessary to go down to the four-digit NACE level to correctly isolate the activities belonging to the circular economy[11].

NACE code	Description
331	Repair and maintenance of machinery and equipment
381	Collection of waste, non-hazardous (3811) and hazardous (3812)
383	Separation, sorting (3831) and recovery (3832) of materials
452	Maintenance and repair of motor vehicles
454	Sale, maintenance and repair of motorbikes and their parts and accessories.
4677	Wholesale trade of scrap metal and waste products
4779	Retail sale of second-hand goods in shops
95	Repair of computers, personal effects and household goods.

Table 1: NACE codes and its description

Once the companies that form part of the circular economy have been identified according to this NACE classification, the SABI[12] database has been exploited, which collects the information from the Annual Accounts deposited in the Mercantile Register by the trading companies[13]. The information available includes the turnover and employment of these companies. At the time of writing this report, the latest data available are for the financial year 2020.

The following table shows the evolution of the indicators relating to the number of companies in the Circular Economy sectors, the number of workers employed and their turnover.

[9] Eurostat is the statistical office of the European Union: https://ec.europa.eu/

[10] In fact, this table is a simplification of the list of NACE codes found in the following link: https://ec.europa.eu/eurostat/documents/8105938/8465062/cei_cie010_esmsip_NACE-codes.pdf

[11] Within Division 33 Repair and installation of machinery and equipment, Group 331, consisting of eight Classes of repair of machinery and equipment (3311 to 3319). Similarly, in Division 38 Waste collection, treatment, disposal and recovery, Groups 381 and 383 are part of the circular economy, but Group 382, Treatment and disposal of waste is excluded. In Groups 454 Sale, maintenance and repair of motorbikes and related parts and accessories, sale must be no considered.

[12] SABI (Iberian Balance Sheet Analysis System) is a database with financial information of more than 2,6 million companies in Spain and Portugal.

[13] In Spain, the registration of commercial companies in the Mercantile Register is an essential requirement for them to acquire legal personality and to be able to operate in the legal market. One of the obligations of the entities thus registered is to deposit their annual accounts in the Register. All these data can be analysed and exploited through different databases; in this case, the aforementioned SABI database has been used.

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These data show that the number of companies involved in the circular economy in Aragon is 1,502, which together account for almost 8,000 direct and indirect jobs and just over 310 million euros of GVA.

NACE code	Companies	Turnover (mil. €)	Employees
331	290	205.190,43	1.808
381	44	62.284,22	422
383	44	270.114,06	1.115
452	821	383.292,03	3.383
454	53	33.547,53	150
4677	94	118.338,49	552
4779	21	5.500,30	61
95	135	30.495,69	432
Total	1.502	1.108.762,74	7.923

Table 2: Companies, workers and turnover in circular economy in Aragon

According to SABI, and as this is the case for Spain as a whole, in Aragon the activity of maintenance and repair of motor vehicles predominates, representing just over 46% of GVA and 48% of total employment in circular activities in the Community[14].

These data show the existence of a circular economy sector that is well established in the territory, very limited to certain activities and which has a relatively small weight in the Aragon economy. The fact that it is so restricted to the NACE categories gives it a relatively limited scope for growth and is conditioned by the promotion of public policies for recycling, repair and reuse.

However, these data only show a part of the circular economy because they leave out the activity of those companies that do not fall into the sectors defined in the NACE categories. Indeed, the cross-cutting nature of the circular economy concept, which affects practically all categories of economic activity, is undisputed. It is therefore necessary to carry out actions that go beyond the recycling, reuse and repair sectors.

Perhaps more for what they hide than for what they show, these data highlight the existence of a broad framework for action to develop circularity policies from which companies included in the NACE sectors are not excluded, in which tools such as RESOURCE can play an important role; for example, none of the pilot projects for which private funding will be sought in the framework of this project belong to the aforementioned categories.

[14] These companies simultaneously carry out activities that do not fall within the scope of the circular economy (vehicle sales) and other activities that do (maintenance and repair). In order to try to distinguish between the two activities, we have used the sectoral reports produced by the consultancy Snap On Business Solutions for the National Association of Motor Vehicle Dealers (Ganvam), which quantify the contribution of car sales, spare parts and repair activities to the turnover and results of dealers.

2.2.2 Trade in recyclable raw materials

One of the main objectives of the circular economy is to keep products and their components in the commercial cycle for as long as possible. However, this generates other flows of materials and substances that cannot be reintroduced into the production cycle forever and need to be given new added value through recycling.

The use of secondary raw materials reduces dependence on the extraction and import of material resources.

In order to promote the use of secondary raw materials, it is necessary to establish the necessary mechanisms to guarantee the stability of supply (in quality, quantity and price) and to encourage demand from the most material-intensive sectors, especially the industrial and construction sectors, so that the use of this type of materials becomes a competitive advantage for companies, compared to those traditionally used.

The import and export trade regime applicable in the Spanish territory, that forms part of the Community customs territory (Peninsula, Balearic and Canary Islands), is determined by the common commercial policy, and is set out in numerous Community regulations.

For its part, trade in recyclable raw materials is a key indicator in the European Union's monitoring framework, based on the International Trade in Goods Statistics (ITGS) published by Eurostat, and regulated, as indicator nº 8, in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a monitoring framework for the circular economy[15].

For Aragon companies, the circular economy and the reduction of raw material consumption can significantly improve their competitiveness, profitability and sustainability.

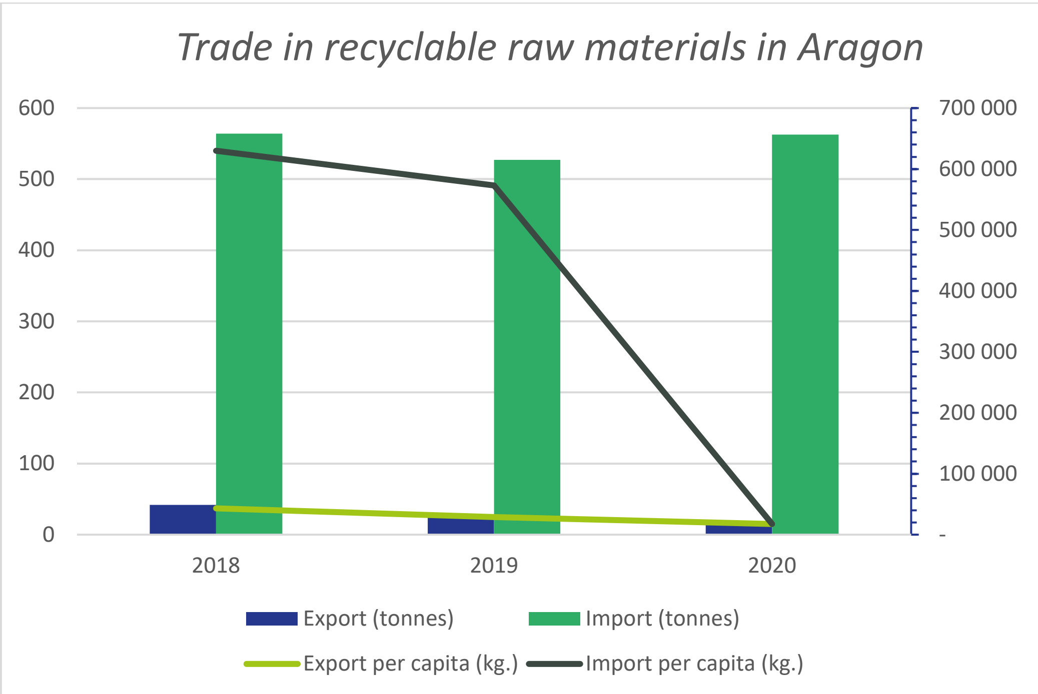

Figure 3: Trade in recyclable raw materials in Aragon

[15] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0029

As can be seen in the above table of trade in raw materials of the Autonomous Community of Aragon (data collected from IAEST), during 2020, Aragon companies exported 20,546 tonnes of secondary or recyclable raw materials abroad, while imports accounted for 656,423 tonnes. 423 tonnes, which represents a decrease in terms of exports compared to 2019, which were 33,461 tonnes, this due to the productive and commercial standstill caused by the Covid-19 pandemic, in terms of imports we see an increase compared to 2019, recovering the figures of 2018, returning to the Aragon economy more dependent on foreign trade.

These data show that in Aragon there is industry in which recycled materials are used as raw materials, as a clear indication of circularity. Consequently, it indicates the existence of companies which use waste and by-products in their production processes, and which could be interested in obtaining private funding for their implementation. It also indicates that there is a field of work in which to bring together companies that can generate circular synergies and establish a trade in recycled materials and reusable waste as raw materials to reduce this dependence on the outside world. To the extent that companies want to reduce costs by purchasing these recycled raw materials in a closer market or simply provide resources to this market, the RESOURCE project can help by bringing these types of projects to the attention of private investors.

2.2.3 Private investments, jobs and GVA: recycling, repair and reuse sector

The circular economy has the potential to contribute to job creation and economic growth. Innovation and investments, in eco-design, in secondary raw materials, in recycling processes and in industrial symbiosis, are a key element of the transition to a circular economy.

Specific sectors that are closely related to the circular economy, such as the recycling and repair and reuse sectors, are particularly labour intensive and contribute to local employment.

The indicator, regulated as indicator nº 9 in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a monitoring framework for the circular economy[16], includes three variables:

1. "Gross investment in tangible goods",
2. "Number of persons employed" and
3. "Value added at factor costs".

2.2.3.1 Gross investment in tangible goods

It is defined as the investment during the reference year in all tangible assets. It includes new and existing tangible capital assets, whether purchased from third parties or produced for own use (i.e., capitalised production of tangible capital assets), having a useful life of more than one year, including non-produced tangible assets such as real estate. Investments in intangible and financial assets are excluded. The latest data available in the IAEST are for the financial year 2017 and are as follows:

a) Value: 59.6 million euros.

[16] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0029

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b) Percentage over the total GVA of Aragon: 0.18%.

These data indicate that private investment in goods dedicated to the circular economy is very low and that policies to promote such investment are needed. Public funding can help, but it is certainly not the solution, and this is where the development of platforms and projects in which private companies can bring their businesses to private investors can make an important contribution.

2.2.3.2 Number of persons employed

The number of persons employed is defined as the total number of persons working in the observation unit, i.e., the enterprise (including the self-employed, working proprietors, partners working regularly in the unit and unpaid family workers). It also includes persons working outside the unit who belong to and are paid by it (e.g., sales representatives, delivery personnel, repair and maintenance teams). It excludes labour supplied to the unit by other enterprises, persons carrying out repair and maintenance work in the research unit on behalf of other enterprises.

The difference with the number of workers included in section 2.2.1 above is due to the fact that the source of the data offered below is Social Security affiliations, and includes all the groups mentioned in the previous paragraph; on the contrary, in the indicator in section 2.2.1, only the number of employment contracts entered into by mercantile companies registered in the Mercantile Register is taken into consideration[17].

	2019	2020	2021
Affiliations	15.140	15.401	15.385
Percentage of total employment	2,61%	2,72%	2,67%
Self-employed	4.034	3.874	3.804
Percentage of total self-employed	3,9%	3,9%	3,8%

Table 1: Employment in the recycling, repair and reuse sector in Aragon

The above table, using IAEST data, shows that the total number of people affiliated to Social Security in the group of companies dedicated to recycling, repair and reuse amounts to 15,385 in the year 2021, of which 3,804 are self-employed.

Likewise, there is also a slight decrease in both salaried and self-employed workers in the circular economy sector, as a consequence of the crisis resulting from Covid-19. However, this decrease is not very significant and even more compared to other sectors such as traditional industry, and services linked to the tourism industry. Thus, we can say that this is an emerging and strong sector in Aragon.

[17] The advantage of this indicator over Social Security affiliation data is that it allows a breakdown of companies according to NACE code.

Although these data increase and clarify the magnitudes expressed in 2.2.1, they are still linked to the recycling, repair and reuse sectors, so that the conclusions mentioned there can be extrapolated.

2.2.3.3 Value added at factor costs

According to the IAEST, the GVA at factor cost of the circular economy sector (recycling, repair and reuse) in Aragon[18] in the years 2018 to 2020 is as follows:

	2018	2019	2020
GVA (million €)	642,7	660,6	625
Percentage of total GVA	1,99%	1,90%	1,94%

Table 2: Value added at factor costs in circular economy sector in Aragon

The above table shows that the slight decrease of 1.3% in the GVA of the circular economy sector in 2020 compared to 2019, undoubtedly due to the effects of the Covid-19 pandemic, does not correspond to a decrease in its importance in the total weight of GVA in Aragon, but rather to an increase of 0.04%, which shows, as previously indicated, that the sector analysed is more resilient and withstands crisis situations better than other sectors of the Aragon economy.

As in the previous section, the conclusions expressed in 2.2.1 can be reproduced here for the same reasons.

2.2.4 Conclusions

The data presented above reflect the existence of a growing number of companies in the circular economy sector, as set by the European Commission, dedicated to the activity of recycling, repair and reuse. The volume of activity of these enterprises represents almost 2% of the total GVA of Aragon. It also includes a significant number of people dedicated to this activity (15,385 people, representing 2.67% of the total), many of whom are self-employed.

Even though the circular economy is already well established in the Aragon territory, there is still a wide field for improvement in the development of circular activities.

The low private investment in the circular economy (see section 2.2.3.1) and the high volume of recycled materials imported (see section 2.2. 2) indicate an important area of the circular economy that remains outside the official statistics. Those imports are mainly carried out by companies integrated in other NACE branches of activity and in which it is necessary to develop policies and actions that allow the increase of circularity processes and, within these, the increase of investments, both public and private, area in which RESOURCE operates.

In recent years, the Government of Aragon has been launching different support packages and actions promoting the Circular Economy sector as a strategic element in the Community. But

[18] Value added at factor cost is the gross income from operating activities after adjustment for operating subsidies and indirect taxes. It can be calculated as the sum of turnover, capitalised production, other operating income, increases minus decreases in stocks and deducting the following elements: purchases of goods and services, other taxes on products that are linked to turnover but not deductible, duties and taxes linked to production. Value adjustments (such as depreciation) are not subtracted.

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convinced that this is not enough, it is a priority to establish mechanisms such as RESOURCE, to facilitate synergies between stakeholders interested in developing circular projects.

3 Stakeholders mapping

The circular economy accommodates and requires, to a greater or lesser extent, the participation of all types of agents, of varying size and nature, such as public and private agents, the third sector, consumers, research centres, etc. Generally, more systemic initiatives will require the participation of a greater and more varied number of agents.

The overall objective of RESOURCE is to develop an innovative methodology to support the financing of circular economy projects from the private sector.

Four types of stakeholders have been identified from the partners network, focusing on their relevance to the project's implementation:

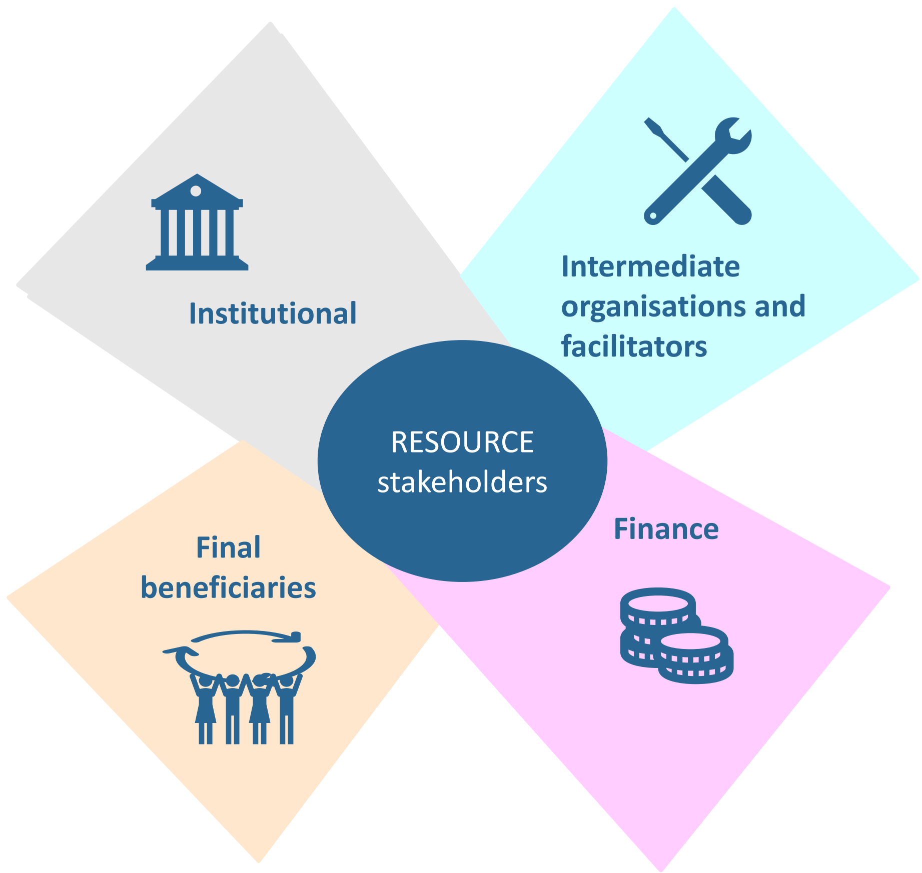

Figure 4: The four types of Stakeholders

3.1 Institutional stakeholders

Institutional actors (public administrations and other para-public institutions) can play a role in facilitating the circular economy, stimulating and promoting the concept among the economic fabric (companies, industry, commerce...), fostering a climate of trust, collaboration, cooperation and transparency that promotes the right conditions for the promotion of the circular economy.

Some of the areas in which this type of actor may be relevant are:

- **Collaborative platforms**: collaboration and sharing of resources and information is a key element of the circular economy. These platforms help to bring together public and private efforts. A good example could be public-private platforms for the exchange of information on the supply and demand of circular resources in a given territorial area (mapping of circular resources), as a basis for identifying strategies for industrial symbiosis, such as the "Valle del Cinca" industrial estate, in the Somontano County
- **Business support schemes**: in some cases a political economic boost may be necessary to initiate the activity, for instance through subsidies and grants (such as those launched by the Government of Aragon in support of R&D), through provision of capital or financial guarantees for circular economy projects, tax incentives, etc.
- **Technical support, advice, training and demonstration of good practices**. Often, the productive fabric, especially SMEs, may need technical support and guidance to implement circular economy initiatives. In this sense, technical support and advisory services can be provided to guide companies in need in the field of the circular economy; the catalogue of training courses in specific areas related to the circular economy (eco-design, manufacturing 4.0, digitalisation and data management, 3D printing, servitisation[19], etc.) can be expanded.
- **Promotion of green and circular entrepreneurship**: the aim is to promote new, more innovative and resilient businesses, prepared for the circular economy, to take on new challenges and adapt to the needs of change. This includes entrepreneur incubation activities for circular business models, business laboratories aimed at innovation in products and services or actions for the recognition and positioning of companies in the development of circular activities.
- **Communication and awareness-raising schemes** aimed at the productive fabric and consumers. It is sometimes necessary to raise awareness among the productive fabric of the importance and urgency of adapting to the circular economy paradigm, while at the same time it is necessary to seek their complicity to implement specific initiatives. It is also essential to educate consumers in responsible purchasing and consumption activities. This includes communication campaigns, dissemination of good practices and success stories, campaigns to reduce waste or to provide tools and elements to promote the circular economy.

From the point of view of administrative organisation, as already indicated, Aragon is an Autonomous Community, led by a regional government (Government of Aragon) and administratively divided into three provinces (Zaragoza, Huesca and Teruel) and 731 municipalities. These in turn are grouped into 33 counties, which in turn have their own

[19] Defined as "the gradual shift from product-centred value propositions to complex product-service systems offerings", in "Definition of a conceptual scale of servitization: Proposal and preliminary results", May 2020 - CIRP Journal of Manufacturing Science and Technology. This model can be a major contributor to the systemic efficiency approach to decarbonisation. It also has potential to assist the post-COVID-19 economic recovery (according to www.weforum.org)

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administrative organisation. All of them have competences that have an impact, to a greater or lesser extent, on the circular economy.

At the regional level, the Government of Aragon launched, as indicated above, the "Aragon Circular" Strategy in January 2020, which is conceived as an economic strategy to support the circular economy in the Aragon territory, beyond the usual activities of waste treatment and management. This initiative will encourage economic development and employment generation and ensure that the economic sector of the circular economy goes from being an emerging sector in Aragon to being a strategic sector. The development and monitoring of this strategy and the actions carried out in its execution can be seen on the specific website[20] created by the Government of Aragon. But focusing the analysis on the identification of the agents interested in the development of the circular economy, the following can be identified at this administrative level:

The Government of Aragon, which participates as a partner in the RESOURCE project through the Directorate General of Planning and Economic Development, of the Department of Economy, Planning and Employment. But the Government of Aragon is a multi-organic and multi-competence entity, in which there are many other bodies from different departments that also carry out activities related to the circular economy and that can collaborate with this project. This is the case of the Department of Agriculture, Livestock and Environment, which is responsible for waste management, including recycling, the Department of Industry, Competitiveness and Business Development, which promotes multi-sector business development, and, finally, the Department of Citizenship and Social Rights, which is carrying out intense consumer education work on the circular economy.

On the other hand, and also dependent on the Government of Aragon, two entities can be mentioned that carry out technical support tasks for Aragon companies also in the field of circular economy:

- The European Centre for Innovative Enterprises of Aragon (CEEIARAGON)[21] which is a partner of the RESOURCE project and therefore needs no further introduction. It is the reference centre in Aragon for the creation and development of innovative business projects, especially technology-based ones, and offers facilities (coworking, offices, technical offices and industrial buildings), advice through its CRECE services and a privileged ecosystem for the take-off of projects, where innovation and technology are the key ingredients.
- The Instituto Aragonés de Fomento -IAF- (Aragones Institute of Promotion)[22], configured as a public entity subject to private law, attached to the Department with competences in the field of Industry, whose functions, among others, are the promotion of public and private investment projects, technical assistance and financial advice to companies, etc.

On the other hand, the importance of municipalities and other local entities in the circular economy has already been made clear since the Declaration of Seville[23], signed on 15 March

[20] https://aragoncircular.es/aragon-circular-2030/
[21] https://www.ceeiaragon.es/zaragoza-2/
[22] https://www.iaf.es/
[23] http://www.femp.es/comunicacion/noticias/la-declaracion-de-sevilla

2017, in which dozens of Mayors and Presidents of Provincial Councils from all over Spain committed to promote and boost the circular economy in their territories.

The complex local organisation of Aragon, structured in provinces, counties and municipalities, many of the latter with very low population levels, highlights the need to attend to institutional or para-public agencies that have among their attributions the support and advice of local entities. In this framework, we can mention the three Provincial Councils (governmental and administrative bodies of the provinces) of Zaragoza, Huesca and Teruel; also, as an associative entity of local public entities, the Aragon Federation of Municipalities, Counties and Provinces (FAMCP)[24] can provide RESOURCE project with an overview of the local administration on the circular economy.

At the county level, it has already been mentioned that Aragon is organised in 33 counties, as entities in charge of the management of supra-municipal competences, among which the circular economy, especially in waste management, occupies an important place. Undoubtedly, the contribution of their experience to the RESOURCE project could be enriching.

And finally, at the municipal level, **of the 731 municipalities in Aragon, only 24 have a population of more than 5,000 inhabitants**, which explains the depopulation problem affecting Aragon and referred to at the beginning of the document. These municipalities, scattered in the three Aragon provinces, **must be the spearhead for the development of the circular economy at the local level and their contribution could be positively valued** and replicated in smaller municipalities**.**

The list of all the institutional agents, according to the categories mentioned, is included in the final annex of the document (ANNEX: LIST OF STAKEHOLDERS).

[24] https://www.famcp.es/

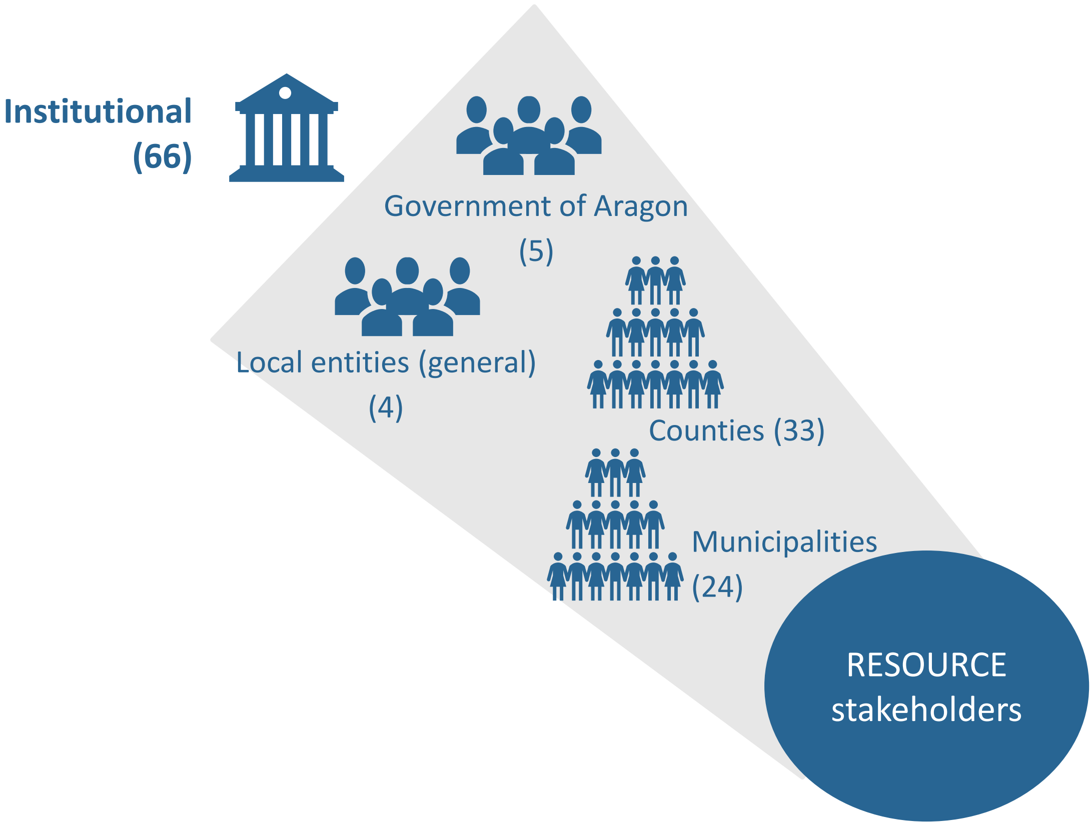

Figure 5: Focus on the Institutional stakeholders

3.2 Intermediary organizations and facilitators

Enablers are understood as those who provide the essential services for the transition to the circular economy to take place and accelerate. This concept can include multiple activities and services, such as data management technologies, a reverse logistics network, etc. There will be as many types of enablers as there are actors capable of addressing the needs of companies that want to progress on the path to circularity. In fact, public administrations, above mentioned, play an important role as facilitators in many aspects. Even the present RESOURCE project aims to be a facilitator for companies to access private financing in the development of their circular projects.

Given the impossibility of carrying out a detailed analysis of these facilitators, it is possible to refer to three categories of entities that fit into this group of stakeholders: regional clusters, research institutes and Socio-Economic Networks.

Clusters are geographically concentrated groups of interrelated enterprises and institutions operating in a specific field. They usually include companies operating at various stages of the value chain, companies producing complementary goods and services, and other related institutions and organizations such as universities, research centres, etc.

Clusters act jointly with stakeholders, with the purpose of requesting resources and share experiences and knowledge. Not only do they share them, but they also optimize them, developing services or products that would not be developed at a single company level. In this way, they achieve three very specific benefits for the companies that make them up: they increase their capacity for innovation, increase their productivity and reduce costs.

In the Autonomous Community of Aragon there are several clusters that can provide companies with solutions to be integrated in the framework of the RESOURCE project, such as those dedicated to water, the pig sector, agricultural machinery, etc. All of them are mentioned in the annex of this document.

On the other hand, **research centres and institutes** are also called to play an essential role in the advancement of circularity. This progress must take place in an environment facilitating the development of new business initiatives, probably unknown at this time, answering new demands of society. **Technology must favour the search for innovative solutions for the recovery of waste flows, the substitution of raw materials, or simply a new product design that makes it more sustainable**. In addition, new technologies, and especially digitalization, open up unexpected possibilities for the emergence of new market niches, based on the processing of data and information in real time to maximize the efficiency of processes, advanced manufacturing and industry 4.0 or 3D printing, all initiatives that can significantly alter the current industrial landscape.

Aragon also has many research institutes and centres. Among them, there are public ones, such as the Spanish National Research Council (CSIC), which is state-owned but with a delegation in Aragon, the University of Zaragoza itself in its various engineering and economics departments, or those attached to the Government of Aragon, such as the Aragon Institute of Technology (ITAINNOVA), which is a non-profit public body, recognized at regional and national level as a technology centre, one of whose areas of activity is that of efficient and circular industry. There are also private research centres, among which our partner in this project, Fundación AIITIP, deserves special mention, without forgetting private university centres (Universidad San Jorge), research centres of a more transversal nature such as Fundación CIRCE or centres focused on specialized areas, such as the Vehicle Research Centre. All of them, which are listed in the appendix to this document, can make contributions of interest to this project and will be the subject of the interviews to be carried out in the second phase.

Finally, reference can also be made to a third category of intermediate agent, namely the **Socio-Economic Networks, with whom the dialogue between the Government of Aragon and the social partners is very regular and fluid for any economic development proposal**. This includes the most representative business associations in Aragon, which bring together the majority of the Aragon business spectrum. They are not strictly speaking a cluster in terms of the objectives to be achieved, nor do they gather entities working in the same field, but they do hold the common interests of the business fabric. In this field, we can mention both the Confederation of Small and Medium-sized Enterprises of Aragon (CEPYME) and the Confederation of Aragon Businessmen (CEOE ARAGON). Closely related to them are the most representative trade unions, which do not represent the business fabric but do contribute a social vision to economic developments. The two main trade unions are the Unión General de Trabajadores (UGT) and Comisiones Obreras (CCOO).

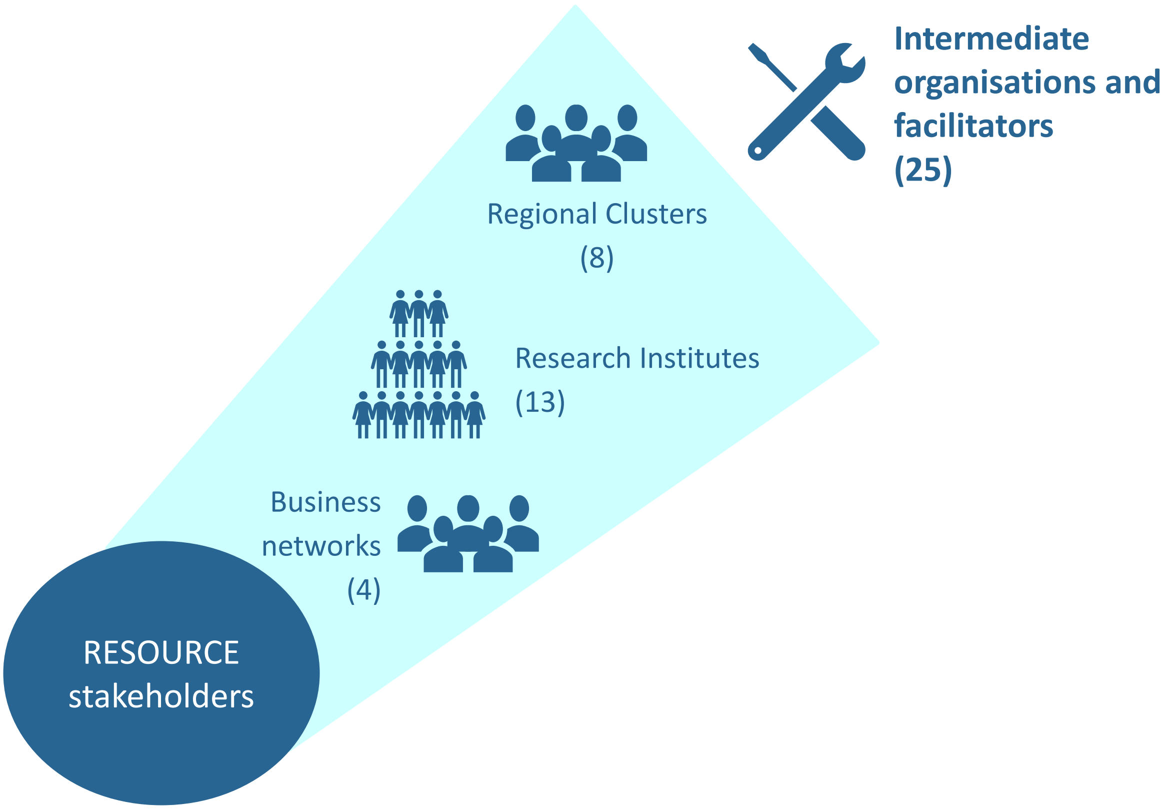

Figure 6: The Intermediary organizations and facilitators

3.3 Finance stakeholders

3.3.1 Investing in circular projects: benefits and obstacles

While it is true that investment under the criteria of sustainable investment has become a cornerstone in the philosophy of many investors, the term circular economy has not yet gained the same currency. However, the future for this type of investment should be favourable. **The paper "Circular Economy: Paradise Restored?"[25] by Candriam (a global asset management company specialising in sustainable investment) argues that circularity will become the new paradigm, and that circular companies will become the biggest winners in the stock market in the future.** The company bases its theory on the fact that the process of circularity will be facilitated by the intense desire of politicians to see the rise of the circular economy, and the coming changes in consumer and corporate behaviour. They give as an example the European Union's announcement of the mobilisation of close to one trillion euros over the next ten years within the framework of the European Green Pact with the aim of making Europe the first carbon neutral continent by 2050.

What are **the benefits of investing in the circular economy**?

- Firstly, the circular economy **is regenerative in its design and is reorienting the productive capacity** of countries as a new source of greener jobs and wealth in the context of a new, more social economy.

[25] https://www.candriam.com/siteassets/medias/publications/brochure/research-papers/circular-economy/2020_09_circular_eco_summary_en_web.pdf

- Secondly, far from being a short-term trend, the **circular economy is one of the most attractive long-term trends** of the coming years. The development of the circular economy will last for decades **and is generating the growth of sectors** such as renewable energy, biofuels, resource recovery, looking for the development of shared platforms and the extension of the useful life of textiles, packaging, electronic equipment and household products through repair, upgrading and resale, etc.
- Thirdly, the circular economy is **a cross-sectoral trend**. It is possible to find targets in most business areas. Investment opportunities can be found in obvious recycling or renewable energy businesses and in fashion, retail, food and beverages, markets, etc. Circular economy favours quality business models

However, **there are also three reasons why investment in this new model is not developing faster** and which are the obstacles that, a priori, **need to be overcome to attract private investment** in circular economy projects:

- the **linear model is the default model** in our system and is therefore the one that has an advantage in accessing finance. The **end-of-life cost price in the linear model is usually close to zero** (it is relatively cheap to dispose of waste); however, its collection, treatment and disposal entail significant externalities, so it is actually an unfair competition in favour of the linear model and to the detriment of the circular model;
- **consumers need to play an active role** because, unlike the linear model in which the product ends up being thrown away, they need to **adapt their way of life**, and be more committed in choosing recovery, reuse and repair or in shared use;
- There is a higher risk in financing circular economy companies because the conditions they face in the market are tougher than those of linear economy companies.

3.3.2 The financial ecosystem for circular economy

Having identified the main advantages and disadvantages of private investment in this type of project, it is necessary to identify the financial players that may be interested in the circular economy and, therefore, in the development of the RESOURCE project. In this respect, three types of stakeholders can be considered:

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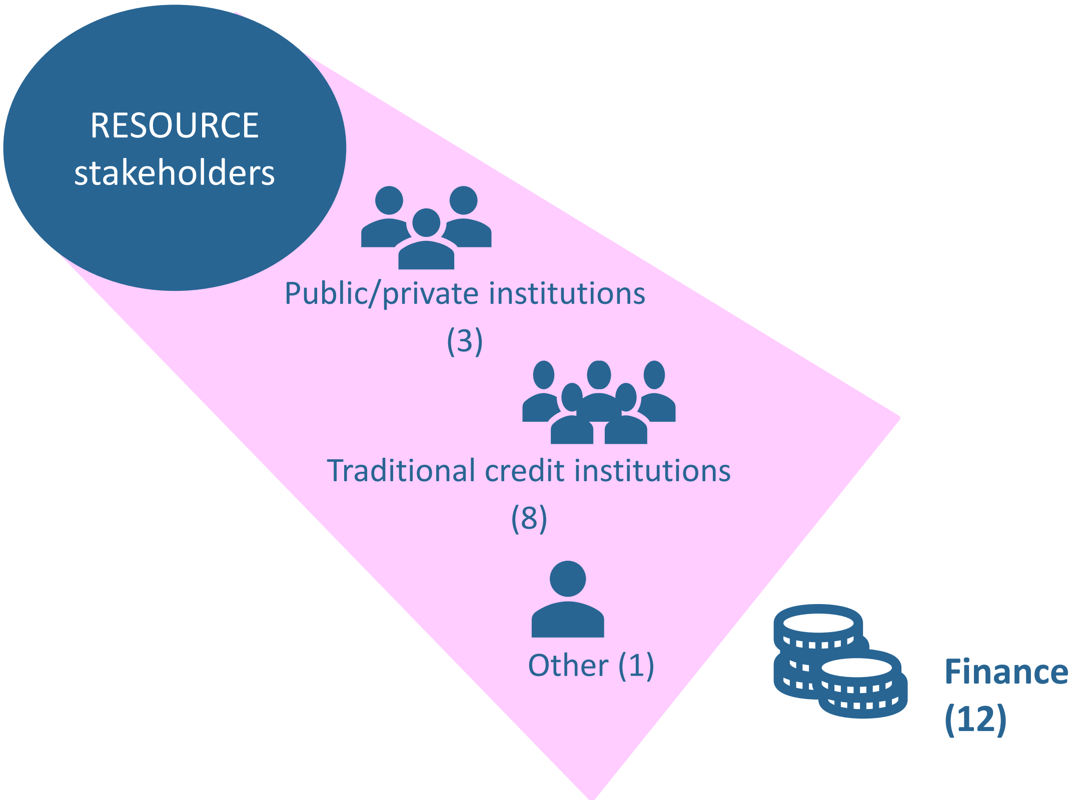

Figure 7: The Financial stakeholders

Public/private institutions. These are entities that provide financial services to support investments that are supported by public funds or whose governing body is controlled by a public entity. Three possible candidates for collaboration in the RESOURCE project can be identified at this stage:

- AVALIA ARAGON, *Sociedad de Garantía Recíproca* (Mutual Guarantee Society)[26], is a mutual commercial society, majority owned by the Government of Aragon. Granting guarantees to SMEs and self-employed individuals to access finance under the best conditions, this organisation also grants them with guarantees in favour of the administration and other individuals, as well as financial advice.
- SODIAR, *Sociedad para el Desarrollo Industrial de Aragón*, is the Company for the Industrial Development of Aragon[27]. It is an instrument of the Department of Economy, Planning and Employment of the Government of Aragon designed to stimulate business activity, participating in initiatives that provide investment and generate employment in Aragon. It currently has a "Fund to support companies in the circular economy sector in Aragon"[28] will be used to finance investment projects carried out by Aragon entrepreneurs and SMEs linked to the circular economy sector.

[26] https://www.avaliasgr.com
[27] https://www.sodiar.es
[28] https://www.sodiar.es/fondo-de-economia-circular/

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  - ICO, *Official Credit Institute*,[29] is a public business entity attached to the Ministry of Economic Affairs and Digital Transformation, which has the legal nature of a credit institution. It is financed in national and international markets and its main objective is to promote economic activities that contribute to sustainable growth, job creation and wealth distribution.
- Traditional credit institutions (banks, credit unions and other financial credit institutions) whose function is to raise funds from the public in various forms, with the obligation to repay them, to provide credit to individuals and companies in need of financing. A list of institutions of this nature with which second-stage interviews can be conducted is included in the annex to this document. IBERCAJA BANCO S.A., CAJA RURAL DE ARAGON and CAJA RURAL DE TERUEL are considered particularly relevant for this purpose, as they are credit institutions with special links to the Aragon territory.
- Other types of private investors, such as ANCES, our third party in the RESOURCE project. ANCES, will be in charge of contacting the main players of the investment ecosystem through its ANCES INVESTMENT PROGRAMME, which is a network of the main investment players to increase the private funding of projects or companies with high innovative and growth potential. This program was created in response to the investment needs of innovative companies and the rapid growth process of alternative investment agents who are aware of the potential of these companies to meet their medium and long-term profitability needs. This group includes investors of different types (Business Angels, Accelerators/Incubators, Equity Crowdfunding platforms, Venture Capital institutions, Private Equity, etc.) and from different sectors that want to diversify into the circular economy. However, individual identification is not possible at this stage because participation in the program is carried out through confidential agreements.

3.4 Final beneficiaries

The most natural "final beneficiaries" of the RESOURCE project are the companies (without excluding the other participating stakeholders - investors, research institutes, etc. - and ultimately the society as well that will benefit from it). Indeed, they are the main lever for change from the classic economy system to the circular model, which proposes an uninterrupted cycle based on reducing waste, recycling and reusing, reducing carbon emissions, extending the life cycle of products by making them more durable and, in short, contributing to more sustainable consumption and minimizing the effects of climate change.

Faced with the question of how far the circular economy is really being implemented, many companies are already doing so. A document presented on 15 November 2021 by the Spanish Network of the United Nations Global Compact, entitled "*Business models based on the circular economy: how companies can move from linearity to circularity*"[30], reveals that **43%**

[29] https://www.ico.es/
[30] https://www.pactomundial.org/biblioteca/whitepaper-economia-circular/

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of Spanish companies are promoting circular economy processes in the fields of waste management, reduction, recycling and reuse. It also indicates that larger companies are making more efforts in this direction (**67% of large companies are taking initiatives of a circular nature** compared to 37% of SMEs and 20% of self-employed professionals).

This data, which can be considered encouraging for the initial stage of the process of implementing the circular economy, also shows that, the other half of it, 57% of Spanish companies, leave a significant room for improvement, even more if we consider SMEs and the self-employed.

While all sectors can find exciting opportunities in the transition to more circular models, there are some that seem more likely to successfully complete this transformation.

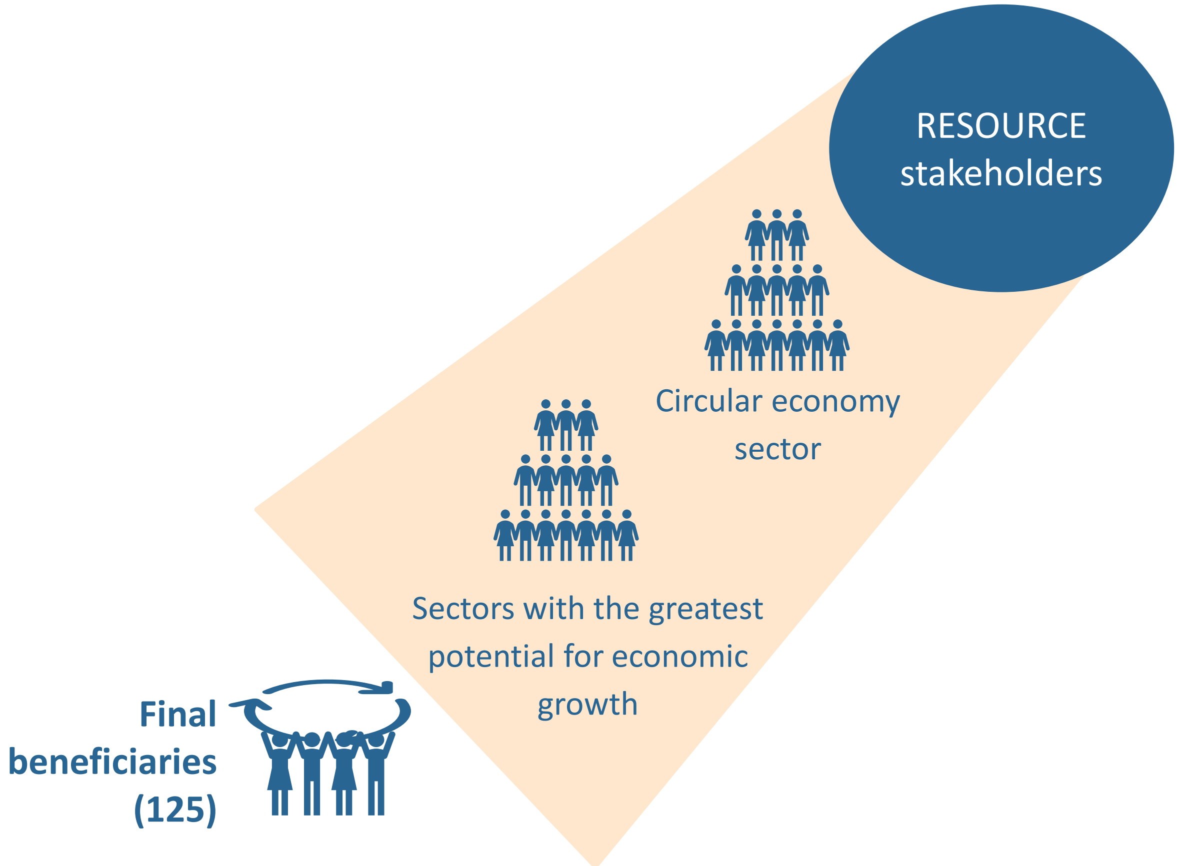

Figure 8: The final beneficiaries stakeholders

The Ellen MacArthur Foundation has identified the plastics, fashion, food, electronics and transport sectors as those most likely to be affected by the circular economy in the short term.

At EU level, the European Green Pact was presented at the end of 2019 with the aim of achieving climate neutrality in the European Union by 2050. One of its main pillars is the new Circular Economy Action Plan adopted in 2020, which provides a roadmap to ensure more circular models that will lead us to climate neutrality. Among other aspects, it envisages the progressive development of a framework for a sustainable product policy with measures on product design, the empowerment of consumers and public purchasers, and greater circularity in production processes with measures throughout the entire life cycle of products. Although the plan is cross-cutting, it focuses on the sectors that use the most resources and have a high potential for circularity, establishing specific measures in seven value chains:

electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and housing and, finally, food.

Finally, the document prepared by the Spanish Global Compact Network mentioned above includes a mapping of sectors with the greatest potential for economic growth in the circular economy in Spain, which is included in the figure below.

It takes ten value chains (packaging and plastics, fashion and textiles, food and agriculture, electronics, automotive, transport and logistics, ICT, engineering and construction, waste and water management, industrial manufacturing and finally paper) and analyses them in the light of four factors driving the potential growth of the circular economy (innovation and business action, policy and regulation, customer preferences and macro trends and global growth potential of the circular economy). The result indicates whether each of the ten sectors mentioned has high growth potential in the short to medium term (high), whether it has growing growth potential in the short term (growing) and whether it has emerging or limited growth potential in the short term (emerging).

The result shows that the sectors with high potential are packaging and plastics, textiles, food and agriculture, electronics and transport. The factors affecting the rest of the sectors are mostly in the "growing" category, although in the case of ICT, engineering and construction and waste and water management, there are also factors with high potential, while in the industrial manufacturing and paper sectors some factors are in the "emerging" category. In short, the sectors with the highest growth potential are plastics and packaging, textiles, food and electronics; on the other hand, industrial manufacturing and paper are at a more initial stage.

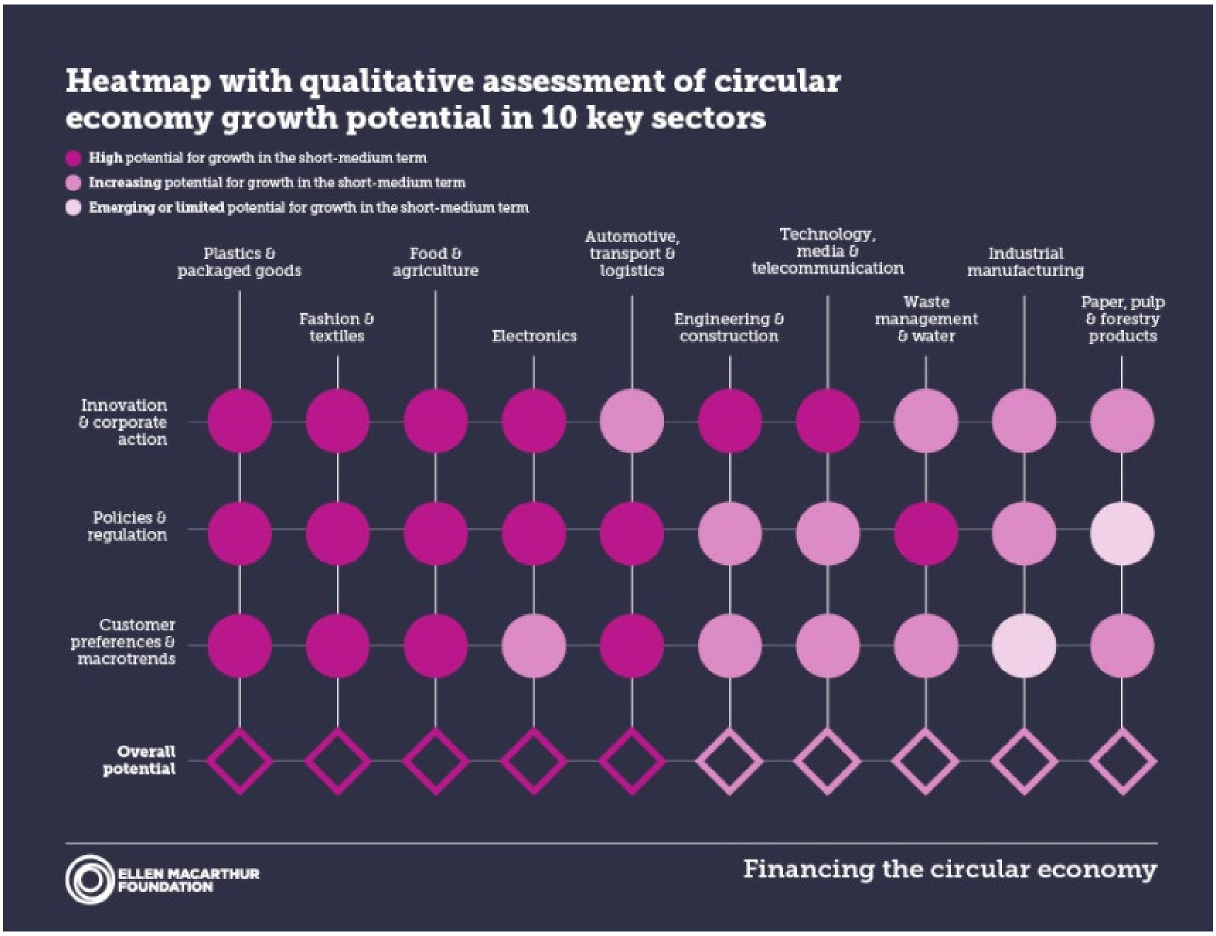

Figure 9: Mapping of sectors with the greatest potential for economic growth in the circular economy in Spain [31]

Thus, sectors with growth potential in the circular economy have been identified, and the reasons that, in general, drive companies to undertake circular investments are cost reduction, the opening of new business lines, the creation of more durable products and sources of income or better risk management than in the linear system.

The aforementioned and referenced report of the Spanish Global Compact Network offers a list of ten benefits of the circular economy for companies and arguments why they should commit to integrating circularity in their strategies:

1. Minimizes costs and accelerates business growth. Increased efficiency, reduced consumption of raw materials and natural resources, reuse of components or recycling of waste can help improve a company's economic performance.

2. It attracts responsible investment and facilitates access to new sources of finance. The transition to a circular economy or pollution prevention and control are increasingly valued by investors.

3. It favours alliances and business partnerships with all types of entities.

4. Increased customer and consumer interaction and satisfaction. Circular approaches favour business expansion into new niches and markets where responsible customers and consumers can be found.

[31] Source: "Business models based on the circular economy: how companies can move from linearity to circularity" https://www.pactomundial.org/biblioteca/whitepaper-economia-circular/

5. Increased security of supply of materials. Less dependence on virgin materials reduces the risks associated with possible shortages of these resources and price volatility, as in the current situation.

6. Facilitates adaptation to environmental regulations, avoiding the risk of fines for non-compliance.

7. Promotes innovation and the emergence of new lines of business with a new economic model that helps to respond to the new demands of society and the market.

8. Improved reputation and competitiveness. The circular economy is a factor that differentiates companies from their competitors. Positioning as responsible and committed companies strengthens relations with different stakeholders and attracts and retains talent.

9. It reduces the risks associated with a high environmental and social impact.

10. Aligns operational processes and corporate culture with the 2030 Agenda and the Sustainable Development Goals (SDGs).

Finally, the experience of the Government of Aragon, through the Directorate General for Planning and Economic Development (which participates as a partner in this project), through the many meetings held over the last three years with Aragon companies interested in the circular economy, many of which have participated in the competition processes referred to below, allows us to draw up the following tables that refer the advantages and the main barriers that companies find to adapting to the principles of the circular economy.

Advantages
The implementation of systems of transparency, traceability and added value on the management of data that can be extracted in the digitization of processes.
Working in value chains, ecosystems and cross-cutting alliances allows knowledge and projects to be shared, interacted and aligned.
Improving the efficiency of production processes.
The minimization and correct management of waste to convert it into resources, promoting the incorporation of recycled material into processes.
Promoting the reuse and repairability of products, extending their useful life.
Facilitating the valuation of resources at the end of their useful life.
Improving energy efficiency, minimizing gas emissions and promoting the production and consumption of renewable energies.
Promoting R&D&I.
The overall improvement of companies' commitment to the environment.

Table 3: Advantages to adapting to the principles of the circular economy

Barriers
Regulations: the development of economic activity is subject to numerous regulations that are complex to understand. Moreover, many of them are oriented towards a linear model, so that when we want to incorporate ideas of circularity, there are gaps in the regulations (for example, how to certify the quality and performance of a secondary raw material).
Fiscal: there are generally no fiscal incentives aimed at favouring circular models.
Business culture: there is still a high level of ignorance of the possibilities of circularity in companies.
Training. It is necessary to provide training to all levels of companies on tools and methods for changing business models.
Access to financing instruments. A large number of small and medium-sized enterprises are not aware of public financing instruments for the development of circular initiatives and business models. There is difficulty in accessing traditional sources of financing from credit institutions and there is a lack of knowledge of the means of accessing or other types of private financing.

Table 4: Barriers to adapting to the principles of the circular economy

The identification of the stakeholders that make up the group of final beneficiaries and on which the interviews of the second phase of this task will be developed, is carried out from the database of companies interested in the circular economy available to the Government of Aragon, through the Directorate General of Planning and Economic Development (partner of this project) and resulting from various public processes of competitive concurrence.

An expression of interest was published in the BOA of 25 June 2020 to capture the willingness of Aragon companies to develop circular economy projects in Aragon[32]; as a result, more than 70 projects were submitted with the participation of more than 90 companies, which proposed actions with an expected investment amount of more than 200 million euros.

As a follow-up to the expression of interest, in August 2021 a call was launched for grants[33] for an amount of 4 million euros to carry out R&D projects in the circular economy in Aragon. A total of 36 projects with more than 45 companies involved and with a planned investment of more than 31 million euros were submitted to this call for proposals, in which the amount announced was exhausted, so that several projects were not funded.

A second call[34] was launched in July 2022 for the same purpose for an additional EUR 4 million, in which 24 projects involving 33 interested companies and a total planned investment of more than EUR 27 million took part.

[32] http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VERDOC&BASE=BZHT&PIECE=BOLE&DOCS=1-26&DOCR=6&SEC=FIRMA&RNG=200&SEPARADOR=&SECC-C=BOA%20O%20DISPOSICIONES%20O%20PERSONAL%20O%20ACUERDOS%20O%20JUSTICIA%20O%20ANUNCIOS&PUBL-C=&PUBL=20200625&@PUBL-E=

[33] http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VERDOC&BASE=BZHT&PIECE=BOLE&DOCS=1-24&DOCR=10&SEC=FIRMA&RNG=200&SEPARADOR=&SECC-C=BOA%20O%20DISPOSICIONES%20O%20PERSONAL%20O%20ACUERDOS%20O%20JUSTICIA%20O%20ANUNCIOS&PUBL-C=&PUBL=20210825&@PUBL-E=

[34] http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VERDOC&BASE=BOLE&PIECE=BOLE&DOCS=1-31&DOCR=10&SEC=FIRMA&RNG=200&SEPARADOR=&SECC-C=&PUBL-C=&PUBL=20220718&@PUBL-E=

In February 2022, another call was launched to obtain the "Aragón Circular"[35] seal, as a distinctive recognition for those companies that have been awarded the "Aragón Circular" seal. As a badge of recognition for those companies and local entities involved in the circular economy. A total of 96 companies (large and small), and five local entities, applied to the call.

Finally, mention should also be made of the Institutional Declaration "Aragón Circular", which is open to all types of entities, from companies of any size to research centres, business groups, etc. So far there have been more than 125 signatures.

The result is a list of companies that have presented investment projects in the circular economy or that are at least interested in it. From this group of companies, it can be highlighted that they are active in the seven value chains identified in the above-mentioned EU Circular Economy Action Plan, as also indicated in the "excellence" section of the RESOURCE project application. Thus, there is a sufficiently wide range of companies to be interviewed in the second phase, diversifying according to the value chains mentioned and the size of the companies. All of them are detailed in the annex of this document. Efforts will be made to interview companies that carry out their activity, at least in the seven value chains indicated by the Circular Economy Action Plan (3 or 4 of each) and ensuring that at least 25% of the total are SMEs.

We cannot end this section without highlighting that among all these companies, we have selected those that form part of the group of pilot projects for whose investment projects a private investment of 20 million euros is expected to be reached, as a target set in the RESOURCE project. In order to reach this 20 million euros' objective, the RESOURCE partners will not be limiting their action to the number of 9 pilot companies and some more might be also selected. But the pre-selected (preliminary selection of) pilot companies are the following:

Enterprise	Sector
THERMOWASTE S.L.	Waste management
MONDOTUFTING S.A.	Sports equipment
FINANCIERA MADERERA S.A. (FINSA)	Industry (wood)
CENTRO EUROPEO DE RECICLAJE FOTOVOLTAICO S.L.	Waste management
GRUPO ARCOIRIS	Agrifood
CONFECCIONES OROEL S.L.	Textil
ADIEGO HERMANOS S.A.	Chemical
CÁRNICAS CINCO VILLAS S.A.	Agrifood
FERTINAGRO BIOTECH S.L.	Fertilisers
YUDIGAR S.L.	Furniture
BECTON DICKYNSON S.A.U.	Health
FELTWOOD ECOMATERIALES S.L.	Waste management

Table 5: Pilot projects

[35] http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VERDOC&BASE=BOLE&PIECE=BOLE&DOCS=1-25&DOCR=1&SEC=FIRMA&RNG=200&SEPARADOR=&SECC-C=&PUBL-C=&PUBL=20220203&@PUBL-E=

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4 Conclusion and next steps

Aragon is a suitable territory for the implementation of the RESOURCE project. The involvement of the Government of Aragon as a leader in the development of the implementation of the circular economy in its territory and the consideration of this as an established economic sector but with ample room for improvement, which allows aspiring to turn it into a strategic sector, are at the origin of the decision of participation of this region in the project.

Proof of this is that, apart from the data provided by the indicators in section 1 of this document, more than 230 stakeholders in the development of the circular economy have been identified, drawn from the network of contacts of the project partners responsible for the execution of this task (GoA, CEEI, ANCES) that can collaborate in the development and enrichment of the project.

The four initial categories of stakeholders have been broken down into eleven distinct groups that have their own peculiarities. The identification of the first two groups (institutional stakeholders and intermediate organisations and facilitators) is relatively simple to carry out because they are entities established in the territory with which there is contact.

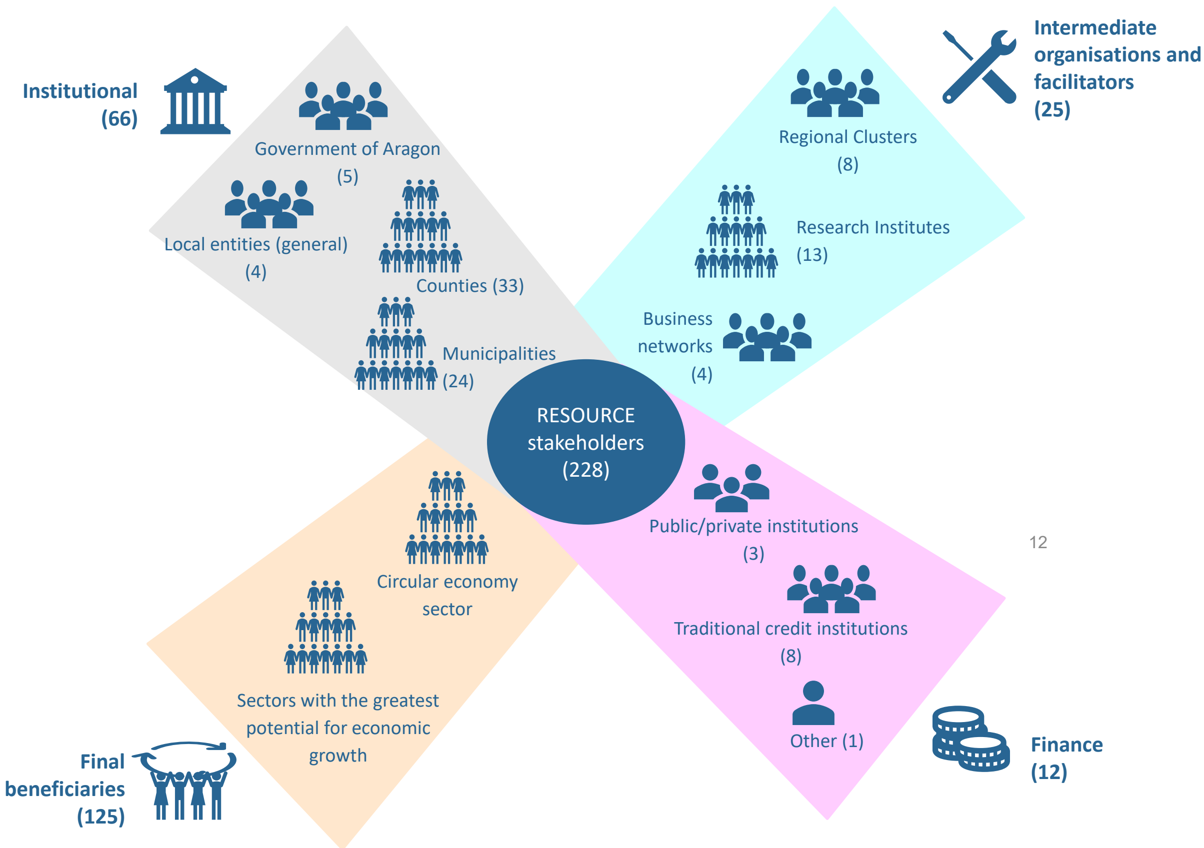

Figure 10: The four types of Stakeholders in details

However, the identification of financial agents and potential final beneficiaries requires the existence of a prior interest on their part in the development of the circular economy. And in this sense, the result of the identification of this type of agents has been satisfactory. It is true that in the case of financial actors it is not possible to identify them completely in this document for reasons of confidentiality, but it is to be hoped that this aspect will become clearer as the work progresses. With regard to potential beneficiaries, the GoA has identified and established contacts with 125 stakeholders (and from day-to-day experience it can be assured that this is a growing number) who are developing circular economy projects in Aragon and who, in general, are willing to receive private funding for their development. The contact with them in previous months, through meetings that they themselves have requested, has allowed the GoA to know what are the main benefits and barriers that they find in the development of circularity processes (they are listed in tables 6 and 7 of this document), among which access to financing occupies a relevant place.

To go deeper into the stakeholder engagement, stakeholders will be interviewed to a stakeholder's agreement.

4.1 Interview process

The process of interviews with the actors above mentioned in section 3 is of particular importance as it is the first step towards stakeholder involvement and subsequent agreement with them.

A minimum of 50 interviews are expected to be conducted in the second part of this task, which will form part of D1.2, and will include representatives of all the groups described above and detailed in the annex to this document. More actors will, however, be contacted to avoid not reaching the expected minimum in a satisfactory way.

The breakdown of interviews is expected to reach the following milestones:

- In the institutional stakeholders category, 3 interviews will be carried out from the group corresponding to the Government of Aragon, considering that two of the five mentioned have the status of project partners. In the group of local entities, at least 7 interviews will be carried out, trying to ensure that entities belonging to the three provinces and the FAMCP are included.
- In the category of intermediate organisations and facilitators, we will try to include the 4 Socio-Economic Networks with whom the relationship is very fluid, and the collaboration is habitual. In the other two groups (regional clusters and research centres) a total of 12 interviews should be carried out (6 in each of them).
- In the category of financial stakeholders, at least two public/private financial institutions and at least three of the traditional credit institutions most closely linked to the Aragon territory will be interviewed. It is not possible to determine the number of interviews that will be carried out with the participants in the ANCES INVESTMENT PROGRAMME as it is not known how many and who they are. These interviews will be carried out by our third party in the project (ANCES) and, due to the importance of this group for the development of the RESOURCE project, they will be as many as possible. If necessary, interviews with traditional credit institutions can be intensified.
- In the last category, concerning the potential beneficiaries, and their importance for the development of the project, 15 to 20 interviews should be conducted. These will

not include, without prejudice to the fact that they may also be interviewed, the companies that have been chosen as pilot projects, since RESOURCE's interaction with them will have a different intensity.

The interviews, which will follow the flexible model included in the section below, will preferably take place face-to-face to facilitate the involvement of the interviewees with the RESOURCE project. Where this is not possible, interviews will be conducted online, and videoconferencing will be preferred to phone interviews. Interviews will not be conducted via email as this may hinder the best possible relationship building and would impede reactions and deeper understanding.

As the stakeholders are located in Spain and especially in Aragon, the interviews will be conducted in Spanish to facilitate the relationship with the interviewees. Each stakeholder will be introduced to the RESOURCE project.

Interviewees should be encouraged to provide names of other relevant stakeholders to contact them, assess possible additional interviews or possible collaborations in the project.

The duration of the interviews should not exceed 30 minutes.

Minutes of the interviews will ensure keeping all details. Written summaries of the interviews, both in the original language and in translation, will be attached as annexes to deliverable D1.2.

The interviews shall be conducted in October and if necessary, in the first days of November, and shall in any case be finalised in time for analysis and for closing the agreements with the stakeholders.

4.2 Interview guide

This stakeholder interview script is designed as a flexible document to be used by the interviewers, adapting it to the peculiarities of the interviewee and to the conditions in which the meeting takes place, and may require any necessary extensions or clarifications.

The targeted interviews will be allocated and distributed among all partners collaborating in WP1, depending on their specialty as much as possible.

A guideline has been designed to carefully record all the elements of the interview, as showed in the Annex 2: Interview guideline.

In conclusion, it can be stated that the mapping carried out in this document offers a wide range of entities with which to collaborate in the different lines of the RESOURCE project: both in the interviews that will be carried out in the second phase of this same task and in the contact with the selected pilot projects, which are part of other work packages.

Annex 1: list of stakeholders

INSTITUTIONAL STAKEHOLDERS

a) Government of Aragon
   - Department of Agriculture, Livestock and Environment
   - Department of Industry, Competitiveness and Business Development
   - Department of Citizenship and Social Rights
   - European Centre for Innovative Enterprises of Aragon (CEEIARAGON)
   - Aragon Institute of Promotion (IAF)

b) Local entities (general)
   - Aragon Federation of Municipalities, Counties and Provinces (FAMCP)
   - Provincial Council of Huesca
   - Provincial Council of Teruel
   - Provincial Council of Zaragoza

c) Counties
   - ZARAGOZA
     i. Del Aranda
     ii. Bajo Aragón - Caspe
     iii. Campo de Belchite
     iv. Campo de Borja
     v. Campo de Cariñena
     vi. Campo de Daroca
     vii. Cinco Villas
     viii. Calatayud
     ix. Ribera alta del Ebro
     x. Ribera baja del Ebro
     xi. Tarazona y el Moncayo
     xii. Valdejalon
     xiii. Zaragoza (Comarca Central)
   - HUESCA
     i. Alto Gállego
     ii. Cinca medio
     iii. Bajo Cinca
     iv. Hoya de Huesca
     v. Jacetania
     vi. La Litera
     vii. Monegros
     viii. Ribagorza
     ix. Sobrarbe
     x. Somontano - Barbastro
   - TERUEL

i. Bajo Martin
ii. Jiloca
iii. Cuenca mineras
iv. Andorra - Sierra de Arcos
v. Bajo Aragón
vi. Comunidad de Teruel
vii. Maestrazgo
viii. Sierra de Albarracin
ix. Gudar-Javalambre
x. Matarraña

d) Municipalities (more than 5,000 inhabitants)
- Zaragoza
- Huesca
- Teruel
- Calatayud
- Utebo
- Monzón
- Barbastro
- Ejea de los Caballeros
- Alcañiz
- Fraga
- Cuarte de Huerva
- Jaca
- Tarazona
- Caspe
- Binéfar
- Sabiñánigo
- Zuera
- Almunia de Doña Godina, La
- Andorra
- Alagón
- Tauste
- Puebla de Alfindén, La
- María de Huerva
- Muela, La

INTERMEDIARY ORGANIZATIONS AND FACILITATORS

a) Regional Clusters
- AERA Cluster Aeroespacial de Aragón
- ARAHEALTH, Cluster de la Salud de Aragón

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- CAAR Cluster de Automoción de Aragón
- CLENAR Cluster de la Energía de Aragón
- Clúster aragonés de alimentación
- I+PORC Cluster del Porcino
- CMAA Cluster maquinaria agrícola
- TECNARA, Cluster Aragonés de Tecnologías de la Información, Electrónica y Telecomunicaciones
- ZINNAE Cluster aragonés para el uso eficiente del Agua

b) Research Institutes
- AITIIP FOUNDATION
- CIRCE FOUNDATION
- ITAINNOVA Aragon Institute of Technology.
- CITA Centro de Investigación y Tecnología Agroalimentaria de Aragón (Agri-Food Research and Technology Centre of Aragon)
- CSIC Centro Superior de Investigaciones Científicas (
- I3A University Institute of Engineering Research
- ICMA. Institute of Materials Science of Aragon.
- INIA National Institute for Agronomic Research
- Instituto de Investigación sobre Vehículos.
- IUCA. University Institute for Research in Environmental Sciences of Aragon.
- University of Zaragoza. Sciences - Engineering
- University of Zaragoza. Faculty of Economics and Business

c) Socio-Economic Networks
- CEPYME Confederation of Small and Medium-sized Enterprises of Aragon
- CEOE ARAGON Confederation of Aragon Businessmen
- UGT Unión General de Trabajadores
- CCOO Comisiones Obreras

FINANCIAL STAKEHOLDERS

a) Public/private institutions
- AVALIA ARAGON, Sociedad de Garantía Recíproca
- Society for the Industrial Development of Aragon (SODIAR)
- Instituto de Crédito Oficial (ICO)

b) Traditional credit institutions
- Ibercaja Banco
- Banco Santander
- Bankia
- BBVA
- CaixaBank
- Caja Rural de Aragón
- Caja Rural de Teruel

- Laboral Kutxa

c) Others
   - ANCES INVESTMENT PROGRAMME (includes Business Angels, Accelerators/Incubators, Equity Crowdfunding platforms, Venture Capital institutions, Private Equity, etc.)

FINAL BENEFICIARIES

- ACAI DEPURACIÓN, S.L.U.
- ADIEGO HERMANOS
- AGROPECUARIA ARCO IRIS S.L
- AGUSTIN CASTAN S.L
- AIRFAL INTERNATIONAL SL
- ALGONTEC, S.L.U
- AM3D METALICA SL
- ARAGONESA DE COMPRA VENTA Y EQUIPAMIENTO INDUSTRIAL SL.
- ARIÑO DUGLASS SA
- ARVENSIS AGRO SA
- AVIATION INTERNATIONAL RECYCLING SL
- BECTON DICKINSON, S.A.
- BIODIESEL ARAGON
- BIOKNOSTIC SL
- BIORECA INNOVACION SL
- BIOSELVAL GESTION MEDIOAMBIENTAL SL
- BIT&BRAIN TECHNOLOGIES SL
- BODEGAS Y VINOS DE LECERA SL
- CARBURO DEL CINCA, S.A.
- CARNES DE TERUEL, S.A. CARTESA
- CARNICAS CINCO VILLAS
- CASALE GESTION DE RESIDUOS SL
- CELULOSA FABRIL, SA
- CEMEX ESPAÑA OPERACIONES SL
- CENTRO EUROPEO DE RECICLAJE FOTOVOLTAICO SL
- CHOCOLATES ARTESANOS ISABEL
- COANFI, SL
- COLAS ARTIACH
- CONFECCIONES OROEL SA
- CONSORCIO AEROPUERTO DE TERUEL
- CONSTRUCCIONES ERNESTO ESPIAS SL
- CONSTRUCCIONES MARIANO LOPEZ NAVARRO
- CONTAZARA, S.A.
- CROISSET THERMOPLASTICS ENGINEERING SL
- DEPUPORC, S.L.

- DERICHEBOURG ESPAÑA
- DR. SCHAR ESPAÑA S.L.
- DYNAMIC TOOLS S.A
- EBROACERO S.A.
- ECOHELP WASTE MANAGEMENT SL
- ELECTROINGENIERÍA INDUSTRIAL XCLC SL
- ENAGAS SA (Enagas-Litera Gas)
- ENERLAND 2007 FOTOVOLTAICA S.L.
- EQUIMODAL S.L
- ERGOMAQ-97 SL
- ESTUDIOS Y PROYECTOS MEDIOAMBIENTALES 2012 SL
- ESYPU SL
- EUTRALSA SL
- FACI METALEST
- FELTWOOD ECOMATERIALES SL
- FERTINAGRO BIOTECH SL
- FERTINAGRO NUTRIGENIA, SLU
- FERTINAGRO TECNOS MÁXIMA, S.L.U.
- FINANCIERA MADERERA SA
- FORESTALIA RENOVABLES SL
- FRAGMETAL CALATAYUD SOCIEDAD LIMITADA
- GESTCOMPOST, S.L.
- GESTION Y TECNICAS DEL AGUA SA
- GESTURVINA SL
- GEEZAR SOLUCIONES, S.L.
- GRANJAS GUCO S.L.U.
- GREENVAL TECHONOLGIES SL
- GRES DE ARAGON SA
- GRUPOS ELECTROGENOS EUROPA SA
- GSS ESTUDIOS PROYECTOS Y SOLUCIONES
- HERDIST
- IBERFOIL ARAGON SLU
- IBÉRICA DE ALEACIONES LIGERAS SLU
- INDUSTRIAS LOPEZ SORIANO SL
- INDUSTRIAS QUIMICAS DEL EBRO SA
- INEDIT INNOVACIO SL
- INETUM ESPAÑA S.A.
- INFINITIA RESEARCH SL
- INGENIERIA DE OBRAS ZARAGOZA SL
- INGENIERÍA Y MONTAJES MONZÓN, S.L. INMOSA
- INMOBORYO SL

- INTERNATIONAL CASING PRODUCTS, SLU
- INVERSIONES METROPOLITANAS ZARAGOZA SL
- JORGE PORK MEAT SL
- JOSÉ MARÍA LÁZARO, S. A. – TAISI
- LIBELIUM COMUNICACIONES DISTRIBUIDAS SOCIEDAD LIMITADA
- MACISA, RUEDAS INDUSTRIALES SL
- MAGAPOR SL
- MODULOS RIBERA ALTA SLU
- MONDO IBERICA SA
- MONDO TUFTING SA
- MOSES PRODUCTOS SL
- MOSO 3D SOCIEDAD LIMITADA
- NABLADOT SL
- NUREL
- OPEL ESPAÑA SL
- PENSUMO, S.L.
- PIENSOS COSTA SA
- PIKOLIN, S.L.
- PIRINEOS METAL, S.A.
- PLASTICOS ESCANERO S.L
- POLUX TECNOLOGIA
- PORCINO TERUEL SA
- POSADA GUADALUPE, S.C
- RECURSOS ENERGETICOS RURALES S.L
- RIBAWOOD
- RIVASAM
- SAICA FLEXIBLE SAU
- SAINT-GOBAIN PLACO IBERICA SA
- SEROIL ENERGY EXPRESS SRL
- SISTEMAS ECOLOGICOS DE POLIURETANO SL
- SMR AUTOMOTIVE SYSTEMS SPAIN
- SOLUTEX GC SL
- SPHERE GROUP SPAIN SL
- TECMOLDE S.L.
- TECNOPACKAGING
- TERRAIBÉRICA DESARROLLOS SL - TERRAIBÉRICA
- THERMOLYMPIC SL
- TINSER S.L.U. - TIEBEL SERVICIOS DE INSERCIÓN S.L.U.
- UMBELCO S.L.
- URBASER
- URVINA SL

- VALL COMPANYS SAU
- VALORA TERUEL, S.L.
- VELABER CONSULTING SL.
- VIALEX CONSTRUCTORA ARAGONESA S
- WEEE INTERNATIONAL RECYCLING SOCIEDAD LIMITADA
- YUDIGAR SLU
- ZALUX
- ZOILO RIOS

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Annex 2: Interview guideline

Organisation name	
Interviewed Person name	
Email address	
Phone number	
Name of the interviewer	
Date	

Presentation of the stakeholder

- Describe your organisation: activity, territorial scope, number of employees, headquarters, etc.
- Value chain in which you operate
- List of actors with whom you have relationships: customers, suppliers, partners, etc.

Links to Circular Economy

- To what extent do you apply circularity principles in your activity? What is your stage of development/commitment to the issue? Please describe briefly.
- What do you see as the main barriers to progress in the circular economy?
- What are the strengths of the circular economy in your activity?
- What are the critical points?
- What is your ultimate goal, your dream, in this respect?
- What do you think are the limits to reach it?

Questions addressed to all stakeholders except financial stakeholders.

- Who are the best actors to finance the circular economy today in Aragon?
- What do you see as the main bottlenecks for financing the circular economy?
- What are the budgets that finance the development of the circular economy today? How can it be improved?

Questions for financial stakeholders

- What do you require from potential private funding stakeholders to facilitate your support?
- What do you require from circular economy projects to support them financially?
- What are the main risks you see in investing in the circular economy?
- What advantages do you see in the linear economy model versus the circular economy model to invest in? How could they be overcome?

Support to RESOURCE development

- What are your expectations regarding the RESOURCE project?
- How can we help you?
- How can we best support the RESOURCE project (discuss engagement, what we need from them, what we can offer them)?

Next steps

- Are there other supporters to contact in this area?
- Can you suggest someone we can interview next?
- Would you agree to share relevant details of your activity with the RESOURCE project?
- Would you be interested in applying to our Expert Committee?

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