

# CIRCULAR ECONOMY STRATEGY OF THE BASQUE COUNTRY 2030



**EUSKO JAURLARITZA**

INGURUMEN, LURRALDE PLANGINTZA  
ETA ETXEBIZITZA SAILA



**GOBIERNO VASCO**

DEPARTAMENTO DE MEDIO AMBIENTE,  
PLANIFICACION TERRITORIAL Y VIVIENDA



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# INSTITUTIONAL PRESENTATION



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Minister for the Environment,  
Territorial Planning and Housing

Over the last hundred years, global consumption per capita has doubled, while primary energy consumption has tripled. Furthermore, the population grew fivefold between 1990 and 2019. Those two factors have significantly increased both the pressure on natural resources and the scale of the impact on the environment. The future trend is clear. The need for natural resources will have tripled by 2040 and the demand for food will increase by 70%. Therefore, a change of paradigm in the way of producing and consuming – moving from a linear economy to a circular economy – is required.

The circular economy provides two types of benefits: environmental and economic. Direct environmental benefits are associated to lower consumption of resources, less waste produced and better management of both. There are also many other associated benefits in different areas such as climate change. In this line, the European Commission has stressed that complying with its "Circular Economy Package" would lead to the greenhouse gases of the European Union being cut by between 2 and 4%.

The circular economy in the Basque Country currently accounts for 1.12% of the Gross Domestic Product, with gross annual income of €764 million. In terms of employment, there are 18,463 jobs related to the circular economy, in other words, 2.08% of the total jobs of the BAC. This value is higher than the figures for Spain and Germany, with 2.00% and 1.71% of jobs, respectively, related to the circular economy.

The Basque Country generates 5.8 million tons of waste a year, 53% of which ends up being recycled. However, there is always room for improvement. The Basque industry's dependency on imported raw materials is 77%, while nearly €45 million worth of materials a year still end up in Basque landfills.

According to the "Circular Economy in the Industry of the Basque Country Assessment", embarking on more circular innovative solutions would lead to estimated average potential savings of 6% in the consumption of raw materials, resulting in savings of €2 billion in Basque industry. The metal (iron &

steel, foundry, metal products) and mobility (automotive, aeronautics) sectors would accumulate half of the potential savings in Basque industry.

The Basque Country has developed this Circular Economy Strategy to harness these opportunities and which focuses on three objectives: (1) increase material productivity, (2) increase the circular material use rate, and (3) reduce the waste generation rate per GDP unit.

The implementation of this Strategy will clearly have positive impacts on environmental, social and economic areas. The expected outcomes include increased business turnover in more circular products; job creation in the field of the circular economy, a positive impact on the environment due to greater demand for natural resources, and better waste management. Furthermore, a more circular economy will cut greenhouse gas emissions, thus contributing to fighting against what is considered the greatest global challenge of the 21st century, climate change.

# 1. INTRODUCTION

## **1.1. CHANGE OF MODEL: FROM A LINEAR ECONOMY TO A CIRCULAR ECONOMY**

### **Rationale and implications**

The world is changing at a faster rate than early generations could never have imagined and technological advances are blurring the frontiers between the digital, biological and physical worlds. That all comes under what is known as the fourth industrial revolution. Unlike previous revolutions, this one is advancing at an unprecedented speed.

The increase in the global demand for resources in recent decades, due among other reasons to the growth of the world population and of emerging economies has led to natural resources being consumed at a significantly faster rate. This situation has led to disruptions in supply and price volatility of raw materials, materials and resources. Furthermore, from an environmental perspective, the current linear model and growth in demand has led to further deterioration of the ecosystem and greater human impact on nature.

The three first revolutions followed a linear model – based on "extract, produce, use and throw away" – when it was considered that natural resources were

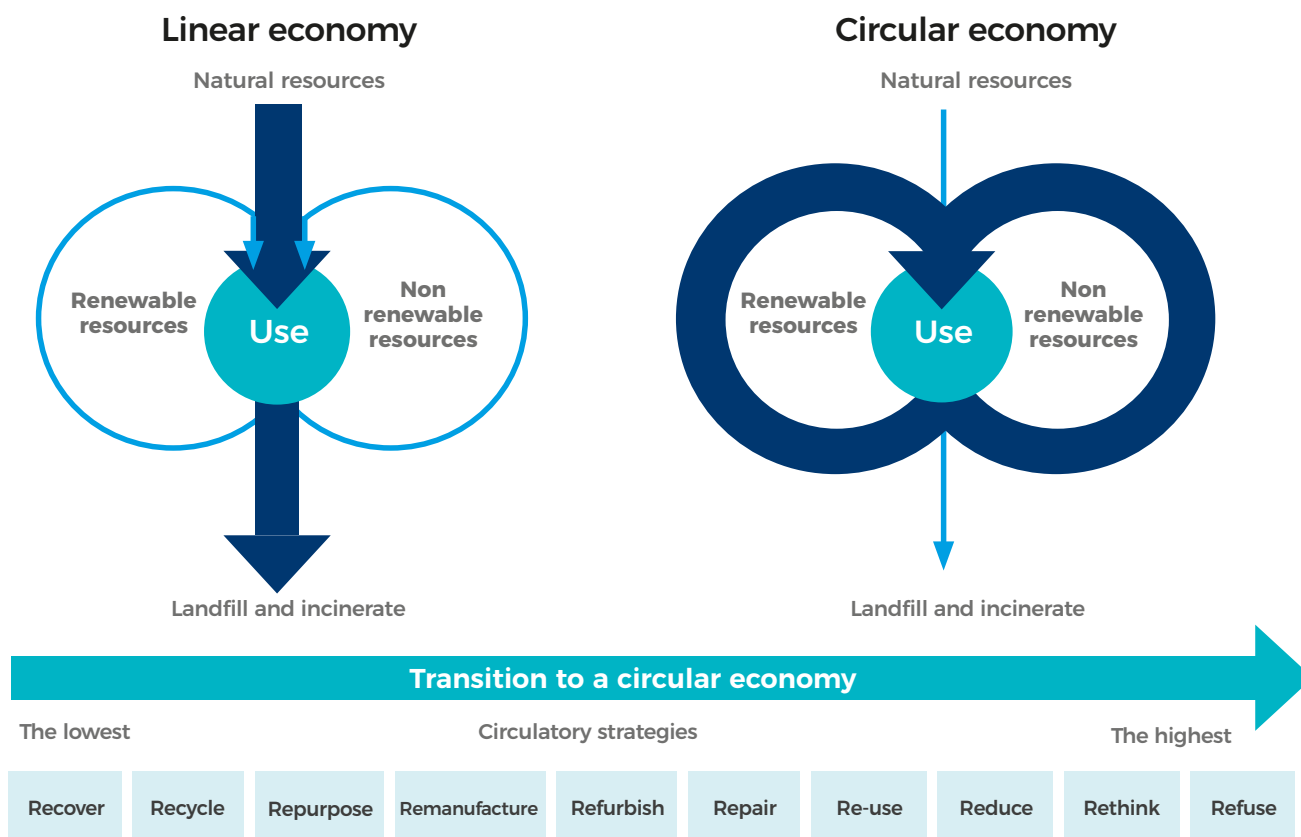
practically infinite and the effects that the different production process could have on people and the environment were unknown. In the last hundred years, global consumption per capita has doubled, while primary energy consumption has tripled. We now know that the last century has seen an overexploitation of our resources, making them increasingly scarcer and more difficult to obtain. However, all projections point to the demand for resources continuing to grow at a very high rate and that will make finding and extracting new resources increasingly more difficult. Prices will fluctuate significantly and, in the long term, certain material resources will likely be scarce and costly. The fourth industrial revolution will therefore not only represent a qualitative leap in technological development, but it will also have to go hand in hand with a decoupling between economic growth and the consumption of natural resources. This will provide opportunities to create new business models and generate quality employment for a more demanding population, which is expected to reach 9 billion people by 2050 and with the middle class growing by 3 billion.

This panorama makes our current lifestyle, fundamentally based on a linear economy, difficult to sustain. The circular economy is a change of paradigm in the way natural resources are used and, therefore, in how we relate to the environment. In

the new circular model, the lifecycle of the products and materials are kept for as long as possible, the waste is reduced to a minimum, and resources are repeatedly reintroduced into the production cycle, thus creating value when the goods reach the end of their useful life. It means moving from "extract, produce, use and throw away" to "reduce, reuse and recycle". Prevention and reuse are the key words in a circular economy. In short, "achieving more with less" is the cornerstone of the circular economy.

The circular economy is based on three<sup>1</sup> key principles.

1. Preserve and enhance natural capital, by controlling finite stock and balancing the flows of renewable resources.
2. Optimise resource yields by circulating products, components and materials with the highest utility at all times in both technical and biological cycles.
3. Foster system effectiveness by revealing and designing out negative externalities.



Source: PBL, Netherlands Environmental Assessment Agency (2016).

<sup>1</sup> Ellen MacArthur Foundation.

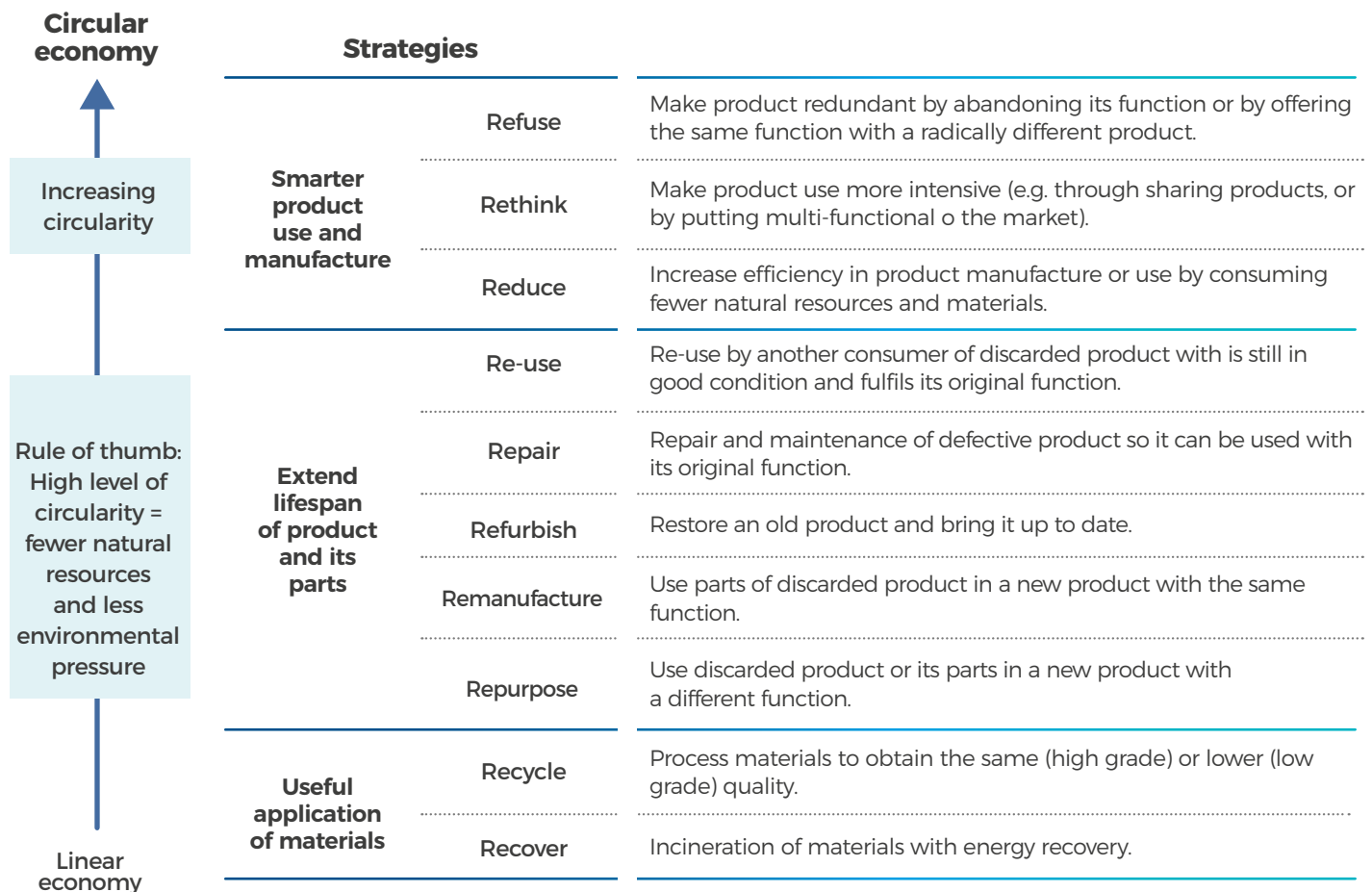
A circular economy seeks to rebuild capital, whether financial, manufactured, human, social or natural, thus guaranteeing improved flows of goSDG and services.

In order to advance towards the circular economy, the territories have 7 key elements<sup>2</sup> on which to base their strategy:

1. Prioritise regenerative resources.
2. Rethink the business model.
3. Design for the future.
4. Collaborate to create joint value.

5. Preserve and extend what is already made.
6. Use waste as a resource.
7. Incorporate digital technology.

Based on those elements, an effective circular economy strategy must allow resources to be optimised throughout the productive process, from design and manufacturing, then consumption and the reuse / remanufacture / recycle processes, to the elimination of non-recoverable waste, thus reducing both the input of resources and waste generation.



Source: PBL, Netherlands Environmental Assessment Agency (2016).

<sup>2</sup> The 7 Key Elements, Circle Economy.

Even though all those aspects are important when drawing up a strategy, the specific characteristics of each territory (demographic, economic, social, etc.) and its baseline, mean that the focus should be on the elements where the room for improvement is greater and the implementation of the strategy allows the expected results to be maximised.

## European context and circular economy

The European Commission is playing a key role in the driving of the transition to a more circular economy, by establishing the pillars and paving the way that companies, the authorities and the general public should follow. These shift actions have been reflected in the following strategies and action plans:

### TIMELINE

<b>2010</b>	Europe 2020 Strategy.
<b>2011</b>	Eco-Innovation Action Plan.
<b>2013</b>	7th Environmental Action Programme.
<b>2015</b>	The EU Action Plan for the Circular Economy.
<b>2018</b>	Circular Economy Package.

#### 2010 Europe 2020 Strategy - 'A strategy for smart, sustainable and inclusive growth'

In 2010, the European Council was taking stock in order to come out of the financial crisis in a stronger position and identify the keys for success by 2020. It therefore drafted a new strategy on a 10-year timeline, which sought to achieve smart, sustainable and inclusive growth.

#### 2011 Eco-Innovation Action Plan

In order to deliver the objectives in the Strategy, as regards the efficient use of resources, the European Commission adopted the Eco-Innovation Action Plan (EcoAP) to accelerate the incorporation of eco-innovation in the market and address both the drivers and the obstacles.

#### 2013 7th EU Environment Action Programme to 2020 - 'Living well, within the limits of our planet'

Three years after adopting the Europe 2020 Strategy, and in keeping with the sustainable growth challenge, a horizontal framework was set up with all the environmental policies that the European Union wished to implement. This led to the 7th Environmental Action Programme, which set out Europe's environmental policy up to 2020.

#### 2015 European Action Plan for the Circular Economy - 'Closing the loop'

Following on from the European Union's endeavours to attain a sustainable economy that is low-carbon, resource-efficient and competitive, a specific action plan for the circular economy was developed and was linked to the twelfth goal of the UN 2030 Agenda. Along with establishing the benchmark legislative framework, the Commission provided support for regional and national authorities, with the aim of encouraging all Member States to take the same path.

#### 2018 Circular Economy Package

Once the "Closing the Loop" Action Plan, the blueprint to transform Europe into a more circular economy had been established, in 2018 the European Commission approved a new package with reviewed legislative proposals to help companies and consumers achieve circular economy objectives in the long term.



Those new measures will come into force in 2020 and will affect the following legislation:

- Directive 2008/98/EC on waste amended by Directive 2018/851.
- Directive 94/62/EC on packaging and packaging waste amended by Directive 2018/852.
- Directive 1999/31/EC on the landfill of waste amended by Directive 2018/850.
- Directive 2000/53/EC on end-of-life vehicle amended by Directive 2018/849.
- Directive 2006/66/EC on batteries and accumulators and their waste amended by Directive 2018/849.
- Directive 2012/19/EU on waste electrical and electronic equipment amended by Directive 2018/849.

In its pursuit to drive competitiveness and sustainable growth, the European Union has different financial instruments to support research and innovation activities. In the field of environmental policies, special mention should be made of the LIFE and H2020 programmes (future Horizon Europe), necessary instruments to drive the circular economy in Europe.

In addition, the Commission is working on driving the bio-economy, cutting food waste and its plastic strategy. Other measures related to the Action Plan are the review the ErP Directive 2009/125 on the ecodesign of products, the single-use plastics directive and the review of the REACH Regulation (EC) 1907/2006 on the registration, evaluation, authorisation and restriction of chemical substances and mixes, to facilitate the recovery of the materials.

## 2030 Agenda of the United Nations and the circular economy

In its 2030 Agenda, the United Nations establishes a blueprint for global sustainable development. In 2015, 17 goals were set to be

achieved by 2030 and impact the environmental, social and economic dimension globally. The European Union has taken this document as a benchmark and is seeking to be trail-blazing in those fields, by including the UN sustainable development goals in its strategies and plans.

The transition to a more circular economic model is completely in line with the United Nations 2030 Agenda. The circular economy is a key lever to achieve the following UN sustainable development goals:

### SDG 7 – Affordable and Clean Energy

The two main targets of the UN with this SDG are to:

- Increase substantially the share of renewable energy in the global energy mix.
- Double the global rate of improvement in energy efficiency.

The transition to a circular economy model will help to meet the SDG 7 targets, as fossil fuels will be replaced in energy production by new resources and alternative energy sources.

### SDG 9 – Industry, Innovation and Infrastructure

The two main UN targets with this SDG are to:

- Upgrade infrastructure and retrofit industries to make them sustainable with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
- Enhance scientific research and upgrade the technological capabilities of industrial sectors in all countries, in particularly developing country, by encouraging innovation.

One of the focuses of the circular economy is on increasing material productivity, which would have a direct impact on achieving SDG 9.

### SDG 11 – Sustainable Cities and Communities

Cities play an essential role in the transition from a linear to a circular economy. Cities are home to 54% of the population; they produce 85% of the GDP, consume 75% of natural resources and generate 50% of waste and 60-80% of GHG emissions. The circular economy is an economic framework that can help to address growing challenges such as the built environment, mobility and habitability and it can help to improve competitiveness. Governance, company empowerment, public procurement, consumption and management of resources are themes that will influence the development of circular economy concepts in the municipalities. Opportunities are opened up for new business models such as reverse logistics or reuse of materials.

"The Basque Declaration. New Pathways for European Cities and Towns" 2016, prepared by ICLEI - Local Governments for Sustainability, points out that challenges need to be converted into opportunities for our local economies in key areas such as decentralised renewable energy generation,

local food production, innovative transport concepts, new approaches to social services, along with many other innovations. Therefore, the signatory municipalities have undertaken to create and close local value chains, facilitate the innovative cooperation of companies to capture regional and local value, create small-scale local investment opportunities and jobs, and increase public revenue. All those actions are in line with the principles of the circular economy.

### SDG 12 – Responsible Consumption and Production

SDG 12 "Responsible Consumption and Production" is at the heart of the circular economy. Its aim is "doing more and better with less". In order to fulfil this goal, a comprehensive review will be needed of the linear production and consumption patterns, in favour of a circular model: a new model where all the products are designed and produced taking into consideration their reuse, their recycling, sustainable management and efficient use of natural resources, and reducing waste generation. This change to the new model will only be possible thanks to the involvement of companies, consumers and authorities.



Source: United Nations.

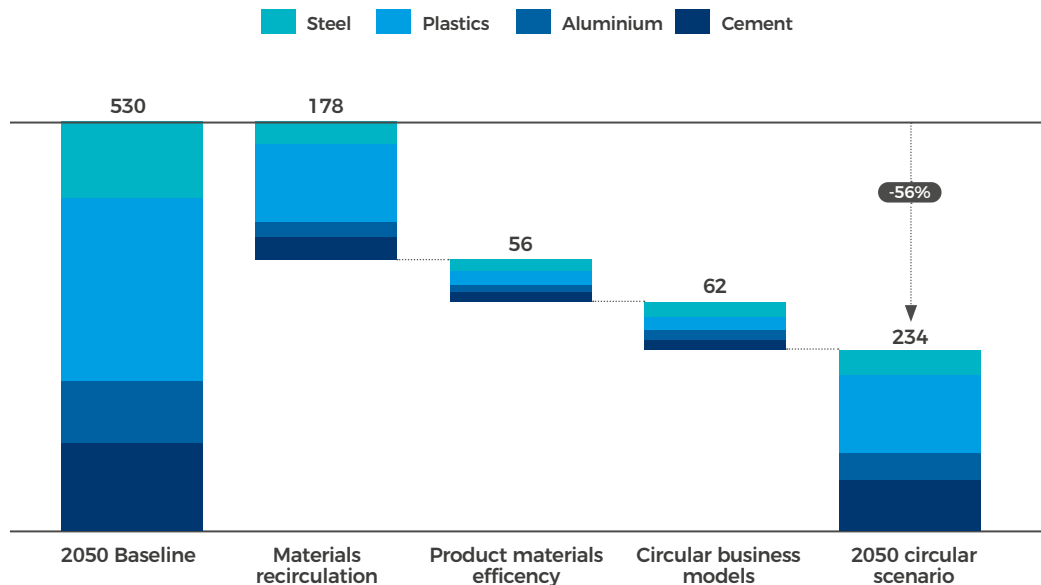
The **Basque Country 2030 Agenda**, approved by the Basque Government Cabinet on 11 April 2018 and which covers 2016–2020, focuses public policies in the light of the challenges of the 2030 Agenda. The Basque Government has taken up the universal challenge of the UN 2030 Agenda and has signed up to the global commitment to achieve the 17 SDGs, by focusing on the common matters of interest that are relevant in our territory. Those 17 goals are linked to 15 country goals and implemented by means of 100 targets, involving 67 planning instruments and the approval of 16 legislative initiatives, along with a Dashboard with 50 indicators. Given the international nature of the Euskadi-Basque Country 2030 Agenda, it is part of the Euskadi-Basque Country Internationalisation Framework Strategy 2020.

### Climate change and the circular economy

The transition towards a circular economy model can play a fundamental role in achieving the objectives established in the "Climate Action" Paris Agreement. A more circular model, particular for materials such as metals, plastics, biomass and cement and rather based on managing the demand for materials, is fundamental to reduce greenhouse gas emissions. The most effective measures to reduce emissions have to consider recirculating materials, improving material efficiency in the products, among other, and, finally, need to deploy new business models.

Therefore, achieving a more circular economy in the EU could reduce industrial emissions by an estimated 50% by 2050<sup>3</sup>.

**EU EMISSIONS REDUCTIONS POTENTIAL FROM A MORE CIRCULAR ECONOMY, 2050**  
Mt OF CARBON DIOXIDE PER YEAR



Source: Material economics, 2018.

<sup>3</sup> The circular economy – A powerful force for climate mitigation, Material economics, 2018.

The European Commission considers ecodesign to be one of the best ways to ensure security of energy supply and reduce greenhouse gas emissions<sup>4</sup>. It also estimates that the Ecodesign Directive, together with energy labelling, may contribute to around half of the energy savings target for 2020. According to the European Commission itself, ecodesign and energy labelling will lead to energy savings of 9% of the EU's total energy consumption in 2020 and a 7% reduction in the total carbon emissions of the European Union<sup>5</sup>.

In addition, including ecodesign criteria in energy products means estimated savings of €490 on household energy bills each year, which would be nearly 1% of the EU GDP by 2020 and 2.6% by 2030<sup>6</sup>.

## The Circular Economy in the Basque Country

The Basque Country has been successfully working on the circular economy for years. Since 2000, the Basque economy has grown by 26%, while material consumption has fallen by 25% and the volume of municipal waste ending up in landfill is down by 56%. We can claim that our economy is decoupling from material consumption and waste generation thanks to the driving circular economy measures.

The series of instruments and tools deployed in the Basque Country in recent years mainly comprises public instruments, aimed both at generating Circular Economy demand and at driving the business offering, mainly by means of cooperation between the Basque Government's Ministry of the Environment, Territorial Planning and Housing and its Ministry of Economic Development and Infrastructures, and IHOBE and SPRI, its publicly-run companies.

The appropriate combination of political instruments is being aimed at:

- Creating circular economy demand, the most complex area to which tax deductions for investment in equipment on the Clean Technologies List, subsidies for investment in equipment, environmental authorisations and inspections, techno-environmental standards, the driving of the supply chain such as the Basque Ecodesign Center and green public procurement contribute.
- Driving the supply eco-innovative solutions, mainly by means of innovation grant programmes.

In this context, the Basque Country seeks to continue along this path and progress towards greater circularity in its economy. Therefore, it is of vital importance to involve the economic sectors with greatest potential to perform that transformation, on the basis of their contribution to the Basque economy, their use of raw materials, the volume of waste generated during their production processes and the capacity to reincorporate secondary raw materials.

The Basque economy imports 70% of its materials and 13% of our total consumption is turned into waste. Our industrial sector consumes 21 million tons of raw materials a year, 77% of which are imported. The transition towards a more circular economy offers opportunities for the Basque Country. In fact, if circular innovative solutions are undertaken, an achievable average potential saving of 6% of that consumption of raw materials is estimated, which would mean savings of around EUR 2 billion in Basque industry. The metal (iron & steel, casting, metal products) and mobility (automotive, aeronautics) sectors would accumulate half of the potential saving in Basque industry.

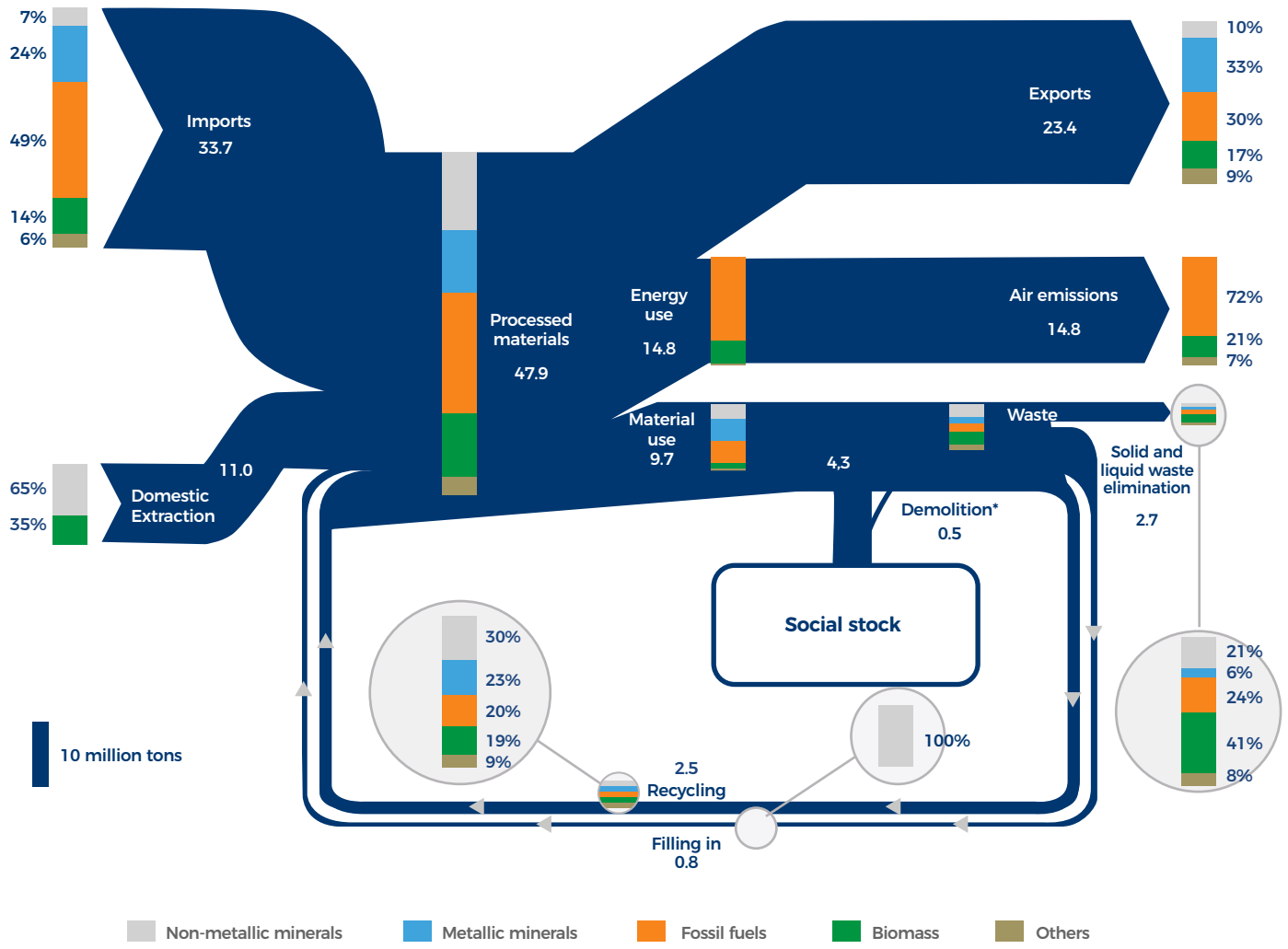
A view of the lifecycle of Basque economy essentially involves adding the Hidden Flows to the sum of material input (DMI). Hidden flows are

<sup>4</sup> The Ecodesign Directive (2009/125/EC) European Implementation Assessment.

<sup>5</sup> Eco design impacts accounting, Status September 2016, European Commission.

<sup>6</sup> Eco design impacts accounting, Status September 2016, European Commission.

**SANKEY DIAGRAM OF THE BASQUE ECONOMY 2016. MATERIAL FLOWS**  
(MILLIONS OF TONS)



*N.B.: the sum of the flows may not coincide with the total due to rounding off.*

**Basque Country 2016**

- 48 million tons of raw materials processed
- 70% imported (49% of imports are fossil fuels)
- 49% exported
- 13% waste (46% waste eliminated)
- 31% air emissions

Source: Ministry for the Environment. Basque Government (2018).

materials that have been removed from the natural environment in or outside the Basque Country, but which do not directly enter the economy as they do not have an economic value. That figure is defined as the Total Material Need (TMN)<sup>7</sup> and is an indicator reflecting the pressure exercised by an economy on the environment, thus providing a more reliable representation of the lifecycle of materials.

Even though imports in the Basque Country stood at 33.7 million tons in 2016, the associated hidden flows came to 222.8 million tons. In turn, the material extracted in the BAC and introduced directly into the economy was 11.0 million tons with associated hidden flows of 14.2 million tons.

Moreover, the Basque economy substantially contributes to the circularity of the global economy as 18.1% of the imported materials, without taking fossil fuels into account, are residual materials that have already been recovered and then reintroduced into the market. That is the case of steel, aluminium, iron and other metals, paper, biomass, etc. where global hidden flows are reduced by 31.2 million tons.

Consequently, when the flows associated to all the material input are included, the total material need of the Basque economy (TMN) came to 250.6 million tons, a figure much higher than the 44.7 million tons associated to direct material input (DMI).

Analysing the material balance of the Basque economy reveals the importance of optimising the processed material, by means of improving material productivity by manufacturing longer lasting and more efficient products, preventing waste generation thanks to ecodesign, greater efficiency of the processes and, finally, by reintroducing that waste in the production cycle, thanks to recycling and the widespread use of secondary raw materials.

For this and other reasons, the Basque Circular Economy Assessment concludes that the **industrial sector** of the Basque Country should be the cornerstone for the transformation towards a more circular economy. That sector accounts for nearly 25% of the GDP of the Basque Autonomous Community, is the most intensive sector in material consumption (the majority of which is imported) and in waste generation. It also offers interesting opportunities for improvement linked to ecodesign, advanced remanufacturing and repair, servitization and the recovery of metals and plastics. Within the industrial sector, there are opportunities linked to the metal, automotive, machine-tool, other means of transport, and energy & other electrical equipment sub-sectors (see table below).

In addition to the aforementioned industrial sector, the Basque Circular Economy Strategy considers specific measures in a further two key sectors. On the one hand, the **agri-food sector and the bioeconomy**, with high potential to contribute to a more circular economy, particularly in terms of cutting food waste and incorporating renewable raw materials. On the other hand, the **construction sector**, due to its important consumption of materials and waste generation and to the potential that it offers to recover secondary materials.

The Basque circular economy strategy is structured around the lifecycle of products and materials **–production, consumption, secondary raw materials and waste management–** and also incorporates the instruments needed to foster **Competitiveness and Innovation**, by leveraging the principles of the circular economy. As mentioned earlier, even though all economic sectors have a path to follow in this transition process, there are 3 main sectors (industry, construction and agri-food/bioeconomy) that, given their inherent characteristics, will decisively contribute to this change of model.

<sup>7</sup> Arto, Iñaki 2009.




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## MAIN CONCLUSIONS OF THE CIRCULAR ECONOMY IN BASQUE INDUSTRY ASSESSMENT

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The industrial sector in the Basque Country **consumes 21 million tonnes of raw materials a year.**

Basque industry **imports 77% of the raw material that it consumes.**

**Annually, Basque industry generates 3.5 million tons of waste, 43% of which** ends up in landfill.

The **raw material costs of companies** account for **61% of the total, compared to 2% of energy costs.** This last figure regarding energy costs is at a similar percentage as for Germany.

If more circular innovative solutions are undertaken, **an achievable average potential saving of 6%** of that consumption of raw materials is estimated, **which would mean savings of EUR 2 billion in Basque industry.**

Over **150 industrial companies of the Basque Country** are already applying circular practices or models (ecodesign, servitization, remanufacturing, lifecycle assessment, environmental declarations, etc.).

**60% of the companies already working on those approaches point out that introducing those criteria in their business or product is essential** in order to, among other aspects, make their processes more productive, cut energy consumption, save materials, grow sales, stand out on international markets, open up new markets, improve their image and increase their internal capabilities.

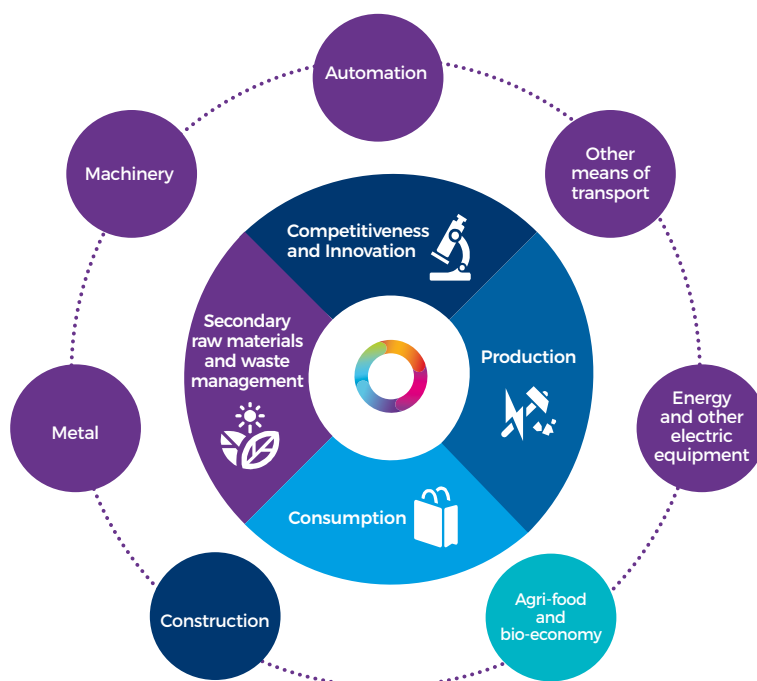
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**Source:** Circular Economy in the Industry of the Basque Country - Assessment,  
Ministry of the Environment, Basque Government, 2018.

Water is a fundamental resource within the Circular Economy and work must be carried out to achieve sustainable use of water, taken to be a cross-cutting element and common to all activity. The efforts must be focused on reducing and optimising consumption. Furthermore, reducing water pollution is important, in order to lower the energy consumed and the amount and hazard of the generated waste in the purifying processes. Even though the reuse of water has not been considered a priority, its potential development in industrial and urban areas has to be considered.

Finally, in addition to establishing priority sectors where specific measures are envisaged, the strategy identifies other sectors such as tourism, where there are options to develop measures related to the circular economy, for example by means of more sustainable mobility and architecture, the efficient harnessing of resources, selecting local suppliers, advanced waste management and respecting and caring for the cultural and physical environment. Those measures may be accommodated with applying the instruments set out in the defined measures and which are more intersectoral.

### PRIORITY SECTORS AND AREAS OF ACTION IN THE BASQUE CIRCULAR ECONOMY STRATEGY



## 1.2. PREPARING THE CIRCULAR ECONOMY STRATEGY OF THE BASQUE COUNTRY 2030

Concern about respecting the environment, optimising resources consumption and sustainable growth is nothing new in the Basque Country. Back in 1994, the first Waste Management Plan of the BAC advocated minimising waste before its correct elimination. In 2002, the I Environmental Framework Programme set the goal of "Responsible management of natural resources and of waste".

The fourth of those programmes, published in 2014 and entitled the "IV Environmental Framework Programme of the BAC 2020", established "To progress towards a resource-efficient, low-carbon, innovative and competitive economy" as one of its objectives and closely related to the principles of the circular economy.

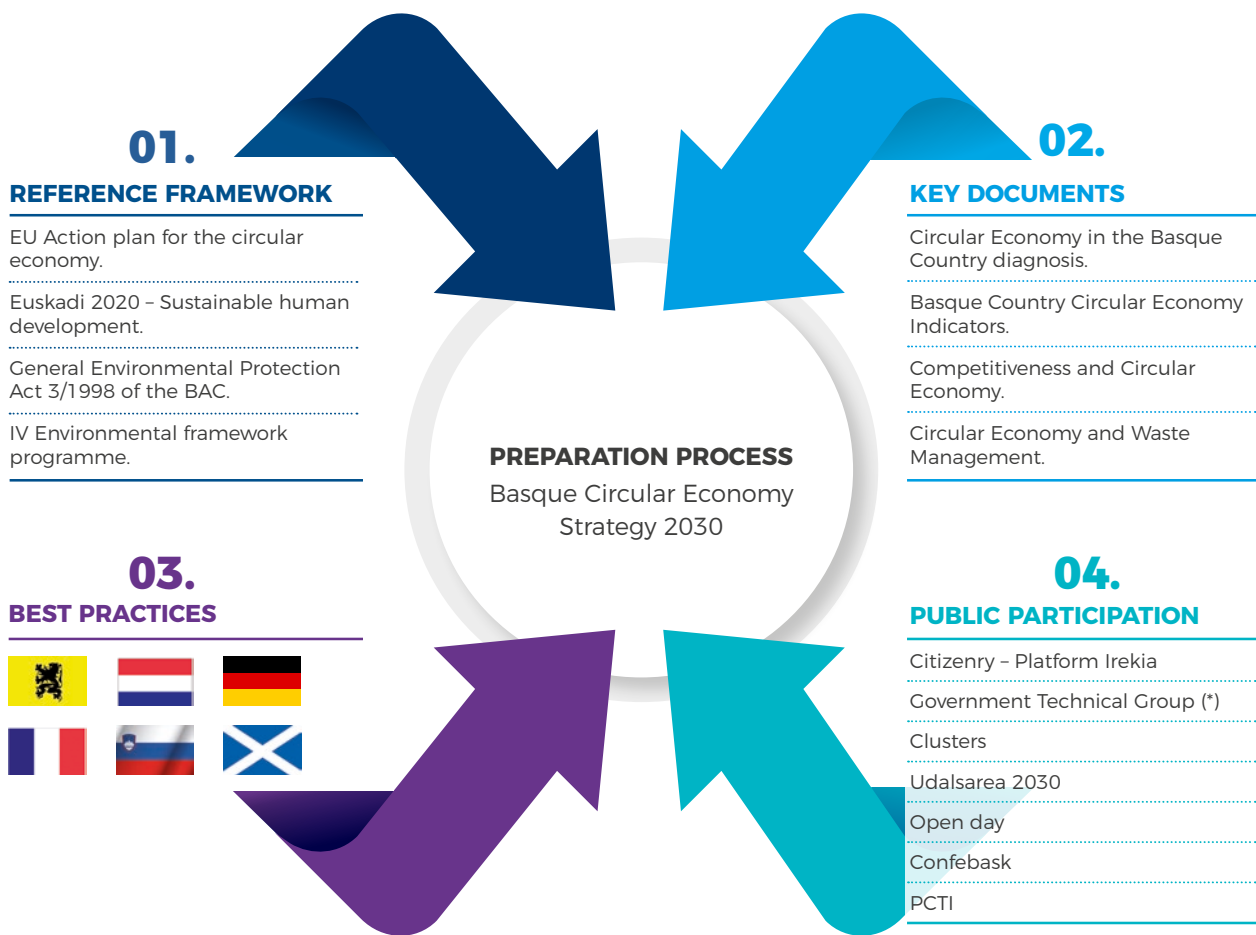
In this context, and in keeping with the most advanced European territories in terms of the environment, the need emerged to develop this **Circular Economy Strategy of the Basque Country 2030**, which engages all the players involved and provides a roadmap for the "circularisation" of the Basque economy.

With the circular economy, the environment becomes a key factor for competitiveness. Using fewer materials – including reusing, repairing and recycling– is aimed at reducing the dependency of our economy on extracting and importing raw materials, along with reducing waste generation. As such, it has the potential to lead to environmental and economic benefits and is recognised, increasingly to a greater extent, as a resource consumption model that will allow local jobs and new opportunities for social integration to be created. Therefore, the transition of a circular

economy will create prosperity and wellbeing in a sustainable, innovative and smart way, where everyone is engaged.

The Strategy preparation process was instigated by the Basque Government's Ministry of the Environment, Territorial Planning and Housing,

through Ihobe, its environmental management agency. Additionally, the provincial and local authorities are working on strategies or initiatives in the context of the circular economy that are in line with and complement the measures envisaged herein. The following aspects were considered when preparing this strategy:



(\*) The Basque Government set up a **Technical Group** to prepare the Strategy, with the participation of Ihobe, SPRI, Neiker, Hazi, Elika and Visesa, to act as the driver group of the strategy. Participatory monthly meetings were established throughout the strategy development process.

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## 01. BENCHMARK FRAMEWORK

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<b>The EU Action Plan for the Circular Economy</b>	Actions designed by the European Commission in 2015 to facilitate and foster the transition to the circular economy.
<b>Euskadi-Basque Country 2020 - Sustainable human development</b>	Government Programme for the XI Parliamentary Term (2016-2020), which sets out 15 strategic plans for the Basque Country and which the different ministries are implementing.
<b>The General Environmental Protection Act of the Basque Country 3/1998</b>	Environmental policy of the BAC establishing the common goals, coordinating powers and designing the instruments needed to successfully achieve environmental protection.
<b>IV Environmental Framework Programme 2020</b>	Programme prepared as a planning instrument. Act 3/1998 establishes that the Basque Country's environmental policy shall be executed through successive action programmes, in order to be aligned with the main European benchmarks.

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## 02. KEY DOCUMENTS (SEE ANNEXES 1, 2, 3 AND 4)

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<b>Circular Economy Assessment in the Basque Country</b>	Assessment of the circular economy's potential to make Basque companies more competitive, focused on the industrial sector and identifying the priority lines of action.
<b>Basque Country circular economy indicators 2018</b>	Basque circular economy dashboard, in accordance with the monitoring framework set by the EU, along with a series of additional indicators that allow the progress to be measured and the efficiency of the actions to be assessed.
<b>Competitiveness and the Circular Economy (2018)</b>	Analysis of the potential of the circular economic as an element of competitiveness for the Basque industry.
<b>Circular economy and waste management</b>	Analysis of the main waste streams in volume and specific proposed measures.
<b>Waste Prevention and Management Plan of the BAC 2020</b>	Instruments and actions to improve waste management.

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## 03. PLANS OF OTHER COUNTRIES AND REGIONS

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<b>Flanders</b>	Circular Flanders (2017).
<b>Germany</b>	II. German Resource Efficiency Programme 2016-2019 (2016).
<b>The Netherlands</b>	A Circular Economy in the Netherlands by 2050 (2016).
<b>France</b>	50 measures for a 100% circular Economy (2018).
<b>Slovenia</b>	Roadmap to the Circular Economy (2018).
<b>Scotland</b>	Making Things Last (206).

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## 04. PUBLIC PARTICIPATION

The public participation process was structured through a series of channels, meetings and public acts with key stakeholders (companies, administrations and citizens), where different methodologies and tools were used to facilitate dialogue and discussion with those players. That public participation process involved the following phases:

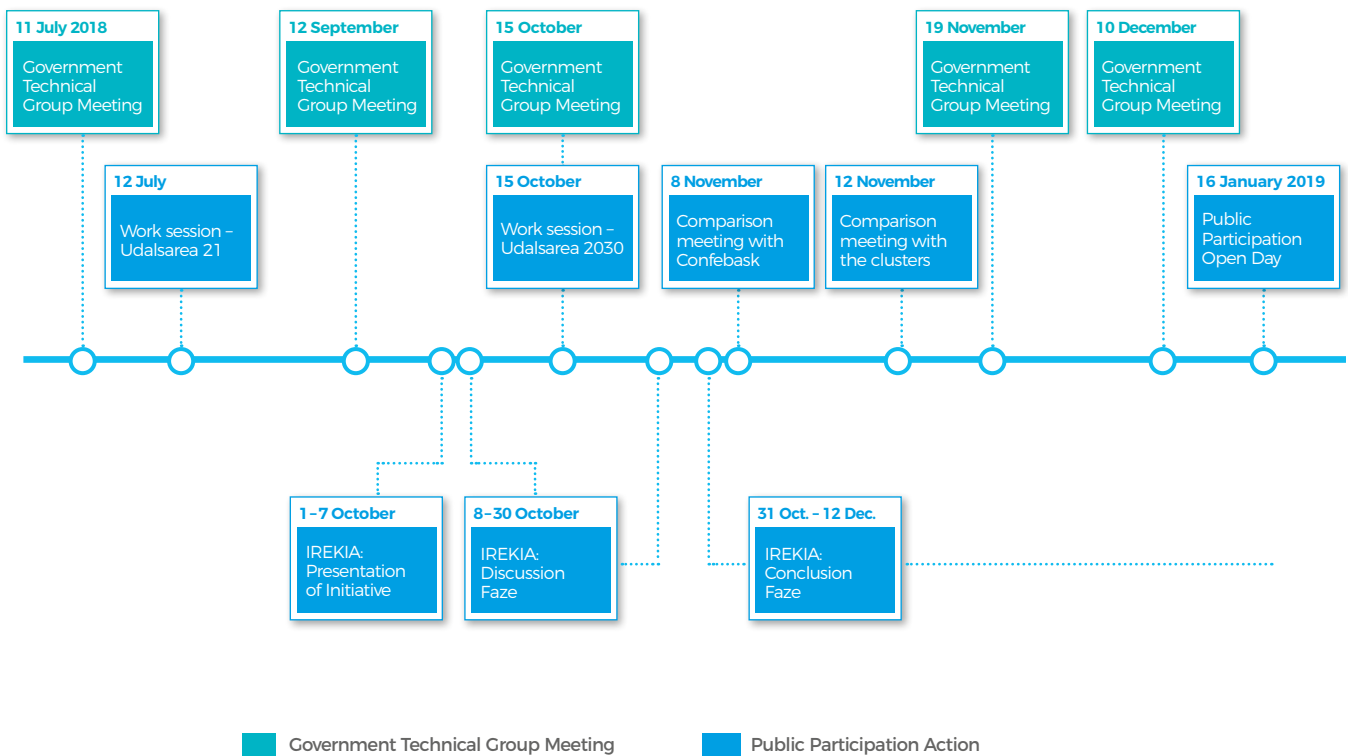
1. Identifying key stakeholders.
2. Defining and organising the participation initiatives.
3. Results analysis.

### Identifying players

The main participants in the public participation were:

- Administrations.
  - Publicly-run companies.
  - Ministries of the Basque Government.
  - Local Authorities - Udalsarea 2030.
- Companies.
- Citizens.
- Clusters.
- Confebask.
- Steering Group of the PCTI ecosystems niche (RIS3).

### TIMELINE OF THE PUBLIC PARTICIPATION PROCESS IMPLEMENTED



### Defining and organising the participation initiatives

Once the players taking part in the strategy preparation process had been identified, the actions to be developed were defined to guarantee effective participation of the selected players:

- Citizen participation, in order to share the process to prepare the strategy and include input from the general public, through the Irekia platform.
- Working with the Udalsarea 2030 network of municipalities to coordinate the Basque Country's strategy with the initiatives implemented in the different municipal areas.
- Workshops with the business sectors identified as key, represented by the different clusters, Confebask and the Steering Group of the PCTI ecosystems niche (RIS3).
- Open day to present the drafted strategy and receive input.

Participatory and information initiatives implemented

**10**



**207**

Input received



**267**

Participants in the process



**80%**

Input considered and included in the Strategy

PARTICIPATING PLAYERS	METHODOLOGY	RESULTS OF THE PROCESS
<b>Stakeholders and Citizenry</b>	Irekia: participatory process to gather opinions & input and email contributions.	2,491 total visits 6 people <b>9 Contributions</b>
	Udalsarea 2030 network of municipalities: 3 work sessions.	56 people <b>44 Contributions</b>
	Work forum with Confebask.	25 people <b>11 Contributions</b>
	Work forum with Clusters and PCTI Ecosystems Niche Steering Group.	15 people <b>4 Contributions</b>
	Public participation open day.	165 people <b>139 Contributions</b>

2.

# CHALLENGES OF THE CIRCULAR ECONOMY IN THE BASQUE COUNTRY

As discussed above, the specific features and characteristics of each region mean that the approaches to advance towards a more circular economy must be adapted to the existing challenges in those territories. In this regard, a series of challenges can be seen in the Basque Country and which must be faced by establishing clear and forward-looking goals, which allow the Basque Country to be positioned as a benchmark in the transition to a circular economy. Addressing those challenges will only be possible with the implication of all the players involved: Companies, Administrations and the Citizenry and prioritising the most important sectors. The collaboration and involvement of all those players must therefore be fostered, so that the vision is not only of the circularity of companies, but also the circularity of the whole territory.

	SECTORS							AGENTS
	Industry					Agri food	Construction	Consumer
	Automotive	Other means of transport	Machinery	Energy and electrical equipment	Metal			
<b>Competitiveness and Innovation</b>								
<b>Challenge 1</b> Drive the creation of new more circular business models	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Challenge 2</b> Innovate in materials (advanced and renewables), processes and products	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Production</b>								
<b>Challenge 3</b> Extend the useful life of products	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Challenge 4</b> Reduce consumption of raw materials and waste generation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Consumption</b>								
<b>Challenge 5</b> Foster a more circular consumption model	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Challenge 6</b> Reduce food waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Challenge 7</b> Foster the more efficient use of plastics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Secondary raw materials and waste management</b>								
<b>Challenge 8</b> Increase waste reuse, recycling and recovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Challenge 9</b> Increase the use of secondary raw materials	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## CHALLENGE 1

### DRIVE THE CREATION OF NEW MORE CIRCULAR BUSINESS MODELS

In the "Reflection paper towards a sustainable Europe by 2030" COM (2019) 22, the European Commission proposes that the circular economy should be the backbone of its industrial strategy. The Commission is seeking to expand the ecodesign policy to other non-Energy related products and support the repair sector. Furthermore, it is considering policy opportunities for packaging, textiles and furniture, has introduced circularity criteria in the BREF documents of the Directive on Industrial Emissions and will continue to give impetus to organisation and product environmental footprints. Anticipating legislation is an important argument to obtain a competitive advantage, particularly in an economy such as the Basque Country, where companies supplying components to other packagers of end products, which will be demanding ever more circular supplies, have considerable weight.

On the other hand, the need to meet customers' needs, sell solutions and services throughout the lifecycle, withdraw the products at the end of their life, use the data and technologies by working with the value chain to provide the market with better solutions are trends that clearly incentivise eco-innovation.

New business models are going to require the optimising of the use of natural resources and reducing of environmental impacts by means of innovating in products or services and other series of proposals geared towards a more circular economy.

In this regard, intrapreneurship by Basque companies is fundamental to drive the creation of new innovative business projects in the sphere of the circular economy. Therefore, the incorporation of ICTs, driving new collaborative economy models and the incorporation of

new services into the traditional model to sell products will allow us to move towards being less dependent on material consumption.

This last case highlights servitization, a business strategy which seeks to add value to a product by means of incorporating services associated to it, where the product can even be replaced by services. It is a process of change towards integrated product and service bundles to meet a specific need of the customer. It also allows the manufacturer to know the experience of the user in order to be able to improve the product and the service rendered. Servitization is also a turnaround in the way in which manufacturing companies get income.

On the other hand, the new service-based business models require companies to be increasingly more bound to integrate finance mechanisms or solutions. Companies' ability to mobilise financial resources is conditioned by their exposure to the financial risk, which also limits their ability to response to the market or position themselves in value chains. Circular economy projects require companies' resources to be mobilised and their finance strategies to be redefined.

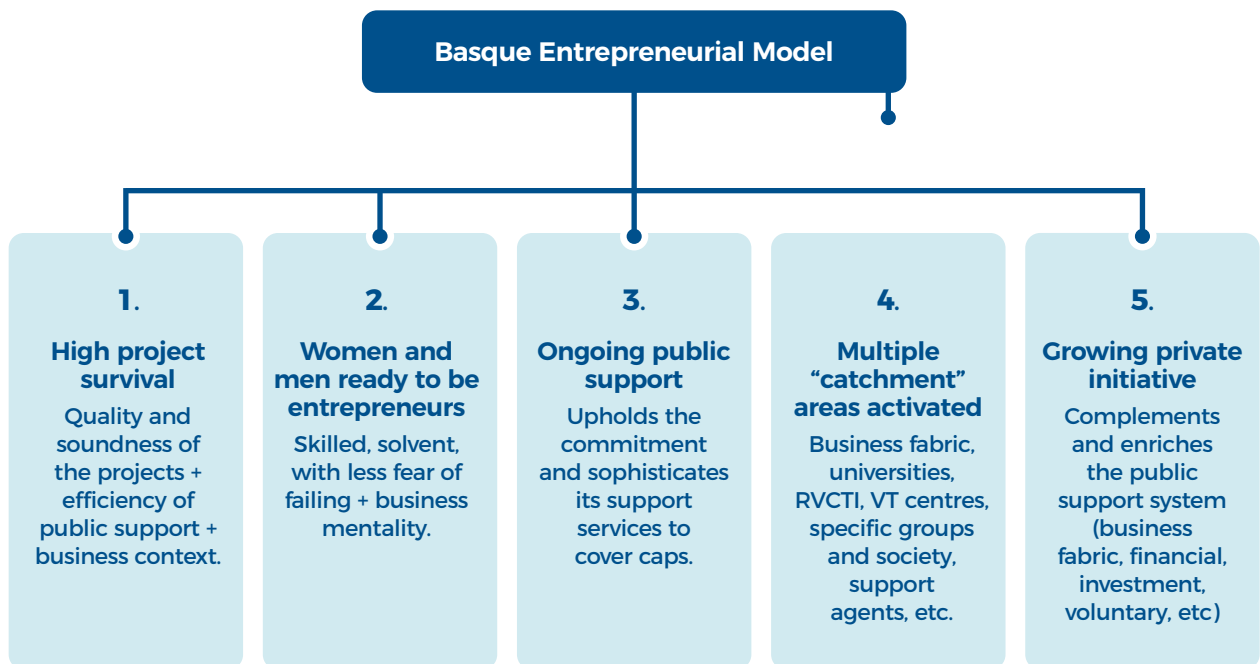
On the other hand, the uptake by new companies has grown by 3.5% a year in the Basque Autonomous Community since 2014. The entrepreneurial culture of the Basque population must continue to be driven to consolidate the Basque Country as an entrepreneurial territory.

The proliferation of new companies in the sphere of the circular economy will be greater if incentivised with employment and green economy subsidies, if administrative formalities are streamlined and the model for these new companies is disseminated appropriately. It is important for entrepreneurial

support programmes instigated by public institutions include the circular economy in order for the private sector to show increasingly more interest. Therefore, there is the Inter-institutional Entrepreneurship Plan 2020 (PIE 2020) in the Basque Country, which is the common strategic framework to plan and set priorities in the field of inter-institutional entrepreneurship in the Basque Country.

In short, incorporating ICTs, driving new collaborative economy models and incorporating services to the traditional model for selling products will allow us to advance towards integrated product and service bundles to meet the customer's needs, leading to service-based business models, with less dependency on material consumption.

### BASQUE ENTREPRENEURIAL MODEL DEFINING FEATURES



**Source:** Inter-institutional Entrepreneurship Plan of the Basque Country 2020, Ministry of Economic Development and Infrastructures.



## CHALLENGE 2

### INNOVATE IN MATERIALS (ADVANCED AND RENEWABLES), PROCESSES AND PRODUCTS

As an alternative to the current consumption and production model, innovation processes must foster the use of advanced technologies that allow the replacement of certain raw materials and for less negative environmental externalities to occur.

In that regard, the Basque Science, Technology and Innovation Plan 2020 (PCTI) identifies two priority areas: advanced manufacturing and energy, and three niches of opportunity: eco-systems, food and urban habitat, all of which are closely linked to the principles of the circular economy. The Basque Ministry of the Environment, Territorial Planning and Housing seeks to achieve a service of medium- and long-term impacts to make the Basque Country a benchmark in ecoinnovation. It has therefore set up three grant programmes through Ihobe:

- **Circular Economy Demonstration:** the projects compromise pilot, pre-industrial or industrial schemes to showcase the environmental, economic and technical feasibility of new technologies, use of secondary materials and, in general, other circular economy solutions.
- **Ecodesign:** the projects consist of technical analysis, tests and developments, including prototypes, which allow the feasibility of product and services eco-design proposals, including new business models based on adding services to the product itself, to be confirmed.
- **Ecoinnovation:** they are industrial development projects to contrast the innovative solution by means of a market and technological analysis, with a degree of greater risk than the demonstration projects, involving, if possible, more than one company, with greater scope of the business impact and harnessing the knowledge generate to address spheres of technological and non-technological innovation: If possible, a roadmap of opportunities for Basque industry should be generated.

The priority areas of eco-innovation in the circular economy have so far focused on:

- **Product and Service Focus:** it stresses eco-design, advanced remanufacturing and repair, along with servitization, based on the product itself. This product area accounts for 22% of the demonstration projects, 82% of eco-design ones and 46% of ecoinnovation ones that have been awarded by Ihobe.
- **Material Focus:** it highlights the increase in production efficiency and recycling both in the transformation of plastic, rubber and composites and in the key metals, valuable alloys and non-ferrous metals. This material area accounts for 78% of demonstration, 18% of eco-design and 54% of eco-innovation projects that have been awarded funding.

Innovation must be global in all the phases of the value chain: pre-production, production and post-production. On the other hand, 23% of eco-innovation projects involve non-technological innovation, an aspect needing to be strengthened.

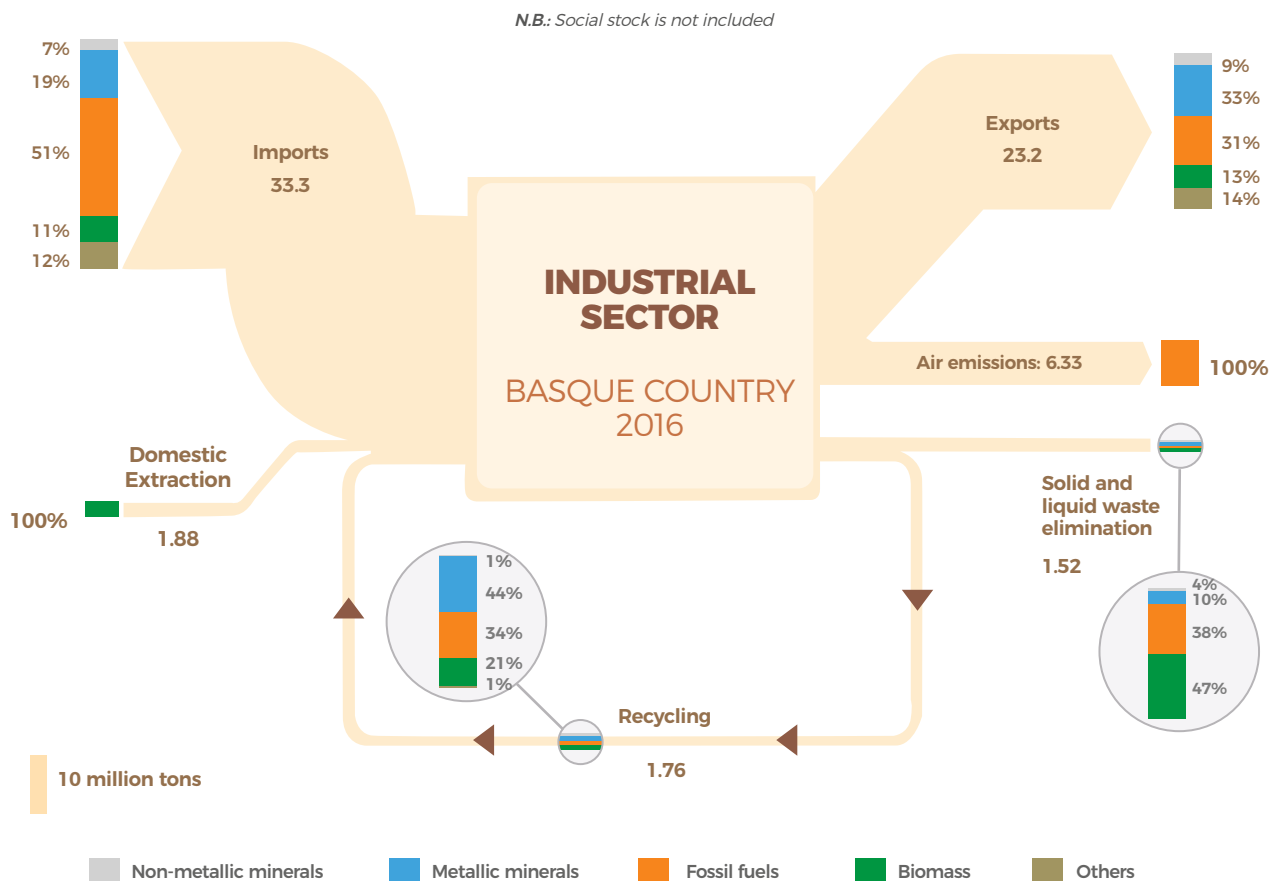
A specific challenge will consist of improving the figure of 40% of the projects that are successful in terms of technical feasibility. In this line, the role to be played by the Basque Government is fundamental, as the driver of those changes, by means of the different support lines and programmes.

Basque companies must be increasingly more dynamic, make even greater investments in the circular economy and conduct assessments or studies in order for their new products to improve on the performance and cost of the current ones, including their environmental performance. In fact,

innovative projects relating to the development of new businesses already focus on solving environmental problems.

Therefore, ecoinnovation must be present in all phases of the value chain – pre-production, production and post-production – to drive the new businesses.

**SANKEY DIAGRAM OF THE BASQUE INDUSTRIAL SECTOR 2016**  
MATERIAL FLOWS (MILLIONS OF TONS)



*N.B.: the sum of the flows may not coincide with the total due to rounding off.*

**Source:** Ministry for the Environment. Basque Government (2018).



### CHALLENGE 3 EXTEND THE USEFUL LIFE OF PRODUCTS

The transition from a linear economy model to a more circular model inevitably involves lengthening the useful life of the products.

Most of the environmental burdens and costs in the lifecycle of a product are determined in its planning and design phase. Therefore, that phase harbours particularly important potential in order to increase durability and efficiency. And the design must improve the circularity and, in general, lead to products with a lifecycle subject to less intensive resource consumption. The European Commission is working on an update of Ecodesign Directive 2009/125/EC to emphasize the need to guarantee the durability of the products, in its fight against planned obsolescence, and has called for the development of technical verification standards defining the durability assessment of the products through the European Committee for Standardisation.

In order to encourage Basque companies to design more circular and green products, they must also be more competitive in terms of cost, quality and delivery.

Companies must look for new ways of expanding the useful life of their products through innovation, R&D&i activities or the use of new technologies. They will thus benefit consumers and increase their loyalty to a more long-lasting, durable product and with a more sustainable and innovative design.

The quickly-growing technological sectors, such as electromobility, offer an opportunity for their immediate application in the design of new products and, thus, increase the great potential of new circular materials for the future. Ecodesign-oriented innovative approaches also provide economic

opportunities for new players, particularly small and medium-sized enterprises, as specialised suppliers or providers of resource-efficient products.

There are different measures oriented at giving recovered products a second life, either on the second-hand market or as a new product, by means of repairing, reuse, aesthetic renewal, reconditioning and remanufacturing.

This challenge focuses on large product groups with great potential to contribute added value in the use phase, such as durable capital goods, including machinery and plants. It also includes groups with potential to increase the productivity of the raw materials based on their volumes and types, for example, electronic/electrical equipment, vehicles and spare parts.

Specifically, remanufacturing currently generates income of 74 million €/year and employs 1162 people in BAC. The forecast is for a turnover of up to 192 million €/year and nearly 1,800 new jobs (capital goods, machinery and energy sectors) by 2025. There is still a great deal of work to be done to overcome the current barriers existing in the Basque Country and incorporate remanufacturing in Basque companies. Therefore, regulations need to be developed for these actions in companies and to incentivise a change in the supply chains with the current suppliers in order to recover the products or parts of them.

In the Basque Country, there are also numerous repair businesses employing over 12,000 people and which, in general, have potential for growth if innovative technologies are incorporated. The set of companies that repair machinery and service and repair motor vehicles stand out given the importance of their turnover and number of people employed.

**CHALLENGE 4**  
**REDUCE CONSUMPTION OF RAW MATERIALS AND WASTE GENERATION**

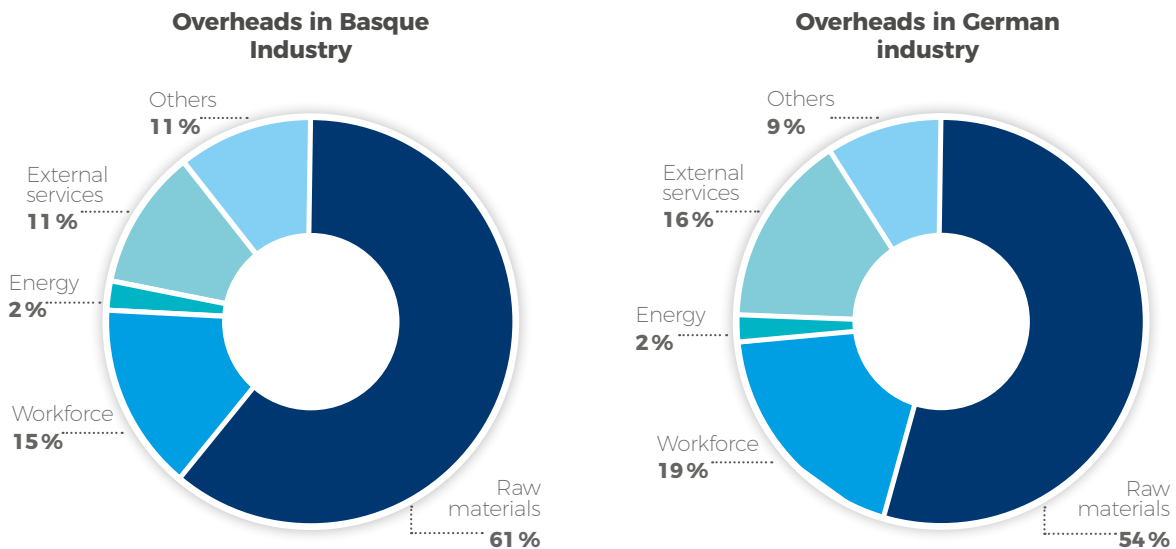
The circular economy and reducing the consumption of raw material can significantly improve the competitiveness, profitability and sustainability of Basque companies. Currently, the supply cost of raw materials accounts for 61% of the total costs of the companies of Basque industry<sup>8</sup>. That results in great pressure on their margins in material intensive sectors, while also incorporating the uncertainty associated to price volatility.

The importance of the metal sector is reflected in the material flows of the Basque Country. Thus, metal accounts for 18% of total material consumption, with the per capita metal consumption being 10 times higher than the European average, a figure that shows the significant weight of metal transformation in

our industry. The economic importance of metal for the value chains prioritised in the Regional Innovation and Smart Specialisation Strategy (RIS3) by the Basque Government is even clearer when the average cost of the raw materials accounts for 58% of the total costs in the metal sector. The initial estimates point to metal consumption by industry standing at over 3.55 million tons a year of steel and iron and 0.47 million tons a year of non-ferrous metal.

Basque companies consume over 44,149 tons/year of the materials considered to be "critical". This figure is notably lower to the one for the previous year as the European List no longer includes chromium (and including tantalum and vanadium). The European

**OVERHEADS IN INDUSTRY**  
 BASQUE COUNTRY & GERMANY 2014



Source: Own compilation using 2017 Eustat and 2017 German Agency for Material Efficiency (DEMEA) data.

<sup>8</sup> Graphs, tables and data obtained from "Circular Economy in the Industry of the Basque Country - Assessment", Ministry of the Environment, Basque Government, 2018.



Commission has identified data management and financing the recyclers as two key points to recover those critical materials from components at the end of life of the latter. Specifically, CEN is conducting an appraisal of the standardisation alternatives for recycling critical materials in used batteries, electronic equipment and other complex equipment.

Another additional aspect to be considered is that an important part of the materials entering the Basque economy, once fuel has been discounted, is residual material that is going to undergo a recovery and recycling process. This is particularly important for metal, paper and agri-food waste. One example is that the Basque Country imported in 2016:

- 2,183,869 tons of material for second smelting of iron and steel
- 282,894 tons of material from the food industry
- 318,276 tons of paper or cardboard for recycling
- 181,304 tons for second smelting of aluminium, copper and zinc.

It should be noted that, according to the estimates, the consumption of recycled materials is particularly high

in the case of ferrous metals (95%), and is relevant in some non-ferrous metals such as nickel (93%) and aluminium (35%), according to own estimates.

The Waste Prevention and Management Plan of the Basque Country 2020 establishes reducing the total amount of waste generated as one of its strategic goals. The Plan has a Prevention Programme to meet that strategic goal.

The Basque Country generates around 6 million ton/year of waste, 56% of which are non-hazardous waste, 21% construction and demolition waste, 75% urban waste and 5.5% hazardous waste. Over half the waste is recycled, specifically, 54%, on the other hand, 6% is recovered as waste-to-energy and 40% is eliminated.

On the other hand, 76% of waste is generated in the industrial and in the construction sector. Therefore, the challenge to reduce waste generation is particularly important in those sectors and three streams emerge here as being especially significant: the steelworks slag, foundry sand and construction & demolition waste.

### BASQUE COUNTRY WASTE 2016

WASTE	TOTAL ECONOMY	INDUSTRIAL SECTOR	% INDUSTRIAL SECTOR OF TOTAL	AGRI FOOD SECTOR	% AGRI FOOD SECTOR OF TOTAL	CONSTRUCTION SECTOR	% CONSTRUCTION SECTOR OF TOTAL
Waste generated (t)	5,965,922	3,279,984	55.0%	393,100	6.6%	1,261,661	21.1%
Waste recycled(t)	3,236,094	1,764,974	54.5%	91,285	2.8%	778,116	24.0%
Waste-to-energy (t)	360,457	142,689	39.6%	99,977	27.7%	-	0.0%
Vertedero (t)	2,076,108	1,372,321	66.1%	201,838	9.7%	177,582	8.6%
Gestión desconocida	305,963	-	0.0%	-	0.0%	305,963	100.0%
Emisiones al aire <sup>2</sup> (t)	14,848,983	6,326,625	42.6%	498,144	3.4%	852,139	5.7%

<sup>1</sup> The agri food sector includes the food and drink industries.

<sup>2</sup> When analysing air emission, Eurostat does not include those from agriculture. Therefore, the air emissions of the agri food sector are exclusively from the food and drink industries.

## CHALLENGE 5 FOSTER A MORE CIRCULAR CONSUMPTION MODEL

There is a widespread concern about the environment among the Basque population. A 100% consider it to very or quite important to protect the environment, according to the latest figures of the Report on the Attitude of Basque Citizens towards the Environment<sup>9</sup>, which has revealed the environmental perception and attitudes of Basque society. However, even though the report reflects the great awareness of the Basque population in that regard, the Environmental Indicator of Basque families shows that, among the habits assessed in relation to behaviours with an environmental impact, the index relating to the consumption guidelines scores lowest (4.3 out of 10)<sup>10</sup>. How is it possible that the Basque population is so aware of the environment, but, in turn, its actions do not follow up with more sustainable consumption habits?

The emphasis has to be on three core areas of the current model in order to drive changes in consumption habits towards more circular practices. On the one hand, the consumer needs greater environmental transparency and communication, with emphasis on increasingly more reliable, uniform and understandable environmental labels and declarations. For example, the product environmental footprint being developed by the European Commission should be one of the fundamental information instruments for the consumer. And on the other hand, what people or user entities demand needs to be reoriented, not only when opting for products with more circular manufacturing processes, but also by sharing products and/or services with other consumers, acquiring second-hand products to extend the life of the product, etc. Finally, the administration as the main user of products/services by means of green public procurement, with an exemplary role and, in turn, by driving the demand for those more

sustainable products/services for them to compete on the market. This role of the administration is bolstered in the application to the construction sector where it has a great impact.

This strategy will have to be worked in both direction, as both are complementary fields: the more additional information consumers have, the easier it will be for them to change their perceptions and motivations when focusing their consumption habits on certain products and/or services, as they will understand their added value. For that information to be as clear as possible, Basque companies will have to correctly assess the environmental impact of the product throughout its lifecycle and provide details in that regard on their products, so that people can identify that guarantee and choose those products. Furthermore, those practices will help companies to stand out from their competitors.

Waste generation is part of the lifecycle of citizen consumption. The municipal solid waste (household waste and similar industrial and commercial waste) generated stood at 1,135,000 t in 2016, 611,000 t of which were gross (not separated) waste -while only 524,000 t were separated at source and collected to facilitate its recycling. The forecast for MSW generated in 2020 is 961,173 t with 50% separate collection. There is obviously still room for the public to better separate and classify the waste generated. As regards management, the emphasis should be on fostering the universalisation of waste collection, selective separation of biowaste, both by households and by the hospitality sector and other large producers, along with, preferably, the setting up of management facilities in the Basque Country.

Therefore, the environmental transparency and communication of the products will have to be improved, demand reoriented, along with fostering the universalisation of waste collection, selective separation of biowaste and the setting up of management facilities.

<sup>9</sup> Sociological Prospecting Office of the Basque Government, 2017.

<sup>10</sup> Eustat, 2015.



## CHALLENGE 6 REDUCE FOOD WASTE

Food waste is one of the main challenges included in the agenda of international organisations (FAO, UN, WHO...) and of European governments due to its economic, environmental and social impact globally. Food waste is considered to be the food products overall discarded from the agri-food chain and which continues to be suitable for human consumption, but ends up being eliminated as waste when there are no possible alternative uses. That may be for very different reasons: close to use-by date, damaged packaging, product that does not meet all the required quality or size criteria, etc. According to the FAO, over 1,300 million tons of food end up in landfill each year, in other words, a third of the food produced in the world.

On the other hand, between 20-30% of food fit for human consumption is estimated to be lost or wasted in Europe throughout the agri-food chain to the consumer and become food waste each year. Around 89 million tons of food waste and food loss is generated in the EU every year. This is equivalent to food waste of 179 kg per inhabitant, and that is without forgetting the agricultural waste, generated in the production process, or the fish discards returned to the sea.

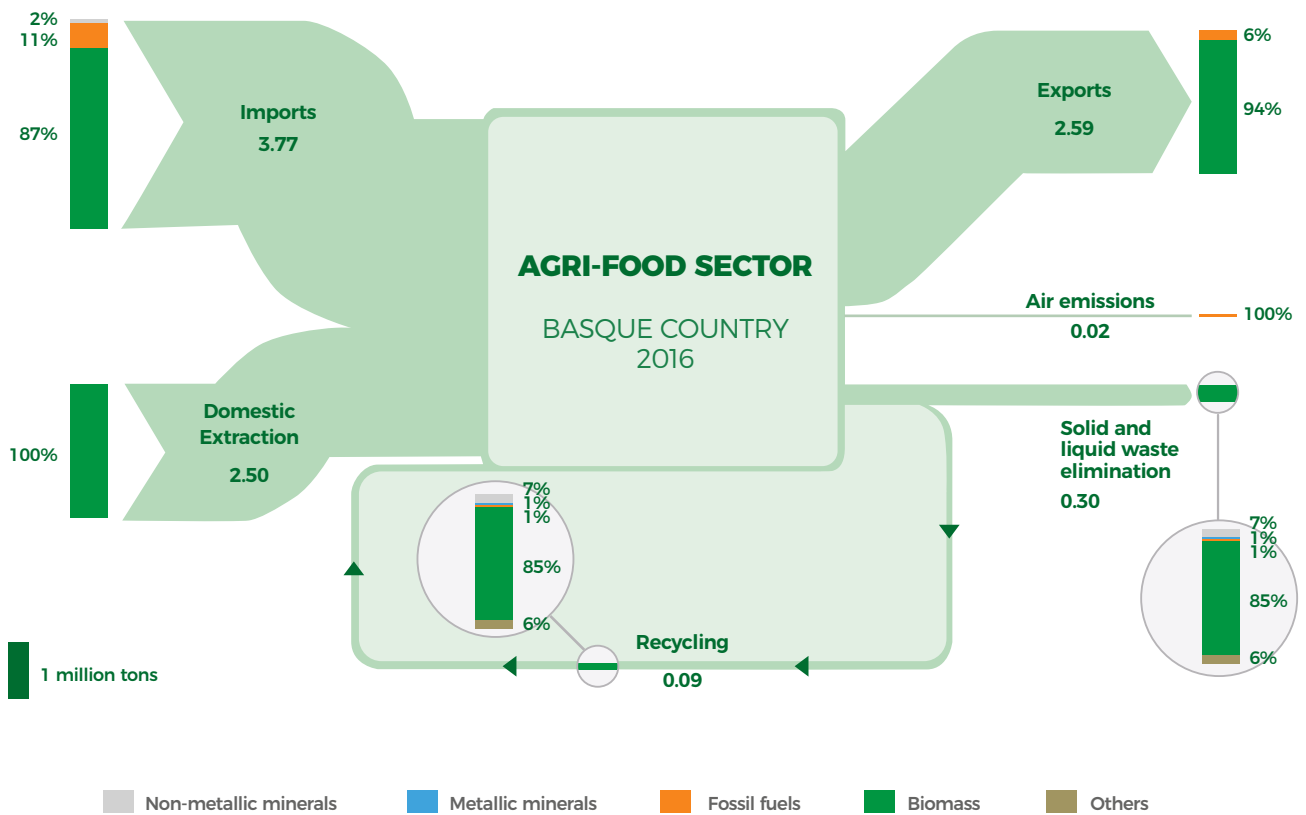
Food waste in the Basque Country is estimated to be over 380,000 tons per year, approximately 182 kg of food per inhabitant. This figure not only includes the good thrown away by households (15% of the food of Basque households ends up in the dustbin), but also the other waste generated throughout the food production and distribution cycle.

The challenge of managing to prevent, reduce, reuse and recover food surpluses is only possible with the cooperation, participation and involvement of the whole of society, not only of the public administrations, but also of all the economic sectors (primary production, transformation, distribution, hospitality, catering, canteens, etc.), research and technology centres, universities, social organisations and particularly the general public.

According to the studies, food waste is mainly focused at two points of the chain: the production processes in the agri-food industry and consumption in households and businesses. Biowaste accounts for a quarter of the latter and currently an important amount ends up in landfill (115,378 t). Therefore, the different public authorities are therefore facing the challenge of reversing that situation.

Consequently, it is important to work both on improving the efficiency of those production processes and on awareness raising and changing consumption habits, by seeking to include sustainable consumption patterns that help to prevent and reduce these problems. More responsible consumption habits, better information for the consumer (for example, relating to the best-by / use-by dates) or improving the processes to reuse the surpluses, while always guaranteeing food safety, are key to making progress in this area.

**SANKEY DIAGRAM OF THE BASQUE INDUSTRIAL SECTOR 2016**  
**MATERIAL FLOWS (MILLIONS OF TONS)**



*N.B.: The total air emissions or social stock are not included.*

**Source:** Ministry for the Environment. Basque Government (2018).



## CHALLENGE 7 FOSTER THE MORE EFFICIENT USE OF PLASTICS

Pollution produced by the excessive use of plastic materials is one of the great economic, social and environmental threats to our planet. That is due to the growing use of plastic in nearly all sectors, from catering to food, given the extensive use of plastic packaging and containers, to the textile or construction sectors, to spotlight some examples where the use of plastic is increasing.

Plastics are used for a myriad of applications and permeate modern life like no other material. World plastic production, which currently stands at 311 million tons, is expected to double over the coming 20 years and quadruple by 2050. Overall, packing materials account for the highest percentage, followed by plastics for buildings, electronic and electrical equipment and the automotive sector.

The existing recycling systems only allow 5% to be kept of the value of the packaging plastics worldwide. Currently, the reuse of recycled high-quality technical plastics in new electronic appliances only stands at 1%.

The European Commission's Circular Economy Package includes a specific plastics strategy that comprehensively addresses this issue. The measures envisage that all plastics used for packaging must be reusable or recyclable by 2030. The package updates the recycling and selective collection targets for plastic

packaging and goes further in banning the sale of certain single-use plastic products.

When compared with other materials, recycling plastics has faced great challenges that have led to the current unsatisfactory elimination situation with a low percentage recycled. Another challenge is the possible degradation and loss of quality of the plastic during the recycling process. That limits the replacement of raw materials by other recycled ones or the applications in which that replacement is viable. Furthermore, the market for that is reduced.

The Basque thermoplastic transformation industry is made up of over one hundred companies. The rubber industry, with a dozen leading companies, is focused around two major tyre manufacturers, even though the automotive component sector is also a key player and is represented by a dozen companies. Finally, the composite manufacturers are smaller and are mainly specialised around the mobility sector.

Given that there are very few multinationals that produce the plastic pellets and film needed for the downstream industries and which have very tight profit margins, incorporating secondary material becomes one of the most interesting alternatives – provided that its quality is appropriate and there is a constant supply –, along with the optimising the manufacturing of polymer-based products.

## CHALLENGE 8

### INCREASE WASTE REUSE, RECYCLING AND RECOVERY

The transition from a conventional linear economy model to a new circular economy model implies increasing waste reuse, recycling and recovery. Europe loses around 600 million tons of material in waste each year, which could potentially be reused, recovered or recycled. Converting waste into resources is an essential challenge to increase competitiveness and advance towards a more circular economy.

In the case of the Basque Country, 3.24 million tons (53.70%) are recycled or reused out of the 6.03 million tons of waste generated in the Basque Country (including municipal solid waste, non-hazardous waste, hazardous waste and construction & demolition waste)<sup>11</sup>. One of the objectives of the Waste Management and Prevention Plan of the Basque Country 2020 is to increase preparation for waste reuse, recycling and recovery up to 60% by 2020.

The generation of steelwork slag in the BAC came to 517,099 t in 2016. 63% of the slag undergoes recycling processes, but the rest is eliminated in landfill.

On the other hand, Basque foundry plants generated 142,910 t of sands and fines and others in 2016, 56.77% of which ended up in landfill. The challenges to be confronted refer to their recovery for mortar & concrete and concrete prefabs, for cement and to be used in road base courses and embankment backfill.

The effective recycling of construction and demolition waste (C&DW) stood at 61.7% and 14% was sent to landfill (not known how the remainder was managed). The identified challenges include improving the quality of the site waste management studies and the final verification reports, the need to separate materials on site, to improve the recyclability and the quality assurance of the secondary aggregates obtained from C&DW. Work is also needed in areas such as designing buildings taking their lifecycle into account in order to face this challenge.

The economic value of the materials embedded in the waste sent to landfill is estimated to be €12.6 million in the case of ferrous and non-ferrous metals waste in landfill. They also have the greatest impact environmentally speaking from a lifecycle perspective. In addition, plastics are the waste stream dumped with the greatest economic potential. In fact, the thermoplastics sent to landfill exceed €14 million per year in theoretical value and also have a great environmental impact from a lifecycle perspective.

Further research is needed to identify and quantify economically valuable raw materials in the current commercial circuit, as well to forecast changes to the amounts and components. The quantitative requirements applicable to post-consumption metals must be clarified. The potential flows of new and unused materials will also have to be identified and technologies and measures developed to overcome losses from dissipation.

They will have to be integrated in the current recycling processes with the help of smart processes and cascade recycling. Organisational innovations are required to find a market outlet for all the fractions of valuable materials obtained by recycling.

Research projects must provide missing data and thus improve the information value and the accuracy of the mockups in the interest of resource efficiency in the recycling procedures or in the modifications of the product designs. For example, those projects would have to calculate the estimated reductions in emissions of the different management options in the main streams of the BAC. Compared to the elimination alternative, the recycling of paper would mean a reduction of 3.2 t CO<sub>2</sub>eq/ t recirculated paper; the same for plastic with reductions of 2.94 t CO<sub>2</sub>eq/ t recycled plastic and for ferrous metal 1.95 t CO<sub>2</sub>eq/ t recirculated material.

<sup>11</sup> Waste inventories and statistics, Ministry of the Environment, Basque Government, 2016.



## CHALLENGE 9

### INCREASE THE USE OF SECONDARY RAW MATERIALS

One of the greatest challenges for the resource-efficient circular economy, in terms of volume, is recycling or the reuse of mineral waste. That mainly comes from construction, metallurgy and the burning of waste and alternative fuels. Highly valuable mineral fractions are also obtained to be reused from the treatment of used cars and electronic waste. Many of those material flows also generate appreciable amounts of metallic waste. In the future, the incineration plant ashes will accumulate critical metals, such as silver or tin, from small high complex devices, radio-frequency identification labels or textiles impregnated with nanoparticles.

The innovative approaches aimed at processes to recover metals from the incineration ashes are promising. The recovery of materials is often not feasible because there are no viable or cost-effective options from an environmental perspective.

The use of recycled construction materials will have a clear impact on the future possibilities to use mineral waste. Energy insulation in housing could likewise contribute to generate material flows that will be able to be reused in a safe way and as per the legislation.

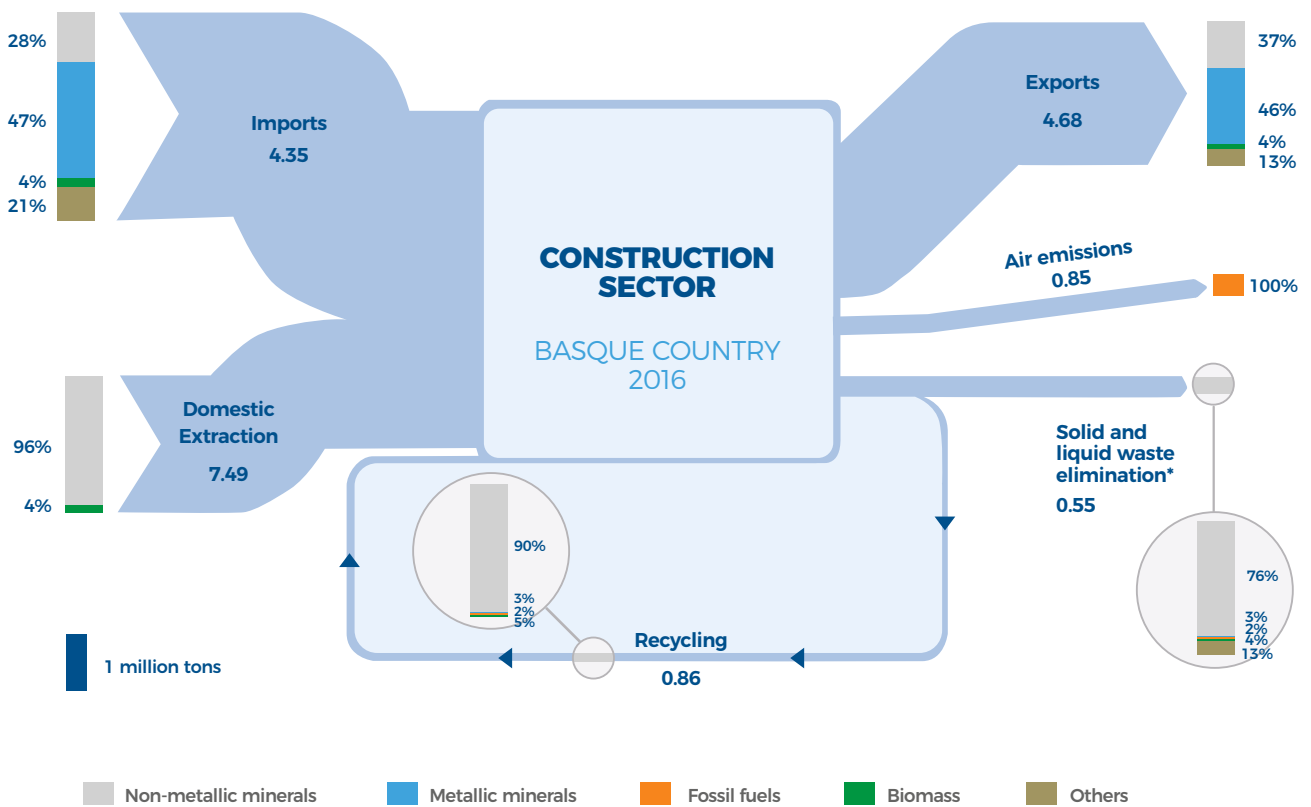
In the European Union, and also in the Basque Country, the use of secondary raw materials in

production is still small in proportion, due to a series of barriers to their market penetration:

- Uncertainty regarding their composition: it is important for the secondary raw material to comply with the characteristics required by producers, in terms of quality and technical specifications, in order for companies to consider the replacement of the traditional raw materials in their production processes to be viable.
- Price: the secondary raw material must be competitive in terms of price in relation to the traditional raw materials, in order to increase its penetration in the market.
- Supply: manufacturers need to obtain raw materials in very specific amounts and timelines so that their production is not altered. Not complying with the supply conditions that companies need can be a barrier to the use of secondary raw materials.

The EU single market for secondary raw materials is still underdeveloped. Decisively facing this challenge would improve the competitiveness of companies, while it would help to reduce their environmental impact and to contribute to the circularisation of the economy. Organisational innovations are required to find a market outlet for all the fractions of reusable materials obtained by recycling.

**SANKEY DIAGRAM FOR THE BASQUE CONSTRUCTION SECTOR 2016**  
**MATERIAL FLOWS (MILLIONS OF TONS)**



*N.B.: The total air emissions or social stock are not included.*

**Source:** Ministry for the Environment. Basque Government (2018).

# 3.

# STRATEGIC VISION

Based on the current context and the challenges identified for the Basque Country regarding the circular economy, the Strategic Vision seeks to set out

the ambition of the Basque Country in this transition process, enshrined in the Mission, Vision, Values and Strategic Objectives described below.

## 3.1. MISSION

**Drive the transition of the Basque Country towards a more circular economy by means of innovation oriented towards a new production and consumption model, and by means of a private-public partnership effectively involving citizens, companies and the administration towards achieving a common goal.**

### What do we do?

The Basque Government's Environment Office is focusing on preparing a circular economy strategy within the Government's initiatives to comply with its commitments to the citizens.

As one of the requirements to align with European and international policy lines undertaken by this Administration for each sectoral area, the aim is to drive the transformation of the Basque Country to a more sustainable, competitive and circular economy, using the preparation of a strategy up to 2030 as an instrument. This strategy is focused on minimising the

extraction and importation of materials, on making the production processes more productive, on maintaining the value of the products, materials and resources for the longest possible time and on reducing waste generation and air emissions as far as possible.

### Who are we doing this for?

This strategy benefits society overall even though the targets are:

- Citizens.
- Companies.
- The Administration.

The success or failure of the implementation of this strategy depends on the changes in way in which of both public and private players act. Thus, the benefits that could occur in the Basque Country are:

- Environmental benefits: reducing the use of resources, less waste production, less energy consumption, fewer air emissions, etc.
- Other benefits: economic growth, job creation, obtaining competitive advantages, slowing job and company offshoring, etc.

### How is that being done it?

The Basque Country was one of the first regions to calculate the European circular economy indicators. Focusing on the inherent characteristics of the territory, priority areas and sectors for action in the Basque economy have been identified in order to continue along this path. Targets, lines of action and specific actions have been established in order to achieve more circular consumption and production models. Furthermore, the Public Administration working with companies in the transition towards a more circular economy is seen as a critical factor for success.

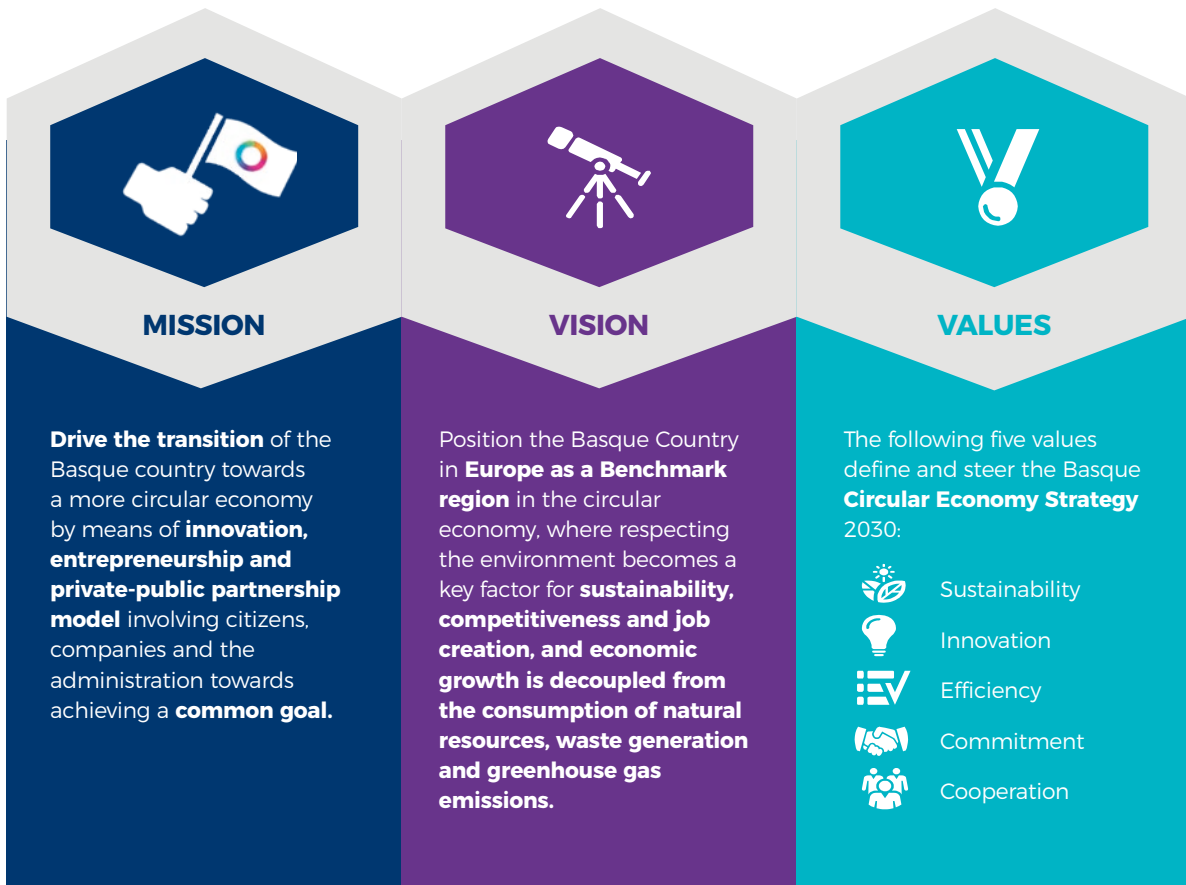
## 3.2. VISION

**Position the Basque Country in Europe as a benchmark region in the circular economy, where respecting the environment becomes a key factor for sustainability, competitiveness and job creation, and economic growth is decoupled from the consumption of natural resources, waste generation and greenhouse gas emissions.**

## 3.3. VALUES

This vision is based on the values of sustainability, innovation, efficiency, commitment and cooperation.

- **Environmental sustainability:** respecting the environment and commitment to land conservation, by fostering the sustainable use of natural resources and rationalising consumption, waste, emissions and landfill.
- **Innovation:** developing new ideas and businesses that position the Basque Country as a trail-blazing region in the transition towards a new more circular economic model and which foster the defining features of the territory for its international expansion.
- **Efficiency:** harnessing the resources used in the production processes and minimising and reusing the waste produced during those processes.
- **Commitment:** involvement, motivation and commitment by the Administration, as a driver and catalyst of the transition process, acting as a benchmark for the other players involved.
- **Cooperation:** participation of all the players, in order to involve them in the management, development and application of the principles of the circular economy, by sharing information and knowledge.



### 3.4. STRATEGIC OBJECTIVES

Pursuant to the Mission and Vision, along with the aforementioned Values, **3 strategic objectives** to be achieved by 2030 have been established. Both the current value and the expected evolution (*business as usual*) and the benchmark values of the most advanced countries and regions in the circular economy have been taken into account when establishing those objectives. Furthermore, those objectives are in line with the priorities of the European Commission in its decisive boost to the circular economy and with the UN Sustainable Development Goals.

- Increase **material productivity** by 30%.
- Increase the circular **material use rate** by 30%.
- Cut **waste generation** per GDP unit by 30%.

In addition, two complementary objectives have emerged from the objective associated to waste generation in relation to two of the streams prioritised by the European Commission in its Action Plan for the circular economy:

- Halve the generation of **food waste**.
- Ensure that 100% of plastic **packaging** is recyclable.

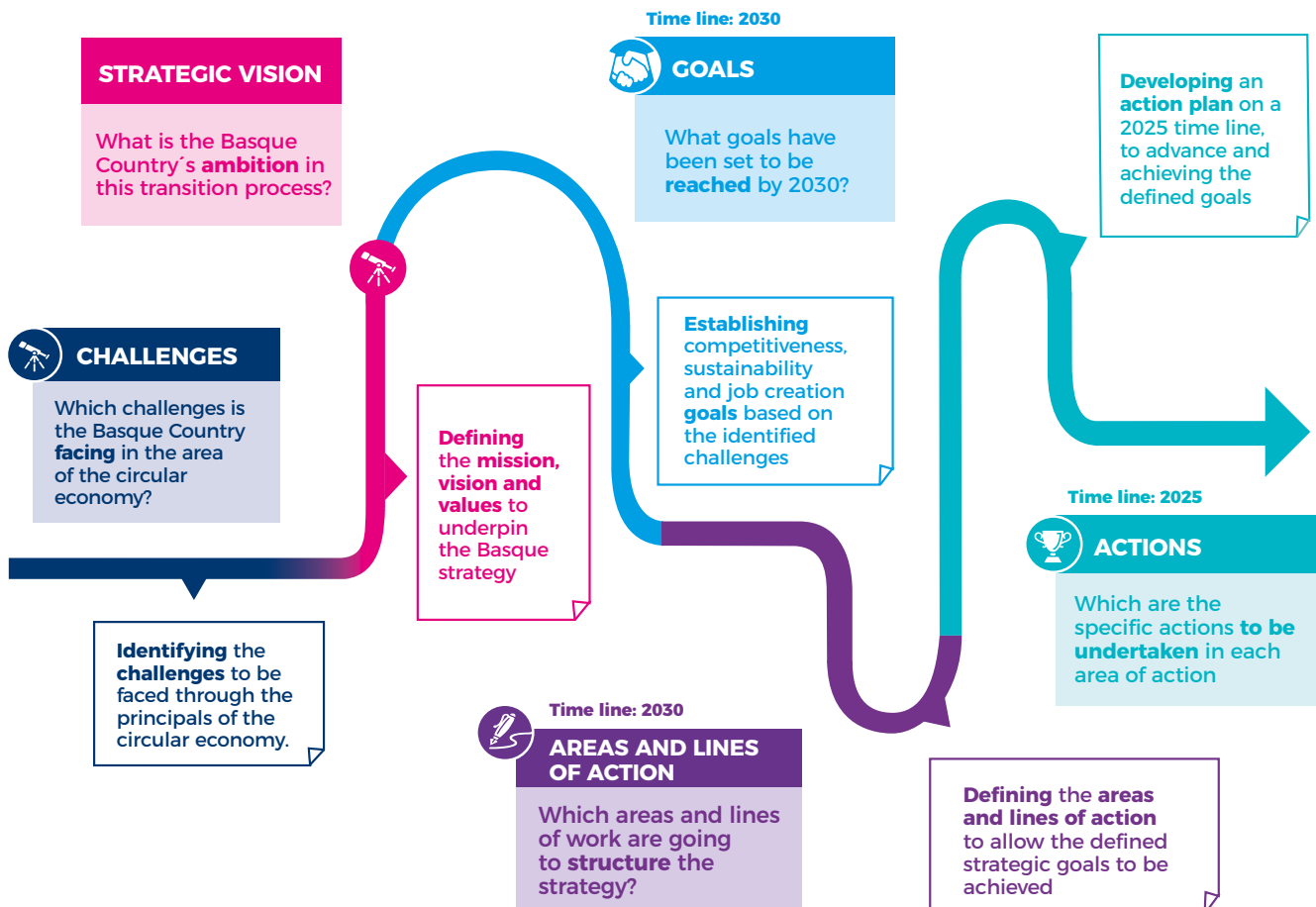
This strategy has been designed with an additional purpose, as it is estimated that its implementation will generate positive results on the sustainability of the BAC in three dimensions. In that regard, it is estimated that the following will have been achieved by 2030:

- The turnover of Basque companies in more circular products increased by up to €10 billion.

- Creation of over 3,000 jobs in the sphere of the circular economy.
- Reducing consumption-based carbon emissions by 26%.

Those objectives have led to **10 Lines of Action**, grouped around **4 policy areas**, on a timeline up to 2030, around which the strategy has been structured. In turn, those lines of action have resulted in the deployment of a series of specific actions, which make up the **Action Plan to 2025**.

### BASQUE COUNTRY CIRCULAR ECONOMY STRATEGY 2030 METHODOLOGICAL OUTLINE



# 4.

# STRATEGIC OBJECTIVES

## 1. INCREASE MATERIAL PRODUCTIVITY BY 30%

Material productivity allows the evolution of the economy towards a consumption and production model that is less dependent on materials to be measured. High material productivity represents, among other things, a more efficient harnessing of resources, greater added value of the products and less dependency on the importing and extracting of materials.

The Basque Country is currently highly dependent on imports of materials (77%<sup>12</sup> of the raw materials of the Basque industry are imported), mainly of fossil fuels, metallic minerals, biomass and non-metallic minerals. By increasing material productivity, the Basque Country is seeking to decouple economic growth from the consumption of materials.

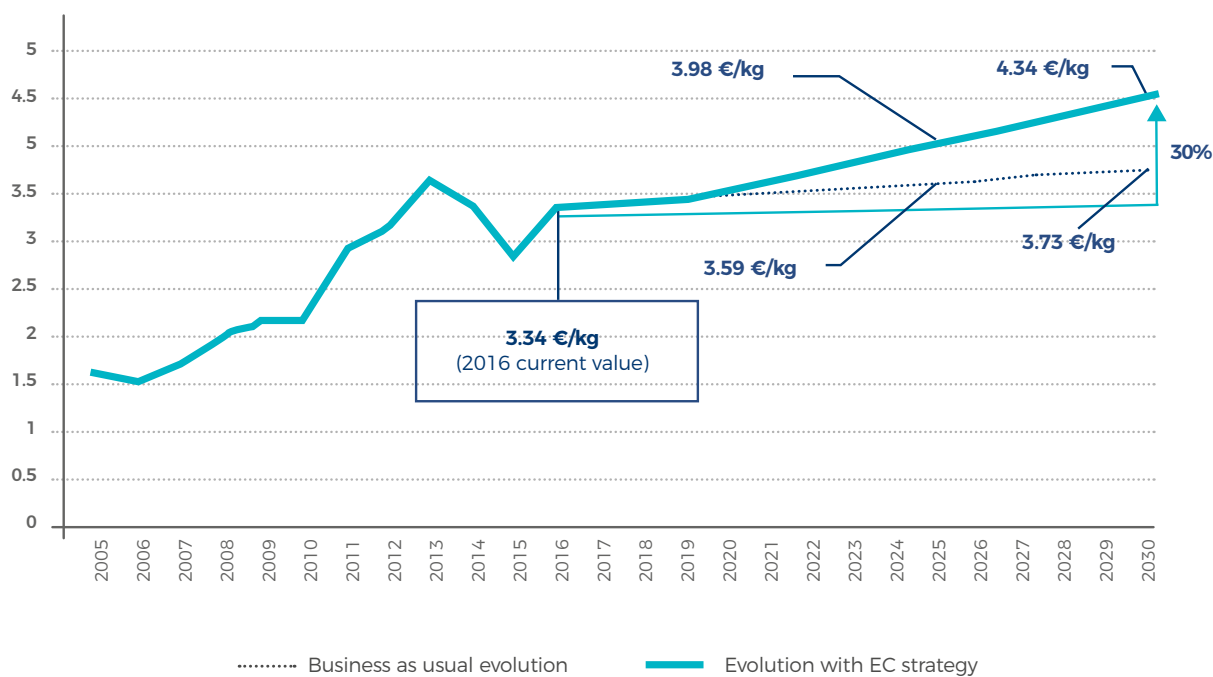
In 2016, the material productivity of the Basque Country stood at 3.34€/kg<sup>13</sup> (GDP adjusted for purchasing power), which is high compared to the other European countries. Thus, the value for the Basque Country is higher than the 2.8 €/kg for Spain, the 2.4 €/kg for Germany or the 2.2 €/kg for the EU average. However, there is room for Basque Country to continue to increase that ratio.

Innovating in the use of current materials and developing new better-performing materials, fostering product innovation and gradually incorporating services to the products, making the use of resources more efficient and extending the practices of reuse, repair and refurbishment, along with increasing the contribution of recycled materials to the total demand for materials will be necessary in order to achieve this objective.

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<sup>12</sup> Circular Economy in the Industry of the Basque Country - Assessment, Ministry of the Environment, Basque Government, 2018.

<sup>13</sup> Basque Country circular economy Indicators, Ministry of the Environment, Basque Country, 2018.



## 2. INCREASE THE CIRCULAR MATERIAL USE RATE BY 30%

The circular material use rate allows the contribution of recycled materials in the Basque Country to the total demand for materials to be measured and is a key aspect to assess the circularity of the economy. Increasing this rate not only means lowering dependency on imports and/or extraction of raw materials, but it also helps to reduce the waste that would, otherwise, end up in landfill. Thus, achieving this objective would likewise mean waste recircularization rising from 50% in 2016 to 72% in 2030.

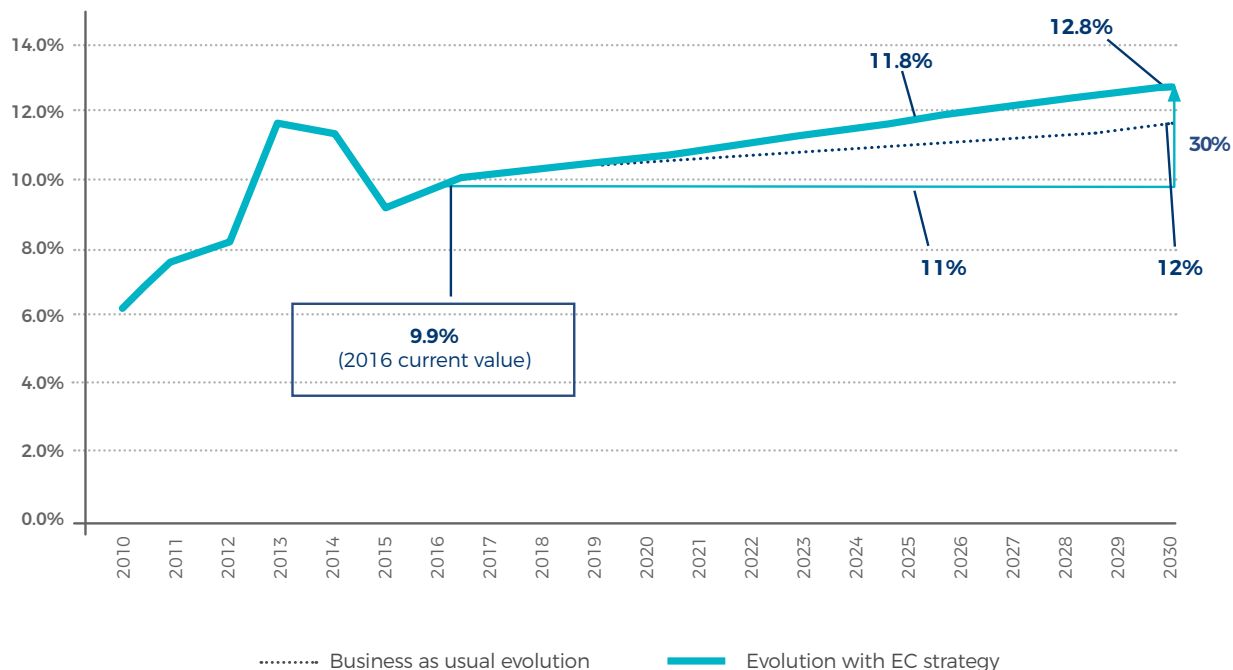
On the other hand, as regards fighting climate change, it is an important contribution, as the use of secondary raw materials reduces CO<sub>2</sub> emissions compared to the use of virgin raw materials.

On the other hand, the increase of the circular material use rate would drive the recycling sector and the appearance of companies linked to the transformation and harnessing of waste to be

reused in other production processes, along with improving the competitive position of Basque companies, by being less exposed to external risks.

Between 2020 and 2016, the Basque Country improved its material use rate, from recycled materials accounting for 6.3% of domestic material consumption (DMC) in 2010 to 9.9% in 2016. Even though this evolution is important, the comparison with the EU average or the value of Germany, 11.4% and 10.7%, respectively, in 2014, points to there still being significant ground to make up in this regard.

In order to advance in the attainment of this objective, on the one hand, it is necessary to develop technical skills, implement the necessary processes and facilities for the effective recycling of the different waste streams. On the other hand, the necessary support mechanisms have to be established to develop a stable secondary raw materials market in terms of technical specifications, quality, volume and price to incentivise companies and help them to incorporate those mechanisms in their production processes.



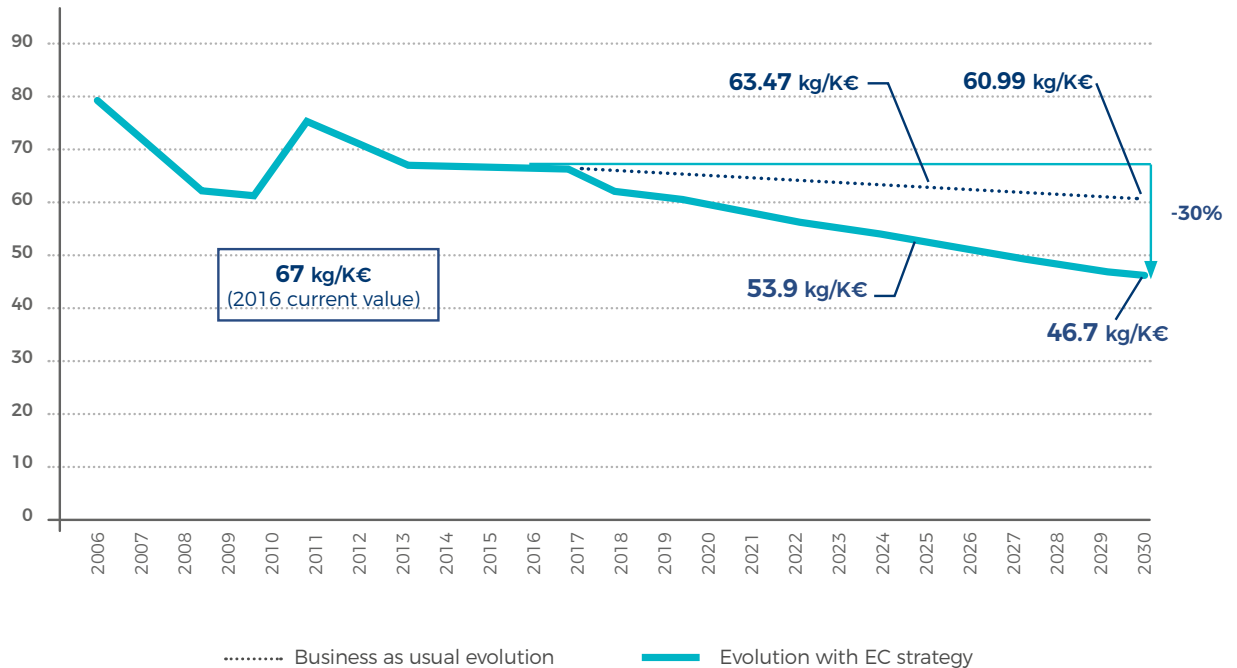
### 3. CUT THE WASTE GENERATION RATE PER UNIT OF GDP BY 30%

The assessment of the waste generation rate per unit of GDP reflects the intensity of the economic activity in waste generation and allows its "eco-efficiency" to be measured. In the same way that the change of model towards a circular economy seeks to decouple economic growth from material consumption, in order to reduce the need to incorporate new resources in the production cycle, it is equally important to also decouple that economic growth from waste generation, in order to thus reduce the negative externalities in the environment caused by human activity.

In 2016, 67 kg of waste (excluding major mineral waste) was generated in the Basque Country for each thousand euros of GDP. This downward trend could also be seen in the EU, with waste generation falling in 2014 to 62 kg per each thousand euros of GDP.

In order to progress to attaining that objective, impetus needs to be given to the transition to a change of production model that minimises waste generation, innovation must be fostered, along with making resource use and ecodesign processes more efficient. The development of new products requiring less material resources in their production will likewise be important, thus reducing the ensuing waste generation. Finally, information and awareness raising is needed in order for citizens to reduce part of the household waste.

The Waste Prevention and Management Plan of the BAC defines the priority streams given their relevance in order to progress towards achieving this objective. Those streams include municipal solid waste, steelworks slag, foundry sand and construction and demolition waste. Those streams will be preferably treated in the new Plan to cover the period that this Circular Economy Strategy is in force. In this Strategy, given their specificity, two fractions are distinguished



that require additional consideration and for which specific goals are likewise set:

### 3.1. Halve the generation of food waste

Food waste is not only a moral issue, but it also contributes to accelerating the depletion of the limited natural resources of the territory and reduces the disposable income of companies and household, which could be earmarked for other purposes.

Reducing the generation of food waste throughout the food chain, in addition to helping to achieve the Sustainable Development Goals, by reduce food losses and waste, also:

- Provides support for the fight against climate change (food waste alone generates around 8% of global greenhouse gas emissions).

- Helps to fight hunger and malnutrition (around 55 million people in the European Union cannot afford quality meals every two days), by means of redistributing food among disadvantaged sectors.

- Generates economic savings by farmers, companies and households.

Food waste occurs throughout the value chain: during production and distribution, in supermarkets, restaurants and in households and in the canteens of the public sector, schools, residential homes, etc. Therefore, in order to achieve this objective, all stakeholders of the food chain need to be involved to prevent and reduce food waste, from those who produce and process food (farmers, food manufacturers and producers) to those who make it available to be consumed (distribution sector, retailers) and, finally, the consumers themselves.

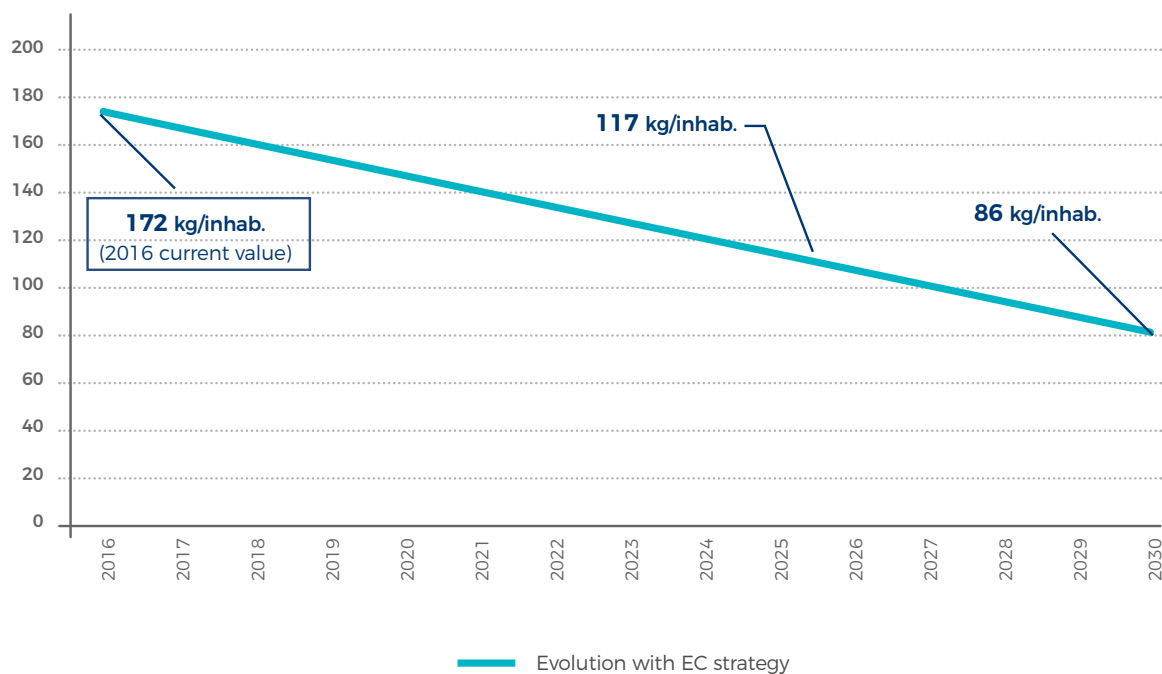
The amount of food waste in the Basque Country in 2016 was estimated to exceed 350,000<sup>14</sup> tons a year with 172 kg per inhabitant and year. Reducing those figures would help to progress to achieving Sustainable Development Goal 12.3, which seeks to halve food waste by 2030.

In order to achieve this objective, it will be necessary, on the one hand, to foster a more circular model and raise citizen awareness. On the other hand, emphasis has to be placed on initiatives such as using the leftover food for other purposes, such as animal feed; donating food that is still edible but which, for logistical or marketing reasons, cannot be sold; or recycling organic waste in order to return it to the economy and for a second use, such as to produce biogas and/or compost.

### 3.2. Ensure that 100% of plastic containers used in the Basque Country are recyclable

There are many different types of plastic and that diversity is an added difficulty for the selective collection and recycling processes, which are complex and costly, and they are currently sometimes unable to achieve the results needed to fight that problem. This reason and others, such as reducing the dependency on fossil fuels for their production, mean that prevention and ecodesign become the best remedy to solve this global problem.

In the Basque Country, the use of plastic has increasingly spread throughout the sectors of the economy, from agri-food to construction, and not forgetting others such as textile or automotive. The



<sup>14</sup> Measures against food waste in the Basque Country, Elika, 2018.

tons of plastic consumed in the Basque Country in the form of pellets, parts in products are estimated to be over 410,000 t. As regards companies, the manufacturers of parts and components of the automotive, rail, aeronautical, electrical equipment and the construction sectors, play a very important role in solving the problem, by applying measures such as ecodesign, repairability, recyclability and incorporating recycled materials, aspects that are already reflected in the European plastics strategy.

Additionally, consumption habits have led to an explosion in the use of plastics, placing the container and packaging sector in a key position. Using the samples from treatment plants, plastic containers are estimated to account for approximately 70% of all light packaging. There is a capacity to act in this regard by seeking to enter into agreements with the stakeholders of the consumption chain for all plastic containers to be recyclable, to increase the amount of recycled plastic in drinks bottles (up to 50% by 2030) or to reduce the use of plastic in the packaging released on the market. Therefore, the EU general objective for plastic containers, that they must be fully recyclable by 2030, has been assumed. The measurement system is still pending.

As regards the general public, a change in consumption habits is fundamental, by changing everyday actions, such as not using single-use plastic products and bags, avoiding buying over-packed products, replacing plastic packaging by other materials, buying recycled and recyclable plastic containers, etc.

## **RESULTS OF APPLYING THE CIRCULAR ECONOMY STRATEGY**

Applying the Strategy will have a series of positive impacts on the environmental, social and economic spheres of the BAC. Three indicators have been defined to measure that effect: the turnover of more circular products, the new employment generated and the reduction of greenhouse gases. An initial approximation has considered what those effects will be.

### **Business turnover of €10 billion in more circular products**

In the framework of the Strategy, we understand more circular turnover to be what is generated as the result of process, service or product innovations, by means of which the environmental impact has managed to be reduced throughout the lifecycle of the product. Specifically, the innovations have involved:

- Conducting product or service lifecycle assessments.
- The application of protocols to obtain an environmental declaration or labelling (semi-type I), European ecolabel, European environmental footprint.
- The use of product ecodesign standards or methods (e.g. ISO 14006 standard).
- Obtaining European environmental awards.
- The results obtained in innovation projects with financing from State or European Authorities or in the framework of the Basque Ecodesign Center and Basque Ecodesign Hub.

This indicator will be calculated using operational business experiences in order to be able to measure the generated effects on competitiveness in greater detail. Therefore, selection criteria have been applied to companies from dynamic sectors in innovation, exporters, and those fundamental in the Basque business fabric with an active profile in innovation programmes and committed to the environment, for whom the eco-innovator



approach provides strategic value and which use the lifecycle assessment as a working tool.

According to the growth expectations of the surveyed companies, the turnover generated by products and services that have applied circular criteria in 2016 was €2852 million and represented 28% of their total turnover.

The companies' forecasts reflect strong growth in the sales of ecodesigned products or services both in percentage and absolute terms, up to €7,250 million by 2020. The outlook up to 2030 will be updated as this indicator is defined in a traceable and systematic way in order to facilitate its monitoring. However, forecasts indicate that business turnover will be over €10 billion.

### **Creation of over 3,000 jobs in the sphere of the circular economy**

The development of new businesses and making current companies more competitive by means of incorporating the circular economy principles will allow new jobs to be created both in existing companies and in new companies as the result of the change of model. Progressing towards greater sustainability is a competitive advantage for Basque companies, but the circular economy goes a step forward and seeks to improve the processes, develop new production models by incorporating advanced technologies arising from digitalisation and from automation, create service-based economies, etc. Thanks to these transformations, job creation opportunities are most likely to occur in the areas of repair, re-manufacturing, upgrading, recycling, renting or leasing and peer-to-peer models.

There are currently 18,463 jobs related to circular economy activities in the industrial sector of the Basque Country. That accounts for 2.08%<sup>15</sup> of the total jobs of the Basque economy. The target is to continue growing that percentage up to 2030.

Basque companies are increasingly grasping that the environment is a factor for competitiveness and differentiation. Therefore, they are striving to evolve towards more sustainable and circular business models. There are currently 117 Basque organisations that have signed up to the United Nations Global Compact, representing 4.5% of the total, and over 239 are applying circular models or practices (ecodesign, servitization, remanufacturing, lifecycle assessments, environmental declarations, etc.). Sixty per cent of those companies report that working in terms of the circular economy has allowed them to increase the productivity of their processes, reduce energy consumption, save materials, grow in terms of sales, stand out on international markets, open up new markets or improve their image. All those factors give a clear boost to job creation. Additionally, the employment associated to new circular models are less likely to be offshored according to existing studies.

Achieving this objective involves both research and innovation in new business models and developing the necessary skills to drive that transition. Therefore, it will be necessary to reflect on the professional profiles and the skills needed to be developed through specific training modules on university and professional training study programmes, in order to ensure skilled workers are available. That work will be carried out in close cooperation between the universities, training centres, companies and research centres.

<sup>15</sup> Basque Country circular economy Indicators, Ministry of the Environment, Basque Country, 2018.

## Reducing consumption-based carbon emissions by 26%

The different lines of action of the Circular Economy Strategy will lead to a reduction of the consumption-based greenhouse gases (GHG) in the BAC.

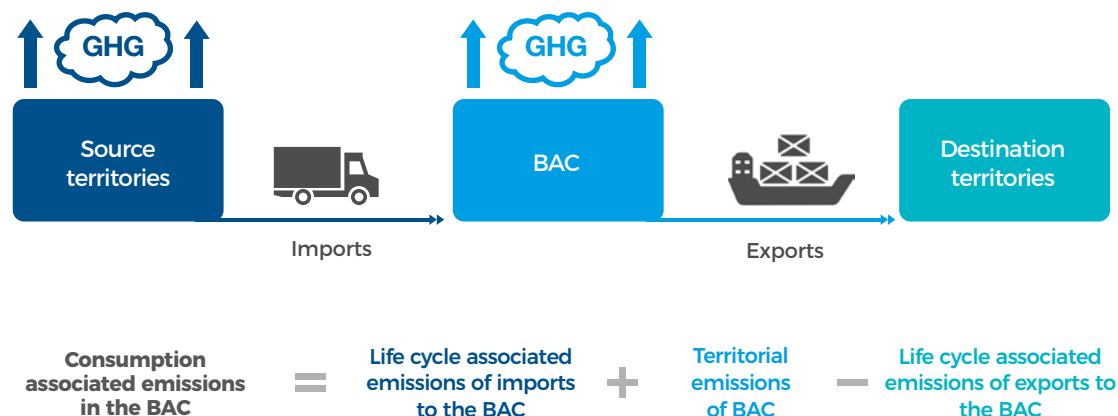
Consumption-based emissions can be estimated as the sum of the emissions generated in the BAC (as per the GHG Inventory of the Basque Country) and the emissions associated to the lifecycle of products and electricity that we import, less the emissions associated to the lifecycle of our exports. In other words, there are GHG emissions generated in the BAC that are linked to production for exports and not to local consumption; and, vice versa, importing products generates emissions in other territories when the consumption actually occurs in the BAC.

This consumption emissions approach associates the GHG emissions with the consumer, i.e. the person that is ultimately responsible for their generation. Thus, each person of the BAC is responsible for 7.56 t CO<sub>2</sub> eq, resulting in a total of 16.4 million of CO<sub>2</sub> eq in the BAC associated to consumption.

The consumption-based approach is coherent with the objectives of the Circular Economy Strategy, which seeks to act on material consumption by means of improving material productivity, of increasing the circular material rate and of reducing waste generation.

By 2030, the Circular Economy Strategy will mean an annual reduction of nearly 1 million t CO<sub>2</sub> eq, in addition to the other existing strategies, by 2030. 70% of that reduction will be due to changes in waste management (reducing waste generation and increasing the recirculation of waste to the economy) and will occur in the BAC. The remaining 30% will be due to a drop in the need to import materials and, therefore, there will a reduction in emissions that will be reflected in other territories.

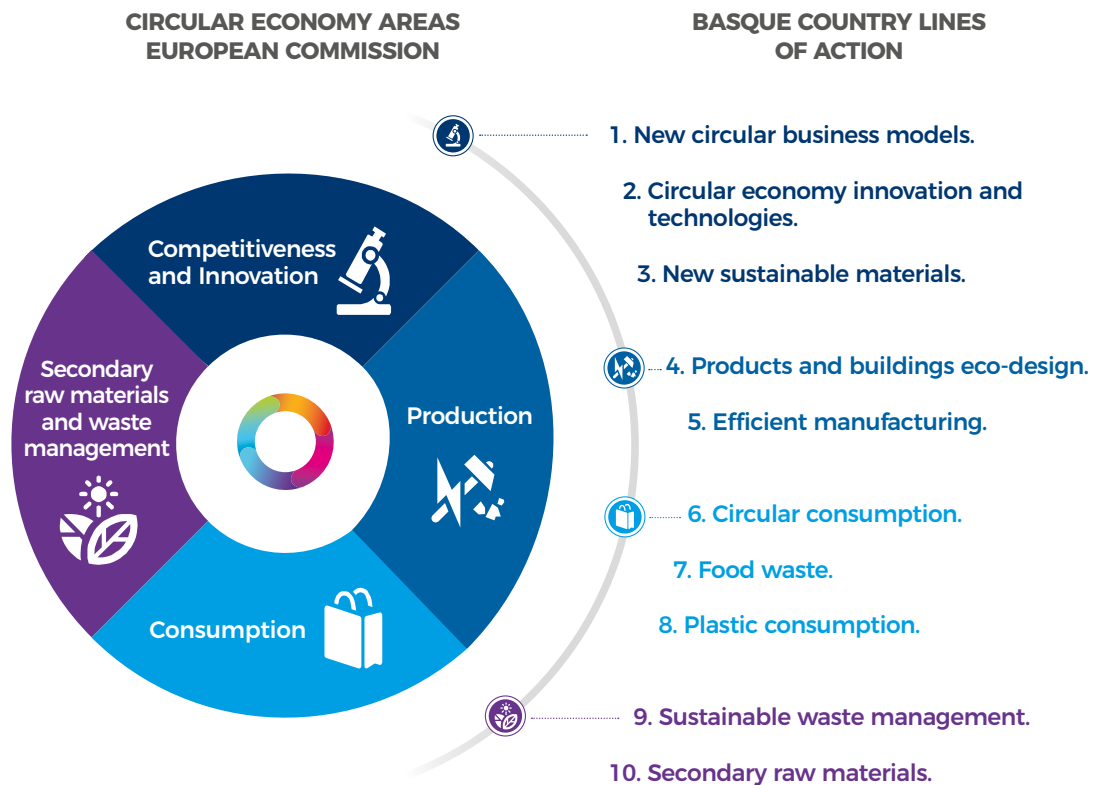
The Circular Economy Strategy and the Basque Climate Change Strategy will achieve a reduction of 4.4 million t CO<sub>2</sub> eq associated to consumption per year by 2030 compared to 2016. That is a 26% reduction on consumption-based emissions by 2016.



# 5. LINES OF ACTION 2030

The Circular Economy Strategy 2030 of the Basque Country is structured around **4 policy areas** (in a similar way to the European Commission's Plan of Action for the Circular Economy), from

which **10 lines of actions** are deployed, each of which represent an aspiration for the future, in line with strategic objectives defined in the above section.





## COMPETITIVENESS AND INNOVATION

### LINE OF ACTION 1:

#### NEW CIRCULAR BUSINESS MODELS

The transition to a new more circular business model requires the appearance of new business models that foster sustainability and the competitiveness of the territory. Therefore, entrepreneurship is seen as a key lever to achieve success, including the intraentrepreneurship conducted by companies today, resulting in a platform that fosters entrepreneurship through current programmes.

Some Basque companies offer a wide range of services throughout the life of the product: installation, predictive maintenance, repairing, improvement programmes to increase efficiency, upgrading old equipment with new technologies, extension of the useful life by means of monitoring systems and structural improvements, reconditioning, uninstalling, dismantling and separation, recovery of parts, recycling and waste management. The sectors in the Basque Country that have shifted towards services playing a greater role in the business are aviation, machine manufacturing, chemical industry and, to a lesser extent, equipment and transport.

In that regard, the transformation of current businesses and the creation of new businesses focused throughout the value chain will be driven by means of grant programmes, by means of incorporating innovative ideas, in order to improve the positioning of the Basque company. The change from the traditional business model, where the manufacturer reduces its dependency on the sale of products and focuses on covering the needs of the customer, can apply Ecodesign strategies that were not previously compatible with the manufacturer's interests. In addition of a significant reduction of the environmental impacts

throughout the lifecycle, those models can provide a new source of stable revenue and grow the business by between 25% and 50% in one of every 4 companies.

On the other hand, the change towards a circular economy requires the players involved to be provided with the necessary tools, knowledge and skills to implement the appropriate changes in their respective policy areas. There is clearly an opportunity to develop new skills regarding a link of solutions that meet the needs of the customer: ecodesign to expand the life of the products, sorting technologies, material standardisation, production, repair and remanufacturing, selling results and services that cover the whole lifecycle, the setting up of component or product return systems, the implementation of digital technologies and data management, managing partnership platforms and deploying a transformative culture, that measures, assesses and acts with transparency.

The actions to be undertaken in this line should facilitate the transition of companies with greatest potential in the application of servitization, the training of workers and the partnership with the educational sector seeking to train students through business practices and supporting entrepreneurship. In this regard, a hub must be created to be a benchmark as regards advanced training and knowledge.

The training and educational provisions play a fundamental role in the transfer of knowledge and the development of new skills. A step forward must be taken by integrating the circular economy concepts in university and vocational training teaching.



## LINE OF ACTION 2:

### INNOVATION AND NEW TECHNOLOGIES IN THE CIRCULAR ECONOMY

The incorporation of new digital technologies and data analysis allows better control and harnessing of resources, along with greater cooperation and knowledge sharing, thus generating positive impacts from the social, economic and environmental point of view.

Digitalisation provides a great opportunity to integrate sustainability throughout the innovation process in new processes and products and, by doing so, generates economic and environmental benefits. For example, digitalisation connected with 3D printing can be expected to revolutionise the repair sector in the coming years, which will result in smaller storage needs.

The resource-efficient circular economy may be one of the most innovative areas in which to deploy the opportunities offered by digitalisation. A digitalised value-added chain may be decisive in order to achieve exhaustive management of the resources, as a complement to the innovative business models and technologies.

The interconnection of the main drivers of the resource-efficient circular economy, such as extending the lifecycle, intensifying the use of products and their recycling, with the advantages of smart facilities and products (the "Internet of Things") encapsulates a great added-value potential. The vast information available to us today thanks to the application of smart facilities and products can be used as feedback to design the facilities and products of the future. That allows the maintenance,

durability predictions and the lengthening of cycles, along with resource-efficiency in the useful life and recycling, to be optimised. There is a great pending potential to develop technologies to prepare status assessment and implementation of measures to control the cycles.

The Basque Government already has ambitious Industry 4.0 activities in place, which are also complemented with the planned measures in the research framework. The "resource-efficient circular economy" encapsulates sustainability opportunities that have not as yet been exploited in terms of unifying the lines to develop digitalisation/industry 4.0 and the resource-efficient circular economy, which have so far advanced in parallel, thus giving access to new areas of application for digitalisation. Basque companies have opportunities regarding the provision of tools to simulate and validate components manufactured in advanced materials, monitoring technologies embedded in components, develop techno-environmental information systems for the value chain, etc.

The actions to be developed in the action plan would be focused on specifically incorporating the circular economy in the RIS3 and on consolidating private and public investment in innovation. An optimum model to transfer knowledge to SMEs and establishing a sectoral watch system or key areas on which to base the selection of priorities to be implemented by the different value chains would complete the most significant actions up to 2025.

### LINE OF ACTION 3: **NEW SUSTAINABLE MATERIALS**

The use of renewable raw materials, mainly locally produced, to replace the ones currently used, may reduce the dependency on the import and extraction processes and improve the sustainability and competitiveness of the Basque economy. Support for the current uses of that type of materials, along with researching new applications that allow companies to increase their market share, would allow the value of the products to be increased, the environmental balance to be improved, raw material needs to be covered and the uncertainty associated to the price fluctuations of raw materials to be reduced.

The PCTI 2020 has pinpointed the most pressing technological gaps for Basque companies related to materials and circularity. They must explore developing advanced surfaces to extend durability, new materials for additive manufacturing technologies, developing smart, replaceable and durable materials, technologies to recover key metals and composites, replacing critical materials (function, materials and technologies), etc.

On the other hand, developing new materials appears to be a differentiating factor to drive the change of model, by eliminating materials that contain components that hinder recycling from the production processes and by advocating the incorporation of new materials that allow the environmental impact to be reduced throughout the lifecycle of the products while increasing their added value.

In this line, the Action Plan to 2020 requires measures to be undertaken aimed at supporting research in new materials, specifically renewable materials such as timber and at conducting detailed assessments of carbon reduction opportunities in other materials, such as steel, cement, aluminium, plastics, waste, etc.



## PRODUCTION

### LINE OF ACTION 4: PRODUCT AND BUILDING ECODESIGN

Product ecodesign involves incorporating criteria during the design phase to assess the environmental impact of products throughout their whole lifecycle, resulting in better efficiency in the consumption of resources during the production process, including the incorporation of secondary materials, in a longer useful life of the products, and in their easier reuse and repair. Finally, the recycling options of the different components are maximised once the useful life of the product has ended. The focus on ecodesign will help to optimise the reliability and the repair and improvement capacity of the products. The value of the utilisation phase will be increased and intensified by means of, among others, possibilities for multiple or simultaneous use and for readaptation. In those cases where the recycling, improvement or repair capacity cannot be altered, ecodesign will help to modularise or miniaturise the products. Furthermore, additional features and interfaces will be included in the digital systems to control the material and product cycles.

Ecodesign generates around 20% savings in raw materials to manufacture products and a reduction in energy consumption and of emissions in the use phases of between 3% and 30% (in motors, lighting and fans). Ecodesigned products have an additional profit margin that is 24% higher than for conventional products and the majority of more advanced companies believe that ecodesign is essential to stand out on the markets that they serve.

Firm commitment to innovation and public-private partnership to share knowledge, experiences and better practices, is needed in order to made progress in that regard. Ecodesign must be integrated in the companies' targets. Systems must be developed to identify products/components so that users and people in charge of their reprocessing, along with the integration of logistics and distributions, data management between designers, manufacturers and all levels of the value chain, including the reinsertion of products or components in the cycle. The new product standards driven by the EU will be a distinguishing aspect that cannot be ignored.

Ongoing development of the ecodesign methodology and their adaptation will be necessary in order to apply the new environmental standards to products throughout their useful life in the priority sectors: industry, construction and agri-food. The comparison of different design options to their impact on the profitability of business models in terms of recycling must also be undertaken.

In parallel, the practice of more sustainable construction based on the design, use of secondary or renewable materials and more efficient processes through their industrialisation will have to be reinforced. In addition to design, the construction sector will have to consider sustainable, durable and modular housing and offices, built with more circular materials.

## LINE OF ACTION 5: EFFICIENT MANUFACTURING

Introducing technological improvements in the industrial sectors with greatest environmental impact, subject to the Industrial Emissions Directive, will be particularly important in that regard. Those sectors are estimated to account for 30 companies in the Basque Country<sup>16</sup>. Those Basque industries that must integrated Best Available Techniques, consume nearly 50% of all materials and generate over 70% of the waste of the BAC.

The industry producing steel, second smelting of aluminium and the melting down of non-ferrous metals, in such a developed industrial setting as in the Basque Country, plays a fundamental role in the implementation of the circular economy. It is essential for the efficient reuse of secondary raw materials in sufficient quantities and quality and, thus, to reduce the use of primary materials. The potentially recyclable materials in reduced concentrations have so far ended up being lost during the separation and preparation phases or are not found again among the secondary products or the preparation waste. Apart from the economically strategic raw materials themselves, the availability of the necessary infrastructures for their processing and recycling may also be a critical aspect.

By means of decisive support for innovation, work will have to be carried out on the ongoing development of metallurgy separation processes for those metals that are present in small amounts among the raw materials of complex product and that, up to now, could only be recycled in a limited way, due to their thermodynamic properties. Furthermore, innovative combinations of hydro- & pyro-metallurgical and mechanical separation processes must be researched.

On the other hand, valuable economically strategic raw materials are lost when alloy elements are accumulated in the slag of the electric arc furnaces. In order to improve the loop closure, the Basque Country should perform specific alloy separation in industrial conditions in order to conserve hybrid and composite metals with certain characteristics. Innovative combined separation and appraisal techniques are needed with new approaches for the metallurgy sector.

Repairing, remanufacturing and refurbishing (in the case of housing or other types of construction) activities allow the life of a product to be lengthened once a situation (failure, ageing, loss of function, etc.) has occurred that, otherwise, would mean the end of that product's life. For those activities to be able to drive the change of model, the development of repair and refurbishing legislation, guides and guidelines needs to be combined with the availability of the spare parts or components needed and the existence of human and technical resources to carry out those activities. Establishing a specific programme in that regard to harness the emerging opportunities is considered to be very relevant.

Working closely with municipal authorities will therefore be a support to use more local repair services and second-hand products, and, particularly, for the upkeep and refurbishing of buildings for different uses.

Particularly with regard to SMEs, the emphasis will have to be on identifying cleaner technologies with impact on resource efficiency and reducing greenhouse gases. More work is also needed on the socio-economic benefits arising from fiscal support for purchasing secondary material to consider its potential inclusion in the list of clean technologies.

<sup>16</sup> Figures from the Ministry of the Environment - Basque Government, 2018.



## CONSUMPTION

### LINE OF ACTION 6: CONSUMPTION

The consumption habits and patterns of the different players (Administration, companies and citizens) decisively impact the change of model. In that regard, incorporating environmental factors in the consumption criteria, along with the technical and economic ones currently used, is fundamental in the change.

The prevalence of services over products, the incorporation of technologies and digital services or the cost assessment of the lifecycle of products, among others, are contributing to a gradual dematerialisation of the economy and the expected decoupling of economic growth and resource consumption.

The Administration as the main consumer will focus on pinpointing what green public procurement can contribute to the circular economy by identifying the most important contracting in that regard, the criteria that must be established in that regard and how to calculate the input of public procurement to drive the Circular Economy.

The private sector must also be involved in order to advance in green procurement focused on the Circular Economy, beyond the public sphere. The aim is for the Basque private sector to voluntarily assume green procurement and thus sign up to that goal.

The support and involvement of the general public, not only through awareness raising campaigns, but also by ensuring they have the appropriate information and knowledge, is essential. The aim is also to foster labelling that is easily understood and which provides the consumer with trustworthy and useful information.

### LINE OF ACTION 7: FOOD WASTE

The concern about eradicating food waste is nothing new. The Basque Country has been working on this problem for years through Elika Fundazioa, by driving initiatives and projects to make the general public more aware of a more responsible consumption model and impetus from the Administration through green procurement in public canteens.

The Basque Government has produced an Action Plan against Food Waste in the Basque Country 2018-2020. As part of that Plan, an Operational Panel and specific Working Groups have been set up, whose members are representatives of different authorities and of all the players of the food chain. Some of its main lines of action are: Sources of information and data; Awareness raising, dissemination and training; Supporting and driving the solidarity networks; Developing guidelines; Analysing and proposing new legislation and regulations; and Supporting and driving research. Furthermore, the Basque Platform against Food Waste has been set up and its main missions are to provide Basque administration with advice and support in order to adopt the necessary policy lines to meet the goals of the Action Plan.

In order to combat food waste, action needs to be taken throughout the chain, i.e., at the point of source, during the transformation, production and distribution process, and at the consumption centres (restaurants, homes, etc.) and involve all the players, from the producer to the end user. In that regard, work is needed on awareness raising from an early age and changes to consumption habits, along with preparing initiatives that first allow the surpluses to be reduced along the chain and, if that is not possible, alternatives to be identified. Local authorities must assess the recovery of organic matter for compost as, in general, the decentralisation of this management is the beneficial alternative.

## LINE OF ACTION 8: PLASTIC CONSUMPTION

Reducing the use of plastic, particularly of single-use plastic, is one of the priorities of the European Commission in its Action Plan for a Circular Economy. In order to make progress towards that goal, the first step is to analyse the Basque social and business reality in depth, to identify those plastic streams where there is greatest potential for reduction. Replacing this type of material by other more sustainable ones, cutting the use of plastics at all levels and the contribution of the recycling sector to the recovery of materials will allow progress to be made towards achieving and attaining the set targets.

Reducing plastic containers, ensuring their recyclability, their collection and the recycled material being used in the new containers is a challenge for the packaging sector and users. One of the key measures in that regard will be a public-private partnership with the most important players of this chain.

In addition, citizen engagement regarding the consumption and recycling of containers has relied on producer environmental responsibility collective systems. However, there is also a model based on a deposit return scheme (DRS). Caution must be taken with those systems and their viability carefully studied, by analysing aspects such as their real functionality, their real sphere of application, the expected environmental achievement and the economic costs of their application, also taking into account that a DRS in itself is not able to manage all types of containers affected by the different legislation in that regard.

Mechanical reuse of plastics, where the plastic material is kept, offers environmental benefits compared to the approaches reusing raw materials, which destroy the material until the basic materials

are obtained. Mechanical recycling keeps the process energy used to manufacture the plastic. However, this is only viable in the cases where good quality secondary raw materials can be guaranteed.

As regards the innovation programmes, they should include the optimisation of the mechanical processes and the development of more efficient cleaning processes to obtain high purity recycled materials. In addition to the post-consumption waste, plastic waste from industrial must also be taken into account, as they contain great potential for high quality mechanical recycling. The material flows must be grouped to thus achieve critical quantities and increase profitability.

It is imperative to find quality recycling solutions for composites, particularly for those reinforced with carbon fibre or steel and plastic panels that currently cannot be recycled effectively. Research is also required, for example, in the area of the chemical recycling of composites.

Impetus will need to be given to new approaches to foster the demand for or use of recycled plastics by means of developing, for example, a quality and usability sorting system for recycled plastic and innovative applications for recycled materials.

Finally, innovative and competitive processes will need to be developed for recycling aimed at obtaining source materials for the chemical industry and developing detailed requirements for the recycling of plastic as part of the integrated environmental permits. The potential of decentralised approaches in small facilities in order to thus increase profitability or the combined effect, such as the simultaneous recovery of antimony or other additives, must be verified.



## WASTE MANAGEMENT AND SECONDARY RAW MATERIALS

### LINE OF ACTION 9: SUSTAINABLE WASTE MANAGEMENT

Sustainable waste management is one of the key aspects in the implementation of a circular economy strategy in the Basque Country, as the transition towards a circular economic model will complement the advances regarding ecodesign, eco-efficient production and responsible consumption.

An improved circular economy that uses mineral waste as secondary raw materials is, therefore, highly important from both an economic and environmental point of view. There is still a lack of sufficient knowledge about the different fields of application, among other aspects. Even though this is particularly applicable to the construction sector, it also affects the corresponding regulations. Given the large number of players responsible to a greater or lesser extent and depth of the construction and dismantling measures, the recycling aspect has not so far been sufficiently taken into account in the planning of the buildings.

New strategies and techniques are needed to ensure the use of the valuable materials available in the dismantling of buildings and to specifically separate the non-compliant material flows. This also includes identifying and quantifying mineral secondary raw materials in the current commercial circuit, along with the forecast changes to the amounts and the components and the detection of the new material flows, as the growing use of multifunctional materials and components in modern buildings will help to generate material combinations that cannot be reused based on the standard processes

for recycling construction materials. Therefore, innovation grants will continue to be a necessary instrument.

On the other hand, there must be an emphasis on innovation to control high temperature processes that seek to facilitate the recovery of certain components in the slag and ash from metallurgy, cement, incinerator and other manufacturing plants. Therefore, the furnace atmosphere, additives to the thermal processes and their control will have to be adjusted.

Furthermore, special mention must be made of the innovation needed in the slag systems of the metallurgy processes to facilitate a subsequent treatment to allow the recovery of the metal and the conditioning the mineral materials to be used in high quality construction applications.

In addition, emphasis will be needed to develop processes to create quality construction materials or components using the prepared mineral residual fractions. The products will have to comply with the use specifications, apart from considerably reducing the amount of waste flows ending up in landfill. The possible impacts caused by future modifications to the composition of combustion fuels will also have to be observed.

In short, best practices and technologies will have to be shared, financial instruments established to improve waste management and public-private initiatives deployed to develop strategic infrastructures.

## LINE OF ACTION 10: SECONDARY RAW MATERIALS

One of the priority goals of the circular economy is to conserve products and their components in the commercial circuit for the longest possible time. But that generates other flows of materials and substances that cannot be reintroduced in the production cycle indefinitely and they need to develop a new added value through recycling.

The use of secondary raw materials leads to lower dependency on the extraction and imports of materials resources. In order to foster the use of secondary raw materials, mechanisms need to be established to guarantee the stability of the supply (as regards quality, quantity and price) and foster demand by the most intensive sectors in terms of material consumption, particularly the industrial and construction sectors, so that the use of this type of materials becomes a competitive advantage for companies, compared to those used traditionally.

Solutions will have to be developed to standardise and overcome administrative barriers, particularly, for certain material flows of high environmental relevance or strategic economically speaking which have not been sufficiently recycled up to now. An increase in the supply of secondary raw materials will not only help to relieve raw material supply bottlenecks and price fluctuations, but it will also help to protect the resources.

Waste recovery and fostering the use of secondary raw materials are one of the cornerstones of the circular economy. Construction and demolition waste (C&DW), steelworks slag, foundry sand, bulky waste and waste electrical and electronic equipment are among the streams with greatest potential to contribute to the goal to increase the circularity rate.

Starting from the current generation and waste conditions, the existing legislation, planning and good practices have been analysed and their extrapolation potential to the Basque Country assessed. Thus, the final action proposal includes measures, such as implementing landfill fees, requiring the use of C&DW or steelworks aggregates in the works in the Basque Country or driving the innovation and inspection work. The economic appraisal performed puts the net contribution of those measures at €4.5 million and 95 jobs.

Different utilisation strategies must thus be studied, taking into account the prices of the raw materials and energy, technological developments, quantities and qualities, and the subsequent specifications of the recovery processes and their market opportunities.

As regards material management, the impact of future trends, such as 3D printing or the growing use of fibre composites, must be considered. Developing new decision-making support tools will often be required in order to establish an optimum reuse strategy and to connect all the players of the waste management chain.

In short, driving the recycling sector, research into new opportunities to use secondary raw materials, support by the authorities to strengthen demand, by means of public procurement processes, and agreement between the different stakeholders seem to be fundamental to generate a favourable environment for the use of secondary raw materials.



## SUMMARY

In short, the following table sets out the **instruments** to be used for the measures set out in the Action Plan to 2025 described in the following section. This table uses a general criterion to establish a practical classification for the purposes of the Strategy, even though there is constant partial interaction between the instruments. Many of them envisage implementing specific measures: programmes, partnership

agreements, technical criteria, labelling, courses and master's, local workshops, etc.

Their application in the different lines of action and the estimated degree of importance is described below in order to facilitate the understanding of the actions.

— Legislation: Developing own legislation of the BAC to regulate certain waste streams, strengthening the incorporation of secondary

AREAS	LINES OF ACTION	Legislative regulatory		Economics			
		Legislation	Authorizations	Investment grants	Tax deductions	Fees	Financing
Competitiveness and Innovation	1. New circular business models	+					+++
	2. Circular economy innovation and technologies		++	++	+	+	+++
	3. New sustainable materials		++				++
Production	4. Products and buildings eco-design	+	+		++		
	5. Efficient manufacturing	+	+++	++	+++	++	+++
Consumption	6. Circular consumption	+					
	7. Food waste	+					
	8. Plastic consumption					+++	
Secondary raw materials and waste	9. Sustainable waste management	+++	+++	+++		+++	+++
	10. Secondary raw materials	+++	+++	+++	+++	+++	

materials in the processes or civil works, etc. Anticipating new European legislation is seen as an area of opportunity.

- Authorisations: Smart use of integrated environmental authorisation permits to support compliance of the Strategy's objective, both regarding waste manager and, in particular landfills, and regarding manufacturing companies.

- Investment grants: Managing the Investment Grant Order of the Ministry of the Environment to support investment, particularly in waste management infrastructure, production efficiency and new businesses. The specific interinstitutional cooperation measures to streamline the introduction of new facilities are also included.

- Tax deduction: Developing, among other things, the Clean Technologies List to focus it on the equipment

INSTRUMENTS										
Market				Development						
Green procurement	Voluntary agreements	Standards	Information awareness raising	R&D&i grants	Knowledge hubs	Monitoring system	Skills building	Transfer	Local action	Knowledge for action
		+		+++	+	+++	+++	+	++	++
	+			+++	+++	+++	+++			+++
+		++		+++	+++	++	++			++
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with greater potential for being used in SMEs in order to improve business efficiency. The potential of integration in the secondary material list will also be analysed.

- Fees: Analysis of the efficiency and viability of the application of environmental fees and taxes.
- Financing: Includes actions aimed at making it easier for companies to search and access BEI financing. Also showcasing the circular economy in the private and public venture capital funds or similar.
- Green procurement: Developing the green public procurement aimed at the circular economy and which integrates other measures to involve the citizens and the private sector in more circular procurement.
- Voluntary agreements: The administration-company agreements as drivers for SMEs regarding the circular economy, such as the Basque Ecodesign Center, the partnership agreements regarding plastic, private procurement and managing certain waste streams are included.
- Knowledge hubs: The strategic initiatives of the PCTI relating to the digitalisation (Basque Digital Innovation Hub) and circular ecoinnovation (Basque Circular Hub) are included.
- Standards: Developing technical standards and methodologies to facilitate the use of secondary materials, anticipating the future ecoinnovation legislation, use of environmental produce information or the business reputation reports. In numerous cases, those standards are or will be integrated in European or Basque legislation.
- Information and awareness raising: Includes actions aimed at providing consumers with circular consumption criteria, along with fostering environmental labelling and managing tools for awareness raising in relation to food waste and consumption and management of plastics.
- R&D&i grants Ilobe and SPRI innovation grants, for projects oriented to the circular economy, along with those aimed at the food and urban habitat niches of the PCTI.
- Watch system: Identifying, analysing and prioritising the opportunity of certain niches of the circular economy, based on the Basque Circular Hub and the PCTI pilot groups. Actions are then implemented so that company can harness opportunities, for example, by means of support for strategic decision making and business models.
- Skills-building: Skills-building includes all the measures aimed at formal training, at university and on vocational training schemes, along with non-formal training on the job.
- Transfer: Knowledge transfer is essential so that the different key players can implement it in their organisations. Work will be needed on practical programmes for VT qualified or university graduates so that they can transfer and anchor knowledge in the company by means of a real project. Collecting and sharing best practices is also considered another key aspect and, finally, the driving of the supply chain with the Basque Ecodesign Center.
- Local action instruments: The US2030 network of municipalities for Sustainability and its skills-building actions, deployment of policies at local level, fostering public exemplariness, pilot or working groups, grants for municipal innovation, etc. are considered.
- Knowledge for action: Generating essential knowledge for the proper implementation of the Strategy. The work envisaged includes preparing technical studies, knowledge maps, environmental barometers, participation in LIFE or H2020 projects, feasibility studies on the reuse of waste

currents, flowgrams of materials in the Basque economy, relationship between climate change and circular economy, etc.

Finally, the **expected impact** of each of the lines of action in the attainment of the previously defined strategic objectives is set out below.

		2030 GOALS			
AREAS	LINES OF ACTION	Increase material productivity	Increase the rate of circular materials	Decrease the rate of waste generation per GDP unit	Create jobs in Circular Economy field
Competitiveness and innovation	1. New circular business models	High impact	Low impact	Low impact	High impact
	2. Circular economy innovation and technologies	Low impact	Medium impact	Medium impact	Medium impact
	3. New sustainable materials	High impact	Medium impact	Low impact	Low impact
Production	4. Products and buildings eco-design	High impact	Medium impact	Medium impact	Low impact
	5. Efficient manufacturing	High impact	Low impact	Medium impact	High impact
Consumption	6. Circular consumption	Low impact	Low impact	High impact	Low impact
	7. Food waste	Low impact	Low impact	High impact	Low impact
	8. Plastic consumption	Low impact	Low impact	Medium impact	Low impact
Secondary raw materials and waste management	9. Sustainable waste management	Low impact	High impact	High impact	Low impact
	10. Secondary raw materials	Medium impact	High impact	Low impact	Low impact



6.

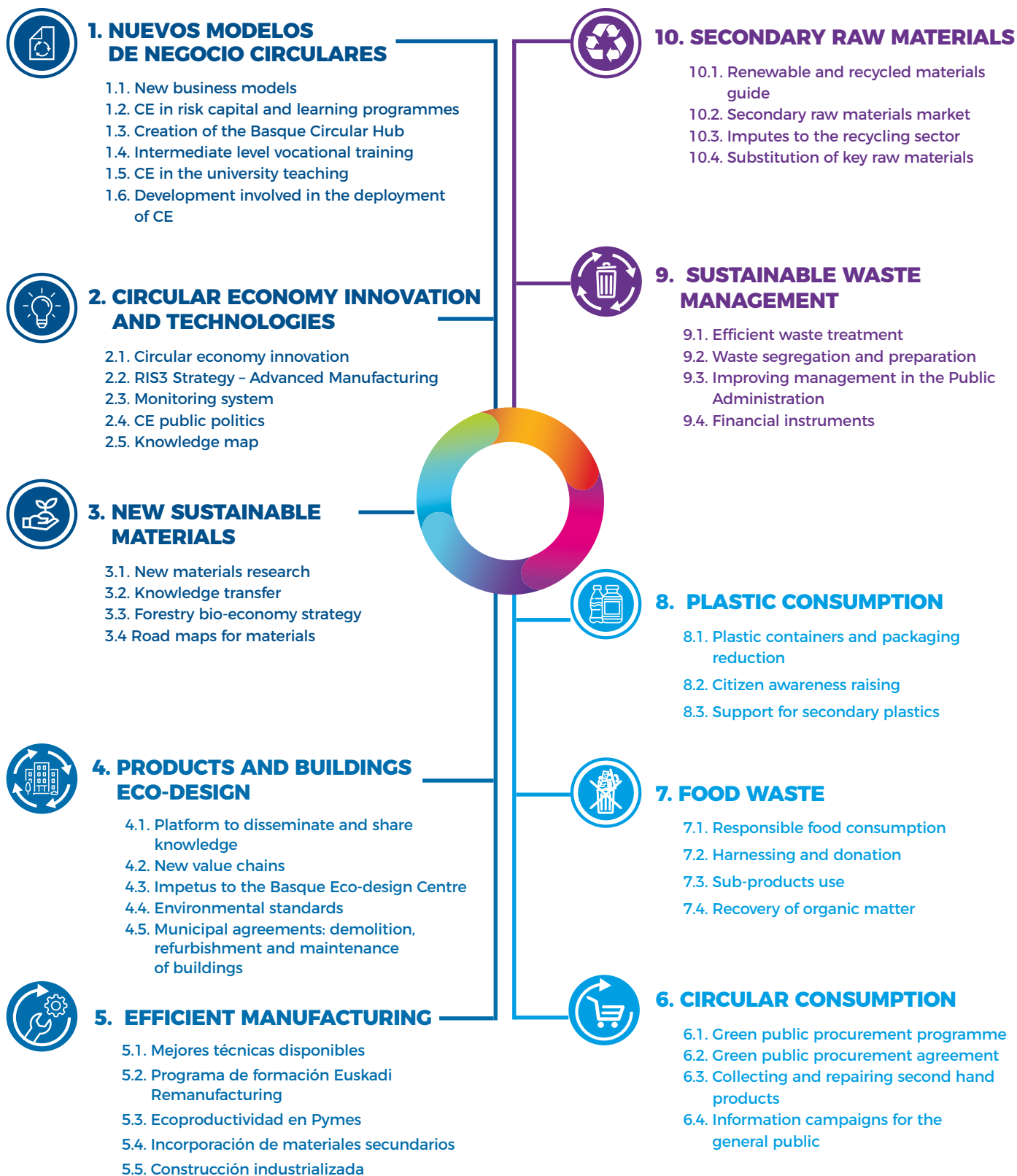
# ACTION PLAN 2025

The lines of action defined in this strategy are guidelines to achieve strategic objectives, established on a medium-long term timeline (2030).

In order to reach that point, short-medium term actions need to be agreed, and which are set out in this Action Plan 2025, which can be updated as changes occur to

the business, social and environmental context, there are new technological advances, legislative changes, and innovative business models appear, etc.

Therefore, this section considers a set of action up to 2025 that are the first steps to achieving the Objectives and Vision established for 2030.





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## AREA: **COMPETITIVENESS AND INNOVATION**

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### Line of Action 1:

#### **NEW CIRCULAR BUSINESS MODELS**

- 1.1. Driving the transition of businesses to new business models aligned with the circular economy.
  - 1.2. Integrating the circular economy in the venture capital and learning programmes.
  - 1.3. Creating the BASQUE CIRCULAR HUB.
  - 1.4. Creating Vocational Training qualifications /certificates with skills associated to the circular economy.
  - 1.5. Integrating the circular economy principles in the university teaching of the BAC.
  - 1.6. Driving the role of Development Agencies in the deployment of the Circular Economy at regional level.
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### Line of Action 2:

#### **INNOVATION AND NEW TECHNOLOGIES IN THE CIRCULAR ECONOMY**

- 2.1. Reinforcing public and private investment in circular economy innovation projects.
  - 2.2. Incorporating the Circular Economy in the RIS3 priority areas of Advanced Manufacturing and Energy.
  - 2.3. Setting up a Watch System for the opportunities existing in the Circular Economy for prioritised business sectors.
  - 2.4. Integrating the circular economy principles in the public policies and plans and driving their deployment.
  - 2.5. Preparing the map of knowledge in circular innovation and an expert forum.
- 

### Line of Action 3:

#### **NEW SUSTAINABLE MATERIALS**

- 3.1. Deployment of research projects to develop new materials
  - 3.2. Driving the knowledge transfer resulting from research into production processes.
  - 3.3. Developing the Forestry Bioeconomy Strategy, impacting on the incorporating of renewable materials in the production processes, to replace the non-renewable ones currently used.
  - 3.4. Preparing road maps of materials with high impact on climate change.
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## AREA: **PRODUCTION**

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### Line of Action 4:

#### **PRODUCT AND BUILDING ECODESIGN**

- 4.1. Creating a platform to disseminate and share knowledge on ecodesign and circular economy.
  - 4.2. Working on initiatives relating to new chain values based on the ecodesign of equipment and components and energy efficiency in manufacturing processes.
  - 4.3. Impetus to the BASQUE ECODESIGN CENTER in projects to improve competitiveness and drive the value chain.
  - 4.4. Extending the use of environmental standards for products and services in the priorities sectors (industry and agri-food).
  - 4.5. Driving municipal agreements focused on demolition, refurbishment and upkeep criteria for large building and offices.
- 

### Line of Action 5:

#### **EFFICIENT MANUFACTURING**

- 5.1. Anticipating efficient manufacturing opportunities emerging in the processes to review the industrial Best Available Techniques.
  - 5.2. Euskadi Remanufacturing programme to drive the remanufacturing industry.
  - 5.3. Implementing eco-productivity measures in SMEs.
  - 5.4. Study to incorporate secondary materials and efficient technologies in the use of resources on the clean technologies list.
  - 5.5. Support for initiatives in the field of industrialised construction and incorporating new construction materials.
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## AREA: CONSUMPTION

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### Line of Action 6: **CONSUMPTION**

- 6.1. Including new circular economy criteria in the Green Public Procurement Programme.
  - 6.2. Preparing a Voluntary Agreement with the private sector to incorporate circular economy criteria in its procurement.
  - 6.3. Impetus to collecting and repairing second-hand products at local and regional level.
  - 6.4. Running citizen information campaigns to foster sustainable consumption habits.
- 

### Line of Action 7: **FOOD WASTE**

- 7.1. Awareness raising of citizens regarding a more responsible food consumption model, stressing the problem of food waste.
  - 7.2. Fostering the use of food surpluses by the consumer and the subsequent donation by the major generators.
  - 7.3. Impetus to the innovative use of by-products of the primary sector and the agri-food industry as own raw material or for other sectors.
  - 7.4. Fostering the recovery of organic matter for compost at local or regional level.
- 

### Line of Action 8: **PLASTIC CONSUMPTION**

- 8.1. Establishing key agreements with stakeholders to reduce of the use of plastic in packaging and containers (and to improve their recyclability).
  - 8.2. Involving consumers and providing guidelines to reduce the consumption of single-use plastic products.
  - 8.3. Programme to support the design of solutions to recycle used plastics and the use of secondary plastics.
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**AREA: SECONDARY RAW MATERIALS AND WASTE MANAGEMENT**

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## Line of Action 9:

**SUSTAINABLE WASTE MANAGEMENT**

- 9.1. Incorporating and developing new more efficient waste treatment technologies and giving impetus to an advanced waste management sector in the Basque Country.
- 
- 9.2. Developing and incorporating new waste separation and preparation practices for its subsequent treatment and recovery.
- 
- 9.3. Boost to improving the waste management of the different Public Administration in their activities.
- 
- 9.4. Establishing financial instruments to improve waste management and deploy public-private initiatives to develop strategic infrastructures.
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## Line of Action 10:

**SECONDARY RAW MATERIALS**

- 10.1. Preparing and distributing renewable and recycled materials guides to use such material in building projects.
- 
- 10.2. Promoting and using material verification standards to develop a market of smart, traceable and uniform secondary materials market.
- 
- 10.3. Impetus to the recycling sector to close the material loops, guaranteeing competitiveness in price and technical specifications and stability in supply.
- 
- 10.4. Research to replacing key raw materials and those with greater difficulties in the reuse, repair and recycling processes to reduce and risk and dependency of those materials.
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# 7.

# MONITORING AND MANAGEMENT MODEL

## 7.1. GOVERNANCE

The Circular Economy Strategy of the Basque Country 2030 is led by the Basque Government's Ministry of the Environment, Territorial Planning and Housing.

However, given that there are many other players working to progress to a more circular economy, from different backgrounds, of great repute and with proven track records, the strategy aims to include them in order to optimise resources, by avoiding repetitions or overlapping and aligning the joint action towards future common challenges.

The different support and coordination tools needed to carry out the different actions defined in each proposed policy area.

Policy area 1:

### **Competitiveness and Innovation**

The role of the Basque Government's Ministry of the Environment, Territorial Planning Housing fundamentally seems to continue to promote and support the innovative ideas that will allow the current models to be transformed to new more resource-efficient and sustainable models.

Additionally, the network of the technology centres is vital to share resources and knowledge, in order

to innovate in the introduction of new technologies, materials and manufacturing processes in the Basque Country's economy. In this regard, the support and coordination work carried out by SPRI will allow the research work in the field of the circular economy to be energised and boosted.

Neiker's work in this area, aimed at driving the contribution of the bio-economy, will also allow progress to towards the objectives established in this strategy.

Finally, the different higher and vocational training education centres will need to be coordinated in order to incorporate the circular economy principles in university and vocational training syllabuses, and thus develop the necessary skills to drive the change of model.

Policy area 2:

### **Production**

The transition process to a more circular production model where new technologies and materials are incorporated and the design processes consider the whole lifecycle of products, must continue to be deployed by means of the coordination and cooperation tasks between the Basque Government's Ministry of Economic Development and Infrastructures and its Ministry of the

Environment, Territorial Planning and Housing through SPRI and Ihobe.

The activity of the Basque Ecodesign Centre is here seen to be fundamental, given its ability to interact with the main companies of the Basque Country and its firm commitment to the principles of ecodesign. Working with the different business clusters, along with Confebask, will ensure greater dissemination of those best practices.

Furthermore, the activity of the Basque Circular Hub must act to foster the private-public partnership between the Basque Government and companies in the field of training in ecodesign and the circular economy.

Finally, Udalsarea 2030, the Basque Network of Municipalities for Sustainability, and the Development Agencies play a key role at local level, given their ability to coordinate the actions of the different local entities and disseminate the local best practices in the field of the circular economy.

### Policy area 3: **Consumption**

Promoting a more circular economy will require the coordinated action of the whole Administration, given its capacity to influence in the transition through the public procurement policies and programmes. In this regard, the impetus by the Basque Government's Ministries of the Environment and of Public Governance seems fundamentally to be to support and advise the different authorities regarding this change of model.

On the other hand, in the field of agri-food, the coordinated action of Hazi and Elika will allow progress to be made to achieve the target regarding food waste, where it will be necessary to work with all the players of the supply chain, from local producers and manufacturers to distributors and large consumption centre.

Udalsarea 2030 and the Development Agencies will again be key players in the dissemination of

best practices and in awareness raising among the general public in the actions relating to change of consumption habits and more sustainable actions.

### Policy area 4: **Waste Management and secondary raw materials**

From its policy areas, the Ministry of the Environment, through Ihobe, will coordinate the alignment of the Circular Economy Strategy with the successive Waste Prevention and Management Plan of the BAC, along with the specific measures implemented by the Provincial Councils in their jurisdiction.

As regards the increase in the use of renewable or secondary raw materials in the Basque Country, the Ministry of the Environment will give impetus to the measures to be implemented to progress towards a stable secondary raw material market, addressing the demands from the business associations of those more material-intensive sectors.

## **7.2. ECONOMIC RESOURCES FOR THE ACTION PLAN 2025**

The timeline for the Circular Economy Strategy of the Basque Country runs up to 2030 and its execution is envisaged through two Action Plans. The first will begin with the approval of the strategy and will last until 2025 and the following will include the period 2026-2030. At the end of this Action Plan, the degree of implementation of the Strategy will be assessed, along with its contribution to achieving its goals. The following Action Plan will be designed based on that assessment.

The economic performance of the Basque Country is showing a more uncertain economic expansion than was expected, due to aspects of trade policy, Brexit negotiations and geopolitical tensions. However, according to the latest figures on the macroeconomic climate and the short-term indicators, the growth

forecasts for 2019 stand at 2.3% of GDP, slightly lower than for 2018, with special emphasis on industry and construction. As regards employment, an increase of 1.4% in 2019 with 13,500 net jobs generated and a more modest lowering of the unemployment rate than in recent years<sup>17</sup>. As is customary, if the long-term timeline of the Strategy is added to the less favourable forecasts, a conservative approach should be assumed as regards estimating budgetary spending.

The benchmark budgetary framework is the one used in 2018 in the budgets for the Environment Office and the Housing Office, both coming under the Ministry of the Environment, Territorial Planning and Housing.

The staff budget lines are not expressly included in the estimated budget that is limited to the operating budget. Based on this budgetary framework, where the operating budget allocation<sup>18</sup> is slightly over €2,000,000, the budgetary resources required to implement the **measures envisaged in 2020** would be:

On the other hand, apart from the budgetary resources of the Environment and Housing Offices, it has to be taken into account that the implementation of the Strategy also depends on the involvement of other agents, such as the municipalities or the Basque Government's Ministry of Economic Development and Infrastructures with a very important role in the efficient implementation of this Strategy. In this regard, an additional budget of those agents is foreseeable, as the result of the shared preparation of the Strategy.

The uncertainty associated to the budgetary estimate increases as we advance along the timeline of the first Action Plan. We therefore assume that the necessary budgetary estimate to allow continuity of the actions included in the Strategy are contingent on the budgetary mandates set by the Basque Parliament, as well as on the formal processing of the instruments required to deploy the Strategy. However, a budget context needs to be forecast for the whole action plan in the interest of greater efficiency in the actions undertaken. The operating budget associated to the Strategy for the first Action Plan would be:

<b>POLICY AREAS</b>	<b>BUDGETARY NEEDS 2020</b>	<b>PERCENTAGE</b>
<b>1. Competitiveness and Innovation</b>	1,356,667	66.5%
<b>2. Circular production</b>	388,333	19.0%
<b>3. Circular consumption</b>	295,000	14.5%
<b>4. Waste Management and secondary raw materials</b>	-	-
<b>TOTAL</b>	<b>2,040,000</b>	<b>100%</b>

<sup>17</sup> Ministry for the Treasury and Economy.

<sup>18</sup> The operating budget allocation excludes both staff costs and those not associated to a specific action, i.e. those considered to be structural costs.

POLICY AREAS	2020	2021	2022	2023	2024	2025
<b>1. Competitiveness and Innovation</b>	1,356,667	1,506,667	1,656,667	1,906,667	1,906,667	1,906,667
<b>2. Production</b>	388,333	408,333	408,333	408,333	408,333	408,333
<b>3. Consumption</b>	295,000	350,000	290,000	285,000	285,000	265,000
<b>4. Waste management and secondary raw materials</b>	-	728,333	839,444	839,444	839,444	1,006,111
<b>TOTAL</b>	<b>2,040,000</b>	<b>2,993,333</b>	<b>3,194,444</b>	<b>3,439,444</b>	<b>3,439,444</b>	<b>3,586,115</b>

### 7.3. MONITORING AND ASSESSMENT

The Circular Economy Strategy of the Basque has a strategic scope until 2030, but the actions are planned to 2025. At the time of its approval, having adaptative management was considered to be of interest and therefore different monitoring mechanisms are envisaged.

The monitoring of the deployment of each of the actions envisaged in the Plan is proposed in order to assess the degree of compliance of the Strategy, which will also allow its implementation to be assessed. Reflecting on the progress in the application of the action plan is envisaged through action and assessment mechanisms of the Strategy:

- Two-yearly monitoring reports: they will consider the degree of progress of the measures envisaged in the Action Plan for each of the actions contained in it.

- Action Plan Assessment Report: this will be produced in the last year of the Action Plan 2025 and, together with the two-yearly monitoring reports, it will be the basis for the following Action Plan. This report will be entrusted to an external entity, in accordance with the criteria of transparency, participation and cooperation and will include the evolution of the dashboard indicators.

All the information generated in the monitoring and assessment of the Circular Economy Strategy of the Basque Country 2030 will be available, to be consulted and for input, on the Ihobe website, the environmental management agency under the Basque Government's Ministry of the Environment, Territorial Planning and Housing: <https://www.ihobe.eus>.

The objective system to manage the degree of compliance of the Circular Economy Strategy of the Basque Country 2030 is explained below.



## INTEGRAL DASHBOARD OF THE CIRCULAR ECONOMY STRATEGY OF THE BASQUE COUNTRY 2030

STRATEGIC OBJECTIVES	2025 TARGET	2030 TARGET
1. <b>Material productivity</b> (GDP/ DMC ratio). 3.34 €/kg (2016)	3.98 €/kg	4.34 €/kg
2. <b>Circular material</b> use rate (recycled material / (recycled material + DMC) ratio). 9.9% (2016)	11.7 %	12.8 %
3. Total amount of <b>waste generated</b> , excluding the main mining waste, per GDP unit in thousands of euros. 67 kg/K€ (2016)	53.9 kg/K€	46.7 kg/K€
3.1 Total amount of <b>food waste</b> generated per year. 172 kg/inhab (2016)	117 kg/inhab	86 kg/inhab
3.2 Percentage of <b>plastic containers put on the market</b> that are <b>recyclable</b>	80 %	100 %
ACTION PLAN MANAGEMENT INDICATORS	OBJECTIVE	
1. Level of implementation of the Action Plan 2025 measures	100%	
2. Action Plan monitoring reporting	Two-yearly	
3. Assessment Reporting	2025, 2030	
ACTION PLAN RESULTS INDICATORS	2025 RESULT	2030 RESULT
1. Turnover of companies in more circular products, €2852 million in 2016	€7 billion	€19 billion
2. Carbon emissions associated to material consumption were cut in 2016 by 16.5 million t eq. CO <sub>2</sub>	26%	
3. Number of <b>new jobs</b> in the circular economy sectors. 18,463 people employed (2015)	1874	3.000

ANNEXES

## **ANNEX 1.**

# SUMMARY OF THE CIRCULAR ECONOMY IN BASQUE INDUSTRY ASSESSMENT

**"Doing more with less"** is the basic principle of the circular economy. Those companies that produce efficiency, cut their costs and thus safeguard jobs. Using less resources in production is of key importance to protect our environment. The guiding principle of decoupling natural resources from economic growth has many benefits: competitive companies, a motivated workforce, attracting businesses to set up and conserving our planet's natural resources.

The industrial sector in the Basque Country consumes 21 million tonnes of raw materials a year. The costs of those raw materials for Basque industry account for 61% of the total. The transition towards a more circular economy therefore offers great opportunities: a real source of economic opportunities to start up innovative companies, the diversification and internationalisation of the existing ones, investment in cleaner new technologies and job creation. With the circular economy, the environment becomes a key factor for competitiveness.

**Over 230 industrial companies of the Basque Country are already applying circular practices or models** (ecodesign, servitization, remanufacturing, lifecycle assessment, environmental declarations, etc.). The main industries that are adopting new "circular strategies", are in the automotive, transport equipment, electronic and electrical equipment, machine-tool, metal, chemical, furniture and building sectors and environmental services subsector.

The circular economy experiences implemented by Basque companies have led to tangible and immediate results. Therefore, 60% of the companies already working on those approaches point out that it is essential to introduce those criteria in their business or product in order to, among others, make their processes more productive, cut energy consumption, save materials, grow sales, stand out on international markets, open up new markets, improve their image and increase their

internal capabilities. If circular innovative solutions are undertaken, an achievable average potential saving of 6% of that consumption of raw materials is estimated, which would mean savings of EUR 2 billion in Basque industry. The metal (iron & steel, casting, metal products) and mobility (automotive, aeronautics) sectors would accumulate half of the potential saving in industry.

Two outstanding aspects of the Basque model are the way of working and the application of advanced tools. On the one hand, private-public partnership in the development of ecoinnovative projects is a relevant and differentiating element for their final success and, on the other hand, the economic and environment lifecycle assessment is set up as an essential tool to incorporate the circular economy projects.

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## PRIORITY LINES OF THE CIRCULAR ECONOMY IN BASQUE INDUSTRY

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**Ecodesign.**

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**Advanced remanufacturing and repair.**

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**Servitization (and other new business models).**

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**Key metals.**

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**Plastics, composites and rubber.**

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See full assessment at:

<http://www.ihobe.eus/publicaciones/economia-circular-en-industria-pais-vasco-diagnostico>

## **ANNEX 2.**

# SUMMARY OF CIRCULAR ECONOMY OF THE BASQUE COUNTRY INDICATORS 2018

## CIRCULAR ECONOMY INDICATOR DASHBOARD - BASQUE COUNTRY 2015

### KEY INDICATORS - MONITORING FRAMEWORK OF THE EUROPEAN COMMISSION

#### PRODUCTION AND CONSUMPTION

	UNIT
1. Self-sufficiency for critical raw materials	See Section 3.1*
2. Green public procurement	767 procurements
3. Waste generation	
3a. Generation of municipal waste per capita	505 kg/inhab.
3b. Waste generation, excluding the main mineral waste, per GDP unit	76 kg/€000**
3c. Waste generation, excluding major mineral waste, per DMC unit	26%**
4. Food waste	182 kg/inhab.

#### WASTE MANAGEMENT

	UNIT
5. Recycling rates	
5a. Municipal waste recycling rate	33%
5b. Recycling rate of all waste excluding major mineral waste	51%
6. Recycling rates of specific waste streams	
6a. Overall packaging recycling rate	79%
6b. Plastic packaging recycling rate	80%
6c. Recycling rate of wooden packaging	69%
6d. Recycling rate of WEEE	33%
6e. Biowaste recycling rate	21 kg/inhab.
6f. Construction and demolition waste recycling rate	59%

#### SECONDARY RAW MATERIALS

	UNIT
7. Contribution of recycled materials to raw materials demand	
7a. End-of-life recycling input rates	*
7b. Circular material use rate	9.2%
8. Trade in recyclable raw materials	***

#### COMPETITIVENESS AND INNOVATION

	UNIT
9. Private investments, jobs and gross value added: recycling sector; repair and reuse sector	
9a. Gross investments in tangible goods related to circular economy sectors	0.03%
9b. Number of people employed in circular economy sectors	2.08%
9c. Gross value added to the cost of the factors in the circular economy sectors	1.12%
10. Number of patents related to recycling and secondary raw materials	1 patent

### AUXILLARY INDICATORS FOR THE BASQUE COUNTRY

11. Domestic Material Consumption (DMC)	11 t/inhab.
12. Resource Productivity	2.87 €/kg
13. Material flows per capita	ED: 5.5 t/inhab. EXP: 11.5 t/inhab. IMP: 17 t/inhab.
14. Total waste treatment	Recycling: 1.15 t/inhab. Incin.: 0.19 t/inhab. Landfill: 0.9 t/inhab.

\* Multiple indicator; \*\* 2014 figure. Data not available for 2015; \*\*\* Indicator being developed for the Basque Country.

## **ANNEX 3.**

# THE CIRCULAR ECONOMY AS A COMPETITIVENESS FACTOR OF THE BASQUE COMPANY

The study examines the potential of Basque companies to turn three strategies linked to the circular economy (ecodesign, remanufacturing and servitization) into competitiveness factors.

### POTENTIAL OF THE STRATEGIES

		ECO-DESIGN	REMANUFACTURING	SERVITIZATION
<b>MAFEX</b>	Specialization	●	●	●
	Companies	●	●	●
	Environment	●	●	●
<b>AFM</b>	Specialization	●	●	●
	Companies	●	●	●
	Environment	●	●	●
<b>ACICAE</b>	Specialization	●	●	●
	Companies	●	●	●
	Environment	●	●	●
<b>ENERGY</b>	Specialization	●	●	●
	Companies	●	●	●
	Environment	●	●	●

Potential level of each strategy:





## MAIN CONCLUSIONS

**THE CIRCULAR ECONOMY AS A COMPETITIVENESS FACTOR**

1. The perception of the clusters is that the theoretical potential of the circular economy strategies is not being harnessed.

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  2. The remanufacturing strategy is the least developed and its lack of implementation may be a threat to the future competitiveness of companies.

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  3. Even though the strategies have been analysed separately, there are links between three, which are particularly clear between the ecodesign and servitization strategies.

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  4. Considered individually, the ecodesign strategy has had the greatest implementation and the Basque Ecodesign Centre is considered an asset of the business environment that has contributed to that implementation.

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  5. The position of the companies of the territory in the global value chains defines their potential to lead the implementation of the strategies or to act reactively to decisions taken elsewhere.

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  6. The themes relating to data exploitation are central for greater deployment of the servitization strategy and, linked to it, also of ecodesign.

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  7. A fundamental theme is that the competitiveness of the companies of the majority of clusters is conditional on cost reduction that allows products to be offered at a lower price.

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  8. Companies that see the competitive advantages that they could obtain from the implementation of these strategies require financing which the current funding models cannot not meet in many cases.

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  9. The circular economy strategies can make it more attractive for some sector to contract workers in the future.
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## **ANNEX 4.**

# THE CIRCULAR ECONOMY AND WASTE MANAGEMENT IN THE BASQUE COUNTRY



The "Closing the loop - An EU action plan for the Circular Economy" communication, approved by the European Commission in December 2015, identifies several fundamental lines of action:

- Product design.
- Efficient production processes.
- Consumption.
- Waste management, with priority being given to plastics, food waste, critical raw materials, construction & demolition waste and biomass/bioproducts.
- Secondary raw materials market.

In recent years, the Basque Country has undertaken numerous initiatives to foster ecodesign, ecoefficiency and responsible consumption, but has detected a margin for improvement in the contribution of waste management and the secondary raw materials market to a new Basque circular economy model.

The Basque Country generates around 6 million ton/year of waste, 56% of which is non-hazardous waste; 19.4% construction and demolition waste; 19.2% urban waste and 5.4% hazardous waste. Over half the waste is recycled, specifically, 54%, on the other hand, 6% is recovered as waste-to-energy and 40%

is eliminated. The elimination treatments include landfill, which is used for 2.2 million t (38% of the annual total generated).

After analysing the streams depositing most in landfill (which prevent the circularity of the economy), the weight of the iron and steel sector can be seen in the Basque Country in that regard, in contrast to the priority streams identified in Europe.

Consequently, a specific assessment is conducted to establish the waste streams in the Basque Country where priority action is required, by incorporating other additional factors to the recovery, such as uniformity of waste, degree of atomisation of production (when evaluating the difficulties when it comes to acting), existing strands of work, associated public problems, etc.

Numerous best practices and planning/legislative benchmarks deployed in different geographical areas, including worldwide, have been identified for the streams thus prioritised (**construction & demolition waste, bulky waste, foundry sand and steelworks slag**).

The technical-environmental assessment of those experiences, which includes the SWOT analysis, pinpointing measures that can be extrapolated to the Basque Country, etc.) has allowed the following proposed actions to be identified:

PROPOSED ACTIONS	
<b>C&amp;DW</b>	<b>C&amp;DW.1:</b> Introduce the landfill tax (the Netherlands, United Kingdom, Flanders).
	<b>C&amp;DW.2:</b> Have a verification mechanism to control (?) selective demolitions (Flanders).
	<b>C&amp;DW.3:</b> Increase the checks and inspections.
	<b>C&amp;DW.4:</b> Support improving the municipal controls of building permits.
	<b>C&amp;DW.5:</b> Identify new uses for the C&DW.
	<b>C&amp;DW.6:</b> Recognise and showcase the quality of the Basque recycled aggregates.
	<b>C&amp;DW.7:</b> Require the use of a % of recycled aggregate from the recovery of C&DW in the works carried out in the Basque Country..
<b>Bulky</b>	<b>BULK.1:</b> Código de conducta voluntario como mecanismo de autorregulación del sector (Reino Unido).
	<b>BULK.2:</b> Establecer sistemas de recogida e infraestructura de preparación para la reutilización y reciclaje (Navarra).
	<b>BULK.3:</b> Impulso a una responsabilidad ampliada del productor (Unión Europea).
	<b>BULK.4:</b> Trabajar con los gestores en el potencial de instrumentos económicos y salidas de mercado atractivas (Reino Unido).
	<b>BULK.5:</b> Valorización de metales con alto valor añadido presente en los RAEEES (Holanda).
<b>Foundry sands</b>	<b>SAND.1:</b> Control de producción en las fundiciones para la prevención de la generación y segregación en origen de arenas.
	<b>SAND.2:</b> Medidas económicas de impulso al uso de arenas recicladas.
	<b>SAND.3:</b> Definir un catálogo de arenas de fundición con sus características (arenas verdes, arenas químicas, finos) para dirigir correctamente las posibles vías de valorización y posibles usos; y creación de algún tipo de 'sello' o marca de calidad de las arenas valorizadas/regeneradas, basado en evidencias técnicas, avalado por Gobierno Vasco para la generación de confianza por parte de los potenciales clientes.
	<b>SAND.4:</b> Fomento de la I+D para validar nuevos usos de las arenas recicladas a través de los proyectos de demostración.
<b>Steelworks slag</b>	<b>SLAG.1:</b> Investigar nuevas líneas de aplicación de las escorias, más allá del sector de la construcción (obra civil o fabricación de cemento/hormigón) (Unión europea, Proyectos RESLAG).
	<b>SLAG.2:</b> Fomentar la apuesta de la obra pública por la utilización de áridos siderúrgicos (Japón).
	<b>SLAG.3:</b> Promover mejoras en el proceso de fabricación del acero para fomentar la prevención y la correcta maduración de la escoria que genere un futuro árido siderúrgico de mejor calidad.

According to the economic assessment performed, and using the estimates in **Annex 2** of this document, these actions would lead to a net positive result of **€4.5 million** in the cost-profit balance and generate **95 net jobs**.

Given that the economic assessment considers the adoption of the proposals to be viable, and taking into account the envisaged environmental benefit association to their adoption, the aforementioned action proposals have been specifically developed

by identifying the actions and instruments needed for their implementation (planning, legislation, knowledge generation, economic promotion, research/watch, monitoring/control, coordination/participation, training/awareness-raising), and being aware of the need of future appropriate technical and economic planning of those measures for 2019-2030 in order to be able to maximise the contribution of waste management with respect to building a more circular Basque economic model.



# **CIRCULAR** THINKING

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