ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACT OF THE BASQUE COUNTRY SUSTAINABLE BOND 2018

Euskadi, auzolana

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Impact report made by **Metroeconomica** based on the resource allocation report contributed by the Basque Government.
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Contents

1. Introduction

1.1. Background

The **debt market** may play an essential role in the funding of projects that contribute towards social and environmental sustainability. The development of the market for **green bonds, social bonds and sustainable bonds** is vital for this.

The first **green bond** emerged on the market in 2008 as a result of a joint initiative between the World Bank and the Swedish financial group, *Skandinaviska Enskila Banken (SEB)*[1]. Since then, there are more and more investors who devote part of their portfolios to supporting environmental, social and good governance projects. Green bonds guarantee that the money associated to their purchase will be used to fund projects with a positive environmental impact.

Over the years, the concept of green bond has been extended to other themed bonds, such as **social bonds** (to support social causes), **blue bonds** (to support fisheries and sustainable marine projects) or **sustainable bonds** (to support social and environmental projects). Sustainable bonds are any type of debt issued by public and private institutions whose revenue will be used exclusively to fully or partially finance or refinance new and/or existing green and sustainable projects that contribute towards the fulfilment of the Sustainable Development Goals.

In June 2018, the Basque Government issued sustainable bonds for a total value of **500 million Euros** on the Bilbao Stock Exchange. These bonds are valid for **10 years** and will accrue annual interest of 1.45%. The funds will be used to finance projects aligned with the Agenda Basque Country 2030, which reflects the degree of alignment and contribution of the Government Programme to the goals and objectives related to the 17 **Sustainable Development Goals** (SDGs). **Issues** of green bonds, social bonds and sustainable bonds follow the **Green Bond Principles** (GBP) and the **Social Bond Principles** (SBP) established by the International Capital Market Association. The principles that this type of bonds must fulfil include the drafting of annual reports on the allocation of funds and impact.

1.2. Project Goals

The aim of this project is to draw up the **2018 Report on the allocation of resources** and the economic, environmental and social **impact** of the Basque Country sustainable bond. The impact has been assessed using a dual approach. First of all, the individual impact of each project financed has been assessed using economic, social and environmental impact indicators (common practice within the context of the assessment of this type of bonds). Secondly, the total impact of the bond on production (economic dimension), income and employment (social dimension) in the Basque Country has been assessed using input-output tables (IOT).

[1] https://sebgroup.com/

2. Context

2.1. Global Situation

In its eleven years of history, the market for this kind of bonds has moved from being dominated by **multilateral bodies**, such as the World Bank, to become a market in which **governments** and **public companies** and **private organisations** participate. In the whole of Europe, there are more than 50 agents who have issued green bonds. A total of 15 agents have opted for social bonds and 24 have issued sustainable bonds. Table 2.1 shows the agents that issue this type of bonds in Spain.

Table 2.1 Agents issuing bonds in Spain

Type of Bond	Agent
Green Bonds	ACS SCE
	ADIF – High Speed
	Banco Bilbao Bizkaia Argentaria (BBVA)
	Gas Natural Fenosa
	Iberdrola
	Repsol
Social Bonds	Community of Madrid
	Official Credit Institute
	Kutxabank
Sustainable Bonds	North Rhine
	Banco Bilbao Bizkaia Argentaria (BBVA)
	Basque Government
	Caja Rural de Navarra
	City of Barcelona
	Community of Madrid
	Telefónica

Source: *International Capital Market Association* (consulted on 2nd May 2019)

Issues of green bonds, social bonds and sustainable bonds follow the **Green Bond Principles** (GBP) and the **Social Bond Principles** (SBP) established by the International Capital Market Association.

Principle 1: User of funds. The funds should be allocated to projects with clear sustainability benefits. These projects should be evaluated and, when feasible, quantified by the issuer. In the event that all or a proportion of the funds is used for re-financing, it is recommended that the issuers provide an estimate of the financing percentage over that of re-financing. The type of projects most commonly funded by social bonds are:

- Affordable Housing
- Consolidation and socio-economic progress
- Food Safety
- Basic affordable infrastructures and access to essential services
- Job Creation

As for green bonds, the most commonly funded projects are:

Renewable Energy	Energy Efficiency	Pollution Prevention
Sustainable management of natural resources, use of land and water and smart agricultural inputs	Biodiversity, terrestrial and aquatic conservation	Clean Transport
Adaptation to Climate Change	Eco-efficient products adapted to the circular economy	Ecological buildings

Principle 2: Assessment process and project selection The issuer of the bonds must notify investors of the sustainability objectives, the process which determines the way in which the projects fit into the previous categories and the eligibility criteria, including, where appropriate, the exclusion criteria and any other process that serves to manage risks and costs associated with projects. Therefore, they must be transparent and allow external evaluation.

Principle 3: Management of funds. The funds must be controlled by the issuer in an appropriate and transparent way and formally confirmed by the issuer. The issuer will allow the complementary review by an auditor or a third party in order to verify the monitoring method.

Principle 4: Reports. The issuer must annually update information on the use of funds and the sustainability benefits obtained. It must include a list of projects to which the funds have been allocated as well as a brief description of the projects and the amount allocated. The **use of qualitative indicators** (and quantitative indicators where possible) regarding the performance of the bonds is recommended.

Table 2.2 includes the typical indicators used in the impact report of some governments, private companies and multilateral bodies. In all cases, the **indicators are static**, or in other words, they refer to the year of issue of the bond to be evaluated and the evolution of the indicator in previous years is not taken into account. However, in some cases, the reduction of issues associated to specific projects is estimated for the useful life of the project.

Table 2.2: Typical indicators used in impact reports

Institution/ Region	# beneficiaries	Jobs created	CO2 avoided	Energy Production	Others
North Rhine	(1)	(1)	(1) and (2) *		
Adif**			(2)		
Community of Madrid	(1)				(1) and (2)
Flanders	(1) and (2)		(1) and (2)		(1) and (2)
Ile-de-France Region	(1) and (2)	(1) and (2)	(1) and (2)		
Nordea***			(2)	(2)	
IFC			(2)	(2)	
Caja Rural de Navarra	(1) and (2)				
World Bank	(2)		(2)	(2)	

*Notes: (1) Social Bonds; (2) Green Bonds; * Estimated emissions savings for the modernisation of buildings and projects intended to promote the use of public transport or bicycles; ** Includes specific indicators for trains (time savings and external costs avoided); *** Norwegian financial group*

The most used indicator in the impact reports by different levels of **governments** to report the results of the social bonds is the number of agents benefiting from the project. Reports such as those from the Community of Madrid, Flanders, Ile-de-France Region or NRW use indicators, such as families with social housing or the number of students that receive subsidies for studies. Other indicators used are the number of special education schools, the number of public schools or the number of clean vehicles bought.

Table 2.3: Some indicators

Examples of indicators	Regions using them
Social Bonds	
Social housing (families)	Community of Madrid
Aid for vulnerable families	Community of Madrid
Number of education centres with subsidies	Flanders
Creation of jobs for disadvantaged people	North Rhine
Number of students with subsidies / grants	Flanders, North Rhine
Number of students who will attend the new school	Ile-de-France Region
Number of homes to which a new project will supply energy	Ile-de-France Region
Number of special education schools	Community of Madrid
Number of public schools	Community of Madrid
Number of clean vehicles bought and charging points	Community of Madrid
Green Bonds	
Recycled material (t)	Flanders
Material savings (t)	North Rhine
Water savings (m3)	North Rhine
Land with subsidies for sustainable use (ha)	North Rhine
Emissions savings*	North Rhine

*Emissions savings are limited to specific questions, such as restoration of buildings, change in the use of means of transport or energy transition (energy efficiency and renewable energy).

2.2. Internal Diagnosis

In 2015, the United Nations General Assembly approved the Agenda 2030 for Sustainable Development which incorporates the Sustainable Development Goals (SDG) for 2000-2015[2]. These principles do not tell us what we have to do, but define the context to improve public policies and establish priorities adapted to each regional reality.

Committed to the adaptation of this Agenda at a local level, the **Basque Government** presented the **Agenda Basque Country 2030** in 2018, whereby it is the first to address the period 2016-2020. This strategy reflects the level of contribution of the 11th Legislature Government Programme (2016-2020) to the 17 SDGs (See Figure). More specifically, this is reflected through the 15 country goals, 15 strategic plans, 54 sectoral plans, 28 legislative initiatives, 175 commitments, 650 initiatives and 100 indicators (Basque Government, 2018a).

[2] The Agenda 2030 seeks to foster the commitment to achieve the 17 SDG (and 169 targets that they address) in 5 areas of particular importance for humanity and the planet: People, Planet, Peace, Prosperity and Partnership.

Figure 2.1: The 17 Sustainable Development Goals

In this context, the **Basque Government** has developed a **Sustainable Bond Framework** for green and social projects. This framework is aligned with the four Principles of the Green Bonds and the aforementioned Principles of the Social Bonds: (a) revenue allocation; (b) project assessment and selection; (3) revenue management; and (4) drafting of **annual reports** on the **allocation** of resources and environmental, economic and social **impact**.

In June 2018, the Basque Government issued sustainable bonds for a total value of **500 million Euros** on the Bilbao Stock Exchange for the first time ever. These bonds are valid for **10 years** and will accrue annual interest of 1.45%. The bonds will be used to finance projects aligned with the Agenda Basque Country 2030, which reflects the degree of alignment and contribution of the Government Programme to the goals and objectives related to the 17 **Sustainable Development Goals** (SDG). In this way, the Government Programme and the United Nations Agenda are linked (See Figure).

The ultimate goal is for the Basque Country to move forward in the fulfilment of the Sustainable Development Goals, an issue that is progressing at a rapid rate if compared with other autonomous communities. In accordance with the **SOS 17X17 Analysis on sustainability in Spain 2019 in the 17 Autonomous Communities Report** drawn up by the Sustainability Observatory (SO), AIS Group and Fundación Ciudadanía, in 2017, the Basque County was one of the two best performing Autonomous Communities in relation to its commitment and fulfilment of the SDGs. For example, our Community was among the top four in terms of equality (SDG 10) and was also strong in environmental issues. On the other hand, limited development in renewable or non-polluting energy (SDG 7) is observed and poor performance in terms of climate change mitigation (SDG 13) in which the report highlights that Basque citizens emit around 5 times more greenhouse gases per inhabitant than a person in Madrid, Murcia or Navarra.

Figure 2.2: Alignment of the Government Programme with the United Nations Agenda 2030

UNITED NATIONS AGENDA 2030		PROGRAMA 2017-2020 GOBIERNO VASCO						
OBJETIVOS DESARROLLO SOSTENIBLE (ODS)	SPHERES OF IMPORTANCE	COUNTRY OBJECTIVES	COMMITMENTS	INITIATIVES	INDICATORS	STRATEGIC PLANS	SECTORAL PLANS	LAWS
17	5	15	175	650	100	15	54	28
1. An end to poverty 2. An end to hunger/food 3. Healthy lifestyle 4. Inclusive education 5. Gender equality	PEOPLE	20% reduction in poverty Increased life expectancy Higher birth rate School dropout rate <8%. 75% of the population <25 years Basque-speaking Among the top 4 countries in terms of gender equality	65	225	33	Social Services Strategic Plan Health Plan 5th Professional Training Plan 4th University Plan 7th Equality Plan Strategic Agenda for the Basque language	18	10
6. Water and sanitation 7. Sustainable consumption and production 8. Climate change 9. Sea resources 10. Ecosystems	PLANET	20% reduction in CO2 emissions	10	35	11	4th Environmental Framework Programme	11	3
11. Economic growth and employment 12. Infrastructures and innovation 13. Energy 14. Reducing inequality 15. Cities and urban settlements	PROSPERITY	Unemployment < 10% 20,000 young people with job experience 125% of the EU's GDP 25% industrial GDP 100 strategic innovation projects Leader in terms of transparency indexes	64	278	51	Strategic Employment Plan Basque Industry 4.0 Industrialisation Plan Basque Science and Technology Plan 2017-2020 Tourism, Trade and Consumption Plan Governance and Public Innovation Plan	16	13
16. Peace and justice	PEACE	Disarming and dissolving ETA	24	80	3	Co-habitation and Human Rights Plan Public Security Plan	6	2
17. Partnerships / cooperation for development	PARTNERSHIP	New political status	12	32	2	"Euskadi - Basque Country" Internationalisation Strategy	3	

Source: Basque Government, 2018

3. Environmental, Economic and Social Impact

3.1. Introduction

This section includes the 2019 report on the projects financed in 2018 using the sustainable Basque Country fund. It includes the following information: (1) a description of the projects, their objectives and relationship to the United Nations Sustainable Development Goals (SDG); (2) the total impact of the projects and the part of the impact attributable to the sustainable bond. The impact of the Basque Country sustainable bond on production, revenue and employment in the Basque Country is analysed in Section 4.

The Basque Country sustainable bond 2018 accrues environmental and social benefits. The social impact is generally measured in terms of the number of beneficiaries (for example, students receiving grants, people who receive different subsidies for housing or people with employment inclusion difficulties). Environmental impact is generally measured bearing in mind physical improvements (for example, energy savings, restored surface area, savings in materials or reduction of greenhouse gas emissions).

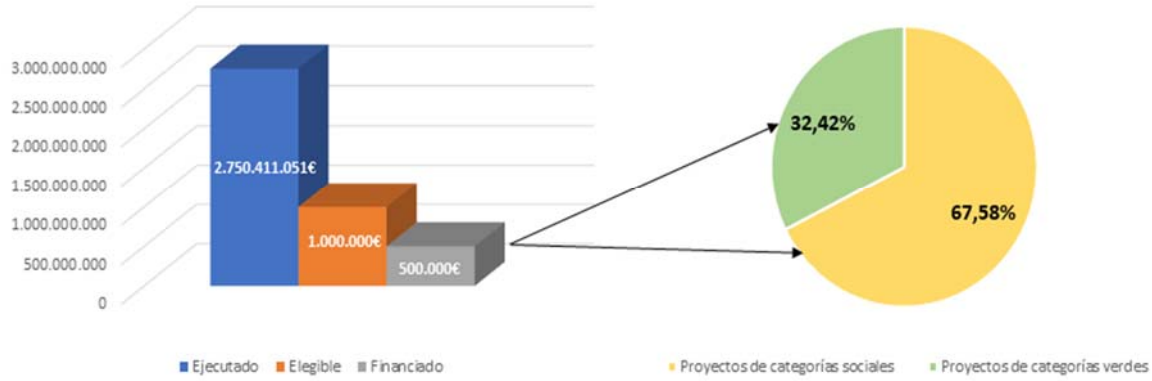
The report includes indicators that enable almost all of the projects financed with the sustainable bond to be measured, although there are some projects whose impact has not been measured due to the lack of methodologies and indicators. The proportion of non-measurable projects will be reduced in future assessments.

3.2. Allocation of the bond

In 2018, the Basque Government **spent** a total budget of €2,750,411,051 in projects corresponding to categories eligible and susceptible to being financed by the sustainable bond, of which €2,575,286,218 were allocated to social projects and €175,124,832 to green projects. Of the total budget spent, the projects that fulfil the **eligibility** criteria and were therefore financed with the Basque Country sustainable bond, €337,921,206 (67.58%) was allocated to social projects and the remaining €162,078,794 (32.42%) went to green projects.

Figure 3.1 shows the total eligible projects, the budget spent on project categories susceptible to being financed through the sustainable bond and the amount finally financed by means of the sustainable bond. Within the projects financed with the bond, the proportion of green projects and of social projects financed is shown.

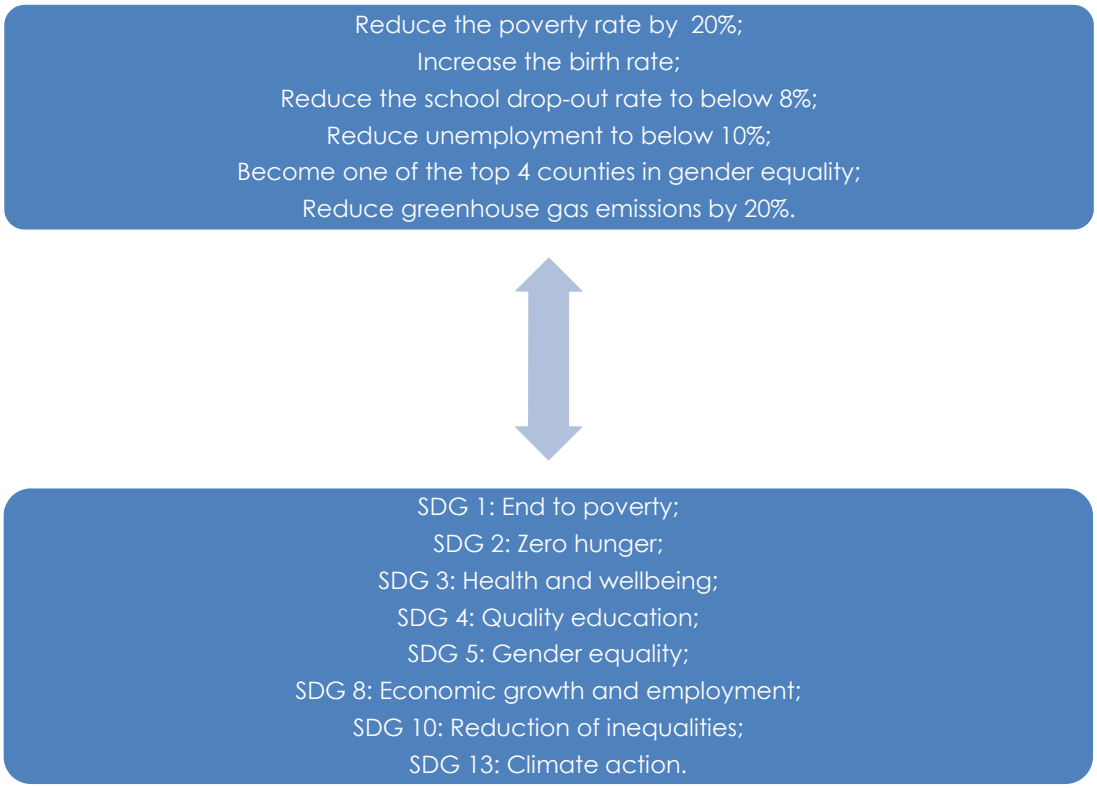
Figure 3.1: Eligible projects, budget spent and budget (green and sustainable) financed through the Basque Country sustainable bond



The total amount of the Basque Country sustainable bond (€500,000,000) has been used to finance part of the budget spent on eligible green and social projects. To select the projects and the proportions of each one to be financed by the bond, the level of alignment with the SDG was taken into account and hence, the goals of the Government Programme.

Social Projects: priority was given to fostering the promotion of investment over expenditure and, within the investments made, priority was given to projects that address the following Government Programme goals: Reduce the poverty rate by 20%; Increase the birth rate; Reduce the school drop-out rate to below 8%; Reduce unemployment to below 10%; Become one of the top 4 counties in gender equality. These objectives are in turn aligned with the following SDGs: SDG 1 (end to poverty), SDG 2 (zero hunger), SDG 3 (health and wellbeing), SDG 4 (quality education) and SDG 5 (gender equality).

Figure 3.2: Relationship between some of the main goals of the Government Programme and the SDG



Source: Metroeconomica

Therefore, priority was given to the following social projects:

Socio-economic Progress

- Income Guarantee (RGI) associated with the job supplement. This part of the RGI is closely related to increasing life quality in general, and improving the life quality of women, in particular, (there is a high percentage of women who receive the job supplement), goal aligned with SDG 5 and with the Basque Government goal of achieving gender equality.
- Social emergency aid programmes and subsidies to support families in line with SDG 1 and SDG 10, and with the Government goal of increasing the birth rate.

Job Creation

- Job insertion. These projects are aligned with SDG 8 and the Government Programme goal of reducing unemployment to below 10%.

Education

- Non-university and university grants. These projects are aligned with SDG 4 and with the Government goal of reducing school drop-out rates to 8%.

As far as green projects are concerned, the environmental part has been fully backed. This means that almost the entire budget spent on eligible green projects (€162,078,794 of the €175,124,833 spent) was financed by the sustainable bond. The priority assigned to this type of projects is in line with the Government goal of reducing greenhouse gas emissions by 20%.

The result is the financing through bonds, which is reflected in the following Table, and which summarises the amounts financed by project categories and includes the impact indicators. Section 3.3 provides a detailed description of the specific projects financed under each project category and their impact.

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OGASUN ETA EKONOMIAREN SAILA DEPARTAMENTO HACIENDA Y ECONOMÍA

Project Categories	Related SDG	Eligible	Spent (a)	Bond Allocation (b)	Allocated with respect to total bond	Financed Bond Spent (b)/(a)	Impact Indicators	
							Indicator	Units
Affordable Housing	SDG 1; SDG 11	110,000,000	126,058,007	68,410,928	13.68%	54.27%	Households benefiting from allowance	20,402
							Families benefiting from public rentals	966
							Number of jobs created	284
Education	SDG 4	151,000,000	122,491,931	45,551,550	9.11%	37.19%	Students benefiting from grants	78,909
Health	SDG 3	235,000,000	1,787,400,000	75,000,000	15%	4.20%	Jobs created	725.4
Socio-economic Progress	SDG 1; SDG 5; SDG 10	210,000,000	442,451,772	137,081,122	27.42%	30.98%	Recipients of AES	50,548
							Beneficiaries of subsidies to families	29,527
							People hired	226
							Recipients of RGI	11,020
Job Creation	SDG 8	104,000,000	96,884,508	11,877,606	2.38%	12.26%	People hired	1,124
Social Bond Projects		**810,000,000**	**2,575,286,218**	**337,921,206**	**67.58%**	**13.12%**		
Clean Transport	SDG 9; SDG 11	148,000,000	138,248,793	128,248,793	25.65%	92.77%	Trains Replaced	5
							CO2 emissions avoided (t/year)	161.06
Pollution Prevention and Control	SDG 11	6,655,292	4,168,481	2,387,049	0.48%	57.26%	Measurement Campaigns	24
							People with daily information	2,172,591
							New accredited stations	6
							Company consultations resolved	870
							Pollution Assessments	1,036
							Companies receiving subsidy	41
							Jobs created	12.92
Sustainable management of water and wastewater	SDG 6	11,000,000	17,224,586	16,836,184	3.37%	97.75%	Number of jobs created	139.95
							Number of actions	911
							Hectares conserved or restored	32
							Rivers assessed	107
Biodiversity, terrestrial and aquatic conservation	SDG 14; SDG 15	6,359,052	3,982,934	3,519,728	0.70%	88.37%	Number of visitors	90,198
							Technical studies financed	24
							Hectares with actions	25,060
							Km of pedestrian routes improved	79.4
Energy Efficiency	SDG 9	2,326,274	1,457,040	1,457,040	0.29%	100.00%	Material savings (t/year)	78,000
							Number of jobs created	60
							Number of young people trained	21
							Slag recycling variation rate	+19%
							RCD recycling variation rate	+3%
							Municipal recycling variation rate	+1%
Adaptation to Climate Change	SDG 13	659,382	412,998	0	0.00%	0.00%	-	-
Renewable Energy	SDG 7	15,000,000	9,630,000	9,630,000	1.93%	100.00%	Projects subsidised	878
							CO2 emissions avoided (t/year)	60,424
Green Bond Projects		**190,000,000**	**175,124,833**	**162,078,794**	**32.42%**	**92.55%**		
Total		**1,000,000,000**	**2,750,411,051**	**500,000,000**	**100.00%**	**18.18%**		

The sustainable bond allows movement towards the better fulfilment of the Sustainable Development Goals, a field in which the Basque Country shows relatively satisfactory performance if compared with neighbouring Autonomous Communities (OS et al., 2019). For future bond issues, the criteria of continuing to allocate green funds to the fight against climate change and the promotion of sustainable energy will be maintained, the two SDGs in which the Basque Country has the worst relative performance.

3.3. Description of the projects and impact analysis

AFFORDABLE HOUSING: €68,410,928

The programmes financed with funds from the affordable housing category are related to SDG 1 (end to poverty) and to SDG 11 (sustainable cities and communities).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
AFFORDABLE HOUSING	SDG 1: End to poverty SDG 11: Sustainable cities and communities	**110,000,000**	**126,058,007**	**68,410,928**
Supplementary Housing Allowance Funding (PCV) and Housing Benefit (PEV)		60,000,000	83,264,150	47,030,498
BIZIGUNE funding programme		20,000,000	23,500,000	13,273,620
Construction of housing for rental		8,000,000	14,352,530	8,106,810
Subsidies for the rehabilitation and/or renovation of houses and buildings		22,000,000	4,941,327	0

Subsidies for Home Rental (€60,304,118)

Description

There is not enough public protection housing. To fulfil the right to access a rented home in the short term, the law defines the possibility of a maximum economic housing benefit (PEV) of €250 a month. This amount is incompatible with other rent payment subsidies. Therefore, there is a bid to promote the supply of private homes for rental.

Furthermore, the bids and resources to promote the supply of private homes for rental are intensified through the mobilisation of the stock of empty properties through the BIZIGUNE market intermediation programme.

The aim of the subsidy programme for home rental is to guarantee access to adequate and decent housing for those people who lack the economic resources, or where appropriate, recognise an economic allowance to guarantee such access under the terms approved by Parliament in April 2016.

Budget

The budget spent in 2018 amounted to €106,764,150, of which €60,304,118 was financed with the Basque Country sustainable bond.

Impact

In 2018, a total of 35,569 households received the Supplementary Housing Allowance Funding. The Housing Benefit (PEV) was received by a total of 552 households. A total of 20,402 allowances were funded with the Basque Country sustainable bond.

Indicator	Total Impact	Bond Impact
Number of homes benefiting from the allowance	36,121	20,402

Construction of housing for rental (€8,106,810)

Description

In 2018, the Basque Government approved the Housing Master Plan 2018-2020 to foster a policy that provides access to decent housing for those people who do not have the resources to do so, addressing the subjective right to housing and mainly favouring access to housing in the form of rental.

This programme addresses the provisions set out in the Housing Law 3/2015 of 18th June, which establishes that the available resources should be primarily allocated to the rental system, so promoting rentals is a central axis of the housing policy. This preference for rental means that, with the exception of resources allocated to restoration, by 2020, 80% of the housing resources will be allocated to rental policies. The housing programme 2018 strictly fulfils these requirements in its programming actions.

Budget

The budget spent in 2018 amounted to €14,352,530, of which €8,106,810 was financed with the Basque Country sustainable bond.

Impact

In 2018, the stock of public properties for rental in the Basque Country amounted to a total of 22,704, an increase of 1,711 properties with respect to the previous year. An increase of 966 properties in the rental stock can be attributed to the sustainable bond.

The Basque Government estimates that for each million euros invested in the construction of new housing, around 35 jobs are created (Source: Basque Government's Department for Housing, Transport and Public Works, 2010)[3]. Assuming that the programme's total budget in 2018 went to the construction of new properties, it is estimated that the construction of properties for rental generated a total of 502 jobs, of which 284 are associated with the sustainable bond.

Indicator	Total Impact	Bond Impact
Number of families benefiting from public rentals.	1711	966
Number of jobs created	502	284

[3] https://www.irekia.euskadi.eus/es/news/1383-gobierno-vasco-invierte-millon-euros-para-reformar-plaza-abastos

EDUCATION: €45,551,550

The programmes in the education category financed with Basque Country sustainable bond funds address SDG 4: quality education.

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
EDUCATION	SDG 4: Quality education	**151,000,000**	**122,491,931**	**45,551,550**
Construction and equipping of nursery and primary schools		35,000,000	18,833,961.17	0
Construction and equipping of secondary schools and vocational training centres		20,000,000	16,815,105.40	0
Contract-programme funding and UPV investment		9,000,000	6,197,086	0
Non-university grants		58,000,000	53,595,392	30,272,548
University grants		29,000,000	27,050,386	15,279,002

Non-university Grants (€30,272,548)

Description

The Basque Government's Department for Education has a system of grants and subsidies that help to reduce the economic barriers that obstruct access to education for students from disadvantaged families. The final objective is to enable access to non-university education for students with economic problems.

Budget

The budget spent in 2018 amounted to €53,595,392, of which €30,272,548 were financed with the Basque Country sustainable bond.

Impact

For the 2017/2018 academic year, a total of 127,884 Non-University grants were awarded (from a total of 163,959 applications) called through an Order on 27th July 2017, by the Minster for Education. A total of 72,233 grants were funded with the Basque Country sustainable bond.

Indicator	Total Impact	Bond Impact
Number of vulnerable non-university students who are beneficiaries of a grant.	127,884	72,233

University Grants (€15,279,002)

Description

In addition to non-university grants, the Department for Education has a grant programme to foster equal opportunities in terms of access to university studies and other higher studies. These grants finance the transport costs of students with special needs. There are also grants for academic excellence to recognise and reward high performing university students.

Budget

The budget spent in 2018 amounted to €27,050,386, of which €15,279,002 were financed with the Basque Country sustainable bond.

Impact

For the 2017/2018 academic year, a total of 11,819 University grants were awarded (from a total of 19,038 applications) called through an Order on 28th July 2017, by the Minister for Education. A total of 6,676 grants were funded with the Basque Country sustainable bond.

Indicator	Total Impact	Bond Impact
Number of vulnerable university students who are beneficiaries of a grant.	11,819	6,676

Of the 7,219 applications denied, 3,975 were due to the fact that the applicants exceeded the minimum required income and 1,758 for not reaching the required academic performance.

HEALTH: €75,000,000

The programme in the health and wellbeing category financed with Basque Country sustainable bond funds address SDG 3: health and wellbeing.

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
HEALTH	SDG 3: Health and wellbeing	**235,000,000**	**1,787,400,000**	**75,000,000**
Financing of expenses for the functioning of Osakidetza		110,000,000	906,000,000	0
Financing of hospital and non-hospital pharmacy expenses		75,000,000	806,400,000	0
Healthcare investment –extension of existing hospitals, health centres, equipment		50,000,000	75,000,000	75,000,000

Healthcare Investment (€75,000,000)

Description

The Basque Government's Health Department has continued to invest in the modernisation of the Healthcare System with the sequential opening of pending services in existing hospitals, the opening of new hospitals and the continuation or initiation of new works. Therefore, there has been investment in high tech equipment.

There has been investment in the modernisation of the Healthcare System with the opening of the Urduliz-Alfredo Espinosa Hospital, the continuation of the works at the new Alava University Hospital, the opening of the new Eibar Hospital and the initiation of the Aiete Health Centre works. The construction work on the BioCruces healthcare research and innovation centre has been completed and the Haemodynamics room at Cruces University Hospital has been renovated. There has also been investment in high tech equipment, such as the purchase of 5 Catscan machines, the renovation of 5 X-ray rooms, the purchase of 5 accelerators, among others.

Budget

The budget spent in 2018 on healthcare investment amounted to €75,000,000, which was fully funded by the Basque Country sustainable bond.

Impact

Applying the input-output methodology, Ansuategi et al (2014) estimate that for each million euros allocated to construction, 12.09 jobs are created. Considering this multiplier effect and assuming that 80% of the budget spent went to construction and the remaining 20% to the purchase of equipment, it is estimated that a total of 725 jobs were created, of which 100% are associated with the sustainable bond.

Indicator	Total Impact		Bond Impact
Number of jobs created	725		725

SOCIO-ECONOMIC PROGRESS: €137,079,916

The Basque Income guarantee and Social Inclusion System is made up of a series of subsidies to combat social exclusion. These allowances are: Income Guarantee (RGI), Supplementary Housing Allowance Funding (PCV) and Social Emergency Subsidies (AES). This system helps to keep the poverty and exclusion rates of the Basque Country below the average figures for the European Union, consolidating the Autonomous Community as one of the societies with the lowest level of inequality in Europe.

The programmes in the socio-economic progress category financed with Basque Country sustainable bond funds address SDG 1 (end to poverty) and SDG 10 (reduction of inequalities).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
SOCIO-ECONOMIC PROGRESS	SDG 1: End to poverty SDG 10: Reduction of inequalities	**210,000,000**	**442,451,772**	**137,081,122**
Social Emergency Subsidy Programme(AES)		25,000,000	23,000,000	23,000,000
Support to families Subsidy Programme		40,000,000	48,426,790	30,781,122
Income Guarantee Funding		145,000,000	371,024,982	83,300,000

Social Emergency Subsidy Programme (€23,000,000)

Description

Social emergency subsidies are non-periodic economic allowances for people whose resources are insufficient to meet specific ordinary or extraordinary expenses that are necessary to prevent, avoid or alleviate social marginalisation situations.

The key to the concept of emergency aid is the pressing and urgent need to address a lack or scarcity of economic resources, as a result of external or incidental causes. These situations need to be covered in order to maintain a standard of living in accordance with the welfare in the country and with the maximum limits that income guarantee subsidies offers in the Basque Country.

It is a question of covering emergency economic situations caused by an unexpected event and the shortage of economic resources from periodic financial benefits. These situations may arise in certain circumstances or at different moments throughout extensive periods of people's lives. AES is used as a palliative resource that avoids situations that may lead to the deprivation and shortage of basic needs.

Budget

In 2018, a total budget of €23,000,000 was spent on social emergency subsidies. It was fully funded by the Basque Country sustainable bond.

Impact

A total of 50,548 people from the Basque Country received Social Emergency Subsidies from the Department for Employment and Social Policies in 2018 (9,410 in Alava, 27,386 in Bizkaia and 13,752 in Gipuzkoa). By concepts, rental takes up the highest proportion of the subsidies with 27.13% of the total, followed by other maintenance costs (20.95%), energy (17.32%), credit amortisation interest (16.93%) and basic needs (12.22%).

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Number of people receiving Social Emergency Subsidies	50,548	50,548

Support to families Subsidy (€30,781,122)

Description

The Basque Government's Department for Employment and Social Policies has different subsidies for families to reconcile family and professional life, and to guarantee the co-responsibility of men and women in the family sphere: (1) subsidies for workers who have taken a leave of absence or have reduced their working hours to care for their children; (2) subsidies for workers who have taken a leave of absence or have reduced their working hours to care for family members who are dependent or in extreme health conditions; (3) subsidies to substitute workers who have taken a leave of absence or have reduced their working hours to care for their children, family members who are dependent or in extreme health conditions; (4) subsidies for the recruitment of workers for the care of minors.

Budget

The budget spent in the programme in 2018 amounted to €48,426,790 (€24,242,200 on subsidies to families with children and €24,184,590 in subsidies for the conciliation of personal and professional life), of which a total of €30,781,122 was financed by the Basque Country sustainable bond (€15,396,122 for subsidies to families with children and €15,385,000 in subsidies for conciliation).

Impact

As for subsidies to **families with children**, 35,093 subsidies were received in 2018 compared with 30,196 received in 2017. Of these 35,093 applications, a total of 27,611 were paid by the Budget for 2018. Of these, a total of 17,536 were funded with the Basque Country sustainable bond.

With respect to subsidies for the **conciliation of personal and professional life**, 2018 saw a slight increase in terms of applications presented: 23,592 in subsidies for workers who have taken a leave of absence or have reduced their working hours to care for their children and subsidies for workers who have taken a leave of absence or have reduced their working hours to care for family members who are dependent or in extreme health conditions, compared with 23,064 applications presented in 2017 (increase of 2.29%). Of the 23,592 applications, a total of 18,850 were paid by the Budget for 2018. A total of 11,991 applications were funded with the Basque Country sustainable bond.

Subsidies for the **recruitment of workers** for the care of minors has also increased, going from 441 in 2017 to 489 in 2018 (increase of 10.88%). Of the 489 applications presented, 355 were paid by the Budget for 2018. A total of 226 applications were funded with the Basque Country sustainable bond.

Indicator	Total Impact	Bond Impact
Number of beneficiaries of subsidies for families with children	27,611	17,536
Number of beneficiaries of conciliation subsidies	18,850	11,991
Number of people hired	355	226

Income Guarantee (€83,300,000)

Description

The Income Guarantee Grant is a periodic financial benefit for people who are integrated in a Cohabiting Unit and do not have sufficient resources to meet expenses associated with basic needs or expenses derived from a job or social inclusion process.

Income Guarantee (RGI) offers two models:

- The Basic Income for Social Inclusion and Protection, aimed at people who do not have sufficient income from employment, when their monthly level of computable resources does not reach the corresponding amount of the Basic Income for Social Inclusion and Protection.
- Supplementary Income Grant

Budget

The Supplementary Income Allowance aimed at complementing the level of resources of cohabiting units, which have a monthly level of computable resources that is less than the corresponding Basic Income for Social Inclusion and Protection, even though they have income from employment. In 2018, RGI expenditure amounted to €371,024,982, allocated to finance the Basic and Supplementary Income Model. The part related to the Supplementary Income amounts to a total of €83,300,000. This model of RGI, closely related to improving life quality and particularly demanded by women (€55.8 million went to supplement the income of women and €27.5 million to supplement the income of men), has been fully financed by the Basque Country sustainable bond.

Impact

The number of people receiving the allowance in 2018 in the whole of the Basque Country was 55,380, of which 44,360 (19,733 men and 24,627 women) received the basic income and 11,020 (3,638 men and 7,382 women) received the supplementary income allowance.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Number of people receiving Income Guarantee (RGI)	55,380	11,020 (7,382 women and 3,638 men)
Number of people receiving basic income	44,360	0
Number of people receiving supplementary income	11,020	11,020

JOB CREATION: €11,877,606

The programmes in the job creation category financed with Basque Country sustainable bond funds address SDG 8 (decent work and economic growth).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
JOB CREATION	SDG 8: Decent work and economic growth	**104,000,000**	**96,884,508**	**11,877,606**
Local employment support and development plans–district employment plans		22,000,000	9,074,047	0
Job insertion funding programmes –aimed at disadvantaged groups, young qualified people		8,000,000	11,877,606	11,877,606
Lehen aukera funding programme		3,000,000	2,000,000	0
Funding programmes to foster employment –employment with support for disabled people, hiring of workers over the age of 35, special employment centres		35,500,000	46,382,855	0
Training funding programmes –work-related training for young people, training for the unemployed-		35,500,000	27,550,000	0

Local Employment Plans (€11,877,606)

Description

Programme to support local employment and to recruit unemployed people registered as job seekers in Lanbide. It also includes a special line of subsidies for districts and municipalities particularly affected by unemployment.

Within this programme, there are four types of actions: Type 1 - for recruitment from the non-ordinary market which aims to increase the employability of people with special insertion problems, increasing their qualification and/or their personal skills and motivation; Type 2 - to facilitate the recruitment of unemployed people who are registered as job seekers in Lanbide SVE, in the ordinary market by local companies; Type 3 - aimed at those districts and municipalities that are particularly affected by unemployment (unemployment rate of 11% or more in December 2018 and the three capitals); Type 4 - to facilitate the recruitment of unemployed people who are registered as job seekers in Lanbide SVE, in the implementation or development of new or expansion business projects by technological and/or innovative **private local companies,** promoted from the local sphere.

In Type 1 actions, salary costs and Social Security costs of the people recruited are subsidised, including the end of contract severance pay for contracts of between 3 and 6 months and a minimum working day of 50%. The maximum subsidy is €12,500 per contract. In Type 2 actions, salary costs and Social Security costs of the people recruited are subsidised, including the end of contract severance pay for contracts with a minimum duration of 3 months and a minimum working day of 50%. The maximum subsidy is €3,000 for 3-month contracts and €6,000 for contracts of 6 months or longer. If disadvantaged groups are recruited, the maximum subsidy is €9,000 per contract. For Type 3 actions, the subsidy is the same as for Type 1 and 2 except in the case of innovative projects, when it will be increased by 10%. In Type 4 actions, salary costs and Social Security costs of the people recruited are subsidised, including the end of contract severance pay for contracts with a minimum duration of 6 months and a minimum working day of 50%. The maximum subsidy is €6,000 per contract. If disadvantaged groups are recruited, the maximum subsidy is €9,000 per contract and if the contract is indefinite, the subsidy increases to 10%.

Budget

In 2018, €20,951,653 was spent on financing local plans, of which €11,877,606 was financed with the Basque Country sustainable bond. 100% was allocated to finance Type 1 actions.

Impact

The results obtained in 2018 for each of the specified types are reflected in the table. A total of 1,124 people have been recruited by 41 local entities, which have received a total of €11,877,606.

Indicator	Total Impact	Bond Impact
Number of people hired (Type 1)	1,124	1,124

RENEWABLE ENERGY: €9,630,000

The Energy Efficiency and Renewable Energy subsidy programmes are in line with SDG 7 (Renewable and non-polluting energy) and SDG 9 (Industry, innovation and infrastructures).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
RENEWABLE ENERGY	SDG 7: Renewable and non-polluting energy	15,000,000	9,630,000	9,630,000

Energy Efficiency and Renewable Energy Subsidy Programmes (€9,630,000)

Description

The Subsidy Programmes are aligned with the Basque Country Energy Strategy for 2030 (3E2030) and represent an essential instrument for the planning of the energy policy of the Basque Energy Entity in relation to the granting of subsidies.

Their objectives, among others, are to foster investments in savings and energy efficiency and in the use of renewable energy in the different sectors of activity in the Basque Country (Industry, Tertiary, Transport, Local Public Administration, etc.); promote the use of biomass and geo-exchange; Foster the electric use of renewable energy; Attract projects to the test areas (BIMEP and MUTRIKU).

Budget

The budget spent in 2018 amounted to €9,630,000, which was fully funded by the Basque Country sustainable bond.

Impact

A total of 878 projects were subsidised through the budget for Energy Efficiency and Renewable Energy Subsidy Programmes, all of which were funded by the part allocated to the sustainable bond. These projects have achieved annual energy savings of 20,836 equivalent tonnes of oil. Assuming that these savings arise from a shift in the consumption of diesel fuel[4], it is estimated that the emission of 60,424 equivalent tonnes of CO2 a year will be avoided. All of this reduction is attributable to projects funded by the sustainable bond.

Indicator	Total Impact	Bond Impact
Number of projects subsidised	878	878
CO2 emissions avoided (t/year)	60,424	60,424

CLEAN TRANSPORT: €128,248,793

[4] 1 equivalent tonne of oil emits 2.9 tonnes of CO2; 1 equivalent tonne of natural gas emits 2.1 tonnes of CO2.

The programmes in the clean transport category financed with Basque Country sustainable bond funds address SDG 9 (Industry, innovation and infrastructures) and SDG 11 (Sustainable Cities and Communities).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
CLEAN TRANSPORT	SDG 9: Industry, innovation and infrastructures SDG 11: Sustainable cities and communities	**148,000,000**	**138,248,793**	**128,248,793**
Supply of new train units		26,000,000	26,186,000	26,186,000
Construction of new infrastructures – doubling of tracks, new trams in Vitoria-Gasteiz, Topo section in Donostia-San Sebastian		67,000,000	57,062,793	57,062,793
Smart electric bus in Vitoria-Gasteiz		10,000,000	10,000,000	0
Funding for rail operators		45,000,000	45,000,000	45,000,000

Supply of new train units (€26,186,000)

Description

The programme foresees the purchase of 5 new trains which will replace other trains that are more than 30 years old. The trains will be built to minimise their environmental impact during the construction phase. The new trains will also minimise the environmental impact in the rail operation phase.

The new trains represent an important improvement in the safety and reliability features of the public rail service, as they fulfil all of the prevailing regulations related to passive and active safety (crash performance, evacuation, fires, etc.). Furthermore, they increase the quality perceived by the users as they offer significant improvements, such as automatic ramps on access doors for people with reduced mobility and are fitted with air conditioning equipment. The new trains also have the latest generation traction and braking equipment, which enable the energy consumed and the braking energy to be optimised.

Budget

The budget spent on the purchase of new train units amounted to €26,186,000 in 2018, which was fully funded by the Basque Country sustainable bond.

Impact

The company's energy audit report for 2017 calculated that the total consumption for the operation of the trains with the full renewal of trains would reduce to around 16.19%, equivalent to a reduction in indirect emissions of 1,858.16 equivalent tonnes of CO2 a year. Translating these savings to a train, a reduction of indirect emissions of 32 equivalent tonnes of CO2 is estimated for each train and year. Therefore, the programme's reduction of emissions amounts to 160 tCO2eq/year attributable entirely to the part allocated to the sustainable bond.

The new trains also incorporate technology to foster efficient driving. Although this system is currently in the testing phase, a study conducted by the company estimated an energy saving percentage of 10% in the sections on which this driving system is activated. Bearing this in mind and assuming that the efficient driving system will be active on 60% of the length of the railway layout, it was concluded that the efficient driving system could represent an additional reduction in emissions of 688,629 tCO2eq/year for the entire fleet of trains. The reduction for 1 train is 12 tCO2eq/year, savings that will be effective once the technology to foster efficient driving starts to be applied.

Indicator	Total Impact	Bond Impact
Number of trains replaced	5	5
CO2 emissions avoided (t/year)	160	160

New Railway Infrastructures (€57,062,793)

Description

In 2018, the Basque railway system has been managed and developed under quality, safety, economic efficiency and sustainability criteria. It has therefore contributed towards the development of the Basque Country and society in general.

The development of new infrastructures and the improvement of existing infrastructures represent a step forward towards universal accessibility and sustainable mobility. The extension of the Vitoria-Gasteiz tram, the track doubling works and the construction of a new station in Ermua or the modernisation of urban mobility with the tunnelling of the railway in Durango deserve a special mention (among other actions).

Budget

The total cost of the construction and renewal of infrastructures amounted to €57,062,793 in 2018, all of which was funded by the Basque Country sustainable bond.

Impact

We assume that the improvement of the railway infrastructures has achieved and modal transfer of 10,000 passenger-kilometres between 2017 and 2018. Taking the emission factors estimated in Adif (2018) for the conventional railway (0.0057 kg CO2 per passenger and km) and the private vehicle (1.1061 kg CO2 per passenger and km) as a reference, the impact of the investment programme, such as the reduction of emissions or savings associated with this transfer is estimated. The annual CO2 emissions avoided is estimated to be 1.06, whereby this reduction is fully attributable to the sustainable bond.

Indicator	Total Impact	Bond Impact
CO2 emissions avoided (t/year)	1.06	1.06

POLLUTION PREVENTION AND CONTROL: €2,387,049

The programmes in the pollution prevention and control category financed with Basque Country sustainable bond funds address SDG 11 (Sustainable Cities and Communities) and SDG 12 (Guarantee sustainable consumption and production models).

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
POLLUTION PREVENTION AND CONTROL		**6,655,292**	**4,168,481**	**2,387,049**
Air Quality	SDG 11: Sustainable cities and communities		1,240,260	1,240,260
Soil Quality			318,213	318,213
Environmental Protection. Subsidies to companies			828,576	828,576
Others			1,781,432	0

Air Quality (€1,240,260)

Description

Continuous improvement and maintenance of the Basque Country's Air Quality Control Network to have a technologically advanced network that allows for the use of air quality data for the Basque Country, to support decision-making in this area, and to conduct control campaigns in accordance with any problems that may arise.

Budget

The budget spent on the air quality programme amounted to €1,240,260 in 2018, which was fully funded by the Basque Country sustainable bond.

Impact

On-line information on the Air Quality Network has been published daily on the Deputy Minister's website: hourly data and daily data, such as the Air Quality indexes per season and the municipality concentration maps. Furthermore, the Basque Country's annual air quality assessment report has been prepared and published and the requirement of communicating information to the Ministry and to Europe has been fulfilled in accordance with RD 102/2011 and Decision 2011/850/EU, on the reciprocal exchange of information and the notification of the atmospheric air quality to the European Commission.

24 measurement campaigns have been performed, 8 with mobile laboratories and 16 with conventional mobile units at 13 points across the region. To continue advancing in efforts to improve data quality, guaranteeing its traceability and accuracy, the number of accredited stations were increased in 2018 to a total of 6 (5 fixed stations and one mobile unit). All of these improvements are attributable to the sustainable bond.

Indicator	Total Impact	Bond Impact
Number of measurement campaigns	24	24
Number of people with daily information on air quality	2,172,591	2,172,591
Number of new accredited measurement stations	6	6

Soil Quality (€318,213)

Description

Development of the plans and instruments for the soil protection policy, support in the application of Law 4/2015 and development of tools and instruments to support the implementation of the polluted soil/soil protection policy. It includes the preparation of technical guides and methodologies, the improvement of IT instruments that support the inventory and the register and interaction with stakeholders, dissemination, raising awareness and training.

Budget

The budget spent on the soil quality programme amounted to €318,213 in 2018, which was fully funded by the Basque Country sustainable bond.

Impact

In 2018, a total of 509 written consultations and 361 telephone consultations were resolved, exceeding the target objective by 127% at the end of the year. 819 procedures related to polluted soil were also addressed (117% above the annual objective of 700) and the upward trend in the receipt of files in relation to soil pollution to be assessed has continued, with a total of 1,036 throughout 2018, beating the record of entry documents with a total of 1,036. To evaluate this number, the average of 605 entry documents between 2012 and 2016 can be used as a reference, with a minimum of 583 and a maximum of 650. In 2017, a significant increase in this parameter was observed (910), which was repeated in 2018.

Indicator	Total Impact	Bond Impact
Number of consultations by companies resolved	870	870
Number of pollution assessments	1,036	1,036

Other milestones in the field of soil quality were the preparation of planning documents (completion of the first draft of the technical document on the "Soil Protection Strategy" and drafting of a document on soil-climate change interaction, among others), the completion of the decree proposal for the development of Law 4/2015 on the prevention and correction of soil pollution and the commencement of the approval proceedings, and the drafting of technical guidelines (on the evaluation of asbestos soil pollution, the impact of landfills and the risk analysis). Throughout 2018, improvements have also been made to the inventory system and technical support and work has continued alongside the Alava Development Agency on the project to reintroduce free land on the real estate market of several financial entities.

Environmental Protection (€828,576)

Description

This programme includes subsidies to companies set out in Decree 202/2015 of 27th October, to make environmental and eco-innovative investments. The percentage of the subsidy with respect to the final investment is 16% in the ordinary procedure and 33% in the simplified one. The total of the subsidy, distributed over three years, amounts to €1,500,000.

Budget

In 2018, the Basque Government allocated a total of €828,576 to subsidies to companies for environmental and eco-innovative investments. All of these subsidies were funded with the Basque Country sustainable bond.

Impact

A total of 61 applications were submitted by 53 companies, of which 41 became beneficiaries to develop a total of 46 projects.

Applying the input-output methodology, Ansuategi et al (2014) estimate that for each million euros spent on eco-innovation, a total of 15.59 jobs are created. Bearing this in mind, it has been estimated that the mobilisation of €828,576 in subsidies to companies created 12.92 jobs.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Number of companies receiving a subsidy	41	41
Number of projects subsidised	46	46
Number of jobs created	12.92	12.92

SUSTAINABLE MANAGEMENT OF WATER AND WASTEWATER: €16,836,184

The main measures are encompassed in SDG 6: Guarantee the availability and sustainable management of water and sanitation for all people.

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
SUSTAINABLE MANAGEMENT OF WATER AND WASTEWATER	SDG 6: Clean Water and Sanitation	**11,000,000**	**17,224,586**	**16,836,184**
Sanitation and Water Purification			12,127,741	12,127,741
Restoration and conservation of channels and riverbanks			2,834,586	2,834,586
Status of bodies of water monitoring network			1,873,857	1,873,857
Others			388,402	0

Sanitation and Water Purification (€12,127,741)

Description

Development of measures to improve the population supply systems that enable an appropriate supply guarantee to be reconciled with the required ecological flow systems. Sanitation and urban waste water purification actions have also been carried out in order to reach the environmental objectives of the related water masses.

Budget

Sanitation works have been carried out in the Urdaibai Biosphere Reserve. Furthermore, the works on the Oion WWTP have been completed and the drafting of the Agurain WWTP project has begun. The budget spent in 2018 amounted to a total of €12,127,741, which was fully funded by the Basque Country sustainable bond.

Impact

The impact of this programme has been evaluated based on the creation of jobs related to expenditure on construction works in the energy and water sector, estimated based on the job multiplier in the energy and water sector, calculated in Ansuategi et al (2014), applying the input-output methodology (as used to estimate the jobs multiplier effect in sectors like construction or eco-innovation). The authors estimate that for each million euros spent in the energy and water sector, a total of 11.54 jobs are created. Based on this estimate, it is also estimated that 139.95 jobs were created with just over €12 million that the sustainable bond allocated to financing supply, sanitation and water purification works.

Indicator	Total Impact	Bond Impact
Number of jobs created	139.95	139.95

Maintenance, conservation, recovery, restoration and environmental improvement of river channels and riverbanks and streams in the Basque Country (€2,834,586).

Description

Within this programme, active conservation and environmental improvement works have been developed in the rivers of the Basque Country, including plantations of indigenous species on the riverbanks, actions against invasive species, environmental restoration or improvements to the morphological conditions of the courses in altered areas, cleaning of waste and other actions that contribute towards the fulfilment of these environmental objectives of the water masses, in accordance with the measurement programmes established in the hydrological planning.

Budget

A total of €2,834,585 has been invested, fully funded by the Basque Country sustainable bond.

Impact

In 2018, 911 water course restoration, conservation or maintenance actions were carried out. Investments have been made in improving the ecosystems (bio-engineering and environmental recovery works, plantations and elimination of invaders) and in actions related to the maintenance of the hydraulic section and unforeseen situations, both related to the removal of objects or sediments to reduce the risk of flooding.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Number of actions	911	911
Surface area (ha) conserved and/or restored	32	32

Status of bodies of water monitoring network in the Basque Country (€1,873,857)

Description

Programme for the maintenance of the status of bodies of water monitoring networks in the Basque Country, including the monitoring of rivers, lakes and marshes, reservoirs, underground water, estuaries and coastal waters, in accordance with the monitoring requirements set out in the Water Framework Directive (WFD). These networks enable detailed information regarding the situation and the evolution of the water masses to be obtained in terms of the ecological, chemical and quantitative state and certain protected areas, following the control requirements determined by the WFD.

Budget

A total of €1,873,857 has been invested, fully funded by the Basque Country sustainable bond.

Impact

During 2018, the programmes for the monitoring of the status of water in the Basque Country have continued, including the monitoring of rivers, lakes and marshes, reservoirs, underground water, estuaries and coastal waters, in order to obtain proper hydrological planning. These networks enable detailed information regarding the situation and the evolution of the water masses to be obtained in terms of the ecological, chemical and quantitative state and certain protected areas, following the control requirements determined by the WFD.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Number of rivers evaluated	107	107

BIODIVERSITY, TERRESTRIAL and AQUATIC CONSERVATION: €3,519,728

The main measures are encompassed in SDG 14: Underwater Life and SDG 15: Terrestrial Ecosystems.

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
BIODIVERSITY, TERRESTRIAL and AQUATIC CONSERVATION	SDG 14: Underwater Life: SDG 15: Terrestrial Ecosystems	**6,359,052**	**3,982,934**	**3,519,728**
Protection of natural capital			835,511	835,511
Restoration and improvement of ecosystems			743,214	743,214
Urdaibai Biosphere Reserve			918,225	918,225
Ekoetxeak Network			1,022,778	1,022,778
Others			463,206	0

Protection of natural capital (€835,511)

Description

Programme for the promotion and generation of knowledge related to our habitats and our biodiversity.

Budget and bond allocation

In 2018, the Basque Government allocated a total budget of €835,511 to the protection of natural capital, which was entirely financed by the Basque Country sustainable bond.

Impact

In 2018, 24 technical studies on habitats and biodiversity were carried out with this budget.

Indicator	Total Impact	Bond Impact
Number of technical studies on habitats and biodiversities financed	24	24

Restoration and improvement of ecosystems (€743,214)

Description

Programme for the preservation of the marshes and improvement of scientific bird ringing. Action has also been taken to eradicate invasive exotic species in different locations. (€918,225)

Budget and bond allocation

In 2018, the Basque Government allocated a total of €743,214 to the restoration and improvement of ecosystems, which was entirely financed by the Basque Country sustainable bond.

Impact

In 2018, several projects were carried out for the eradication of invasive species in an area of 25,000 hectares.

Indicator	Total Impact	Bond Impact
Surface area (ha) with actions for the eradication of invasive species.	25,000	25,000

Urdaibai Biosphere Reserve (€918,225)

Description

Implementation of projects to foster sustainability in the tourist, agricultural and forestry sectors: inspections, homologations, cleaning and maintenance of several environmental areas of the Urdaibai Biosphere Reserve. Action has also been taken in relation to the maintenance of signs or the project for the pedestrianisation of the route between Kortezubi and the Urdaibai Bird Centre facilities in Gautegiz-Arteaga.

Budget and bond allocation

In 2018, the Basque Government allocated a total of €918,225 to promote sustainability in the **Urdaibai Biosphere Reserve**, which was entirely financed by the Basque Country sustainable bond.

Impact

In 2018, several cleaning and maintenance projects were carried out in the Urdaibai Biosphere Reserve. Emphasis has also been placed on maintaining and improving the pedestrian route of the reserve.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Surface area (ha) of the Urdaibai Biosphere Reserve in which cleaning and maintenance actions have been carried out.	60	60
Length (km) of improved-maintained pedestrian routes.	79.4	79.4

Management of the Ekoetxea Network of Environmental Centres (€1,022,778)

Description

The "Ekoetxea" network of environmental centres, made up of the Ekoetxea Azpeitia, Txingudi Urdaibai and Peñas Negras, is a key instrument for raising the Basque society's awareness of the value of sustainability. From the field of informal education, the Ekoetxea offer people experiences that help them to understand and enjoy the natural environment, understand its value and commit to its care.

Budget and bond allocation

In 2018, the Basque Government allocated a total of €1,022,778 to the protection of natural capital, which was entirely financed by the Basque Country sustainable bond.

Impact

A total of 90,198 people have participated in the activities programmed by the 4 Ekoetxeak in 2018, 5,000 more than in 2017. Urdaibai has significantly increased the number of visitors, reaching 64,409 people, up 12.2% on the previous year. Txingudi, with 14,299 visitors, has gone down 15% with respect to 2018 due to the fact that the facilities remained closed for more than 3 weeks due to works. Peñas Negras, with 14,739 participants shows an increase of 9.2%. Azpeitia maintains its usual levels with 4,864 participants. The global satisfaction of visitors remains high: 9.3 out of 10. With respect to the type of visitors, 27.3% are school children (School Programme) and the rest are mainly families.

Indicator	Total Impact	Bond Impact
Number of visitors	90,198	90,198

ENERGY EFFICIENCY: €1,457,040

The main measures are encompassed in SDG 9: Industry, innovation and infrastructures.

PROJECTS	RELATED SDG	Eligible	Spent (a)	Bond Allocation (b)
		€	€	€
ENERGY EFFICIENCY	SDG 9: Industry, innovation and infrastructures.	**2,326,274**	**1,457,040**	**1,457,040**
Waste Management			296,070	296,070
Eco-design and green manufacturing			1,160,970	1,160,970

Waste Management (€296,070)

Description

Implementation of the RCD valuation strategy and the and steelworks slag valuation strategies, promoting the homogenous implementation of the compost throughout the region, giving the go-ahead to the Waste Prevention and Management Plan 2020 and handling the collaboration agreements with the CLUSPAP paper sector and the AFV metal casting sector.

Budget and bond allocation

In 2018, the Basque Government allocated a total of €296,070 to waste management, which was entirely financed by the Basque Country sustainable bond.

Impact

The clearest way of observing the impact of this project is to evaluate how the waste recycling rate has varied over time.

The total impact and that corresponding to the sustainable bond as a result of the implementation of the programme in 2018 are shown in the attached table.

Indicator	Total Impact	Bond Impact
Steel slag recycling variation rate	+19%	+19%
CDW recycling variation rate	+3%	+3%
Municipal waste recycling variation rate	+1%	+1%

Notes: The construction and demolition waste (CDW) recycling rate went from 42% in 2009 to 61% in 2016. Assuming a constant rate, this represents an annual increase of 3%, which we assume was maintained in 2018. The steel slag recycling rate went from 66% in 2015 to 86% in 2016, an annual increase that we assume was maintained in 2018. The municipal waste recycling rate went from 36% to 37% between 2014 and 2015, an increase that we assume was maintained in 2018.

Eco-design and Green Manufacturing (€1,160,970)

Description

Eco-design is a methodology that considers the environmental variable as another criterion in the design process of industrial products. The final objective is to increase the environmental performance of the products throughout their life cycle. Eco-design has become a necessary practice to face the growing consumption of products in the industrial sector.

This programme seeks to foster eco-design and green manufacturing, facilitating the eco-efficiency of the industrial sector from the perspective of manufacturing and the circular economy and the closure of cycles, developing technical projects in eco-design in collaboration with the sectors, promoting green public purchasing and procurement, carrying out training activities in terms of Eco-design with universities and vocational training centres and developing eco-design projects.

Budget

In 2018, the Basque Government allocated a total of €1,160,970 to the promotion of eco-design and green manufacturing, which was entirely financed by the Basque Country sustainable bond.

Impact

The 2017 projects have been implemented and 16 new eco-efficiency and green manufacturing projects have been awarded, which all together will represent material savings of 78,000 t/year according to Government data, enabling companies to invoice an additional €21.4 million and create 60 new jobs. Furthermore, 6 projects related to the order of eco-design subsidies have been awarded for a total of €115,000.

A total of 21 young people have participated in the training process during the 2018-2019 course at the BASQUE ECODESIGN HUB. Participants have received a 140-hour training course in Eco-design, Life Cycle Analysis (LCA) and environmental monitoring.

Indicator	Total Impact	Bond Impact
Material savings (t/year)	78,000	78,000
Number of jobs created	60	60
Number of young people trained in eco-design	21	21

4. Impact of the bond on production, income and employment

In this section, the total economic impact derived from the funds allocated to projects has been estimated using models that exploit the information in the input-output tables (IOT).

4.1. Results

As for the impact on production, income and employment derived from the issue of sustainable bonds, it is worth highlighting that their influence on production, income and employment in the Basque Country will be significant. **For every euro invested, an increase in production of €1.69 is generated and an increase in income of €0.398. In the case of employment, it can be seen that for every million Euros invested, 16.79 jobs are created.**

By sectors, those that benefit the most will be "Construction", "Rental, real estate and business services", "Transport, storage and communications", "Manufacturing Industry" and "Hotel and Catering". However, these sectors will boost other branches of activity and will produce a knock-on effect derived from the income-consumption interaction. The role of the indirect and induced impact is therefore key, which shows that they are important and must be considered when implementing a certain policy.

Table 4.1 sums up the **results obtained for the Basque economy as a whole**. By columns, the direct, indirect, induced and total impact (sum of the previous three columns) is detailed. The "Multiplier" column indicates the multiplier effect (or dragging) on the production and income generated by each euro invested in sustainable projects, as well as the jobs created for each million euros invested.

Table 4.1. Impacts of investments derived from the issue of sustainable bonds

	IMPACTS				
	Direct	Indirect	Induced	**TOTAL**	*Multiplier*
Production (€)	500,000,000	245,967,994	97,347,189	843,315,182	*1.69*
Income (€)	159,366,088		39,726,279	199,092,368	*0.398*
Employment (number of jobs)	6,450		1,944	8,394	*16.79*

Source: Own preparation based on results from the analysis

The results show that the investments derived from the issue of sustainable bonds generate and increase in total production[5] of €843,315,182. In other words, a further €245,967,994 generated as a result of the dragging effect in the production sectors (indirect impact) and a further €97,347,189 due to the increase in consumption derived from the increase in income (induced impact) must be added to the direct effect (€500,000,000). Therefore, as can be seen, **bearing in mind the indirect and induced impacts** on analysing the economic impact **is not a trivial matter**, as far as its **effects are superior to the direct effects.** Indeed, the multiplier indicates that each euro spent/invested generates and increase in production of 1.69%.

[5] The data should be interpreted with precaution as the IOTs correspond to different periods. More specifically, the latest IOT offered are those for 2015.

Note, however, that the **increase in production does not transform entirely into available income, as part of it is allocated to imports or the payment of taxes**. In this way, the direct impact on income is less, €159,366,088, whereby the increase due to the induced effect is €39,726,279. In total, the impact on income reaches €199,092,368. The multiplier effect is 0.398, which means that each euro invested generates an increase of 0.398 euros in available income.

The **jobs created** add up to a total of **8,394** of which 6,450 are direct and indirect, whilst 1,944 are induced. The multiplier effect is 16.79, which means that each euro invested generates 16.79 jobs.

Breaking down the impacts by fields of activity, the results show a similar tendency: **the indirect and induced impact is important** and must therefore be taken into account when it comes to implementing a certain policy.

Table 4.2 sums up the **sectoral impact on production**. The fields in which the highest increases are located are:

- Rental, real estate and services to companies,
- Construction,
- Transport, storage and communications,
- Manufacturing Industry, and
- Production and distribution of electrical energy, gas and water.

These represent almost 76.02% of the total impact. In the case of the latter two, this is due mainly to the fact that they receive a large part of the estimated investment in Table 9, so their production is benefited to a greater degree than the rest of the sectors. More specifically, investments in sectors such as architecture and engineering services, research and development, other professional activities and telecommunications stand out.

Analysing the type of impact, it can be seen that in the case of **indirect impact**, "**Manufacturing Industries**" and "**Construction**" and "**Rental, real estate and services to companies**" stand out. This responds to the logic that they are sectors devoted to the **production of intermediate goods** which will be demanded by the industries directly financed by the bonds (particularly those that work in the field of property restoration, construction of new means of transport or the installation of renewable energy) and sectors aimed at the **provision of services** necessary, for example, to promote the creation of jobs or the drawing up of environmental recovery and improvement plans, campaigns and projects, among others.

As for the **induced impact**, the cases of "**Rental, real estate and services to companies**", **"Trade and Repairs**" and "**Hotel and Catering**" stand out, which is coherent as it is necessary to remember that induced impact is that which is generated by the expansive effect of the income-consumption interaction. The higher the income of households, the greater the consumption of goods and services.

Table 4.2. Impact on production by economic sector (€)

	Direct	Indirect	Induced
Rental, real estate and services to companies	107,139,107	40,375,424	24,776,048
Construction	126,214,793	42,949,819	2,791,009
Transport, storage and communications	97,457,540	35,786,945	8,096,353
Manufacturing Industry	32,243,913	45,479,264	9,144,301
Production and distribution of electrical energy, gas and water	26,648,259	35,203,033	6,792,251
Trade and Repairs	8,678,840	19,288,908	14,031,395
Education	30,431,369	1,815,359	2,551,939
Hotel and Catering	18,862,788	2,719,149	13,173,380
Healthcare and veterinary activities; social services	20,225,660	2,215,714	3,936,721
Financial Intermediation	5,377,570	12,458,702	4,034,578
Other social activities and personal services	8,145,882	2,711,489	5,894,657
Extractive Industries	10,174,668	3,000,230	46,288
Agriculture, farming, hunting, forestry	4,763,003	637,274	385,259
Public Administration	2,375,521	1,226,431	179,676
Fisheries, Aquaculture	1,261,086	100,252	100,242
Households that employ domestic staff	0	0	1,413,088

Source: Own preparation based on results from the analysis

As already explained, the **increase in the final demand** of the sectors will lead to an **increase** in the total Basque production and therefore, in its **income**. In turn, this will have additional effects on family consumption, hence increasing final demand. However, as **all of the production sectors do not have the same capacity to generate income,** it is necessary to specifically estimate the impact on income. The economic sectors that generate the highest income [6] (Table 4.3) are:

- Rental, real estate and services to companies (particularly architecture and engineering services and research and development),
- Transport, storage and communications,
- Construction,
- Hotel and Catering, and

[6] Annex 3 includes the tables indicating the income and job coefficients and jobs by fields of production.

- Manufacturing Industry (particularly metal construction, mechanical engineering, transport material and electrical equipment and material).

These activities stand out for being **highly specialised sectors**, which require highly qualified professionals and therefore tend to generate high regional income.

Table 4. 3. Impact on income by sector (€)

	Direct + Indirect	Induced
Rental, real estate and services to companies	17,464,735	336,583
Transport, storage and communications	17,766,301	79,663
Construction	294,721	47,640
Hotel and Catering	5,442,502	1,406,526
Manufacturing Industry	10,848,386	1,785,882
Production and distribution of electrical energy, gas and water	2,908,479	606,487
Education	14,449,273	3,481,879
Other social activities and personal services	6,035,553	875,037
Healthcare and veterinary activities; social services	6,189,067	1,335,314
Trade and Repairs	2,475,528	285,530
Financial Intermediation	3,058,426	1,086,449
Agriculture, farming, hunting, forestry	52,861	6,979
Fisheries, Aquaculture	263,956	26,243
Public Administration	527,171	76,258
Extractive Industries	6,270,431	489,069
Households that employ domestic staff	0	0

Source: Own preparation based on results from the analysis

As for jobs, (Table 4.4), the sectors that will be favoured the most are:

- Rental, real estate and services to companies,
- Transport, storage and communications,
- Construction,
- Education and
- Manufacturing Industry.

Logically, they are sectors to which the Basque administration has given special importance and which will therefore benefit directly from the issue of sustainable bonds.

Table 4.4. Impact on jobs by sector (number of jobs)

	Direct + Indirect	Induced
Rental, real estate and services to companies	1,696	1,059
Transport, storage and communications	1,312	315
Construction	1,177	140
Education	613	31
Manufacturing Industry	469	118
Hotel and Catering	321	32
Trade and Repairs	205	99
Healthcare and veterinary activities; social services	195	72
Production and distribution of electrical energy, gas and water	145	49
Other social activities and personal services	117	19
Agriculture, farming, hunting, forestry	82	1
Financial Intermediation	48	9
Public Administration	28	0
Extractive Industries	25	0
Fisheries, Aquaculture	17	0
Households that employ domestic staff	0	0

Source: Own preparation based on results from the analysis

In short, the issue of sustainable bonds by the Basque Government will not only benefit the environmental quality of the Basque Country but also its economic and social structure, generating income and jobs, and **laying the bases to advance towards** the fulfilment of the three dimensions required for **sustainable development**.

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Annex 1: Input-Output Tables Methodology

The models that exploit the information in the input-output tables (IOT) enable the total economic impact derived from the expenditure associated with green and sustainable projects to be estimated.

The **issue of sustainable bonds** and the use of the funds obtained to foster the corresponding projects represents an **increase in total Basque production**, as many sectors are immersed in new activities, such as, for example, property restoration or waste management. This will undoubtedly have a positive impact on production in the sectors directly involved, which will highlight the need to acquire more inputs, leading to an increase in production in the rest of the sectors (multiplier or dragging effect). This new level of production will be accompanied by **job and income creation**, so both variables will also benefit from the investments related to the Basque Country sustainable bond.

As a general rule, total impact of a law or policy tends to be considered, but the IOTs enable it to be **broken down into direct, indirect and induced impact**.

- **Direct Impact**: This includes the increases in production (final demand) as a result of the funds allocated to sustainable projects. In other words, it is determined by the initial impact (increase in production) that will only occur in the financed sectors (Table 9).
- **Indirect Impact**: the increase in production by the sectors directly financed will mean that they will, in turn, increase the demand for inputs from the rest of the sectors. Therefore, indirect impact includes the adjustments in the production level of the rest of the sectors as a result of the increase in demand for *inputs*.
- **Induced Impact**: that generated by the expansive effect (also known as the multiplier effect or dragging effect) of the income-consumption interaction. In other words, it determines the effect of allocating funds to finance projects on families and not on production sectors, as in the previous two cases. The logic is simple: by increasing the demand in one sector, an increase in production is this sector (direct effect) is created as well as an increase in internal consumption (demand for inputs) by this sector, positively favouring the rest of the sectors, which will see their demand further increased. This increase in total demand will be translated into greater income for consumers. This will foster higher levels of consumption and therefore in final demand. This latter effect is what measures the induced impact.

The IOTs **enable the entire economic structure of the economy and the numerous relations between the sectors that form part of it to be represented** empirically. Most of the regional statistical agencies offer them and have a long tradition in regional studies. So much so, that they represent the central pillar of the economic accounts of a country or region, along with the national accounting.

The **IOTs** show the **total production** of each sector (*output*) and the **destination** of this production[7] (part of which will be acquired by the rest of the sectors – *inputs* – for use in their own production process).

Efforts towards **statistical homogenisation** of the different counties culminated in the implementation of the National Accounts System in the 1960s. In the European sphere, the central reference framework is the **European System of Integrated Economic Accounts (ESA)**, which is still valid after several reviews and modifications. The current base is **ESA 2010**, which offers greater possibilities of using the information supplied by the IOTs.

However, the IOTs are part of a broader approach, known as **Input–Output Framework, which consists of three tables:**

- Table of Origin (Table A1.1): it is a matrix with the values for the **total production of goods and services, by type of product and field of activity.**
- Destination Table (Table A1.2): indicates the **destination of each of these products** (intermediate consumption, final consumption, Gross Capital Formation and exports)[8].
- Symmetric Input-Output Table (Table A1.3): by **condensing the origin and destination in a single table, the** fields of production can be related to each other instead of the products to the fields that generate them.

[7] In other words, what is produced plus what is imported must be the same as what is consumed, invested and exported.
[8] The gross added value is also taken into consideration.

Table A1.1. Table of Origin

Fields / Products	Field 1	Field 2	Field n	**Total Production**	**Imports**	**TOTAL SUPPLY**
Product 1						
Product 2						
Product n						
Total Products				$\sum_1$	$\sum_2$	$\sum_1+\sum_2$
CIF/FOB Adjustment						
Resident purchases outside the territory						
TOTAL				$\sum_3$	$\sum_4$	$\sum_3+\sum_4$

Source: Own preparation

Table A 1.2. Destination Table

Fields / **Products**	Field 1	Field 2	Field n	**Intermediate demand**	**Final consumption expenditure**	**Gross Capital Formation**	**Exports**	**TOTAL FINAL DEMAND**	**TOTAL JOBS**
Product 1									
Product 2									
Product n									
Total Products				$\sum_5$	$\sum_6$	$\sum_7$	$\sum_8$	$\sum_T - \sum_5$	$\sum_T = \sum_5 + \sum_6 + \sum_7 + \sum_8$
Employee Remuneration									
Other net taxes on production									
Gross Operating Surplus									
Gross Added Value				$\sum_9$					
Production at basic prices				$\sum_5 + \sum_9$					

Source: Own preparation

Table A1.3 Symmetric Table

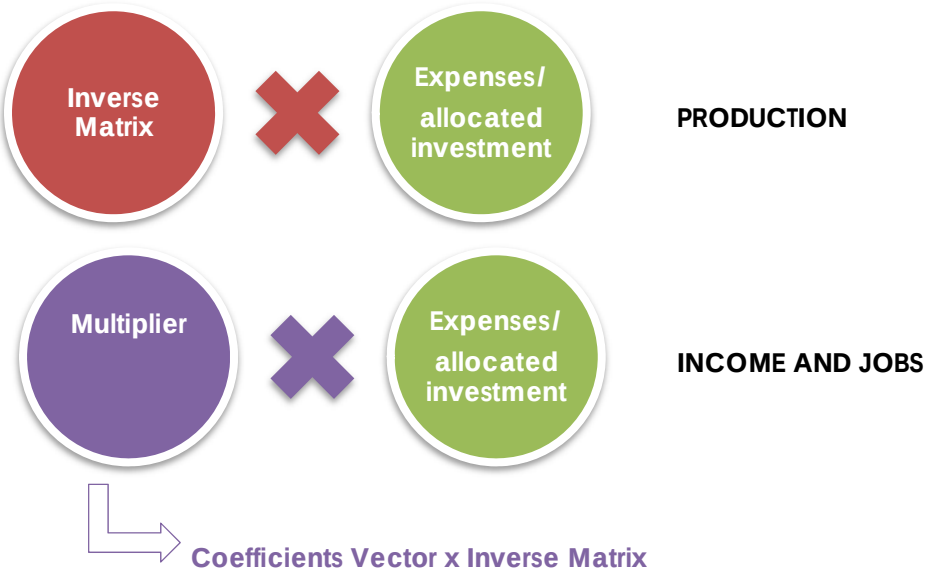
Fields / **Products**	Field 1	Field 2	Field n	**Intermediate demand**	**GCF**[9]	**FBK**	**X**	**TOTAL FINAL DEMAND**	**TOTAL JOBS**
Field 1									
Field 2									
Field n									
Total Products				$\sum_5$	$\sum_6$	$\sum_7$	$\sum_8$	$\sum_T-\sum_5$	$\sum_T=\sum_5+\sum_6+\sum_7+\sum_8$
CIF/FOB Adjustment									
Resident purchases outside the territory									
Non-resident purchases in the territory									
Total				$\sum_{10}$	$\sum_{11}$	$\sum_{12}$	$\sum_{13}$	$\sum_T-\sum_{10}$	$\sum_T=\sum_{10}+\sum_{11}+\sum_{12}+\sum_{13}$
Employee Remuneration									
Other net taxes on production									
Gross Operating Surplus									
Gross Added Value				$\sum_9$					
Production at basic prices				$\sum_9+\sum_{10}$					
Imports				$\sum_2$					
Total Supply				$\sum_9+\sum_{10}+\sum_2$					

Source: Own preparation

The aim of incorporating imports (see the lower part of the table) is so that the fields of activity of resources and jobs can be identified.

[9] Final consumption expenditure (GCF) Gross Capital Formation (FBK); Exports (X).

Having said this, the next question we must pose is **how to calculate the impact through IOTs for the 3 variables** considered in this report:



1. In an **initial phase**, **the funds obtained are allocated** to the corresponding fields of activity into which the IOTs divide the Basque economy (Table 8 in Annex 2). Although the IOTs provided by the Basque Statistics Institute (Eustat) are divided into 85 fields, they have been grouped into 16 fields in the economic report (See Annex 2) to facilitate the analysis of the results.

2. In a **second phase**:

    a. Starting with the symmetric matrix, the **technical coefficients matrix** (or direct requirements matrix) is calculated, where each coefficient includes the percentage that represents each *input* on the final production [10], and

    b. From the technical coefficients matrix, the **Leontief inverse matrix** (o total requirements - direct and indirect matrix) is obtained.

3. Finally, once the inverse matrix has been obtained, the **impact multipliers on income and jobs are calculated**[11] (for each field of activity). To do so, the steps to follow are:

[10] Final production is understood to be production at basic prices, which is the data offered by the IOTs for Navarra. This magnitude is obtained by adding the net taxes on products, purchases by residents outside the national territory and the gross added value art basic prices to the production total. The latter is broken down into employee remuneration (gross salaries and wages plus social security contributions), other net taxes on production and the gross operating surplus/mixed income. Therefore, it is worth mentioning that this magnitude will be superior to that traditionally offered when talking about the Gross domestic product.
[11] For production, we do not have to calculate any multiplier: just multiply the inverse matrix by the expenses/allocated investment. This is because , as already explained, each coefficient of this matrix represents the additional amount produced by i-*ésimo* sector in light of the increase in the final demand of the j-*ésimo* sector in one unit. On the other hand, the IOTs do not provide data on available income or jobs by production fields, so it is necessary to create a vector that includes this.

- INCOME: the inverse matrix is multiplied by the **income coefficients vector**. To calculate this vector, (domestic income of each sector divided by the total production), it has been necessary to estimate the distribution of available income by fields of production. Bearing in mind that there is no sectoral data available, the procedure has been slightly more complex. To do so, the proposal set out in Ansuategi et al. (2014) has been used, by which the value of the total available income is the same as that of the total private consumption provided by the IOTs, although with a different distribution, as the available rent will be distributed proportionally to the added value by sector.
- JOBS: the inverse matrix is multiplied by the **income coefficients vector**. The data related to the number of jobs by sector has been sought. Then, the job coefficients vector by sector has been calculated by dividing the jobs by i-*ésimo* sector among the total production for the same sector.

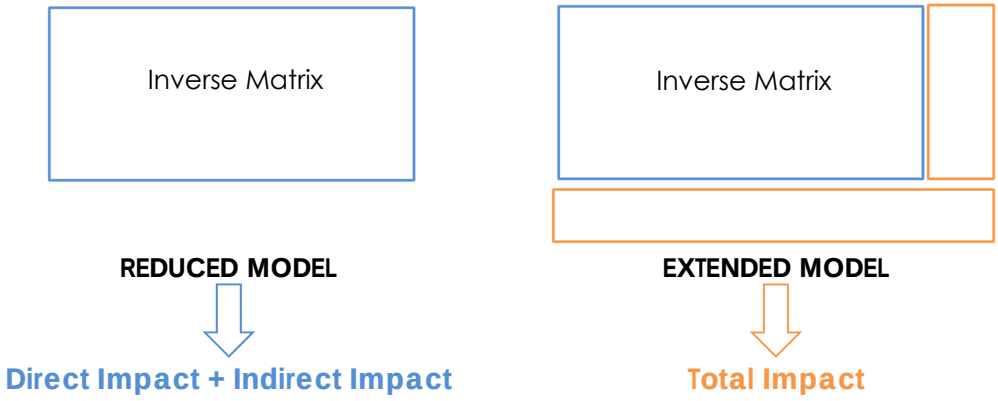
Finally, the multipliers are multiplied by the funds allocated to each sector in order to obtain the impact.

However, as previously explained, the total **impact** is distributed between the direct, indirect and **induced** impact. The calculations shown up to now only provide the direct and indirect impact, so it is necessary to estimate the induced impact (based on the income-consumption interaction) to obtain the total impact. To do so, it is necessary to **extend the inverse matrix to add the families**, considering them as if they were another economic sector. To do so, a new row and a new column have been added. The row represents the distribution of the available income by fields of production and measures the flow of the families sector to the i-*ésimo* sector, whilst the column collects the flow from the i-*ésimo* sector towards the families sector. The data for the column is obtained directly from the IOTs, selecting the internal private consumption within the final demand.

This will require the calculation of **"new" multipliers**[12], so the same procedure as before will be followed (extended technical coefficients matrix - extended inverse matrix - coefficients vector) and, once it has been obtained, it is multiplied by the expenses/investments.

In this way, we will have **2 models**: an **extended model** whose result gives the **total impact and a reduced model** which gives us the **direct and indirect impact**. Taking the difference between them both, we obtain the induced impact.

[12] Annex 3 shows the coefficients vector and the multipliers by sectors.



Mathematically, we present the Input-Output Model (or Leontief model) applied to this report. The notation is as follows:

q_i = production of the *i*-ésimo sector.

y_i = final demand of the *i*-ésimo sector (sum of private and public consumption, the gross capital formation and exports).

x_{ij} = flows from the *i*-ésimo sector to the *j* Eskimo sector.

n = number of sectors or fields of production.

The identity for all *j* sectors is as follows:

Production of the sector = Intermediate consumption + Final demand

$$q_j = x_{ij} + x_{2j} + \cdots + x_{nj} + y_j \quad \forall j \in (1, \ldots, n)$$

In matrix terms:

$$\begin{bmatrix} q_1 \\ \vdots \\ q_n \end{bmatrix} = \begin{bmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{nn} \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} + \begin{bmatrix} y_1 \\ \vdots \\ y_n \end{bmatrix}$$

$$q = X_i + y$$

where $q_1 = x_{11} + \cdots + x_{1n} + y_1$; $q_n = x_{n1} + \cdots + x_{nn} + y_n$ and X is the matrix of inter-industrial transactions (Ansuategi et al. 2014).

Based on this equation, we can calculate the matrix of technical coefficients which includes the percentage that each input represents on the final production. as there is a relationship between the selling sector I and the purchasing sector j:

$$a_{ij} = \frac{x_{ij}}{q_j}$$

so the model would be as follows:

$$\begin{bmatrix} q_1 \\ \vdots \\ q_n \end{bmatrix} = \begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \cdots & a_{nn} \end{bmatrix} \begin{bmatrix} q_1 \\ \vdots \\ q_n \end{bmatrix} + \begin{bmatrix} y_1 \\ \vdots \\ y_n \end{bmatrix}$$

$$q = Aq + y$$

where matrix A is the matrix of technical coefficients, q is the total production vector and y is the final demand vector. Each coefficient of the matrix, $[a_{ij}]$, measures the production of the sector *j* that comes from sector *i*[13].

From the matrix of technical coefficients, we can obtain the basic equation for the model - the Leontief inverse matrix. To do so, we first take the matrix q to the other side:

$$q - Aq = y$$

to later take the common factor:

$$[I - A]q = y$$

where I is an identity, not 1. If we divide a matrix up, we obtain a matrix with ones in its diagonal and that which is shown below:

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Breakdown q

$$q = [I - A]^{-1} y = By$$

where B is the Leontief inverse matrix. The coefficients of this matrix, $[b_{ij}]$, collect the multiplier effect produced in the whole of the economy when the final demand is increased (Fernández et al., 1999): each coefficient indicates the addition al amount that the *i* sector needs to produce to satisfy the increase of an additional unit in the final demand of the *j* sector. Each element on the main diagonal is greater than 1 ($b_{ij} > 1$), given that both the direct effect of the increase in demand over production of its own sector and the indirect effects generated in other sectors are included (Ansuategi et al., 2014).

$$B = [I - A]^{-1} = I + A + A^2 + A^3 + \cdots$$

Therefore, the coefficients of this B matrix directly include multipliers of production. On the other hand, in order to obtain the coefficients on income and jobs, it is necessary to multiply this matrix by the coefficients associated with these indicators:

[13] However, as already explained, depending on whether we take the rows or columns into account, we will be measuring one thing or another: purchases in the rows and sales in the columns.

- **Multiplier of the impact on income**:

$$MR = rB$$

where *r* is a vector of income coefficients as follows:

$$r_i = \frac{R_i}{q_i}$$

and where R_i is the income of the families generated in the production of the *i*-ésimo sector.

- **Multiplier of the impact on jobs:**

$$ML = \gamma B$$

where γ is the vector of jobs coefficients as follows:

$$\gamma_i = \frac{L_i}{q_i}$$

and where L_i is the jobs of the *i*-ésimo sector.

However, this model does not take into account the families sector as another sector, so we are not able to see the income-consumption interaction. To include it, we must extend the X matrix with a new row (total available income) and a new column (private consumption), so the model is as follows:

$$q^* = X_i^* + y^*$$

$$X^* = \begin{bmatrix} X & CF \\ RD & 0 \end{bmatrix} \quad \text{and} \quad A^* = \begin{bmatrix} A & cf \\ rd & 0 \end{bmatrix}$$

where X^* and $A^*$are the inter-sectional matrix and the extended technical coefficients matrix, respectively and where

$$cf = \left[cf_i = \frac{CF_i}{q_F}\right] \quad \text{and} \quad rd = \left[r_i = \frac{CFR_i}{q_i}\right]'$$

Following the same steps as before, we obtain:

$$q^* = [I_{n+1} - A]^{-1} y^* = B^* y^*$$

so that

$$B^* = [I_{n+1} - A]^{-1} = [b_{ij}]$$

where b_{ij} represents the additional income generated in the i sector if the demand in sector j increases by one unit.

$$B^* = \begin{bmatrix} B^p & s \\ b^f & v \end{bmatrix}$$

where b_{ij}^{p} measures the additional amount produced by the i-ésimo sector if the final demand of the *j*-ésimo sector increases by one unit andb_{ij}^{pf} is the additional income generated in the *i*-ésimo sector if the final demand of the j-ésimo sector increases by one unit. From here, we can obtain the impact multipliers:

- **Multiplier of the global economic impact on production** For the *j* sector, the multiplier will be calculated as the sum of the elements from one column of the production multipliers matrix:

$$MP_j = \sum_{i=1}^{n} b_{ij}^{p} = B^{p}$$

- **Multiplier of the global economic impact on income**: we multiply each element of the matrix B^{*} by the income coefficientsr_j. Therefore, the multiplier is:

$$MR_j = \sum_{i=1}^{n} r_i b_{ij}^{p} = b^{f}$$

We obtain the total income generated, within the territory in light of an increase in demand of the j sector of one unit.

- **Multiplier of the global economic impact on jobs** The procedure is the same as in the previous cases so that:

$$ML_j = \sum_{i=1}^{n} \gamma_i b_{ij}^{p} = \gamma B^{p}$$

We obtain the total jobs generated, within the territory in light of an increase in demand of the j sector of one unit.

Annex 2: Aggregation of sectors and fund allocation

Aggregation by sectors

Table A2.1 Aggregation by sectors

Agriculture, farming, hunting and forestry	Agriculture, farming and hunting
	Forestry and forestry development
Fisheries and aquaculture	Fisheries and aquaculture
Extractive Industries	Extractive Industries
Manufacturing Industry	Meat Industry
	Fish Processing
	Dairy Products
	Bakery and Milling
	Other food industries
	Beverages
	Tobacco
	Textile, clothes, leather and footwear
	Wood and cork industry
	Paper industry
	Graphic arts and reproduction
	Coke and refined petroleum products
	Basic chemical products
	Paint and other final chemicals
	Pharmaceutical products
	Rubber products
	Plastic products
	Glass industry
	Cement, lime and plaster
	Other non-metallic industry
	Steel industry
	Production of non-ferrous metals
	Metal smelting
	Metal construction
	Metal forging and stamping
	Mechanical engineering
	Metal articles
	IT products and electronics
	Electrical equipment and material
	Domestic appliances
	General use machinery
	Machine-tooling
	Manufacture of motor vehicles
	Naval construction
	Other transport material
	Furniture production
	Other manufacturing industries
	Repair and installation
	Sanitation and waste management
Production and distribution of electrical energy, gas and water	Electrical energy
	Gas, vapour and air conditioning
	Water supply
Construction	Construction
Trade and Repairs	Sale and repair of vehicles

	Wholesale Trade
	Retail Trade
Hotel and Catering	Hotel and Catering
Transport, storage and communications	Rail transport
	Other passenger land transport
	Other goods land transport
	Maritime and river transport
	Air transport
	Activities related to transport
	Postal and courier activities
	Publishing
	Audiovisual, film, radio and TV
	Telecommunications
	Information Technology
Financial Intermediation	Financial services, except insurance
	Insurance
	Auxiliary financial services
Rental, real estate and services to companies	Real estate activities
	Legal and accounting activities
	Architecture and engineering services
	Research and development
	Advertising and market studies
	Other professional activities
	Rental activities
	Activities related to employment
	Travel agencies
	Other auxiliary activities
Public Administration	Public Administration
Education	Education
Healthcare and veterinary activities and social services	Healthcare activities
	Social services
Other social activities and personal services	Cultural activities; games
	Sports and leisure activities
	Associative activities
	Repair of computers and other articles
	Other personal services
Households that employ domestic staff	Household activities

Allocation of funds by sectors

Table A2.2 Allocation of funds by sectors (€)

	Allocation
Construction	126,214,792.9
Rental, real estate and services to companies	107,139,107
Transport, storage and communications	97,457,540.16
Manufacturing Industry	32,243,912.73
Education	30,431,369.27
Production and distribution of electrical energy, gas and water	26,648,258.55
Healthcare and veterinary activities and social services	20,225,660.4
Hotel and Catering	18,862,788.48
Extractive Industries	10,174,668.19
Trade and Repairs	8,678,839.634
Other social activities and personal services	8,145,882.39
Financial Intermediation	5,377,569.618
Agriculture, farming, hunting and forestry	4,763,003.469
Public Administration	2,375,521.296
Fisheries and aquaculture	1,261,085.561
Households that employ domestic staff	0

Source: Own preparation based on results from the analysis

Annex 3: Income and job coefficients and multipliers

Table A3.1. Income coefficients, income multipliers and income multipliers for the model extended to families

	Income Coefficients	Income Multiplier	Extended Income Multiplier
Agriculture, farming, hunting, forestry	0.152921757	0.163009898	0.166151452
Fisheries, Aquaculture	0.180056783	0.182297859	0.183115274
Extractive Industries	0.000530833	0.002335072	0.002712523
Manufacturing Industry	0.034317986	0.288531167	0.363097334
Production and distribution of electrical energy, gas and water	0.120175368	0.336447576	0.391834216
Construction	0.036994485	0.109143317	0.131902285
Trade and Repairs	0.357652532	0.474815084	0.589232503
Hotel and Catering	0.716288231	0.740933014	0.848353849
Transport, storage and communications	0.141502693	0.306000762	0.372021556
Financial Intermediation	0.194354933	0.285237174	0.318136685
Rental, real estate and services to companies	0.282980018	0.568737616	0.77077109
Public Administration	0.005453749	0.011098351	0.0125635
Education	0.197725871	0.209308836	0.230118335
Healthcare and veterinary activities; social services	0.199995721	0.221918045	0.254019588
Other social activities and personal services	0.573805919	0.616278652	0.664345967
Households that employ domestic staff	0.671993864	0.671993864	0.683516733

Table A3.2. Job coefficients, job multipliers and job multipliers for the model extended to families

	Job Coefficients	Job Multiplier	Extended Job Multiplier
Agriculture, farming, hunting, forestry	0.01667231	0.01713401	0.01728778
Fisheries, Aquaculture	0.01356559	0.013604831	0.013644841
Extractive Industries	0.002208483	0.002441809	0.002460284
Manufacturing Industry	0.003667001	0.014544085	0.018193874
Production and distribution of electrical energy, gas and water	0.001029657	0.007330096	0.010041105
Construction	0.005394811	0.009323786	0.010437769
Trade and Repairs	0.011858628	0.016683222	0.02228361
Hotel and Catering	0.009775738	0.010883408	0.016141334
Transport, storage and communications	0.005698381	0.013466657	0.016698176
Financial Intermediation	0.005295327	0.008939618	0.01054995
Rental, real estate and services to companies	0.005881484	0.015824647	0.025713577
Public Administration	0.011675912	0.011870428	0.011942143
Education	0.019707595	0.020127019	0.021145581
Healthcare and veterinary activities; social services	0.014695006	0.015874252	0.017445526
Other social activities and personal services	0.013147511	0.014404942	0.016757692
Households that employ domestic staff	0.04585502	0.04585502	0.04641903

Source: Own preparation based on results from the analysis