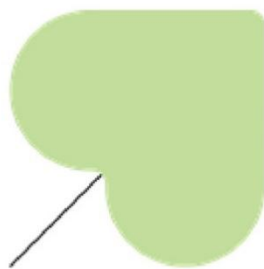


Bilbao Climate City Contract





Bilbao



Index

Index	2
Presentation	5
Commitment of the city of Bilbao to climate neutrality	10
Introduction	10
Climate neutrality target for 2030	14
A new framework of ambition for climate neutrality	15
Priority sectors and areas for action	15
An integrated economic, social and environmental approach.....	15
Natural sinks and residual emissions offsetting	16
A common, collective and transformative goal.....	16
Strategic priorities and interventions	16
Bilbao Neutral: energy transition and structural decarbonisation	17
Resilient Bilbao: urban resilience to climate impacts	18
Healthy Bilbao: environmental quality, well-being and territorial equity.....	18
Bilbao Smart: digitalisation and innovation as accelerators	19
Collaborative governance and transformative participation.....	19
Principles and processes	20
A transformative vision based on local reality	20
Green and social pact for a just transition.....	20
A collective, multi-stakeholder and open journey.....	21
A continuous planning-learning process	21
Multi-level governance, internal capacities and social legitimacy.....	21
Climate culture and structured participation	22
ANNEX I: CLIMATE ACTION PLAN FOR THE CITY OF BILBAO	1
Introduction	1
Territorial and sectoral scope	1



Diagnosis: structural challenges	5
Relationship with existing plans and role of the Climate City Contract (CCC)	5
Working process and stakeholders	6
Next steps.....	6
Work process	7
PART A - CURRENT STATUS OF CLIMATE ACTION.....	9
MODULE A-1	9
MODULE A-2.....	20
MODULE A-3.....	28
PART B - PATHWAYS TO CLIMATE NEUTRALITY BY 2030	34
MODULE B-1	34
Transport sector	34
Building and Air Conditioning Sector	43
Electricity sector	49
Waste sector	57
Other sector (Industry and Assessment).....	59
MODULE B-2.....	63
Transport sector	66
Buildings and Heating & Cooling Sector	84
Electricity sector	96
Waste sector	107
Other sector (Industry and Recovery)	110
MODULE B-3.....	114
PART C - ACHIEVING CLIMATE NEUTRALITY BY 2030	120
MODULE C-1	120
MODULE C- 2.....	124
MODULE C-3.....	128
ANNEX II: CLIMATE INVESTMENT PLAN	2
PART A - CURRENT STATUS OF CLIMATE INVESTMENT.....	2



MODULE A-1	2
MODULE A-2.....	6
MODULE A-3.....	9
PART B - INVESTMENT PATHWAYS TOWARDS CLIMATE NEUTRALITY BY 2030 ...	11
MODULE B-1	11
MODULE B-2.....	16
MODULE B-3.....	19
PART C - CONDITIONS FOR CLIMATE NEUTRALITY IN 2030	25
MODULE C-1	25
MODULE C-2.....	26
MODULE C-3.....	28
ANNEX III: GOVERNANCE MODEL FOR THE BILBAO 2030 CLIMATE MISSION.....	2
1. Institutional commitment at the municipal level.....	2
2. Involvement of key internal actors	3
3. Multilevel and institutional governance	3
4. Multi-stakeholder engagement ecosystem	4
5. Monitoring and evaluation system	4
Bilbao Climate City Contract Adherence System.....	5
Purpose and scope	5
Types of membership and commitment frameworks	5
Levels of commitment and climate seals.....	6
Membership and traceability platform.....	6
Monitoring, verification and recognition	7
A multi-stakeholder ecosystem in motion	7
Bilbao Climate Mission Seal System	7
OTHER ACTORS.....	10
COMMITMENTS FROM OTHER ACTORS	13



Presentation

At a critical juncture for the global response to climate-related emergencies, the European Union has pledged to lead climate action and has established the necessary objectives and legislation to achieve it. Consequently, the European Union must reduce its emissions by **at least 55% by 2030** and achieve climate neutrality by mid-century. In this context, cities are called upon to play a pivotal role, both in accelerating the decarbonisation process and in ensuring a fair and equitable transformation that contributes to the well-being of society as a whole.

It is noteworthy that cities, despite occupying only around 3% of the Earth's surface, are responsible for over 70% of greenhouse gas emissions and for more than 65% of global energy consumption. It is imperative that they act as hubs of experimentation and innovation in the transition towards climate neutrality.

The EU Mission "**100 Climate Neutral and Smart Cities by 2030**" aims to support the transformation of cities to expedite compliance with the Paris Agreement, and to serve as both a catalyst and driver for the implementation of the European Green Deal, as well as a demonstration that climate neutrality is achievable before 2050.

Continuing along this path, and in a geopolitical and economic climate that has underscored the need for strategic autonomy and resilience, the European Commission has also taken a decisive step to ensure that the climate transition not only consolidates but also reinvigorates the continent's industrial competitiveness. Within this framework, on 26 February 2025, the Clean Industrial Deal was unveiled, a comprehensive strategy designed to accelerate the decarbonisation of the European economy and, simultaneously, foster reindustrialisation based on clean technologies and resilient value chains. This pact acknowledges the urgency of creating a favourable environment for European industry in the face of global competition and high energy costs, proposing a set of actions focused on affordable energy, boosting demand for clean products, circularity, access to critical raw materials, and the development of necessary capabilities.

Thus, cities, as epicentres of the EU Mission, are now in an even more strategic position: they must not only accelerate their decarbonisation but also become attractive hubs for new green industries. In this regard, the Clean Industrial Deal and



the various European financing instruments—including funds provided in the Green Deal, recovery mechanisms, and programmes to support innovation and reindustrialisation—offer opportunities to mobilise investments, foster local innovation, and promote the creation of skilled jobs in key sectors of the circular economy and clean technologies. In this way, Climate City Contracts acquire a new dimension, needing to integrate this perspective of sustainable industrial competitiveness and actively help explore European funding opportunities so that the ecological transition is also a driver of prosperity and technological leadership for the Union in the current global scenario.

In Spain, on 8 September 2021, **the Government of Spain and the City Councils of Barcelona, Madrid, Seville, and Valencia signed the "Climate Neutral Cities by 2030" Declaration (annexed to this Contract)**, as a boost to the commitments and initiatives of the signatory cities and government support for the transformation of these cities to achieve climate neutrality and improve their resilience. Following this pioneering approach, on 13 December, the City Councils of Soria, Valladolid, Vitoria-Gasteiz, and Zaragoza acceded to the Declaration.

Furthermore, on 15 September 2021, the Senate Plenary approved a motion urging the Government to promote the climate neutrality of cities within the framework of the EU Cities Mission. The motion recognises the fundamental role of cities in responding to the climate emergency and highlights the opportunity to accelerate the necessary and cross-cutting changes for cities to be climate-neutral by 2030. It also values that the different territorial Administrations promote and facilitate the climate neutrality of Spanish cities through their incorporation into the Cities Mission and through the development of transformation projects.

In this respect, on 25 November 2021, the Cities Mission launched a call for expressions of interest addressed to European cities with over 50,000 inhabitants interested in participating. **Of the 377 that applied, 100 from the EU-27 were selected**, including the Spanish cities of Barcelona, Madrid, Seville, Valencia, Valladolid, Vitoria-Gasteiz, and Zaragoza.

The Mission Implementation Plan envisages that **each of the 100 selected cities will draw up a Climate City Contract tailored to its own reality**, through a co-creation process and in close collaboration with civil society and citizens as a whole, detailing the strategy for deploying and monitoring innovative and digital solutions to achieve



climate neutrality; and allowing other cities to follow their example before 2050. Thus, this document constitutes a clear political commitment, not only to the European Commission and national, regional, and local authorities but also to citizens, and includes a general climate action plan across different sectors, such as energy, buildings, waste management, and transport, along with corresponding investment plans.

Following the selection, the seven Spanish cities focused on preparing their Climate City Contracts. The co-creation work they championed culminated in the submission of these documents to the European Commission during 2023: the first five cities (Madrid, Valencia, Valladolid, Vitoria-Gasteiz, and Zaragoza) submitted their Contracts in April 2023, while Barcelona and Seville did so in September 2023. As a result of this endeavour and after the corresponding evaluation, in October 2023, the European Commission announced that five of the first ten European cities to obtain the Mission Label, certifying the submission of a robust and viable Climate City Contract to achieve climate neutrality by 2030, were precisely Madrid, Valencia, Valladolid, Vitoria-Gasteiz, and Zaragoza. Spanish leadership in the Mission was consolidated in March 2024, when the European Commission awarded the Mission Label to Seville and Barcelona, thus **making Spain the first country in the European Union** where all its designated cities in the Mission achieved this important recognition. With the Mission Label obtained, these cities are working on the implementation of their Climate City Contracts, deploying concrete actions and innovative projects on their path towards climate neutrality.

In 2024, Spanish cities, together with Swedish cities and with the support of their respective national platforms, citiES 2030 and Viable Cities, promoted the "**Carta Verde de València**" **Development Declaration**. Presented at the 2024 Cities Mission Conference in Valencia, this declaration articulates a strategic alliance between the Mission cities to demand more support and funding from the European Commission to accelerate urban climate transition. Its primary objective is to promote scalability as the new normal, ensuring that successful climate solutions are replicated and expanded rapidly, fostering cooperation between cities and national platforms, and demonstrating collective leadership in urban climate action. Since its launch, the declaration has garnered the support of over 60 Mission cities, city networks, and national platforms in 15 Member States, thus consolidating the leadership of Spanish cities in promoting collective collaboration for climate action.



In 2025, and in accordance with the commitment established in the initial agreements, the Spanish Mission cities, with the support of the citiES 2030 platform, have initiated the iteration process of their Climate City Contracts. This review and adjustment exercise, fundamental for incorporating the learnings from the first years of implementation and for adapting roadmaps to the European context, has been collaboratively opened to the rest of the cities on the platform. With this, and in parallel to this iteration process, those cities that, without having been initially selected for the EU Mission, aspire to climate neutrality, have been able to advance in the preparation of their own Climate City Contracts, benefiting from the experience and knowledge generated by the Mission cities. **The cities of Bilbao and Viladecans have positioned themselves at the forefront of this group, submitting their Climate City Contracts coinciding with the iteration of the seven Spanish Mission cities.** This fosters a pulling effect and a transfer of knowledge that is vital for scaling climate ambition at the national level.

This document responds to the requirements of the EU Cities Mission. It has been prepared by the city, with the participation of other public and private actors, and establishes plans to achieve city climate neutrality. In particular, it recognises that the Mission cannot succeed without being solidly anchored in the local community and garnering broad support. Therefore, it involves civil society, youth groups, cultural institutions and creative sectors, foundations, local media, small and medium-sized enterprises, private industry, trade unions, academia and research, and the public sector, among others, in their respective roles as decision-makers, users, consumers, producers, and owners.

Furthermore, it integrates the city's own qualities and heritage, which guarantee the local dimension of the transition towards climate neutrality, but also its inclusive nature, in accordance with the values of the New European Bauhaus (art/culture, sustainability, society). It fosters a sense of belonging and ownership among the city's inhabitants and professional actors, highlighting that their unique contribution is relevant and that the fulfilment of this Agreement will result in a better quality of life and a better environment for all.

Moreover, **it is configured within the framework of an iterative process, as a document that will be subject to monitoring and updating**, both through the signing of addenda and other adherence documents, thus bringing together other actors necessary for the city to achieve the established climate neutrality objective. In



particular, the commitments included may be expanded or updated to effectively contribute to the achievement of climate neutrality in the city.

The document is divided into several parts: one relating to **the commitment of cities to achieve city climate neutrality**; another relating to **institutional support and coordination** between the different public administrations; another part referring to its **monitoring and updating**; and a final one comprising the annexes corresponding to the **Climate Action Plan**, the **Climate Investment Plan**, and the **City Stakeholders and Commitments**, which follow the models developed by NetZeroCities.



Commitment of the city of Bilbao to climate neutrality

Introduction

Bilbao faces significant challenges arising from climate change and its growing impact on the urban environment, public health, the local economy and social cohesion. Aware of the magnitude of the challenge, the city has been developing a solid strategic and institutional architecture in recent years, aimed at both mitigating greenhouse gas emissions and adapting and building resilience to their effects. This commitment is based on an integrated vision of sustainability, in which environmental, economic and social dimensions converge.

Since 2020, **Bilbao's Environmental Strategy 2050** has served as a long-term roadmap for moving towards a carbon-neutral city that is resilient to climate risks, healthy for its citizens and digitally innovative. Under the slogan *Bilbao, a sustainable, resilient and healthy city*, the strategy is structured around four interrelated challenges: **Carbon-Neutral Bilbao, Resilient Bilbao, Healthy Bilbao and Smart Bilbao**. Each of these challenges contributes synergistically to transforming the city towards a fairer, greener and more inclusive future.

The first challenge, **carbon neutrality**, is the backbone of local climate action. Its commitment is clear:

"To prepare Bilbao for an orderly, efficient and fair energy transition, reducing its dependence on fossil fuels, improving urban air quality and reducing greenhouse gas emissions. At the same time, the aim is to increase carbon absorption potential through nature-based solutions, renaturalisation of spaces and circular economy policies".

The second challenge focuses on climate **resilience**, identifying the priority risks threatening the city according to the diagnosis developed within the framework of the Climate and Sustainable Energy Action Plan (PACES), aligned with the IPCC's risk analysis model. **The two most significant climate impacts** for Bilbao are:

- River flooding and sea level rise, with a direct impact on the built environment and critical infrastructure.



- Heat waves, which affect health, especially among the elderly, children and vulnerable groups.

As part of its specific commitment to a fair and comprehensive climate transition:

"The city of Bilbao is committed to mainstreaming climate change adaptation into all its actions. In particular, it commits to carrying out, or updating where necessary, a climate risk assessment at the [urban/municipal] level, in coordination with regional and/or metropolitan administrations, in order to ensure a coherent, effective response that is aligned with broader territorial frameworks."

The third challenge is **environmental health**, which focuses on the physical and emotional well-being of citizens. To this end, it aims to improve key parameters such as air quality, noise pollution and the thermal comfort of public spaces. The goal is ambitious: **to increase the environmental health index by 50% by 2050.**

That is why the commitment to climate neutrality, in addition to responding to an environmental obligation, also responds to an urgent need to improve public health.

"Climate change mitigation policies represent an unprecedented opportunity to reduce the burden of disease associated with air pollution, environmental noise, extreme heat and sedentary lifestyles. Acting now means preventing respiratory, cardiovascular, neurodegenerative and metabolic diseases, reducing premature mortality, improving mental health and increasing the general well-being of citizens. Accelerating the energy transition, promoting active mobility, expanding green infrastructure and reducing exposure to air pollutants are measures that save lives, especially among the most vulnerable groups. In this context, climate action is also a health policy based on scientific evidence and social justice criteria, as emphasised by organisations such as WHO Europe and its Pan European Commission on Climate and Health."

The fourth challenge, linked to the concept of **the smart city**, promotes the intensive use of digitalisation as a catalyst for sustainability, from energy monitoring to mobility and natural resource management. This approach enables progress in building an efficient, connected and people-centred city.



In this strategic context, **the Bilbao 2030 Climate Mission represents a qualitative leap forward in the municipal commitment.** As a city aspiring to join the European Commission's 100 Climate Neutral Cities programme by 2030, Bilbao is taking on the challenge of drastically reducing its emissions, mobilising all actors in the urban ecosystem and designing a collaborative governance model. This Mission establishes a clear roadmap towards climate neutrality through innovation, experimentation and collective learning.

The Mission acts as a results-oriented instrument with a cross-cutting approach that:

- Places sustainability at the heart of all local policies.
- Defines ambitious climate targets for 2030.
- Promotes high-impact pilot projects in strategic neighbourhoods and sectors.
- Ensures citizen participation and the principle of climate justice.

This commitment is based on a track record of urban and environmental transformation that is recognised internationally. Since the end of the 20th century, Bilbao has undergone a profound transformation, going from being an industrial city in decline to becoming a European benchmark in urban regeneration, cultural innovation and the recovery of public space. The recovery of the estuary and the transformation of Abandoibarra in the past, and the current modernisation of neighbourhoods such as Zorrozaurre, are evidence of a city with foresight and strategic vision.

At the same time, following the signing of **the Aalborg Charter** in 1998, Bilbao has built a solid technical foundation in sustainability policies. Since 2005, it has been carrying out emissions inventories, has developed **Environmental Action Plans within the framework of Agenda 21** and, in 2010, it joined the Covenant of Mayors, which led to the launch of **the first Sustainable Energy Action Plan (SEAP)**, which was approved in 2012. This journey has evolved into **the current PACES, approved in 2024**, thus renewing the Covenant of Mayors. The PACES introduces climate adaptation and a package of concrete measures for both mitigation and resilience in an integrated manner.



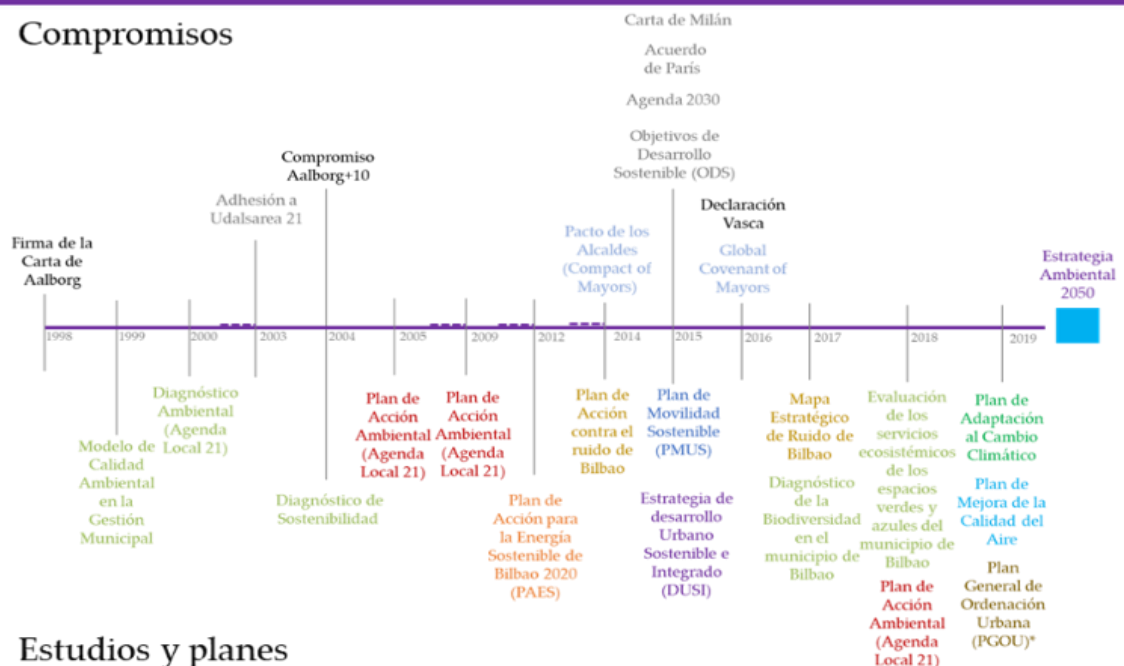
Another key milestone for the city was the **8th European Conference of Sustainable Cities and Towns** held in Bilbao (2016), where the Basque Declaration was signed. Through this declaration, the city formalised commitments such as:

- Decarbonising its energy system.
- Promoting sustainable and accessible mobility.
- Improving urban biodiversity.
- Reducing land consumption and protecting water and natural resources.
- Strengthening social cohesion and the local economy.

Since then, sectoral plans such as the **Sustainable Urban Mobility Plan (PMUS)**, the **Strategic Noise Map**, the **Climate Change Adaptation Plan** and the **Air Quality Improvement Plan** have been approved, consolidating integrated planning. A milestone was the drafting of the aforementioned **Environmental Strategy 2050**, which was followed by the approval of other documents such as the **Urban Master Plan (PGOU in Spanish)**, integrating the climate perspective, and the **Energy Action Plan (PAE)**, which is included in the Climate and Energy Plan (PACES).

Histórico de compromisos y planes ambientales del Ayuntamiento de Bilbao

Compromisos





Bilbao has also sought to highlight its commitment to sustainability by drawing up the **Bilbao Sustainable: Agenda 2030 and SDGs plan**, aligned with the Sustainable Development Goals (SDGs). This instrument reinforces the logic of the Mission through five major strategic axes: collaborative governance, institutional capacities, transformative investment, co-creation of public policies and a shared narrative for the city.

With all this, the Bilbao 2030 Climate Mission seeks to generate a real impact on citizens, accelerate innovative projects, incorporate new models of governance and involve all sectors – public, private, academic and social – in an ambitious and fair transition. In this way, Bilbao is aligning itself with the commitments of the Brussels Declaration of European Mayors (2024), calling for a more integrated, accessible and adapted European urban policy that meets the needs of cities.

As Mayor Juan Mari Aburto said:

"In Bilbao, we are proposing a transformation similar to that undertaken at the end of the 20th century. A structural transformation towards the Sustainable Development Goals that we share with the rest of the planet, challenges in which we also want to play a leading role. We want to advance the pillars of sustainable human development in the city, the relationship between citizens and the city, social cohesion, the economic competitiveness and the response to environmental challenges, while actively contributing to the universal challenge of advancing the SDGs of the 2030 Agenda, 'from local to global'.

Bilbao is thus positioning itself not only as a city committed to the climate future, but also as a benchmark for European leadership in urban innovation, ecological transition and social justice. **The Mission is, in short, the vehicle for accelerating this path in a collaborative and innovative way with a real impact on citizens.** It will therefore reflect a collective will to make Bilbao a climate-neutral, liveable city that is prepared for the challenges of the 21st century.

Climate neutrality target for 2030

Bilbao is committed to achieving climate neutrality by 2030 as part of its Climate Mission, bringing forward by two decades the target initially set in its 2050 Environmental Strategy and PACES 2024. This step forward translates into a firm commitment to accelerate the decarbonisation of the city, acting on the key sectors



responsible for emissions and accompanying this process with measures for climate justice, urban innovation and improved quality of life.

A new framework of ambition for climate neutrality

Although the Climate and Sustainable Energy Action Plan (PACES) approved in 2024 envisaged a 90% reduction in emissions by 2050, the new framework defined by the Bilbao 2030 Climate Mission sets as a priority objective to achieve an **80% reduction in emissions by 2030**, compared to the base year established in 2005, when recording began, and to offset the remaining 20% through natural sinks both within and outside the municipal boundary.

This leap in ambition is based on the principle that **innovation and citizen collaboration can make possible what once seemed distant**, and that Bilbao, as a leading European city in urban transformation, must lead this new wave of ecological transition.

Priority sectors and areas for action

Climate neutrality is proposed for the entire municipality of Bilbao, covering a total of 41.6 km². This involves intensive action in the sectors that account for the bulk of the municipality's greenhouse gas emissions:

- **Transport:** transformation of the mobility system towards sustainable models, electrification of fleets and promotion of active transport.
- **Buildings and heating:** deep energy renovation of the building stock and replacement of polluting boilers with renewable systems.
- **Electricity:** massive deployment of local renewable energy generation, such as energy communities and self-consumption.
- **Waste:** circular economy, waste reduction and energy recovery from organic waste.
- **Industry:** Reduce emissions from industry.

With these levers for action, it is estimated that an annual reduction of around **55 kilotonnes of CO₂** will be achieved **by 2030**, in accordance with the economic and impact model developed for Bilbao within the framework of its Mission.

An integrated economic, social and environmental approach

The cost-benefit analysis estimates that, with a cumulative investment of around **857 million euros** between 2021 and 2030, direct benefits and social co-benefits of over **500 million euros** could be generated by 2040.

These co-benefits include:



- Improved public health through reduced air and noise pollution.
- Structural energy savings for households and businesses.
- New employment opportunities and emerging sectors linked to the ecological transition.
- Strengthening urban biodiversity and thermal comfort through nature-based solutions.

Natural sinks and residual emissions offsetting

To achieve 100% climate neutrality by 2030, the city will need to complement emissions reductions with **carbon absorption mechanisms**. These include:

- Urban and peri-urban greening strategies: urban forests, green corridors, green roofs.
- Ecological regeneration projects in the area surrounding the estuary and riverbank areas.
- Ecological rehabilitation of degraded soils.

These solutions will be evaluated and monitored using advanced measurement systems, integrating remote sensing, tree inventories and monitoring of ecosystem indicators, within the framework of the new Green Infrastructure Strategy being drafted by the city council.

A common, collective and transformative goal

The transition to a climate-neutral Bilbao is not only an environmental goal, but also **a** collective, inspiring and transformative **mission for the city**. This commitment will be developed through:

- **A portfolio of transformative projects** promoted by the Bilbao 2030 Mission.
- **Participatory governance models**, involving citizens, the business community, academia and public institutions.
- **Transparent monitoring and evaluation systems**, aligned with the European framework of the Mission for Smart and Climate-Neutral Cities.
- **Innovative financing mechanisms**, combining European funds, private investment and municipal budgets.

Strategic priorities and interventions

Bilbao's commitment to climate neutrality is translated into an operational roadmap structured around **four strategic axes of transformation** that will guide municipal and multisectoral action in the coming years, as set out in the 2050 Environmental Strategy. These axes respond to the main challenges identified in the city's climate diagnosis and reflect both the opportunities and limitations of Bilbao's urban, geographical and social environment.



The Bilbao 2030 Climate Mission thus defines a set of **priority interventions** aimed at achieving the target of an 80% reduction in emissions by 2030 and generating transformative social, economic and environmental impacts. This approach recognises that climate neutrality is inseparable from improving well-being, urban quality, social cohesion and collective resilience.

Bilbao Neutra en Carbono La reducción de emisiones en un 55% para 2030 es un paso intermedio hacia la neutralidad total en 2050



Bilbao Resiliente La adaptación a los efectos del cambio climático, con infraestructuras sostenibles y soluciones basadas en la naturaleza, sienta las bases para una ciudad preparada



Bilbao Saludable La mejora de la calidad del aire, la expansión de zonas verdes y la movilidad sostenible impactan en el bienestar ciudadano.



Bilbao Smart La digitalización y la innovación tecnológica permiten una gestión eficiente del medio ambiente urbano.



Bilbao Neutral: energy transition and structural decarbonisation

The first area of intervention focuses on **reducing emissions at source**, targeting the sectors that account for the majority of energy consumption and greenhouse gas emissions. Mobility, building and the energy system are the main areas for action.

Bilbao will promote a **profound transformation of the urban mobility model**, prioritising electrified public transport, cycling and walking. This involves rethinking public space, reducing private vehicle use and ensuring affordable, accessible and safe mobility for all citizens. The deployment of electric charging infrastructure and the promotion of low-emission zones will also be encouraged, in line with European regulations.

At the same time, ambitious **energy renovation** programmes will be developed **for the building stock**, which accounts for a substantial part of urban energy demand. Interventions will prioritise vulnerable areas, promoting equity and the fight against energy poverty. The City Council will work with public and private actors to boost the construction of nearly zero-energy buildings (nZEB) and the implementation of renewable technologies in homes and businesses.

The decarbonisation strategy is complemented by the promotion of **local renewable energy generation**, particularly through photovoltaic installations on municipal and private roofs. Urban energy communities will be promoted to democratise access to



energy and strengthen climate co-responsibility. The commitment to collective self-consumption and smart energy management systems will be a cornerstone of this transition.

These actions will be coordinated under a circular approach, which will also include measures to **reduce waste generation, reuse materials and optimise resources**. The development of new value chains based on the circular economy will be a priority line of action in sectors such as construction, commerce and urban industry.

Resilient Bilbao: urban resilience to climate impacts

Bilbao is aware that mitigation alone is not enough to protect the city from the impacts of climate change. **River and coastal flooding, heat waves, extreme wind events** and the **risk of water scarcity** are part of an increasingly likely risk scenario.

Therefore, the second pillar of the Mission is aimed at **strengthening the adaptability and resilience of the urban environment and citizens**. This transformation cannot consist solely of protecting what already exists, but rather of redesigning the city so that it functions better under adverse climatic conditions.

One of the main commitments will be the **progressive renaturalisation of urban space**, increasing the presence of vegetation, connecting urban ecosystems and creating green corridors linking parks, streets and riverbanks. These green infrastructures not only capture carbon, they also reduce the heat island effect, improve water management and increase people's emotional and physical well-being.

Interventions are also planned in particularly vulnerable areas, such as school environments, nursing homes and neighbourhoods with low vegetation cover, integrating nature-based solutions into urban regeneration projects. Urban design will incorporate climate comfort and adaptability as key criteria.

Healthy Bilbao: environmental quality, well-being and territorial equity

The third pillar is directly linked to **people's everyday well-being**. Air quality, noise levels, access to green spaces, the design of healthy neighbourhoods and the fight against environmental inequalities are fundamental factors in a climate-just city.

Bilbao aspires to be a city that not only reduces emissions but also **increases the life expectancy and quality of life** of its citizens. In this regard, actions will be promoted to improve air quality and reduce noise pollution levels, especially in areas with high traffic density or social vulnerability. Urban planning will incorporate criteria of public health, universal accessibility and proximity to essential services.

The creation of safe and healthy school environments, green corridors between neighbourhoods and public spaces that promote intergenerational coexistence will be



promoted. The transformation of streets to promote community life, safety and the reduction of heat stress will be a key element.

The healthy city approach is also aligned with the **15-minute city** model, where people can access facilities, shops, transport and urban nature within a short walk. This vision connects sustainability with territorial justice, recognising that not all neighbourhoods start from the same base.

Bilbao Smart: digitalisation and innovation as accelerators

Climate transformation requires **new tools for a new challenge**. Bilbao is committed to making digitalisation a driver of efficiency, participation and collective intelligence.

The fourth strategic pillar prioritises **smart management of the urban environment** through technologies such as environmental sensors, open data platforms, digital twins and real-time visualisation tools. This will enable better planning, anticipation of impacts and more transparent communication of progress towards climate neutrality.

Social and technological innovation around the ecological transition will also be promoted, generating a local ecosystem that involves start-ups, research centres, companies and citizens in the development of replicable solutions. Urban laboratories will be promoted as testing and learning spaces.

Digital transformation will also be a key tool for **inclusion**: ensuring that everyone can actively participate in the climate mission, acquire skills, and access new jobs linked to sustainability and the green economy.

Collaborative governance and transformative participation

These four pillars will not be possible without **strong and collaborative governance** that brings together all actors in the urban ecosystem. Bilbao will strengthen cooperation between administrations, companies, technology centres, social entities and organised citizens, activating an innovative governance architecture.

Monitoring, evaluation and accountability instruments will be developed, in line with European and national frameworks. Deliberative processes, climate assemblies and co-decision mechanisms will also be put in place to legitimise and reinforce the shared leadership of the Mission. In 2025, prior to the approval of the Climate City Contract, the first **Citizens' Assembly for the Climate** has been launched as a sign of commitment to this mechanism for monitoring and citizen involvement.

Citizen participation will not be limited to information or consultation: it will be a **structural lever** for the success of climate transformation, aligned with the principles of equity, co-responsibility and intergenerational justice.



Principles and processes

The Bilbao 2030 Climate Mission is a city-wide pact that goes beyond an environmental strategy: it is a commitment to collectively transform the urban model towards a fairer, more resilient, innovative and carbon-neutral model. This transformation is based on a series of guiding principles and a framework of collaborative, participatory and adaptive governance, aligned with local dynamics and European commitments. This Climate City Contract acts as a shared roadmap to guide this process.

A transformative vision based on local reality

Bilbao aspires to guarantee high levels of quality of life and urban quality for its citizens, visitors and workers, based on its role as a metropolitan city, regional capital and cultural, social and economic reference point for the Basque Country. This vision is built on a complex reality but also on a powerful legacy of urban transformation and is projected into the future with a commitment to being a healthy, carbon-neutral and socially cohesive city.

The Mission is informed by the principles set out in the 2023–2027 Mandate Plan and the **Bilbao Charter of Values**, developed within the framework of *Bilbao Balioen Hiria*. Among the 17 values defined, **environmental sustainability** stands out as a cross-cutting value that should guide the behaviour of individuals, organisations and public administrations. Citizens, for example, can contribute through responsible lifestyles, conscious consumption practices and active participation in local initiatives; social organisations, through the promotion of a culture of sustainability and the building of collective consensus; and the City Council, through public policies that fully integrate ecological principles into urban planning, mobility, waste management and the use of public space.

This shared vision fuels the Climate Mission as an instrument of integration, cooperation and institutional and social co-responsibility, with the aim of building the Bilbao we want, in harmony with the global challenges of our time.

Green and social pact for a just transition

The Mission is based on a **just transition** approach, which recognises the differentiated impacts of climate change and decarbonisation policies on different social sectors. This guiding principle means that climate actions must avoid reproducing or widening existing inequalities and, on the contrary, must be an opportunity to correct them.

This means, for example, ensuring that energy rehabilitation primarily benefits vulnerable households, that green spaces are distributed evenly across all neighbourhoods, and that green jobs created by the transition are accessible to young people, women, the unemployed and groups at risk of exclusion. It also implies a cross-



cutting **gender perspective** in policy design, as well as special attention to accessibility, disability and cultural diversity.

Bilbao conceives its Mission as a **green and social pact**, in which environmental sustainability goes hand in hand with well-being, justice and equity.

A collective, multi-stakeholder and open journey

Climate transformation cannot be the sole responsibility of public administrations. It requires **distributed and collaborative leadership**, with the active participation of the four main pillars of the urban ecosystem: public administration, the private sector, organised civil society and the academic world.

The Bilbao 2030 Climate Mission promotes the creation of **multi-stakeholder platforms**, city alliances and spaces for shared experimentation (transition arenas), in which all actors can be involved in the design, implementation and evaluation of impact projects. This collaborative approach is accompanied by a specific **public communication and social mobilisation** strategy to disseminate the principles of the Mission, generate support and strengthen the local climate culture.

The aim is that no person, neighbourhood, company or institution is left out of the Mission. Everyone can and must contribute.

A continuous planning-learning process

The Mission is not a closed plan or a one-off goal. It is a **living**, constantly adapting **process** that requires reviewing assumptions, learning from mistakes, celebrating progress and reformulating approaches when necessary. Bilbao will adopt a **continuous planning-learning** approach based on pilot projects, urban prototyping and impact assessment.

Demonstration projects will play a key role as mechanisms for testing, scaling and replication. In parallel, monitoring tools and evaluation indicators consistent with the European NetZeroCities framework and PACES 2024 will be consolidated.

This approach recognises that 2030 is not an end, but **the beginning of a decisive decade**. The efforts made at this stage will lay the foundations for addressing the challenges of 2040 and 2050, including the reduction of Scope 3 emissions and the transformation of production, logistics and metabolic systems beyond the municipal boundaries.

Multi-level governance, internal capacities and social legitimacy

The governance of the Mission will be **multi-level and cross-cutting**, coordinating efforts between the City Council, the Basque Government, the Spanish Government,



European institutions and local actors. This framework will facilitate policy alignment, access to climate finance and the construction of a shared vision for the city.

The **institutional and operational capacities of the City Council** will also be strengthened through training programmes, the creation of interdepartmental teams and the deployment of the Mission's Technical Office as a hub for coordination, innovation and support for other municipal areas.

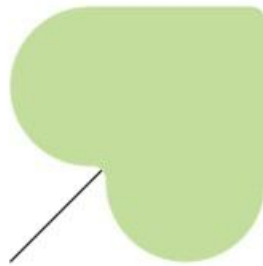
The role of the local administration will be twofold: on the one hand, as a direct driver of projects and policies; and on the other, as **a facilitator of the urban ecosystem**, creating the conditions for other actors to activate climate solutions from their own spheres.

Climate culture and structured participation

Finally, Bilbao will continue to promote a **strategy of communication, education and structured participation** to broaden the social base of the Mission. It is not just a matter of informing, but of generating a sustained cultural change that allows climate action to be integrated into everyday life, personal decisions and collective aspirations.

Specific channels will be set up, such as the Mission's website, awareness campaigns, educational materials for schools, and spaces for dialogue such as Citizen Climate Assemblies. Individual and collective co-responsibility practices will also be encouraged, from conscious consumption to participation in community energy, mobility or renaturalisation projects.

Because only a **conscious, committed and cohesive** city will be able to achieve such an ambitious transformation as that proposed by the Bilbao 2030 Climate Mission.



ANNEX 1:
*Climate Neutrality
Action Plan*



ANNEX I: CLIMATE ACTION PLAN FOR THE CITY OF BILBAO

Introduction

Bilbao's 2030 Climate Neutrality Action Plan is part of the city's strategic commitment to tackle the climate emergency from a **transformative, ambitious and inclusive** perspective, in line with its adherence to the **European Mission for Climate-Neutral Cities by 2030** and its participation in the Spanish Government's **CitiES2030** initiative.

Territorial and sectoral scope

Bilbao is located on the Atlantic coast of the Basque Country in northern Spain and is the central hub of the Greater Bilbao Metropolitan Area, which has a population of over one million. With a population of **approximately 345,000 (2023)**, the municipality of Bilbao covers **an area of 41.6 km²**, divided into 8 urban districts and 35 neighbourhoods, organised around the Nervión-Ibaizabal estuary. Its coastal location, mountainous terrain and dense, built-up nature significantly influence both its exposure to climate risks and its potential for urban transformation.

From an institutional point of view, **Bilbao City Council is the main actor in local climate action**. There is no supra-municipal body covering the metropolitan area, with the Provincial Council of Bizkaia assuming responsibility at this territorial level. Coordination with the Basque Government and the Spanish Government is also essential to achieve the objectives set by the European Union's Mission for Climate-Neutral Smart Cities.

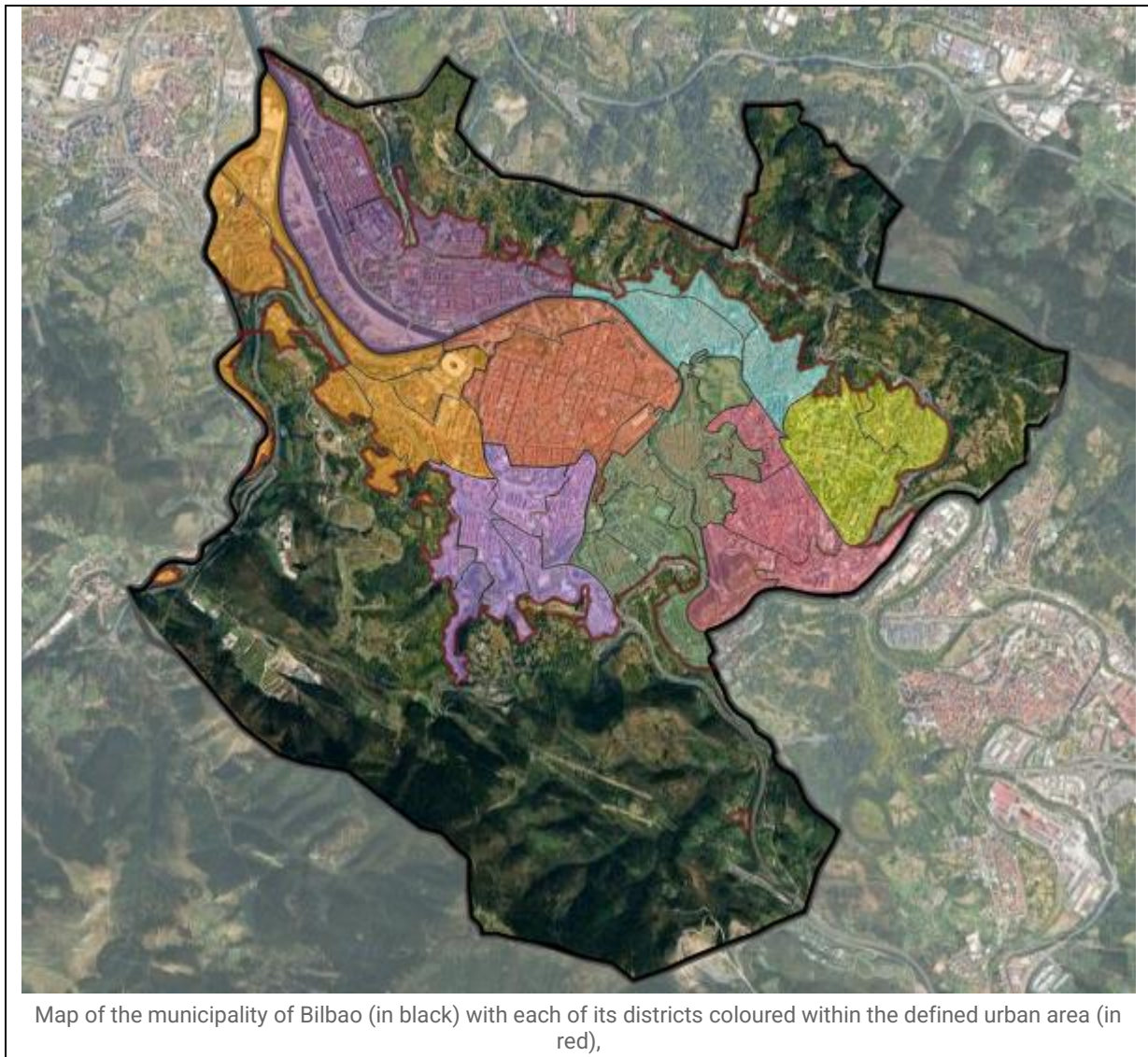
The climate neutrality objective set out in this agreement covers the entire municipality of Bilbao, in its eight administrative districts corresponding to the urban area and peri-urban areas, rural centres and surrounding forest land. There are no territorial exclusions.



Table I-1.1: Climate Neutrality Targets for 2030			
Sectors	Scope 1	Scope 2	Scope 3
Stationary energy	Included	Included	
	Includes natural gas, diesel and propane consumed by the residential and service sectors in Bilbao according to data from the distributor provided by the Basque Government.	Includes electricity consumption purchased outside the municipality (standard emission factors)	
Transport	Included	Excluded	
	Includes all emissions from road transport using diesel or petrol registered in the municipality, cars, motorcycles, buses and light and heavy trucks.	Electricity consumption by electric vehicle fleets is not accounted for separately, as it is included within the electricity consumption figures of the buildings where vehicles are charged.	
Waste/wastewater	Partially included	Not applicable	Included
	Wastewater is managed outside the municipal boundary and is the responsibility of the provincial authorities (Diputación de Bizkaia), so its scope 1 is unknown. Municipal solid waste is treated within the municipal boundaries. The facilities manage waste from several municipalities in the historical territory of Bizkaia. Emissions are attributed to each local administration on a per-tonne-generated basis as Scope 3 emissions. Therefore, the direct emissions from the facilities are not assigned to the municipality, as they are distributed among the different waste generators.	Not applicable	Scope 3 of urban waste generated in the municipality is included.
Industrial processes and use of products	Included	Not applicable	
	Includes natural gas consumed by industry located in Bilbao according to data from the distributor provided by the Basque Government.	Not applicable	
	Excluded	Not applicable	Included



Agriculture, forestry and land use	Direct emissions associated with agricultural, livestock and forestry activities in Bilbao are not measured.	Not applicable	The type of crops per hectare and the number of livestock associated with emissions are measured. The hectares are measured. These hectares are classified by forest type in order to assess their CO ₂ absorption capacity within the natural infrastructure.
Geographical limit	Same as the administrative boundary of the city		
Map			
			
Map of the municipality of Bilbao (in black) over its metropolitan area (transparent) with the urban area outlined (in red),			



Map of the municipality of Bilbao (in black) with each of its districts coloured within the defined urban area (in red),

The **climate neutrality target for 2030** set by the Bilbao 2030 Climate Mission **covers the entire municipality of Bilbao**, with no territorial exclusions. However, there are other types of exclusions. It is recognised that Scope 3 emissions are not fully integrated into this first version of the Action Plan, although their progressive incorporation is envisaged in future iterations of the Climate City Contract (CCC). Nor is the metropolitan perspective included, due to the complexity of including 25 different and independent local administrations in an agreement such as this.

With regard to excluded sources, sectors or gases, no formal exclusions have been defined, although data coverage and the feasibility of intervention vary depending on the sector. The initial priority focuses on sectors such as **mobility, construction, energy and waste**, where reliable data and local capacity for action exist. Sectors such as scope



3 of companies based in the city or aviation or port activities linked to the city but based in other municipalities in the metropolitan area will be integrated as appropriate methodological tools and competence frameworks are developed.

Diagnosis: structural challenges

Bilbao has a **high degree of urban consolidation**, which poses significant challenges for energy rehabilitation, the creation of green areas and the deployment of renewables. In addition, its coastal location exposes it to specific climate risks such as **river and coastal flooding, urban heat waves and extreme wind and rain events**. These threats particularly affect vulnerable populations, such as the elderly, low-income households and neighbourhoods with less vegetation cover.

From a socio-economic perspective, Bilbao has an economy based on the service sector, but also with a strong presence of logistics, cultural and technological activities. There are territorial inequalities between neighbourhoods in terms of environmental quality, population health and access to opportunities, which must be addressed from a **fair and equitable transition perspective**.

Relationship with existing plans and role of the Climate City Contract (CCC)

Bilbao's Climate City Contract Action Plan (CCC) **does not replace, but rather reinforces and aligns existing efforts**, acting as an umbrella for all the city's climate plans. These include:

- **PACES 2024**, which sets a 90% emissions reduction target for 2050 and a robust package of mitigation and adaptation measures.
- The **Bilbao 2050 Environmental Strategy**, which establishes an integrated vision of sustainability, resilience and urban health.
- The **Climate Change Adaptation Plan**, with a specific focus on public health, urban nature and risk management.
- The **Bilbao Sustainable** cross-cutting framework: **Agenda 2030 and SDGs**, which guides all public policies towards the 17 SDGs.

The CCC synthesises these instruments and accelerates their implementation through a logic of **mission, innovation, co-governance and citizen participation**, complementing with a **strategic financial dimension** through the **2030 Climate Neutrality Investment Plan**.



All the actions included in the PACES, the PMUS and other municipal plans have been incorporated into the **CCC's initial portfolio of actions**, and therefore their emission reductions are considered part of the **gap that this contract aims to close** in order to achieve the 2030 neutrality target.

Working process and stakeholders

The CCC Action Plan has been drawn up using a **participatory and technical methodology, coordinated by the Mission's Technical Office**. Municipal departments and public bodies have been involved in its development and have validated the entire process.

Updated data from emissions inventories, climate scenarios, sectoral diagnoses and vulnerability maps have been used. **Key actors for the implementation of the mission** have also been identified, including strategic companies (both public, BilbaoEner, and private), universities, technology centres, neighbourhood associations, cultural entities and the media.

The CCC will be developed in **multiple iterations**, incorporating learning, impact assessment and new actions as the process progresses. This **first version covers the period 2025-2027**, with a strategic review planned for 2027 and a global update scheduled for 2030, which will incorporate the status of implementation, necessary adjustments and new actions derived from the changing context.

Next steps

The operational rollout of the CCC Action Plan will follow a **phased schedule**:

- **2025-2026**: Validation of sets of transformative projects, design of financial mechanisms, strengthening of internal capacities, and activation of pilot projects.
- **2027**: Mid-term evaluation and reformulation of the portfolio of actions.
- **2027-2029**: Intensive implementation, scaling up and consolidation of impacts.
- **2030**: Final review of the degree of compliance with the climate neutrality objective and public validation of the closure of the mission cycle.



Bilbao recognises that climate neutrality is not an end point, but a continuous process of profound urban transformation, the consolidation of which will extend to 2050 and beyond.

Work process

The Bilbao 2030 Climate Mission Action Plan builds on the city's existing climate plans, broadening their scope, deepening their ambition and accelerating their implementation with the objective of **reaching net-zero emissions by 2030**.

This Action Plan aims to be a **living, evolving** document, adapted to the lessons learned, changes in context and contributions from different social, economic and institutional actors. Its development and implementation will therefore be guided by a logic of continuous improvement, taking into account both the consolidation of previous progress and the incorporation of new projects and commitments.

In order to ensure broad and effective participation, Bilbao City Council will focus on the following operational objectives:

- **Improve and expand the functionalities of the municipal Open Government platform**, incorporating specific tools for visualisation, monitoring and citizen involvement in the implementation of the Action Plan.
- **Regularly inform the actors involved** about the progress of the Plan, its objectives, its main milestones and the indicative timetable for implementation.
- **Strengthen the local network of agents involved in the Mission**, promoting the accession of new entities to Bilbao's decarbonisation ecosystem and gathering specific commitments for their active participation in projects and actions.
- **Participatory review and validation of key Plan documents**, especially those requiring the mobilisation of local actors, ensuring feedback on their contributions and the proper processing of their comments.
- **Identify resources, opportunities and strategic projects** that can be aligned with the Plan and converted into vectors for accelerating the climate transition.

Bilbao, as a participating city in the **cityES 2030 Platform**, will have the technical, methodological and strategic support of this public support infrastructure, while maintaining a direct link with the European **NetZeroCities** platform. This dual connection will facilitate peer learning, the identification of synergies and the transfer of solutions between leading cities in climate action.



The development of the Plan is also supported by the progress made by Bilbao City Council in **data governance**, conceived as a public good. A high-quality, georeferenced, accessible, structured and reusable climate data ecosystem will be promoted to facilitate evidence-based decision-making and enable a **common data exchange infrastructure** between public administrations, private actors and civil society.

The aim of the process is to ensure that all the results of the Action Plan can be **presented and communicated in accordance with the principles of interoperability, accessibility and traceability**, respecting privacy and anonymisation criteria and generating shared public value.

This Action Plan is based on a logic of **continuous development**, highly adaptable to a changing socio-economic environment, and will be updated in successive iterations of the Climate City Contract. These will detail more precisely the timetables, intermediate milestones and evaluation mechanisms that will guide progress towards climate neutrality in Bilbao.



PART A - CURRENT STATUS OF CLIMATE ACTION

The **Climate Action Plan** is structured in three distinct parts. Part A establishes the current state of climate action and is the focus of the following modules. Part B develops the pathways to climate neutrality and, finally, Part C describes the cross-cutting innovation and financing actions necessary to achieve the goal of neutrality by 2030.

Part A therefore serves to explain the starting point on which our climate action is based. It is made up of three modules: module A-1 describes the baseline from which emissions reduction will be undertaken; module A-2 describes current policies and strategies; and finally, module A-3 identifies systemic barriers.

This part details the starting point for the city of Bilbao in terms of climate neutrality. To do this, we start by reviewing the **GHG emissions inventory prepared in the PACES** and comparing it with the inventory based on the economic model developed through **the NetZeroPlanner platform** (Module A-1). This inventory is followed by the other two modules that help to characterise this starting point: the policies and strategies that are in place (Module A-2) and the identification of systemic barriers to neutrality (Module A-3).

MODULE A-1

Reference inventory of greenhouse gas emissions

Bilbao has an updated inventory of greenhouse gas (GHG) emissions with **verified data up to 2023**, in line with its commitments as a signatory city of the Covenant of Mayors for Climate and Energy.

This inventory is an integral part of PACES 2030, approved by the City Council in 2024, and has also been used as the technical basis for the design of the City Climate Contract (CCC). The **base year used is 2021**, despite data being available since 2005, and includes:

- **Geographical boundary:** the municipality of Bilbao
- **Sectors:** transport, housing, services (only sectors in the PACES), industry, waste and the primary sector (also included in the inventory).
- **Scopes** 1 and 2 are fully covered; Scope 3 is addressed on an indicative basis and will be expanded in future versions.
- **Gases included:** CO₂, CH₄ and N₂O.



- **Latest data collected on gross emissions 2023:** 685615,89 tCO₂e.
- **Actual reduction compared to 2005:** -60.0%

The inventory fully covers the sectors included in the climate neutrality target for 2030, with the exception of some elements excluded due to jurisdiction (metropolitan elements outside the municipal boundary), which will be addressed by 2050 through inter-institutional cooperation.

The inventory has been fundamental in establishing the priorities for action of the PACES and the CCC Action Plan. It has made it possible to:

- Identify priority sectors (transport, buildings and services).
- Determine the residual emissions gap for 2030.
- Link sectoral actions to existing plans (PMUS, energy rehabilitation, electric mobility, energy community).
- Establish monitoring indicators and define annual reduction targets (average of 55,000 tCO₂e/year until 2030).

The inventory also supports the design of the monitoring, compensation and governance mechanisms that guide the implementation of the Bilbao Climate City Contract.



A-1.1: Final energy use by source sector				
Base year	2021			
Unit	MWh/year + t (non-energy) for waste			
Emitting sector	Scope	Scope 2	Scope 3	Total
Buildings	455,144 MWh (residential) 425,100 MWh (service sector)	385,535 MWh (residential) 506,590 MWh (service sector)	-	1,772,367 MWh
(Type of fuel/energy used)	Natural gas Diesel LPG	Electricity	-	
Transport	1,529,957 MWh		-	1,529,950 MWh
(Type of fuel/energy used)	Diesel Biodiesel Petrol	Electricity	--	
Waste	-	-	151,319 t	151,319 t
Industrial processes and use of products	111,032 MWh	33,3856 MWh	-	144,418 MWh
(Type of fuel/energy used)	Natural gas	Electricity	-	



A-1.2: Emission factors applied						
For the calculation in kWh of primary energy for the year 2021						
The emission factors provided by the Basque Government to all municipalities in the Basque Country have been used, following the IPCC method, for reporting to the Covenant of Mayors for Climate and Energy.						
Primary energy/energy source	Carbon dioxide (CO ₂)	Methane (CH ₄)	Nitrous oxide (N ₂ O)	Hydrofluorocarbons and perfluorocarbons	Sulphur hexafluoride (SF ₆)	Nitrogen trifluoride (NF ₃)
Renewables (kgCO ₂ /kWh)	0					
State electricity mix (kgCO ₂ /kWh)	0.14					
Natural gas (kgCO ₂ /kWh)	0.203					
Diesel B (kgCO ₂ /kWh)	0.268					
LPG (kgCO ₂ /kWh)	0.228					
Diesel (kgCO ₂ /kWh)	0.252					
Petrol (kgCO ₂ /kWh)	0.238					
Biodiesel (kgCO ₂ /kWh)	0.191					



A-1.3: Activity by Sector (based on input data from the Net Zero Planner economic model)			
Base year		2	
	Scope 1	Scope 2	Scope 3
Transport			
Transportation needs – private cars and motorcycles (million vehicle-km/year)	1,382		
Transportation needs – buses (million vehicle-km/year)	6		
Transport demand – trains/metro (million vehicle-km/year)	2		
Transport demand – light commercial vehicles (<3.5 tonnes) (million tonne-km/year)	27		
Transport demand – heavy goods vehicles (>3.5 tonnes) (million tonne-km/year)	4		
Buildings and heating			
Heating demand (space heating + domestic hot water) (GWh/year)	1,425		
Electricity			
Electricity demand within municipal boundaries (GWh/year)		926	
Waste			
Waste collected within municipal boundaries (tonnes)			116,419



A-1. 4a: GHG emissions by sector - Base year					
Base year	2021				
Unit	t CO ₂ equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of total
Transport	374.674,77			374.674,77	46%
Buildings and air conditioning	232.054,29			232.054,29	28%
Electricity		129.570,00		129.570,00	16%
Waste			18.277,30	18.277,30	2%
Other (including IPPU** & AFOLU***)	66.318,62			66.318,62	8%
Total	673.047,67	129.570,00	18.277,30	820.894,98	100%

* Includes Scope 3 emissions derived from waste management and treatment, regardless of where they are treated.

**IPPU includes Scope 1 emissions from industry

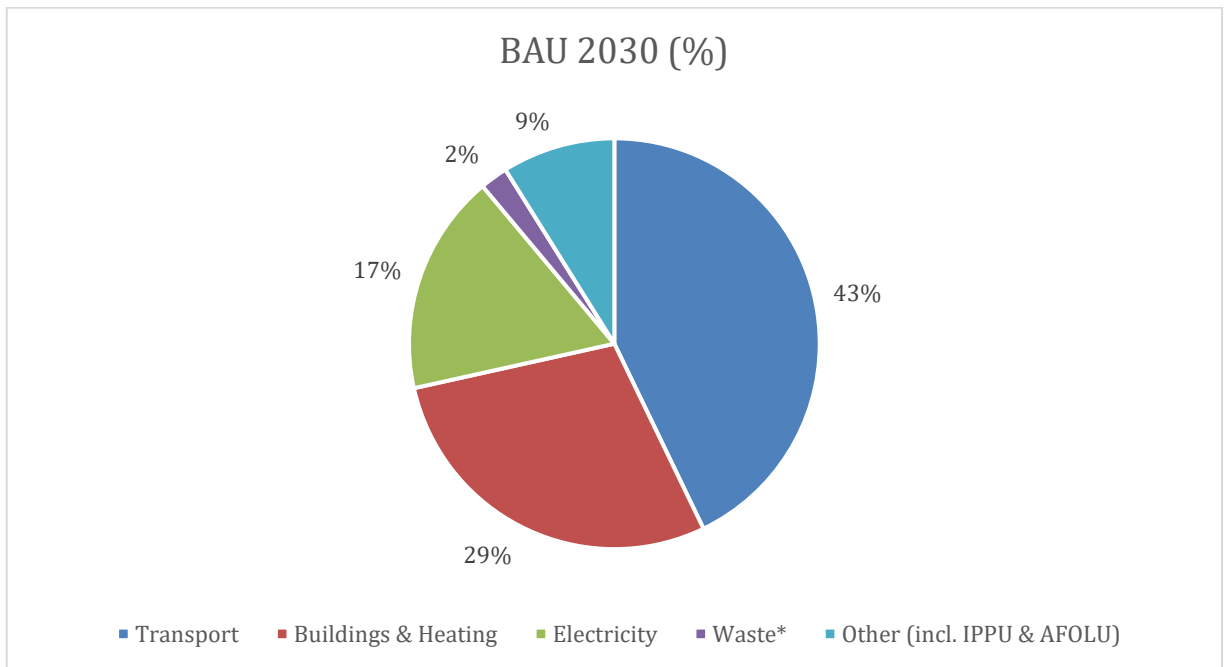
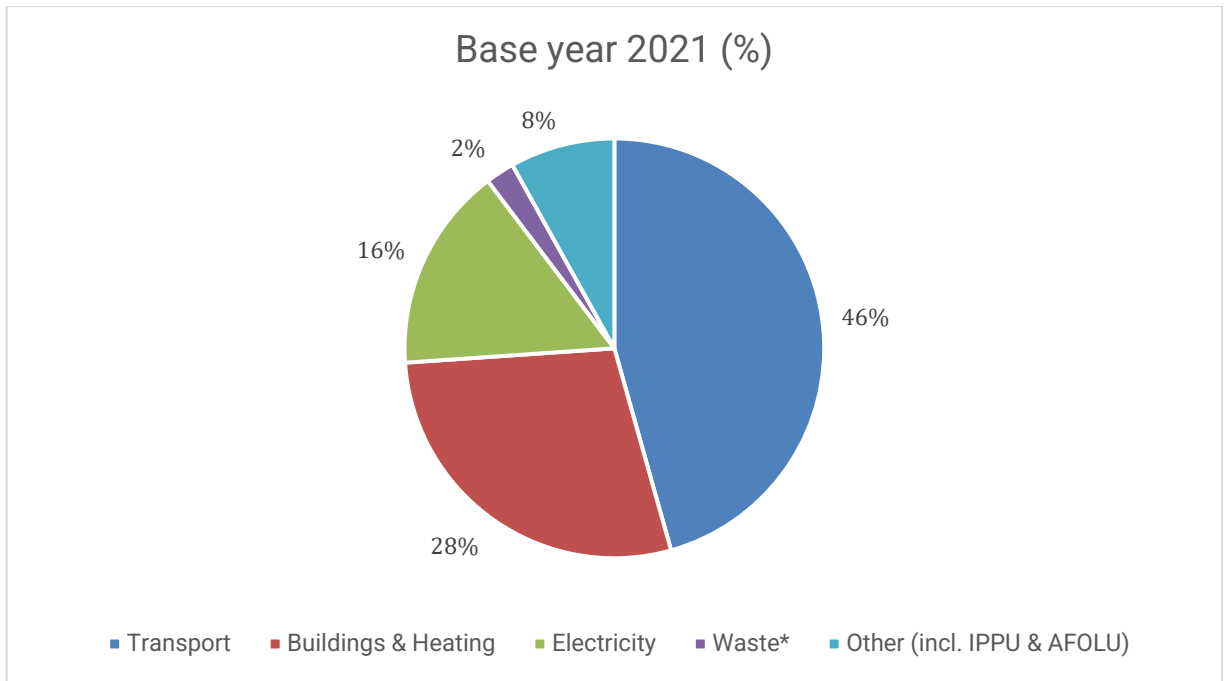
***AFOLU, includes Scope 1 emissions from agricultural activity (minimal in Bilbao)

A-1.4b: GHG emissions by sector - Business as Usual (BAU) 2030					
Base year	BAU 2030				
Unit	t CO ₂ equivalent/year				
	Scope	Scope 2	Scope 3	Total	% of total
Transport	319.284			319.284	43%
Buildings and air conditioning	213.605			213.605	29%
Electricity		129.570		129.570	17%
Waste			16.301	16.301	2%
Other (including IPPU** & AFOLU***)	66.319			66.319	9%
Total	599.208	129.570	16.301	745079	100%



A-1.5: Graphs and tables

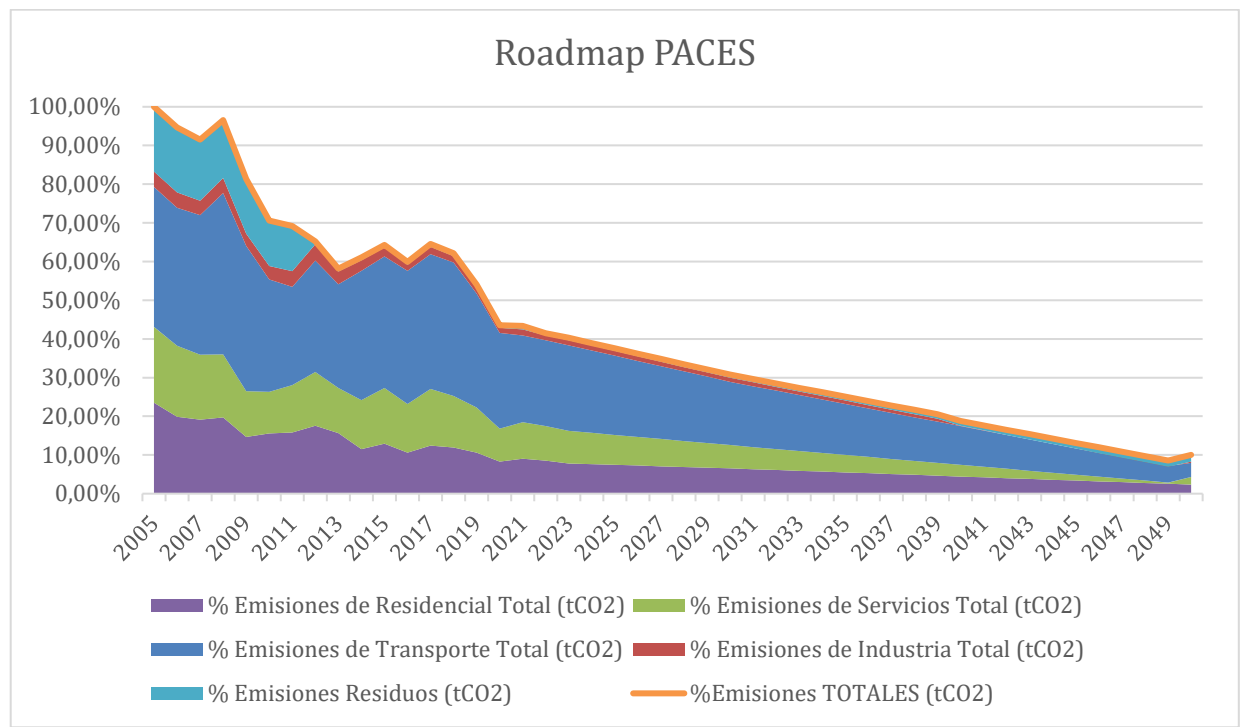
Comparison of emissions according to the Net Zero Planner model for 2021 (base year) and 2030 (target year).



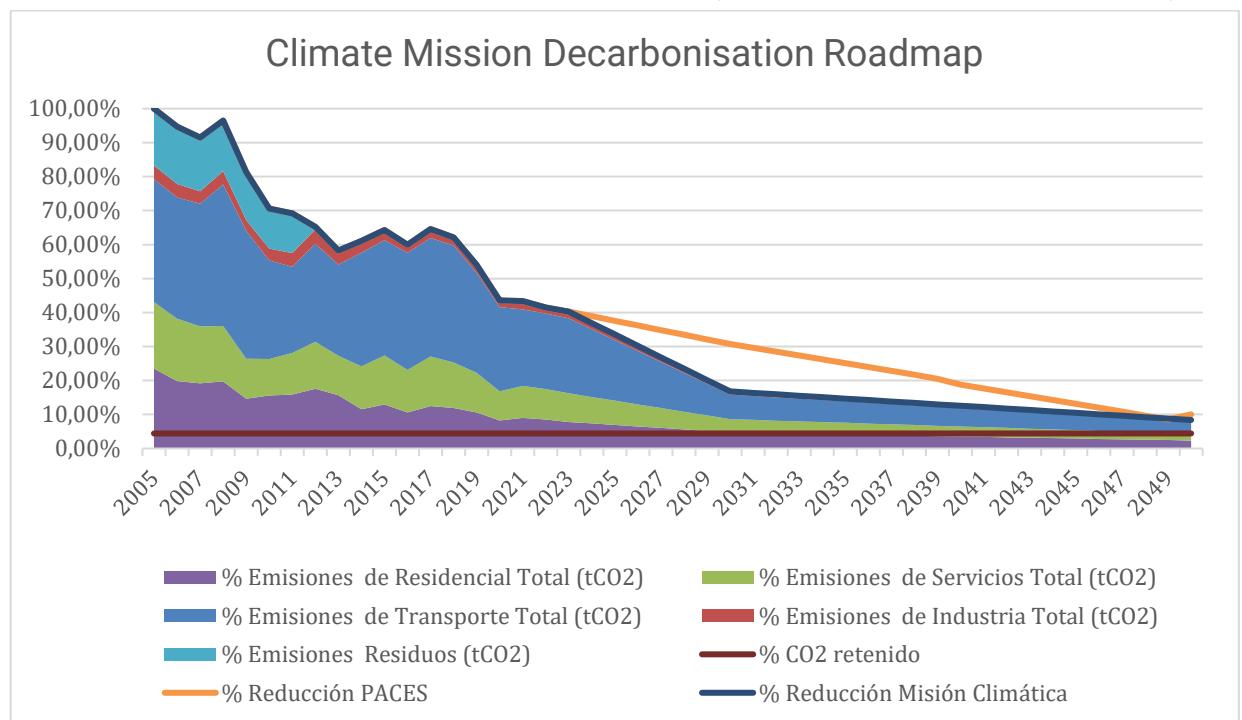
* Includes Scope 3 emissions derived from waste management and treatment, regardless of where they are treated.



Comparison of emission reduction roadmaps using 2005 as the base year (first year of record).



Projected reduction for all sectors (including those not included in the PACES) with the ambition of achieving neutrality set in the PACES (90% compared to 2005 by 2050)



Projected reduction for all sectors with the ambition of achieving neutrality set in Bilbao's 2030 Climate Mission (80% compared to 2005 by 2030)



A-1.6: Description and evaluation of the GHG reference inventory

The diagnosis of greenhouse gas (GHG) emissions in Bilbao has been constructed on **the basis of the official emissions inventory drawn up by the City Council**, as well as the prospective analysis carried out using the **Net Zero Planner model, a tool recognised by the European platform NetZeroCities**. This analysis provides a clear picture of the current emissions structure and projects its evolution under a trend scenario, serving as a basis for planning the Action Plan towards climate neutrality.

Municipal emissions inventory: emissions for the last year recorded – 2023.

The city's emissions have been recorded since 2005, with 2023 being the last year on record. Throughout this period, greenhouse gas (GHG) emissions in Bilbao have followed a steady downward trend. Despite cyclical variations in energy consumption due to economic and social cycles, the city has managed to reduce its emissions by **60% compared to the base year 2005**, representing significant progress in its decarbonisation process. This evolution has been particularly notable in the residential and industrial sectors, as a result of improvements in energy efficiency, partial electrification, the improvement of the electricity mix with greater acceptance of renewables, the deindustrialisation of the city and changes in consumption patterns.

Total GHG emissions in 2023 stood at around **685.615,89 tonnes of CO₂ equivalent**, representing an average of **2 tCO₂ per inhabitant**. By sector, **transport** is the main source of emissions (55%), followed by **services** (21%) and the **residential sector** (19%). This distribution confirms the importance of prioritising action on urban mobility and the building stock, which are the main levers for achieving climate neutrality.

In terms of the composition of energy consumption, electricity accounted for **41.7%** of the total in 2023, followed by natural gas (37.6%), petroleum derivatives (19.8%) and other minor sources.

Sectoral analysis: base year emissions and trend evolution (2021–2030)

A detailed analysis of emissions by sector has been carried out using the **official municipal inventory (2021)** and the **Net Zero Planner (NZIP)** model, developed within the framework of the European NetZeroCities (NZC) platform. This dual approach has provided a solid basis for strategic planning and for anticipating future behaviour under a business-as-usual (BAU) scenario.

In this case, the sectors analysed are not exactly the same as those in the municipal inventory, but as the latter contains all the detailed information, they can be grouped according to the sectors indicated in the NZP.

Distribution of emissions in the base year 2021

In 2021, total emissions in Bilbao were around **1.08 million tonnes of CO₂ equivalent**. The sectoral distribution was as follows:

- **Transport:** 46%
- **Buildings (residential and services):** 28%
- **Electricity:** 16%
- **Waste:** 2%
- **Other (Industry and Agriculture):** 8%

This distribution confirms that **transport and buildings account for the bulk of urban emissions**, with transport being the sector with the highest emissions. Despite progress in sustainable mobility, energy efficiency, and building retrofitting, **diffuse emissions continue to condition the achievement of climate targets**.



The **building sector represents a significant share**, particularly in a densely built city with a strong tertiary sector presence. **Bilbao's industrial sector**, which is clearly disappearing from the municipal area, accounts for **only a minimal share of emissions**.

Finally, the **agricultural and livestock sector has very little activity and negligible impact** in terms of emissions within the city. **Emissions associated with waste generation are also marginal** compared to the other sectors.

Although **electricity represents around 40% of total energy consumption**, it accounts for **no more than 16% of emissions**. This is due to the **national electricity mix**, which each year contains a **lower proportion of fossil fuels**.

2030 projection: trend scenario (BAU)

The Net Zero Planner shows the comparison between 2021 and the trend scenario for 2030 (BAU) if no additional measures are introduced. In this case, there is a variation in the grouping of sectors where emissions from electricity consumption (in the residential, services and industry sectors) are grouped together, leaving buildings (scope 1) on one side and industry (scope 1) together with emissions from the primary sector on the other.

2030 (BAU):

- **Transport:** 43%
- **Buildings:** 29%
- **Electricity:** 17%
- **Waste:** 2%
- **Other:** 9%

Implications for Bilbao's climate strategy: 2030 target

The comparative analysis between the emissions inventory for the base year 2021 and the projection for 2030 under a trend scenario (Business as Usual, BAU) highlights a series of structural dynamics in Bilbao's urban system that condition the achievement of the climate neutrality target.

Urban transport is the main source of emissions, both in terms of volume and relative weight, accounting for over 40% of total emissions. This dominant position is explained by the high dependence on private vehicles, the persistence of thermal fleets in public transport and the importance of freight transport in the city. The stagnation in the decarbonisation of urban mobility therefore represents a critical barrier to achieving the 2030 target.

In the case of the **buildings** sector, the persistence of fossil fuel heating systems, especially in older residential buildings, limits the potential for reducing emissions. Despite progress in energy renovation, the BAU projection shows that the sector's relative weight will remain stable (29%), reflecting an insufficient rate of renovation and electrification of thermal uses. This is a major challenge given the characteristics of Bilbao's current building stock, which is quite old.

Electricity consumption, meanwhile, is set to increase slightly in the sectoral breakdown. This could be interpreted as meaning that the electricity mix will remain stable, raising questions about the capacity to decarbonise energy supply at regional and national level. This may not be entirely in line with the estimates of Red Eléctrica de España. In 2021, renewable energies accounted for 46.7% of electricity generation, nuclear energy for 20.6% and fossil fuels (mainly natural gas and coal) for 32.7%. The updated National Integrated Energy and Climate Plan (, PNIEC) sets a target of 81% of electricity generation coming from renewable energies. If the expected contribution of nuclear energy (~9%) is added, 90% of generation would be emission-



free. It could then be said that, despite the increase in electrification, the percentage in terms of emissions will be reduced by more than the model indicates.

The **urban waste sector**, although quantitatively smaller than the other sectors, appears to remain at around **2% of total emissions**. Current emissions attributed to this sector are already relatively low, and further improvements are expected through **regulatory compliance aimed at reducing waste generation**, as well as through the **implementation of less polluting treatment methods**. However, **no significant relative reduction in emissions is expected**, even if absolute emissions decline.

Finally, the group of sectors classified under “**others**” (including **industrial processes and product use – IPPU – and emissions derived from agricultural land use – AFOLU**) is expected to **maintain a contribution similar to current levels**.

Overall, this **diagnostic assessment highlights the existence of a structural emissions gap** that Bilbao must close before **2030**. The rate of reduction achieved so far, while positive, **is not sufficient to meet the climate ambition of the Mission 2030**. Since 2005, emissions have decreased by an **average of 40,836 tonnes of CO₂ per year**, a figure that **will need to increase to 54,663 tonnes annually in the coming years**.

As a point of reference, **during the Covid-19 pandemic in 2020**, Bilbao experienced a **significant drop in emissions** due to the temporary reduction in mobility and economic activity. This decline is estimated to have reached **172,500 tonnes of CO₂**, particularly in the **transport and administrative building sectors**. However, this was **an exceptional and temporary phenomenon that did not alter the structural trends of the system**.

This conclusion **reinforces the need for a strategic instrument such as the Climate City Contract**, capable of **integrating information, planning, and implementation within a common and coherent framework**.



MODULE A-2

Assessment of current policies and strategies

Bilbao has a robust range of public policies, plans and local strategies that support its ambition to achieve climate neutrality by 2030. These tools are aligned with both the European framework (Climate Neutral Cities Mission) and national (PNIEC, citiES2030) and regional (Klima 2050 Strategy, Basque Energy Sustainability Law and Basque Ecological Transition Law) commitments.

The main tools that directly or indirectly impact this ambition are:

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions required
Strategy	Location	Bilbao 2050 Environmental Strategy	Sets three major environmental objectives: climate neutrality by 2050, a 50% reduction in climate risks and a 50% improvement in the environmental health index.	Aligned with the European Green Deal framework, although with a horizon beyond 2030.	Strengthen its time frame and link its actions to the CCC's 2030 horizon.
Strategy	Local	PACES – Bilbao Climate and Sustainable Energy Action Plan (2024)	Document replacing the previous PAES. It incorporates the diagnosis of emissions, climate risks and vulnerabilities, as well as mitigation and adaptation measures.	It is the main climate planning tool currently in place in Bilbao.	Fully integrate its actions into the CCC and quantify the emissions gap with respect to the 2030 target.
Strategy	Local	Green Infrastructure Strategic Plan (under development)	Document defining the lines of action for promoting green infrastructure and nature-based solutions (NbS) in the city in a coordinated manner with all the municipal areas involved.	It is the main planning tool for implementing measures and criteria for the deployment and improvement of green	Link the actions of the Green Infrastructure Strategy with strategies to offset residual emissions.



				infrastructure in the city.	
Plan	Local	Bilbao Climate Change Adaptation Plan	Defines actions to reduce climate vulnerability in health, infrastructure and ecosystems. Prioritisation of vulnerable populations.	Essential for anticipating increasing climate impacts in the city.	Incorporate its sectoral and territorial approach into the design of the CCC Action Plan.
Strategy	Local	Bilbao 2030 Agenda – SDG Localisation Plan	Includes 136 municipal actions linked to the SDGs, with a special focus on sustainable urban development and the green transition.	Complements the CCC in terms of systemic sustainability and social inclusion.	Consider the CCC as a key operational tool for the implementation of the 2030 Agenda in Bilbao.
Plan	Local	Bilbao Sustainable Urban Mobility Plan (PMUS) (2017, under review)	Defines priorities in sustainable mobility, transport electrification, intermodality and improvement of public spaces.	Sector with the highest volume of local emissions.	Update the SUMP in line with the CCC and include it as a pillar in the decarbonisation of transport.
Plan	Plan	Air Quality Improvement Plan	Diagnosis and corrective measures in areas with pollutant exceedances. Incorporates a health dimension.	Aligned with environmental justice and urban health objectives.	Integrate into CCC actions to reinforce climate and health co-benefits.
Diagnosis	Local	Municipal GHG Emissions Inventory	Covers Scope 1, 2 and partially 3. Base year 2021. Disaggregated by sector: transport, industry, buildings, waste, etc.	Technical basis for climate planning.	Used as a starting point for calculating the emissions gap in the CCC.
Diagnosis	Local	Net Zero Planner – BAU 2030 scenario	Simulation tool for the trend scenario without additional measures. It shows that Bilbao will not achieve neutrality without transformative measures.	Allows for the quantification of impacts and the structuring of a portfolio of interventions.	Main guide for defining the CCC's ambition and prioritising measures based on cost-effectiveness.



Plan	Local	Review of the Urban Master Plan (PGOU)	Under development. Opportunity to include climate, energy, biodiversity and environmental health criteria.	Long-term structuring instrument.	Align the PGOU with the CCC, ensuring the integration of climate principles into spatial planning.
Strategy	Provincial	Bizkaia Climate Change and Energy Strategy (under development)	Framework document of the Provincial Council of Bizkaia to guide municipalities in mitigation, adaptation and energy efficiency.	Can reinforce and align local action in Bilbao.	Ensure consistency between this strategy and the CCC. Include complementary elements if not already integrated.
Plan	Provincial	Bizkaia Urban Waste Management Plan 2030	Strengthens the hierarchy of treatment, selective collection and prevention. Includes circularity and associated emission reduction targets.	Affects a significant part of the municipality's indirect emissions.	Incorporate its framework into the CCC's circular economy measures.
Strategy	Regional	KLIMA 2050 Climate Change Strategy	Basque strategy to move towards a resilient, low-carbon economy and society.	Regional reference framework.	Align the CCC with its principles and indicators.
Strategy	Regional	Basque Circular Economy Strategy	Aims to transition to an economy that uses resources more efficiently and minimises waste.	Relevant for industrial sectors, waste and sustainable consumption.	Include circularity measures in the CCC portfolio.
Plan	Regional	Sectoral Territorial Plan for Sustainable Transport in the Basque Autonomous Community	Planning of sustainable interurban transport infrastructure and services and their coordination with urban nodes.	Relevant for metropolitan mobility in Bilbao.	Coordinate with CCC measures on public transport and last-mile logistics.
Action plan	National	Integrated National Energy and Climate Plan	Defines greenhouse gas emission reduction targets, renewable energy penetration and energy efficiency, as	This is of vital importance for the European Mission, as they must be aligned.	Level of ambition aligned with the Mission. Local strategies must be aligned with the



		(PNIEC) (2021–2030)	well as the lines of action to achieve them.		objectives of the Plan.
Strategy	State	Long-Term Strategy for a Modern, Competitive and Climate-Neutral Spanish Economy in 2050 (ELP 2050)	It sets out a roadmap towards decarbonisation that will guide investment in the coming years, supporting the shift towards a zero-emission economic model.	It imposes obligations on local authorities and other actors.	Effective coordination and the provision of tools to cities are essential. Institutional support and support from platforms linked to the Mission must be sought.
Regulations	State	Law 7/2021 on Climate Change and Energy Transition	Sets minimum targets for 2030 in terms of GHG emission reductions, the penetration of renewables in final energy consumption, their minimum share in the electricity system and the reduction of primary energy consumption. It includes the PNIEC and the ELP2050 as instruments.	It is one of the key legal tools for reducing GHG emissions, including mobility obligations.	The targets are not as ambitious as those of the Mission, but the actions implemented by Bilbao contribute to compliance with state regulations.
Strategy	State	Spanish Circular Economy Strategy (EEEC)	Lays the foundations for moving beyond the linear economy model and promoting a new model of production and consumption where the value of products, materials and resources is maintained for as long as possible. It seeks to minimise waste generation and maximise the use of unavoidable waste.	It sets quantitative targets for 2030. These include reducing emissions from the waste sector to less than 10 Mt in 2030.	Bilbao's Circularity Strategy must be aligned with this National Strategy.
National	National	National Strategy for Green Infrastructure, Connectivity	Strategic planning document that regulates the implementation and	It establishes lines of action so that the development of green infrastructure	The Bilbao Green Infrastructure Strategy (currently being drafted) is



		and Ecological Restoration	development of Green Infrastructure in Spain.	takes into account global change scenarios, contributing to climate change adaptation and mitigation.	aligned with this national strategy.
European	European	European Green Deal	European growth plan to achieve climate neutrality by 2050. It articulates financing, innovation, clean energy and the circular economy.	Comprehensive political reference for the CCC.	Inspire the transformative ambition of the CCC and seek alignment with associated European funds.
European	European	European Mission for Climate-Neutral Cities by 2030	Specific framework for 112 European cities (including Bilbao). Promotes climate contracts, mission-oriented innovation and multi-stakeholder collaboration.	Direct justification of the CCC.	The CCC is Bilbao's main tool to deliver on its commitments under this Mission.
European	Europe	NetZeroCities – European platform to support the Cities Mission	Technical, methodological and financial support initiative. Develops tools such as the Net Zero Planner and promotes exchange between cities.	Supports the design, implementation and evaluation of the CCC.	Continue to use its tools (NZP, Climate Finance Gap Fund, Portfolio Builder, etc.) to structure the next phases of the CCC.

A-2.2: Description and evaluation of policies

Bilbao has progressively developed a strong tradition in the design and implementation of policies, strategies and sectoral plans linked to sustainability, covering key areas such as mobility, energy transition, air quality, urban regeneration, green infrastructure, waste management, housing rehabilitation and the circular economy. These efforts are part of a transformative vision aimed at achieving climate neutrality by 2030 in areas under municipal influence. This horizon is reflected in cross-cutting strategic frameworks such as the **Bilbao 2050 Environmental Strategy, the Bilbao 2030 Agenda, and the revision of the Urban Master Plan (PGOU).**

Based on these strategies, the City Council has approved and implemented more specific key instruments, equipped with climate action planning and sustainability policies. Examples include the Bilbao Climate Change Adaptation Plan; the Energy Action Plan (PAE); the Bilbao Climate and Sustainable Energy Action Plan (PACES 2030); the Air Quality Improvement Plan; the Sustainable Urban Mobility Plan (PMUS), approved in 2017 and currently under review; and the city's **Green Infrastructure Strategic Plan**, which is still being developed. This planning is also coordinated with regional and provincial strategies and plans such as the **Bizkaia Climate Change and Energy Strategy**, currently being prepared, and the **Bizkaia Urban Waste Management Plan 2030**.



Adherence to the **European Mission for Climate-Neutral and Smart Cities** reinforces this commitment by aiming to reduce the timeframe for achieving neutrality, but uses these planning and strategic elements as tools to achieve this goal. Bilbao's Climate Mission draws on these documents and will articulate mechanisms to catalyse and coordinate the achievement of the objectives set out in each of them.

The PACES 2030, approved in 2024, is the main roadmap for climate mitigation, with a target of reducing emissions by 90% by 2050 compared to 2005 and a planned investment of over 650 million euros. The plan targets key sectors such as buildings, mobility, energy and climate culture, and is structured around 15 programmes organised into five strategic areas. Its implementation and results are analysed annually by the Climate Neutrality Observatory. As a diagnostic basis, the City Council has the **Municipal Greenhouse Gas Emissions Inventory (GEI)**, complemented by the use of **the Net Zero Planner**, a tool that has made it possible to construct a trend scenario for 2030 and estimate a reduction of more than 800,000 tonnes of CO₂ equivalent under existing policies. These include the PACES itself, the PMUS, the Low Emission Zone (LEZ) ordinance, the **Opengela energy regeneration strategy**, investments in housing renovation, the deployment of photovoltaic solar energy, municipal tax incentives and the progressive electrification of transport. This set of actions has served as the basis for the design of this Action Plan and has been taken into account to avoid double counting of emissions.

In the field of mobility, Bilbao has undertaken a **comprehensive transformation through the electrification of the tramway and the Bilbobus fleet**, with the incorporation of new electric and hybrid buses, as well as charging infrastructure linked to surplus energy from the metro. In addition, there are pedestrianisation policies, the extension of the cycle network, the progressive implementation of low-emission zones and new environmental taxation measures such as incentives for scrapping polluting vehicles and free public transport for children under 14. These actions seek to reduce transport emissions by more than 50% by 2030 and consolidate a sustainable, safe and accessible mobility model.

At the same time, **the City Council is rolling out an ambitious housing renovation policy**, focusing particularly on vulnerable neighbourhoods. Through programmes such as Opengela and Orain Otxar, major energy renovation, universal accessibility, shared self-consumption and technical and social support measures are being implemented, including the creation of Neighbourhood Offices. These actions are complemented by aid lines managed by Surbisa, programmes for homeowners' associations and subsidies for measures to improve energy efficiency in hundreds of homes, together with the promotion of social housing with high energy efficiency standards in neighbourhoods such as Amezola.

In terms of waste, Bilbao has promoted the modernisation of its infrastructure with the renovation of the Bilbogarbi Elorrieta recycling centre, the implementation of door-to-door selective collection systems in sectors such as the hospitality industry, and a new waste tax with discounts for good practices in waste separation and use of the brown bin, which will come into force in 2026. In addition, a new collection and cleaning contract has recently been awarded, which includes ECO-labelled vehicles and improvements in the digitisation of the service. At the same time, **circular economy models** are **being promoted** through the development of Ekonopolo, the promotion of repair networks, mobile recycling points and educational campaigns on reduction, reuse and recycling.

All these measures are part of an urban transformation strategy based on knowledge, innovation and participatory governance, such as the **Citizens' Climate Assembly**. The **Climate Neutrality Observatory** and the future **Digital Climate Platform** are key tools for monitoring indicators, institutional transparency and citizen involvement. In **collaboration with entities such as the Basque Government, IHOBE, the University of the Basque**



Country and various social and economic agents, the City Council continues to develop capacities and attract European, state and private funding to strengthen its ecological transition.



A-2.3: Emissions gap												
	(1) Reference emissions /base line ¹	(1) BAU 2030 scenario emissions ¹	(2) 2030 Emissions Reduction Target ²		(3) Emissions Reduction through the CCC Action Plan ³		(4) Emissions gap ⁴		(5) Emissions Reduction through the CCC Action Plan to Address the Gap ⁵		(6) Residual Emissions ⁶	
		Absolute value kt CO ₂ e	absolute value	%	absolute value	%	absolute value	%	absolute value	%	absolute value	%
Transport	375	319	261	82	180	56	81	25	139	44	58	18
Buildings	232	214	183	81	122	54	61	27	105	42	44	19
Electricity	130	130	121	93	108	84	12	10	21	16	9	7
Waste	18	16	11	66	3	19	8	47	13	81	6	34
Other (including IPPU** & AFOLU***)	66	66	225	73	108	35	117	38	201	65	84	27
Total	820	745	801	80	52	52	279	28	480	48	200	20
Comments	The Bilbao CCC will use 2005 as the base year for this 80% reduction, which is why there is an emissions gap between reducing emissions by 80% in 2021 and reducing them by 80% compared to 2005, which would be equivalent to a 57% reduction (52% compared to BAU, as indicated in this table).											
	¹ Baseline emissions (year 2021) - referring to the inventory used to establish the target and the estimated emissions for the BAU scenario for the year 2030. ² Baseline reduction target for 2030. Baseline emissions - residual emissions. The emissions reduction target for 2030 ideally achieves a minimum reduction of 80% from the baseline, as indicated in Section 2 of the CCC Commitments document. The overall target should be absolute or net zero (i.e., including offsetting of any residual emissions). ³ Emission reductions envisaged in existing action plans and strategies should be quantified by sector. These are the emission reductions that would be achieved through existing policies and plans, described in Section A-2.1, as well as the actions in Section B incorporated in Module B-2. ⁴ Emissions gap = Reference emissions reduction target - Emissions reduction in existing strategies. This column is used to show the gap between reducing 80% of 2005 emissions and reducing 80% of 2021 emissions. ⁵ This column indicates the emissions that would need to be reduced to achieve the reduction target using the base year 2021, a target that is not assumed at this time in this action plan. ⁶ Residual emissions are those that cannot be reduced through climate action and are offset. Residual emissions may amount to a maximum of 20%, as indicated in the Mission Info Kit.											



MODULE A-3

Systemic barriers to climate neutrality by 2030

Bilbao's transition to climate neutrality by 2030 does not only depend on the implementation of clean technologies or the launch of sectoral actions. It requires a profound transformation of the urban, institutional, financial, cultural and social systems that structure city life. This module identifies the main elements that favour or hinder this transformation, mapping both systemic barriers and existing opportunities. It also analyses the ecosystem of stakeholders involved and presents the participatory model proposed by the city to sustain, govern and accelerate the transition process.

A-3.1: Description of systemic barriers and opportunities

Bilbao has committed to achieving climate neutrality by 2030 as part of the European Mission "Smart and Climate-Neutral Cities". To do so, it must undergo a profound transformation of its main urban systems — energy, mobility, building, governance, financing, civic culture and innovation — which currently present both structural limitations and windows of opportunity.

Main systemic barriers

The climate transition faces a number of structural, institutional, financial and cultural barriers which, if not addressed, could compromise the pace and scale of the necessary change:

1. **Limited operational capacity:** Local government and some sectoral stakeholders have limited human and technical resources to deploy complex solutions such as large-scale energy renovation or the implementation of district heating networks. This makes it difficult to move from pilot projects to structural programmes.
2. **Insufficient or poorly adapted urban infrastructure:** There are bottlenecks in critical infrastructure such as the electricity grid to absorb the electrification of demand and a shortage of charging points for electric vehicles.
3. **Regulatory mismatches and institutional friction:** The lack of integration between sectoral plans (energy, mobility, adaptation, etc.) and the existence of fragmented competences between different levels of government hinder the effective coordination of the transition.
4. **Inadequate or insufficient structural financing:** Although Bilbao has accessed European funds and has tools such as SURBISA and Bilbao Ekintza, it continues to rely excessively on one-off funding for pilot projects. There is a lack of stable instruments to mobilise long-term structural and private investment.
5. **Unequal social participation:** Despite advances such as the Energy Office and the PACES consultations, certain groups, such as young people, migrants and SMEs, are underrepresented in climate decision-making spaces. This limits legitimacy and shared responsibility in the transition.



6. **Territorial inequality in transformation capacity:** Neighbourhoods with high energy vulnerability or low density show a lower capacity to absorb climate solutions, which can lead to climate justice gaps if not corrected with specific support mechanisms.

Systemic opportunities

In the face of these challenges, Bilbao has strengths and processes in place that can accelerate the transition if activated strategically:

1. **Strategic planning aligned with climate action:** Instruments such as PACES 2030, the Sustainable Urban Mobility Plan (PMUS), the Climate Change Adaptation Plan and Bilbao's Urban Agenda provide a basis of technical and political coherence for moving towards shared objectives.
2. **Replicable pilot cases:** Experiences such as the Recalde energy community, the comprehensive rehabilitation of Otxarkoaga, the implementation of low-emission zones in Abando and electric mobility actions are a real starting point for scalability.
3. **Active innovation and knowledge ecosystem:** Centres such as UPV/EHU, BC3, Tecnalia and initiatives such as Bilbao Next Lab and the Climate Observatory provide methodologies, data and intelligence to design evidence-based solutions.
4. **Progressive articulation of participatory climate governance:** The Climate Mission model currently under construction, with spaces such as the Mission Committee, the Climate Forum and sectoral technical groups, allows for the creation of multi-stakeholder alliances and ensures consistency and legitimacy in implementation.
5. **Access to European networks and climate finance resources:** Participation in initiatives such as NetZeroCities, CitiES2030 and the Spanish Urban Agenda allows Bilbao to strengthen its position, share lessons learned and attract technical and financial resources.
6. **Compact and dense urban framework:** Bilbao's urban morphology favours active mobility, energy efficiency and the concentration of services, providing structural advantages over more dispersed cities.



A-3.2 Systems and stakeholders mapping				
System description	Stakeholders	Network	Influence	Interests
Energy system and energy communities	BilbaoEner, Iberdrola, EVE, energy communities, citizens, UPV/EHU	Moderately consolidated; growing with collective self-consumption projects	High – key to decarbonising energy consumption	Electrification, renewables, energy democratisation, local resilience
Mobility system and public space	City Council Mobility Department, Bilbobus, private operators, citizens, logistics clusters	High institutional and technical connectivity, although with barriers in the last mile	Very high – essential for improving air quality and reducing emissions	Sustainable mobility, accessibility, decarbonisation of transport
Building and urban regeneration system	SURBISA, Municipal Housing. BuildInn, construction companies, professional associations, neighbourhood associations	Consolidated technical network in pilot areas, still uneven in vulnerable neighbourhoods	High – with a major impact on energy consumption and social cohesion	Energy efficiency, habitability, equitable regeneration
Institutional and governance system	Bilbao City Council, Basque Government, Provincial Council of Bizkaia, Mission Committee, Climate Forum	Multilevel network with friction; coordination process in consolidation	Very high – determines policy coherence, legitimacy and implementation capacity	Participatory governance, policy integration, monitoring and evaluation
Financial and economic support system	Bilbao Ekintza, BEAZ, ethical banking, European funds, business associations	Fragmented but with potential for mobilisation through climate instruments	Medium – influences the scale and viability of investments	Financial stability, social return, scalability
Social, educational and cultural system	Energy office, educational centres, youth platforms, neighbourhood movements	Active social network but uneven across sectors and neighbourhoods	Moderate – affects social acceptance and climate justice	Climate awareness, citizen empowerment, shared responsibility



Knowledge, innovation and data system	UPV/EHU, Tecnalia, BC3, Climate Observatory, CitiES2030, NetZeroCities	High academic and technical density; greater integration with the public sector is required	High – supports data- and evidence-based decision-making	Impact measurement, transparency, replicability of solutions
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A-3.3: Description or visualisation of the participatory model for the city's climate neutrality

The participatory model underpinning Bilbao's Climate Mission has been designed to ensure ambitious, structured and distributed governance, enabling the effective involvement of all municipal areas, the private sector, citizens and key institutional actors. This model responds to the need to manage a process of profound transformation in just a decade, with a common roadmap, strong political leadership and collective responsibility.

A dual model: institutional endorsement and operational commitment

Bilbao's governance model is based on two strategic pillars:

- On the one hand, **institutional endorsement**, which guarantees political involvement at the highest level—the Mayor's Office—as well as the cross-cutting integration of the mission in all municipal areas. This initial commitment is essential to mobilise resources, coordinate internal efforts and provide political stability to the process.
- On the other hand, **operational commitment**, which activates key municipal actors, public companies, social entities and the private sector to implement transition projects in a coordinated manner. This commitment translates into working groups, partnerships, agreements and pilot projects that feed into each other. All of this is coordinated by the leadership of the Sustainability Department.

Internal structure of the governance model

The internal model is organised through an inter-area and inter-institutional coordination structure that operates under the leadership of the **Sustainability Department** and the direct impetus of **the Mayor's Office and the Governing Board**. This is a tandem that functions as a cross-cutting working space between municipal areas, and responsibilities have been distributed according to five main areas of coordination:

- **Coordination of policies on mobility, urban regeneration, healthy development, housing and education:** promoting low-emission zones, electrification projects, energy rehabilitation and climate adaptation.
- **Coordination of urban development policies and strategic projects:** focusing on green infrastructure, urban resilience and the integration of environmental criteria into major urban projects.
- **Coordination of economic policies:** promoting the circular economy, supporting the productive fabric and channelling incentives and funding to key sectors.
- **Coordination of social policies:** with an emphasis on climate justice, equitable access to the benefits of the transition and protection of vulnerable groups.



- **Coordination of cultural and youth policies:** key to promoting sustainability through culture, sport and citizen participation.

Key internal actors

The model recognises a group of **leading municipal public entities that make up the mission's working group**, with technical and operational leadership capacity in project implementation. These include:

- **BilboEner:** leading projects on self-consumption, heating/cooling networks, electrification of industrial sectors and energy consulting.
- **Bilbao Ekintza:** promoting green entrepreneurship, climate-related employment, training and innovation in strategic sectors.
- **SURBISA and Bilbao Etxebizitzak:** responsible for energy rehabilitation, urban regeneration and adapting the building stock to climate efficiency and resilience criteria.

Coordination with the private sector and partnerships

The private sector is considered an **essential player** in achieving the Climate Mission's objectives. For this reason, a **system of voluntary membership** has been designed with specific protocols for companies, associations, clusters and professionals.

This system is based on three components:

- A **clear categorisation** of agents and differentiated commitment models.
- A set of **membership letters**, which include specific objectives, monitoring criteria and public visibility.
- The creation of **specific programmes** for key types of businesses, such as SMEs and local shops, accompanied by incentives, campaigns and good practice guides.

Supramunicipal collaboration

The model recognises that the transition cannot be tackled alone. It is therefore supported by an **ecosystem of partner administrations**, including:

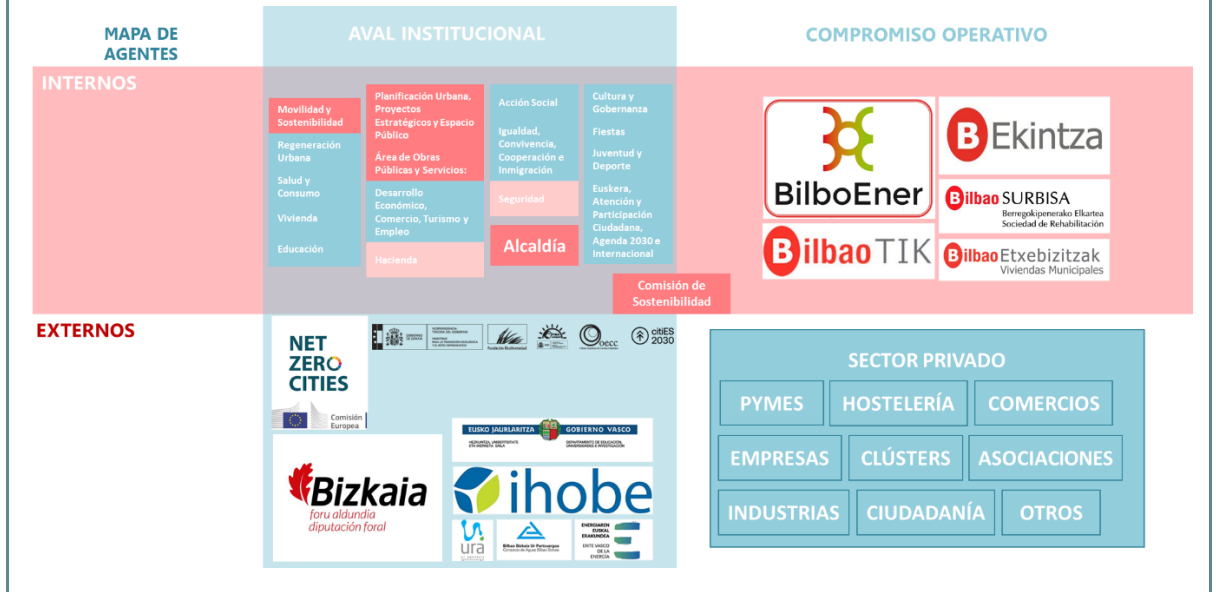
- The **Provincial Council of Bizkaia**, key to metropolitan mobility and regulatory and financial alignment.
- The **Basque Government**, through URA, EVE and IHOBE, as technical, regulatory and financial support.
- The **State and Europe**, through integration into programmes such as CitiES2030 and NetZeroCities, which reinforce Bilbao's multi-level coherence and international positioning.

Monitoring and evaluation tools

The governance system is complemented by tools to ensure traceability and compliance with commitments:



- A **system for monitoring and measuring decarbonisation** is being developed, which will enable the progress of each participating agent to be monitored.
- A system of **climate recognition seals**, an **interactive map of participants** and a **public agenda of events and results** will be promoted to highlight the collective effort.





PART B - PATHWAYS TO CLIMATE NEUTRALITY BY 2030

This module constitutes the core of the 2030 Climate Neutrality Action Plan, and includes its essential components: scenarios, strategic objectives, impacts, portfolios of actions, and indicators for monitoring, evaluation, and learning.

MODULE B-1

Climate neutrality scenarios and impact pathways

This chapter identifies the main areas where Bilbao will focus its efforts to reduce emissions effectively. Based on the climate diagnosis and local competences, a set of impact pathways has been defined that combine immediate interventions with structural transformations. The module describes these **lines of action by sector and lever**, estimating their effect on emission reductions, implementation deadlines and the additional benefits they bring to the urban and social environment.

Transport sector

B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
(1) Reduction in the need for motorised passenger transport	(1.1) Expansion of the Bilbao tram network	(1.1.1) Extend the length and coverage of the tram network, with new stations and services to other neighbourhoods in the city	Drafting of technical project	Reach Zorrozaurre via Olabeaga, adding 2.5 km to the current line	61	Improved air quality, positive perception of public transport
	(1.2) Implementation of the Low	(1.2.1) Development	Traffic reduction in the LEZ	Improvement of environmenta	2.5	Public health, noise reduction, social cohesion



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
	Emission Zone (LEZ)	of a LEZ ordinance (1.2.2) Establishment of an automatic environmental monitoring system for air quality (1.2.3) Creation of a database based on data collected in the LEZ (1.2.4) Development of a LEZ Observatory and Simulation System (1.2.5) Evaluation and monitoring of the system (1.2.6) Communication plan for citizens	Reduction of pollution in the LEZ Reduction in the number of vehicles attracted from other municipalities to the city centre	Improvement in the LEZ Reduction of CO2 emissions Decrease in the number of the most polluting vehicles Extension of the LEZ to other areas of Bilbao		
	(1.3) Expand the network of cycle lanes	(1.3.1) Connect more neighbourhoods in the city (1.3.2) Establish the	New sections awarded and under construction	Completion of the urban cycle network	4.8	Public health, noise reduction, social cohesion



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		missing cycle routes that are currently missing (1.3.3) Complete a network that allows most of the city to be connected by this mode of transport.				
	(1.4) Regeneration of neighbourhood centres	(1.4.1) Conduct an ecosystem-based urban planning study or equivalent (1.4.2) Develop models for Corazones de Barrio (1.4.3) Design based on nature-based solutions (NBS) and cost-effectiveness of environmental impacts (1.4.4) Reorganise public space within the framework of the	Technical studies and participatory design in progress	Comprehensive interventions in key neighbourhoods, with renaturalisation and climate adaptation	14.8	Social inclusion, renaturalisation, thermal and environmental improvement



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		Neighbourhood Plan (1.4.5) Implementation of the works				
	(1.5) Pedestrianisation of city streets	(1.5.1) Carry out a study on parking supply and demand in pavement-widening projects (1.5.2) Simulate traffic and pedestrian flows (1.5.3) Select streets where public space will be reallocated to pedestrians and junctions where traffic lights can be removed (1.5.4) Assess the impact on decarbonisation, the local economy, green infrastructure, air quality, noise, temperature, and health	First pilot projects launched	Roll-out of the walkable city model across multiple districts	7.1	Public health, noise reduction, local revitalisation



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		(1.5.5) Reorganise public space in urban planning (1.5.6) Implement the works (1.5.7) Expand park-and-ride facilities and strengthen intermodality				
(2) Shift towards public and non-motorised transport	(2.1) Promotion of the BilbaoBizi system	(2.1.1) Expand the fleet to 1,250 bicycles (2.1.2) Increase the number of stations to 68 (2.1.3) Incorporate GPS, electric assistance, and LED systems	New stations and bicycles installed	Consolidation of the system as the preferred mode of transport for short distances	0	Active mobility, social cohesion, health
	(2.2) Replacement of the municipal fleet	(2.2.1) Replace 225 diesel vehicles with electric vehicles	Investment underway and acquisitions in progress	Increased electrification of the municipal fleet	0.3	Noise reduction, institutional benchmark
	(2.3) Reduction in the number of polluting private vehicles	(2.3.1) Campaigns to reduce private vehicle use, including	Decrease in the number of registered vehicles	Reduction in registrations by approximately 10,500 LE	19	Reduction in NOx and particulate matter, less noise



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		<i>incentives for voluntary deregistration , supported by the expansion of low-emission zones and pedestrianisation</i>				
(3) Increase in car sharing (carpooling)	(3.1) Promotion of car sharing	(3.1.1) Sign a car sharing agreement with private sector partners to develop applications and digital platforms (3.1.2) Run carpooling promotion campaigns aligned with the signing of the Climate City Contract (CCC)	<i>Incentives for shared vehicle use Awareness campaigns Pilot programmes</i>	<i>Increase in average vehicle occupancy</i>	15	<i>Less congestion, shared culture</i>
(4) Electrification of cars and motorcycles	(4.1) Subsidies for electric vehicles	(4.1.1) Programme of financial aid in the form of non-repayable subsidies for the purchase of electric vehicles (4.1.2) Electrification	<i>incentives for the purchase of electric vehicles</i>	<i>Replacement with electric models 8,136 cars + 657 motorcycles</i>	19	<i>Reduction in NOx and particulate matter, less noise</i>



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		of 7% of the fleet of passenger cars, motorcycles and mopeds				
	(4.2) Promotion of measures for the municipal EV charging network	(4.2.1) Favourable urban planning regulations (4.2.2) Tax incentives and simplification of procedures (4.2.3) Promotion of public and private electric charging stations (4.2.4) Provision of electrified parking spaces in municipal car parks for residents	Promotion of initial measures	Extensive territorial network of accessible charging points	0	Reduction of NOx and particulate matter, less noise
(5) Electrification of buses	(5.1) Progressive electrification of the Bilbobus fleet	(5.1.1) Renewal of the Bilbobus fleet (5.1.2) Implementation of a smart charging system using	Electric bus pilots on key routes (from 2022)	Electrification of 69% of the municipal bus fleet	7.3	Improved air quality, positive perception of public transport



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		energy from the metro				
(6) Optimised logistics	(6.1) Study of the use of loading and unloading zones	(6.1.1) Technical study of the current use of loading and unloading zones to optimise schedules, use, location and types of vehicles	Accurate diagnosis of urban logistics and approved recommendations for improvement	Optimisation of the loading and unloading system with an impact on route efficiency	0.1	Reduction in congestion, improvement in air quality, better urban planning
(7) Electrification of trucks	(7.1) Renewal of cleaning and waste fleets	(7.1.1) Acquisition of electric trucks (7.1.2) Installation of overnight charging points (7.1.3) Progressive replacement of conventional fleet	New units added from 2024 onwards	Progressive electrification of urban cleaning and waste contractor fleets	10	Noise reduction, improvement of public health
	(7.2) Progressive electrification of private goods transport fleets	(7.2.1) Programme of financial aid in the form of non-repayable grants for the purchase of electric vehicles (7.2.2) Design of a plan to	Open calls, initial voluntary participation and sectoral pilot projects	Replacement of around 400 vans and 95 trucks with electric models	21	Reduction of local emissions in urban centres, noise reduction in residential areas, modernisation of logistics fleets, energy savings in



B-1.1: Impact pathways in the transport sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co- benefits)
		<i>implement an urban last- mile logistics hub for delivery with electric vehicles (7.2.3) Progressive restrictions on access to the ZBE for vehicles without an environmenta l badge (7.2.4) Installation of fast charging points at logistics hubs and industrial estates</i>				<i>urban distribution</i>



Building and Air Conditioning Sector

B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO ₂)	Indirect impacts (co-benefits)
(8) Building renovation (envelope)	(8.1) Renovation work on municipal buildings and facilities	(8.1.1) Energy renovation in various municipal buildings (8.1.2) Renovation of envelopes, roofs and windows (8.1.3) Implementation of energy efficiency criteria in public buildings	Planning of pilot projects in key facilities	Structural reduction of energy demand in public buildings	3.2	Institutional exemplarity, budgetary efficiency, improved comfort
	(8.2) Promotion of energy rehabilitation of buildings and homes	(8.2.1) Line 0: support for communities to carry out renovation work in priority areas (8.2.2) Line 1: aid to vulnerable families for renovation work in priority areas (8.2.3) Line 4: strategic energy efficiency projects in residential buildings in	Aid programmes activated by Surbisa since 2022 Management of direct subsidies, Next funds and Basque Government funds for the renovation of municipal housing	Improvement of energy efficiency and accessibility in hundreds of residential buildings 240 homes (12 buildings) Torre Urizar 264 homes and 25 buildings Santutxu 135 homes and 13 buildings	3.9	Improved comfort, reduction of energy poverty, urban regeneration



B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		priority areas (8.2.4) Green Line: energy renovation work on buildings in Bilbao. (8.2.5) Next Generation funds for energy renovation with subsidies for buildings and homes in vulnerable neighbourhoods in Bilbao				
	(8.3) Inter-institutional agreements for energy efficiency in non-municipal public buildings	(8.3.1) Signing of framework agreements with the Provincial Council of Bizkaia, the Basque Government, subsidised centres and universities to undertake major energy renovations (envelopes, insulation, roofs).	Establishment of shared governance and joint planning with the entities involved.	Intervention on 400,000 m ² of public facilities, with a high impact on reducing thermal demand and energy consumption.	5.5	Institutional coordination, thermal comfort, public savings, shared leadership.
	(8.4) Promotion of	(8.4.1) Urban Commercial	Grants activated; first	Renovation and energy	12	Local economic boost, reduction



B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
	renovation in the tertiary sector	Improvement Plan: aid for shop windows, accessibility, lighting and aesthetics in ground floor premises in Casco Viejo, Bilbao La Vieja, Irala and Olabeaga (8.4.2) Line 5: aid for the modernisation of commercial facilities (8.4.3) Bilbao Ekintza aid to promote business sustainability and competitiveness	reforms completed	modernisation of small urban businesses		in consumption, revitalisation of degraded areas
(9) New high-energy- f buildings	(9.1) Review of energy and life cycle standards in new buildings	(9.1.1) Inclusion of NZEB standard in the PGOU. (9.1.2) Development of technical and regulatory criteria. (9.1.3) Incorporation of embedded	Municipal technical guide published. New ordinance under development. Application to municipal tenders. Work in progress, co-financed by	Generalisation of green building standards and life cycle analysis in all new public and private construction projects. Pilot tested with an 80% reduction in consumption compared to	Instrumental measure with no direct impact	Structural energy savings. Promotion of local and circular materials. Reduction of indirect impacts. Affordable housing, energy equity, reduced vulnerability



B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		carbon calculation into licences and specifications (9.1.4) Construction of 93 social rental homes with NZEB standards, mechanical ventilation, and reinforced insulation. (9.1.5) Pilot project for life cycle analysis, energy monitoring and support for residents.	European funds	conventional buildings		
	(9.2) Passive architecture and low-impact materials in new construction	(9.2.1) Green roof and green façade pilot project. (9.2.2) Application of bioclimatic criteria in municipal buildings. (9.2.3) Recommendations for passive adaptation in new urban	Installation of the first pilot project. Municipal climate adaptation guide. Inclusion in public tenders.	Systematic incorporation of passive and plant-based solutions in new urban developments Reduction of embedded carbon and greater thermal resilience.	Instrumental measure with no direct impact	Improved urban thermal comfort. Public health. Innovation in materials. Institutional leadership.



B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		development s. (9.2.4) Incentives for the use of low-carbon materials.				
(10) Decarbonisation of heating generation	(10.1) Electrification of public buildings	(10.1.1) Heat pumps in schools and public centres	Works and EPC contracts underway	Thermally renovated municipal facilities	8.7	Public savings, institutional exemplarity
	(10.2) Thermal electrification of the residential and tertiary sector	(10.2.1) Replacement of fossil fuel heating technologies (boilers) with renewable technologies (heat pumps, district heating, etc.) in residential, commercial, and industrial buildings (10.2.2) Financial instruments, tax incentives, technical advice and agreements with large consumers (10.2.3) Monitoring of consumption and public visibility of	Signing of agreements, call for grants and pilot projects launched	Structural replacement of fossil fuels with renewable electricity in 65GWh/year	20	Technological modernisation, improved comfort, reduced operating costs, lower fossil fuel dependency, positive environmental image, public-private coordination



B-1.2: Impact pathways in the Building and Air Conditioning sector						
Systemic levers	Project / Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO2)	Indirect impacts (co-benefits)
		participating entities				
	(10.3) Implementation of geothermal district heating in Zorrotzaurre	(10.3.1) Technical feasibility study and assessment of geothermal and urban potential in Zorrotzaurre (10.3.2) Design of the system and public-private governance of the project (10.3.3) Implementation of a low-temperature heating network fuelled by geothermal energy from shallow geothermal sources (10.3.4) Progressive connection of new developments and refurbished buildings	Pipelines under construction and first connections in public facilities	Operational network throughout the district and progressive connection of new residential and office buildings	5.8	Structural reduction in fossil fuel demand for heating, technological innovation, climate resilience, long-term energy savings



Electricity sector

B-1.3: Impact pathways in the electricity sector						
Systemic levers	Project/programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO ₂)	Indirect impacts (co-benefits)
(11) Lighting and equipment efficiency	(11.1) Renovation of lighting systems and equipment in public buildings	(11.1.1) Energy audits in municipal facilities to identify areas of high electricity consumption (lighting, air conditioning, ICTs) (11.1.2) Replacement of indoor lighting with high-efficiency LED systems. (11.1.3) Replacement of obsolete electromechanical equipment with class A or higher models (11.1.4) Implementation of energy management systems (EMS) and remote control in civic centres, sports, educational and	Implementation of measures in the main public buildings	Sustained reduction in public electricity consumption during daytime and night-time hours	5.5	Budget savings, improved lighting and thermal comfort, institutional energy saving culture



B-1.3: Impact pathways in the electricity sector						
		administrative centres				
	(11.2) Actions on public lighting	(11.2.1) Replacement of public lighting fixtures (roads, squares, parks, street furniture) with LED technology (11.2.3) Prior lighting audit to ensure adequate levels of visibility and efficiency (11.2.4) Financing through direct investment	Continue with the work being carried out, especially in priority areas	Reduction of energy consumption in municipal street lighting	3.4	Structural economic savings, improved visibility and night-time safety, reduction in light pollution
	(11.3) Incorporation of high energy efficiency standards in public works	(11.3.1) Analysis of international benchmarks in energy-efficient urban planning (11.3.2) Study of standards and certifications in urban efficiency (11.3.3) Definition of criteria applicable to urban planning and	Review of regulations and implementation of pilot projects with new tenders	Progressive and sustained reduction in energy consumption in lighting and public works	0	Economic savings, improved visibility and safety, regulatory alignment



B-1.3: Impact pathways in the electricity sector						
		construction contracts (11.3.4) Identification of sections, considerations and regulations where criteria can be included (11.3.5) Incorporation of energy planning and bioclimatic or similar building criteria into contract specifications . Carry out a pilot project (11.3.6) Incorporate the requirement to calculate the LCA of new buildings				
	(11.4) Inter-institutional agreements for energy efficiency in non-municipal public buildings	(11.4.1) Signing of framework agreements with supramunicipal public bodies, subsidised centres and universities to implement efficiency measures in lighting and equipment in	Establishment of technical and legal governance Joint design of a roadmap with the entities involved	Energy renovation of up to 400,000 m² of non-municipal public facilities	1	Inter-administrative coordination, equity in improving public services, shared institutional support



B-1.3: Impact pathways in the electricity sector						
		these non-municipal public buildings.				
	(11.5) Programme to promote energy efficiency in the residential and tertiary sectors	(11.5.1) Non-repayable grants for the replacement of lighting with LEDs, efficient motors, home automation and sensors in residential buildings and commercial premises (11.5.2) Awareness campaigns on the efficient use of household appliances, ICTs and electric air conditioning (11.5.3) Free technical assistance for homeowners' associations and (model: "electrical renovation office") (11.5.4) Tax rebates for energy certifications of A or higher (11.5.5) Agreements with trade	Pilot call for proposals and public awareness campaigns Technical assistance for the first communities	Renovation of interior electrical installations in 3,000 homes and 500 commercial premises	2.4	Reduction in electricity bills, improved comfort, revitalisation of the local installation sector



B-1.3: Impact pathways in the electricity sector						
		associations and installation companies to scale up interventions				
(12) Decarbonisation of electricity generation	(12.1) Renewable energy generation in municipal buildings	(12.1.1) Installation of up to 13,000 kW of solar photovoltaic power in public buildings (12.1.2) Prioritise buildings with high energy consumption and roof availability (12.1.3) Interdepartmental coordination to facilitate permitting and management (12.1.4) Long-term monitoring and maintenance system	Implementation of photovoltaic installations prioritised according to feasibility and impact criteria	Gradual increase in clean energy generation and reduction in municipal electricity consumption	3.4	Energy autonomy, structural savings, institutional example
	(12.2) Municipal programme of aid for renewables	(12.2.1) Non-repayable grants for individual or collective installations (12.2.2) Specific support for energy communities	Publication of regulatory bases and launch of the first call for applications	Promotion of residential, neighbourhood and business self-consumption throughout Bilbao	21	Reduction in bills, citizen participation, promotion of the renewable energy sector



B-1.3: Impact pathways in the electricity sector						
		(12.2.3) Tax rebates on property tax (IBI) and construction tax (ICIO) for solar installations (12.2.4) Fee exemptions and personalised technical advice (12.2.5) Access to European funding, R&D&I and own funds				
	(12.3) Planning and regulatory programme for the deployment of renewable energies	(12.3.1) Preparation of an updated municipal inventory of existing renewable energy generation, with georeferenced data classified by type and ownership (12.3.2) Conducting a study of renewable potential (solar, thermal, geothermal) using an online visual tool	Drafting and tendering of technical studies Design and processing of regulations Coordination with other municipal departments	Structured planning of the deployment of renewable energies in the municipality, with legal, technical and visual tools for its orderly and participatory implementation	Instrumental programme	Technical and regulatory enabling, acceleration of investments, transparency and evidence-based decision-making, promotion of self-consumption and balanced territorial development



B-1.3: Impact pathways in the electricity sector						
		(12.3.3) <i>Approval of municipal regulations to organise, regulate and promote the installation of renewable energy systems on roofs, facades, public and private land, both urban and peri-urban</i>				
	(12.4) <i>Business commitment to 100% renewable electricity consumption</i>	(12.4.1) <i>Public campaign to join the Neutrality Mission</i> (12.4.2) <i>Signing of commitment agreements with consumer companies</i> (12.4.3) <i>Verification of supply through renewable origin certificates</i> (12.4.4) <i>Creation of a public register of participating companies and calculation of</i>	<i>Creation of the register, first agreements with large consumers and active campaign for the tertiary and industrial sectors to sign up</i>	<i>Consolidated deployment of a business ecosystem with 100% renewable electricity consumption. Cumulative reduction of 525 GWh/year of fossil fuel consumption replaced by certified clean sources.</i>	25	<i>Positive corporate reputation Environmental commitment of the economic fabric Transparency and institutional drive Reinforcement of the sustainable city narrative</i>



B-1.3: Impact pathways in the electricity sector						
		<i>avoided emissions</i>				



Waste sector

B-1.4: Impact pathways in the waste sector						
Systemic levers	Project/programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO ₂)	Indirect impacts (co-benefits)
(13) Increase in waste recycling	(13.1) New Municipal Waste Management Plan	(13.1.1) Drafting of the 2027 Plan with a focus on prevention, recycling and the circular economy (13.1.2) Definition of local objectives aligned with the objectives of the Bizkaia Waste Management Plan (PIPGRB)	Initial approval of the plan and public information and awareness campaigns	Progressive reduction of the residual fraction, increase in selective collection. (reuse and/or recycle 70.97% and compost 5.64%), recover 20.90% for energy and eliminate 2.49%.	1.5	Promotion of a recycling culture, reinforcement of citizen co-responsibility
	(13.2) Introduction of a new waste tax	(13.2.1) Launch of the tax from January 2026, calculated according to the municipal register and use of the brown bin (13.2.2) 10% discount in 2026 and 20% discount in 2027 for users of the organic waste bin	Approval of the tax ordinance and notification to households about the new system	Increase in organic waste collection, improvement in waste quality, incentive for effective separation	1.0	Reduction in municipal costs, neighbourhood involvement, compliance with European regulations



B-1.4: Impact pathways in the waste sector						
	(13.3) Improvement of infrastructure and selective containers	(13.3.1) Reinforce recycling centres with containers for textiles, hazardous waste and other specific waste streams (13.3.2) Promote door-to-door collection pilot schemes with large generators or on a sectoral basis (13.3.3) Installation of new weighing, identification and logistics traceability systems	Investments in equipment and development of sectoral pilot tests	Technical improvement of selective collection, reduction of mixed waste and efficiency gains on routes	0.2	Increase in actual recycling, improvement of citizen experience, waste traceability



Other sector (Industry)

B-1.5: Impact pathways in the Other sector (Industry and Assessment)						
Systemic levers	Project/Programme	Actions	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (kt CO ₂)	Indirect impacts (co-benefits)
(14) Reduction of industrial emissions	(14.1) Decarbonisation of local industry in Bilbao	(14.1.1) Campaigns to reduce thermal consumption in local industries (facilities >70 kW) (14.1.2) Facilitating access to funding for the replacement of diesel/gas with geothermal, aerothermal, biomass or renewable electricity (14.1.3) Technical training for engineers and installers and support with administrative procedures (14.1.4) Monitoring of heat savings and reduction of industrial emissions within the framework of the CCC compliance system	Signing of accession agreements with the Bilbao industrial sector and the relevant supra-municipal bodies for 2025–2027	Transformation of industrial thermal processes in urban industrial estates and medium-sized industries, reaching around 75 medium-sized facilities (≈107 MWh/year replaced).	8	Technological modernisation, competitiveness, energy savings, improved air quality



B-1.5: Impact pathways in the Other sector (Industry and Assessment)						
	(14.2) <i>Environmental compensation programme</i>	(14.2.1) <i>Reforestation of at least 600 ha in Bizkaia, with monitoring of carbon absorption</i> (14.2.2) <i>Agreements with forest landowners and municipalities</i> (14.2.3) Certified annual monitoring	<i>Expansion of the energy efficiency system</i> <i>Application for funding for capture</i>	<i>Compliance with the combined strategy of efficiency, partial capture and advanced waste management, enabling a 31% reduction.</i>	90	<i>Thermal recovery with a lower footprint, technological innovation</i>
	(14.3) <i>Provincial programme for environmental compensation associated with recovered waste</i>	(14.3.1) <i>Reforestation of at least 600 ha in Bizkaia with monitoring of absorption</i> (14.3.2) <i>Agreements with forest owners and local councils</i> (14.3.3) <i>Certified annual monitoring (e.g. CO₂ Veritas type)</i>	Programme design in coordination with the competent supramunicipal authorities	<i>Progressive natural capture of a portion of residual emissions</i>	10	<i>Improvement of natural sinks, local forest economy, and institutional image</i>

B-1.6: Description of impact pathways
The selected impact pathways combine rapid interventions (switch to LED lighting, direct aid for photovoltaic installation, implementation of the new waste tax) with more far-reaching and longer-term transformative projects (comprehensive building renovation, renewable thermal networks, electric and industrial mobility)



programmes). This combination guarantees both early milestones that maintain political and financial momentum and structural transformations that ensure climate neutrality by 2030.

1. Key arguments for choosing these impact pathways

The Plan prioritizes interventions with the greatest potential for emissions reduction and that are within the reach of direct municipal action or strong partnerships. Acting on the public building stock, electrifying transport, and upgrading public lighting are lines of action with local management autonomy and low legal risk.

These are complemented by new and increasingly consolidated competencies, such as the design of local environmental taxation (including the new waste fee), coordination with the tertiary and industrial sectors for decarbonisation, and the implementation of support schemes for energy self-consumption.

This approach is reinforced by its strong demonstration effect: when the public administration acts as a leading example, households and businesses tend to accelerate the adoption of solutions such as self-consumption, electric mobility, and building renovation.

In addition, the social co-benefits—including job creation, household energy savings, and cleaner air—increase the political attractiveness of these measures and their compatibility with European and national funding instruments (NextGen, ERDF, LIFE, EVE).

2. Link to the diagnosis (Part A: current status, barriers and opportunities)

The measures respond to the specific challenges identified in the diagnostic assessment. Energy inefficiency in municipal buildings is addressed through a comprehensive renovation programme, accompanied by improvements in lighting systems and efficient climate control.

The dependence on diesel in transport drives the renewal of public vehicle fleets and the electrification of the urban bus system, while the tram network is expanded and Low Emission Zones (LEZs) are strengthened.

The low penetration of renewable energy is tackled by creating both a regulatory and an operational framework—including support programmes, a renewable potential map, and an inventory of installations—to democratize energy self-consumption.

In the waste sector, the new pay-as-you-throw waste fee, the new municipal waste plan, and the strengthening of separate collection systems are key measures to reduce emissions.

In industry, the use of fossil fuels for thermal energy is addressed through a technological substitution programme and financial support mechanisms, coordinated with the Basque Energy Agency (EVE).

Finally, the increasing exposure to heatwaves and flooding is driving the development of green corridors, sustainable urban drainage systems, and metropolitan green infrastructure strategies.

3. Alignment with the 2030 Climate Neutrality Commitments

The measures translate Bilbao's commitments within the framework of the European Mission "100 Climate-Neutral and Smart Cities" into concrete actions. To achieve the operational neutrality of the City Council, actions focus on the key pillars: thermal and electrical energy use in buildings, mobility, public lighting, and energy supply contracts.

For the city as a whole, a set of actions is deployed to move towards shared climate neutrality: access to energy self-consumption is democratized, clean public transport networks are strengthened, environmental taxation in the waste sector is activated, and institutional agreements are promoted with key private and institutional stakeholders.

These lines of action are aligned with the principle of a just transition, generating local employment, improvements to the urban environment, and opportunities for vulnerable sectors.



4. Balance between short- and long-term priorities

The actions have been carefully phased. In the short term, the "quick wins" stand out: installation of LED lighting in buildings and street lighting, subsidies for self-consumption, implementation of the waste tax and replacement of municipal fleets. These actions will show tangible results before 2025. At the same time, more structural projects are being developed: extensive renovation of homes and tertiary buildings, implementation of green corridors and thermal networks, a regulatory framework for solar photovoltaic energy and inter-institutional agreements to decarbonise different sectors. This combination ensures that the city will make simultaneous progress in visible achievements and systemic transformations that are sustained over time.

In short, the Climate Action Plan's impact pathways form a comprehensive, realistic and ambitious package. They respond to the main urban challenges, activate all available levers at the municipal level, promote key institutional partnerships and articulate a fair, phased climate transition consistent with Bilbao's commitments for 2030.



MODULE B-2

Portfolio of transformative actions

The impact pathways defined in the previous module are translated here into **concrete actions, planned to expand Bilbao's emission reduction capacity** beyond existing policies. This chapter presents the Plan's portfolio of transformative interventions, grouped by sector and accompanied by detailed information on their scope, responsible parties, climate impact and estimated costs. It also includes measures to address residual emissions through carbon sinks or compensation mechanisms.

B-2.1: Description of the portfolios of transformative actions			
Emissions sector	Description of the portfolio of transformative actions		
	Levers	List of programmes	General description of the levers
Transport	(1) Reducing the need for motorised passenger transport (2) Shift towards public and non-motorised transport (3) Increase in car sharing (carpooling) (4) Electrification of cars and motorcycles (5) Electrification of buses (6) Optimised logistics (7) Electrification of trucks	(1.1) Expansion of the Bilbao tram network (1.2) Implementation of the Low Emission Zone (LEZ) (1.3) Expand the network of cycle lanes (1.4) Regeneration of neighbourhood centres (1.5) Pedestrianisation of city streets (2.1) Promotion of the BilbaoBizi system (2.2) Replacement of the municipal fleet (2.3) Reduction in the number of polluting private vehicles (3.1) Promotion of car sharing (4.1) Subsidies for electric vehicles (4.2) Promotion of measures for the municipal EV charging network (5.1) Progressive electrification of the Bilbobus fleet (6.1) Study of the use of loading and unloading zones (7.1) Renewal of cleaning and waste fleets	(1) This corresponds to compliance with the PMUS (Sustainable Urban Mobility Plan) and the PACES (Sustainable Energy and Climate Action Plan) through interventions that promote pedestrian, cycling and public mobility, while discouraging private vehicle use. (2) Promotion of active mobility and renewal of the public fleet using sustainable criteria to ensure low-emission urban transport. (3) Introduction of collaborative services that reduce the number of vehicles in circulation. (4) Promotion of the transition to electric mobility through subsidies, regulation, and improvements to the charging infrastructure. (5) Renewal of urban and metropolitan fleets to achieve zero-emission public mobility. (6) Use of technological tools to plan routes, improve efficiency,



		(7.2) Progressive electrification of private goods transport fleets	and, where possible, reduce unnecessary journeys. (7) Progressive replacement of heavy combustion vehicles with electric models, especially in the delivery and urban services sectors.
Buildings and Heating & Cooling Sector	(8) Building renovation (envelope) (9) New high-energy-efficiency buildings (10) Decarbonisation of heating generation	(8.1) Renovation of municipal buildings and facilities (8.2) Promotion of energy renovation of buildings and homes (8.3) Inter-institutional agreements for energy efficiency in non-municipal public buildings (8.4) Promotion of renovation in the tertiary sector (9.1) Review of energy and life cycle regulations in new buildings (9.2) Passive architecture and low-impact materials in new buildings (10.1) Electrification of public buildings (10.2) Replacement of boilers with heat pumps (10.3) Implementation of geothermal district heating in Zorrotzaurre (10.4) Thermal electrification in the residential and tertiary sectors	(8) Deep energy renovation of existing buildings to reduce energy demand and emissions. Use of own funds and fund management to promote renovation in vulnerable neighbourhoods. Aid and renovation programmes managed by Surbisa and Viviendas Municipales. (9) Application of NZEB, bioclimatic and life cycle criteria in all new public and private buildings, promoting climate-adapted designs with a low carbon footprint and high energy performance. Pilot projects in municipal housing. (10) Progressive replacement of fossil fuel heating sources with efficient electrical systems and renewable heat networks, prioritising the most intensive and vulnerable installations.
Electricity	(11) Efficiency in lighting and equipment (12) Decarbonisation of electricity generation	(11.1) Renovation of lighting systems and equipment in public buildings (11.2) Actions on public lighting (11.3) Incorporation of high energy efficiency standards in public works (11.4) Inter-institutional agreements for energy efficiency in non-municipal public buildings (11.5) Programme to promote electrical efficiency in the residential and tertiary sectors (11.6) Promotion of energy efficiency in the tertiary sector (12.1) Renewable energy generation in municipal buildings	(11) Reduction of electricity demand through technological interventions (LED, efficient appliances, sensors, etc.) in public facilities, homes and commercial premises, especially in priority areas. (12) Promotion of renewable electricity self-consumption (individual and collective), regulatory planning for large-scale deployment, and agreements with companies to achieve 100% renewable consumption with a guarantee of origin, both local and remote.



		(12.2) Municipal programme of aid for renewables (12.3) Planning and regulation programme for the deployment of renewable energies (12.4) Business commitment to 100% renewable electricity consumption	
Waste	(13) Increase in waste recycling	(13.1) New Municipal Waste Management Plan (13.2) Introduction of a new waste tax (13.3) Improvement of infrastructure and selective containers	<i>(13) Prevention, separation and recovery of waste through improvements in governance, incentive systems and new infrastructure to strengthen the circular economy, with a progressive reduction in the residual fraction.</i>
Other (Industry)	(14) Reduction of industrial emissions and recovery	(14.1) Thermal decarbonisation of local industry in Bilbao (14.3) Programme for environmental compensation associated with recovered waste	<i>(14) Replacement of fossil fuels with renewable thermal energy in industrial processes and enhancement of forest carbon sinks as a mechanism to offset residual emissions from the sector.</i>



Transport sector

B-2.2.a: Individual action plans for the transport sector		
Action plan	Name of the action	(1.1) Expansion of the Bilbao tram network
	Type of action	Electric public transport infrastructure
	Description	Extension of the Bilbao tram network through the construction of new stations and sections, improving connections between neighbourhoods and facilitating access to collective electric mobility. The first phase includes the Olabeaga-Zorrotzaurre section (2.5 km), with plans for further expansion. This action forms part of the structural reinforcement of decarbonised public transport in the city.
Reference to the impact pathway	Scope of emission	Transport
	Systemic lever	Reduction in the need for motorised passenger transport
	Result (according to module B-1.1)	Reduction in private vehicles on the road, increased use of electric public transport, improved air quality and intermodal connectivity.
Implement	Organisations/individuals responsible for implementation	Bilbao City Council (Department of Mobility and Sustainability), Basque Government (Department of Transport) and ETS (Euskal Trenbide Sarea).
	Scale of action and target entities	Municipal urban area. Directly affects residents and workers in Bilbao, especially in areas not yet covered by the tram network.
	Actors involved	ETS, Bilbao City Council, Bizkaia Provincial Council, construction companies, public transport operators (Euskotren), neighbourhood associations.
	Comments on implementation	The project is part of the comprehensive sustainable metropolitan mobility plan and with sections already in the planning and tendering phase. It requires inter-institutional coordination, demand analysis and urban planning. Its progress is dependent on multi-year budget availability and phased implementation.



B-2.2.a: Individual action plans for the transport sector		
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Estimated reduction of 242.9 GWh through reduced private car use per electric tram km (increasing use in expanded areas)
	Estimated GHG emissions reduction (total)	61 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated cost per extended section: ~€42 million per 2.5 km (Olabeaga-Zorrotzaurre). Approximate cost per tonne of CO ₂ avoided: ~€689/tCO ₂ over 10 years.

B-2.2.a: Individual action plans		
Action plan	Name of the action	(1.2) Implementation of the Low Emission Zone (LEZ)
	Type of action	Urban environmental regulation and traffic control
	Description	Development and implementation of a Low Emission Zone (LEZ) with progressive restrictions on polluting vehicle traffic. The first phase will be launched in the Abando district in 2024 and will include specific regulations, signage, automated number plate recognition, and a database for environmental monitoring. The LEZ is expected to be extended to other neighbourhoods in stages, accompanied by communication strategies, public information campaigns, and compensatory measures.
Reference to the impact pathway	Scope of emissions	Transport
	Systemic lever	Reduction in the need for motorised passenger transport
	Result (according to module B-1.1)	Reduction in traffic from more polluting vehicles, improved air quality, less congestion and reduced CO ₂ emissions.



Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	Application in established urban areas. Target audience: citizens, logistics operators, shops and businesses operating in the affected areas.
	Actors involved	Bilbao City Council, DFB, Municipal Police, technology companies specialising in control and surveillance, neighbourhood associations, logistics sector
	Comments on implementation	The ordinance was approved in 2023 and implementation will begin with a pilot phase. It requires a digital monitoring infrastructure, sanction protocols, and mechanisms for continuous evaluation. Support schemes are in place for vulnerable groups, along with temporary exemptions for certain professional vehicles.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in petrol and diesel use within the LEZ (mainly older and diesel vehicles)
	Estimated reduction in GHG emissions (total)	2.5 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Initial estimated cost: €1.7 million (installation, software, communication). Estimated cost per tonne of CO ₂ avoided: ~€702/tCO ₂ over 10 years.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of action	(1.3) Expand the network of cycle lanes
	Type of action	Infrastructure for active mobility
	Description	Development and extension of the cycle lane network in Bilbao to connect more neighbourhoods and facilitate the everyday use of bicycles as a means of transport. The intervention includes the design of safe, segregated and well-signposted



B-2.2.a: Individual action plans for the transport sector		
		routes, as well as connections to other forms of public transport (intermodality).
Reference to the impact pathway	Scope of implementation	Transport
	Systemic lever	Reduction in the need for motorised passenger transport
	Result (according to module B-1.1)	Increased bicycle use for daily travel, improved public health and reduced motorised traffic in urban areas.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	City of Bilbao. Aimed at all citizens, with special attention to schoolchildren, workers and people with reduced mobility.
	Actors involved	Bilbao City Council, civil engineering and signage companies, cycling groups, neighbourhood associations
	Comments on implementation	The programme is currently in the technical design and prioritisation phase. The works are expected to be carried out in phases, based on safety, connectivity and demand criteria. The measure is integrated with the Bilbao 30 strategy (pacified areas) and the public bicycle system.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Partial reduction in petrol and diesel use through modal shift in urban travel
	Estimated reduction in GHG emissions (total)	4.8 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated initial cost: €3.3 million. Estimated cost per tonne of CO ₂ avoided: ~€688/tCO ₂ over 10 years.



B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of the action	(1.4) Regeneration of neighbourhood centres
	Type of action	Ecosystem-based urban planning and redesign of public spaces
	Description	Transformation of public space in residential areas of Bilbao through comprehensive interventions that prioritise pedestrian mobility, urban nature, and thermal comfort. The programme includes redesign based on nature-based solutions (NBS), environmental cost-effectiveness analysis, urban climate modelling, and integration into urban planning processes.
Reference to the impact pathway	Scope of emission	Transport (indirectly), urban resilience
	Systemic lever	Reduction in the need for motorised passenger transport
	Result (according to module B-1.1)	Reduction in through traffic, recovery of public space for citizens, increase in green areas and improvement in environmental quality in vulnerable neighbourhoods.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Department of Works and Services, Urban Planning and Mobility and Sustainability
	Scale of action and target entities	Pilot actions in neighbourhoods with a lack of public space or climate vulnerability. Aimed at residents, shopkeepers and schools in the surrounding area.
	Actors involved	City Council, architecture and urban planning studios, neighbourhood groups, environmental associations, Surbisa
	Comments on implementation	Requires participatory processes, detailed environmental diagnosis by area and close coordination with urban planning and renaturalisation strategies. Integrated into the Nearly Zero Energy Neighbourhoods model.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable



B-2.2.a: Individual action plans for the transport sector		
	Energy eliminated/replaced, volume or type of fuel	Indirect reduction in motorised traffic through reconfiguration of urban space
	Estimated reduction in GHG emissions (total)	15 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated cost per intervention: €10.16 million/neighbourhood. Average cost per tonne of CO ₂ avoided: ~€677/tCO ₂ over 10 years.

B-2.2.a: Individual action plans for the transport sector		
Action plan	Name of action	(1.5) Pedestrianisation of city streets
	Type of action	Reorganisation of public space and restriction of motorised traffic
	Description	Progressive intervention on streets in the city centre and neighbourhoods with high pedestrian density, aimed at eliminating private motorised traffic and reallocating urban space in favour of pedestrians, active mobility, local commerce, and green infrastructure. This is proposed following a study of parking supply and demand, traffic simulations, and an assessment of the associated environmental and social benefits.
Reference to the road affected	Scope of implementation	Transport
	Systemic lever	Reduction in the need for motorised passenger transport
	Result (according to module B-1.1)	Reduction in vehicle traffic, improved air quality, reduction in urban noise and r social cohesion in more liveable urban environments.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Works Department
	Scale of action and target entities	Municipal scope. Directly affects residents, businesses, tourists and workers in the city centre and areas of action.



B-2.2.a: Individual action plans for the transport sector		
	Actors involved	City Council, urban engineering companies, trade associations, residents, logistics sector
	Comments on implementation	The measure is being implemented in phases, in previously assessed areas, with citizen participation and in line with urban logistics strategies. It is coordinated with intermodal transport and park-and-ride programmes.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in petrol and diesel consumption due to less motorised traffic in pedestrianised areas
	Estimated reduction in GHG emissions (total)	7 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Average cost per action: €4.87 million per zone. Approximate cost: ~€696/tCO ₂ avoided in 10 years.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of action	(2.1) Promotion of the BilbaoBizi system
	Type of action	Expansion of the public electric bicycle system
	Description	Renovation and expansion of the municipal electric bicycle loan system (BilbaoBizi), through the installation of new stations, expansion of the electric fleet, and technological improvements in system management. The programme aims to establish electric bicycles as a common option for urban mobility, fully integrated with other sustainable modes of transport.
Reference to the impact pathway	Scope of emission	Transport
	Systemic lever	Shift towards public and non-motorised transport



B-2.2.a: Individual action plans for the transport sector		
	Result (according to module B-1.1)	Increased daily bicycle use, reduced motorised private vehicle travel, improved public health and reduced urban noise.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	City of Bilbao. Aimed at the general public, workers, students and people with regular journeys of less than 5 km.
	Actors involved	City Council, mobility operators, technology providers, cycling groups
	Comments on implementation	The BilbaoBizi system is already operational, but its usage remains limited. Plans are under way to double the number of stations and electric bicycles, improve maintenance services, and optimise redistribution to reduce imbalances in availability. The programme will be coordinated with the rollout of the cycling lane network.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Replacement of private vehicle journeys (petrol and diesel) with electric bicycle journeys
	Estimated GHG emissions reduction (total)	Not directly quantifiable. Estimated within the overall modal shift.
	Total costs and costs per unit of CO₂eq	Estimated cost of expansion: €13 million.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of the action	(2.2) Replacement of the municipal fleet
	Type of action	Electrification of the municipal vehicle fleet
	Description	Progressive replacement of Bilbao City Council's combustion vehicles with 100% electric units. The intervention applies to general service vehicles,



B-2.2.a: Individual action plans for the transport sector		
		urban mobility fleets, maintenance units, and shared-use vehicles. The measure forms part of the City Council's objective of achieving operational climate neutrality.
Reference to the impact pathway	Scope of emissions	Transport
	Systemic lever	Shift towards public and non-motorised transport
	Result (according to module B-1.1)	Elimination of direct emissions in municipal fleets, reduction of noise and air pollution, exemplary drive towards urban decarbonisation.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility, Sustainability and General Services Departments
	Scale of action and target entities	Municipally owned operational fleet: service vehicles, urban logistics and technical assistance.
	Stakeholders	City Council, electric vehicle manufacturers and dealers, leasing companies, charging point suppliers
	Comments on implementation	The action includes priority renewal criteria for the most polluting vehicles, the installation of charging infrastructure in municipal facilities, and maintenance by either in-house or outsourced personnel. It forms part of the City Council's green public procurement strategy.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Replacement of approximately 225 diesel vehicles. Estimated savings: 800,000 litres of diesel/year
	Estimated reduction in GHG emissions (total)	0.3 kt CO ₂ /year
	Total costs and costs per unit of CO ₂ eq	Total estimated cost: £6.2 million. Approximate cost per tonne avoided: ~€20,600/tCO ₂



B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of action	(2.3) Reduction of the fleet of polluting private vehicles
	Type of action	Demand management and modal shift incentive programme
	Description	Campaigns to reduce the use of private cars and motorcycles, along with non-monetary incentives for voluntary deregistration (tax advantages, LEZ points, etc.). The action supports the transition to electric vehicles for both citizens and businesses through assistance with the installation of charging points, information on external subsidies (such as MOVES and tax relief), and framework agreements for leasing or purchasing electric vehicles.
Reference to the impact pathway	Scope of emission	Transport
	Systemic lever	Shift towards public and non-motorised transport
	Result (according to module B-1.1)	Reduction in the number of vehicles registered in Bilbao
Implement	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Departments
	Scale of action and target entities	The entire city of Bilbao, with a focus on neighbourhoods with high levels of car ownership
	Stakeholders	Citizens, neighbourhood associations, vehicle registration agencies, urban mobility agents
	Comments on implementation	Requires the design of incentives, a strategic communication campaign, integration with urban mobility policies and green taxation
Impacts and costs	Renewable energy generated (if applicable)	–
	Energy eliminated/replaced, volume or type of fuel	Elimination of petrol and diesel consumption from ~10,500 vehicles (cars, motorcycles and vans, trucks and buses), equivalent to approx. 34 GWh/year avoided.



B-2.2.a: Individual action plans for the transport sector		
	Estimated reduction in GHG emissions (total)	20 kt CO ₂ /year (estimated based on average annual consumption per vehicle taken off the road)
	Total costs and costs per unit of CO ₂ eq	€22.8 million borne by individuals and companies. Estimated cost: ~€315/tCO ₂ avoided in 10 years.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of the action	(3.1) Promotion of car sharing
	Type of action	Promotion of private vehicle sharing
	Description	Signing agreements with car sharing companies to implement digital platforms, promoting carpooling campaigns, and conducting urban pilot tests
Reference to the impact pathway	Scope of implementation	Transport
	Systemic lever	Increased carpooling
	Result (according to module B-1.1)	Reduction in the number of vehicles on the road, lower fuel consumption and less congestion during rush hour.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	Metropolitan area. Aimed at workers and students in Bilbao with interurban or suburban commutes.
	Actors involved	City Council, workplaces, universities, business associations, mobility technology companies
	Comments on implementation	The measure requires public–private collaboration and strong initial communication efforts. Its success depends on reaching a critical mass of users and on the usability of the platform. It can be integrated into the framework of workplace mobility plans promoted by large employers.



B-2.2.a: Individual action plans for the transport sector		
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in vehicle-kilometres travelled. Net fuel savings on daily interurban journeys
	Estimated reduction in GHG emissions (total)	15 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Low administrative cost. Climate impact reflected in actions for efficient private vehicle use.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of action	(4.1) Subsidies for electric vehicles
	Type of action	Economic incentives for the electrification of private vehicle fleets
	Description	Aid programme for the purchase of electric vehicles by individuals, self-employed persons and small businesses. Priority is given to groups with lower purchasing power and to vehicles intended for urban services (taxis, delivery, cleaning, etc.). This action is part of the Sustainable Urban Mobility Plan and is organised and conditioned by the regional (MOVES) and national subsidy lines.
Reference to the impact channel	Scope of issuance	Transport
	Systemic lever	Electrification of cars and motorcycles
	Result (according to module B-1.1)	Renewal of the polluting private vehicle fleet, increase in zero-emission vehicles, improvement in air quality and reduction in urban noise.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	Municipality of Bilbao. Residents, self-employed professionals and small local fleets.



B-2.2.a: Individual action plans for the transport sector		
	Stakeholders	City Council, electric vehicle dealers and manufacturers, logistics and professional associations, general public
	Comments on implementation	The programme is coordinated with other regional and European support schemes. It includes an electronic application platform, minimum technical requirements, and simplified documentation. Annual monitoring of the number of newly registered electric vehicles in the city is planned.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Partial replacement of private petrol and diesel vehicles represents an approximate saving of 41.7 GWh/year
	Estimated reduction in GHG emissions (total)	19 kt CO ₂
	Total costs and costs per unit of CO₂eq	Estimated investment: €41 million. Estimated cost: ~€216/tCO ₂ avoided over 10 years.

B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of the action	(4.2) Promotion of measures on the municipal EV charging network
	Type of action	Municipal regulation for the deployment of electrical infrastructure
	Description	Promotion of the deployment, use and maintenance of the electric vehicle charging network in the city. The aim is to facilitate the installation of public and private charging points, ensure the interoperability of systems, simplify administrative procedures and ensure compliance with uniform technical and environmental criteria.
Reference to the impact pathway	Scope of emission	Transport
	Systemic lever	Electrification of cars and motorcycles



B-2.2.a: Individual action plans for the transport sector		
	Result (according to module B-1.1)	Accelerating the rollout of charging infrastructure, improving territorial coverage, reducing barriers to electrification and increasing the share of electric vehicles.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Urban Planning Departments
	Scale of action and target entities	Municipality of Bilbao. Affects developers, energy operators, citizens and companies in need of charging points.
	Stakeholders	City Council, energy distribution companies, charging operators, dealers, local technical and legal community
	Comments on implementation	Criteria will be established for implementation on public roads, private garages, commercial car parks and residential buildings. This will be coordinated with urban planning and linked to installation subsidies.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Supports the structural replacement of combustion vehicles with electric vehicles, but its direct effect is instrumental
	Estimated GHG emissions reduction (total)	0.0 kt CO ₂ (instrumental action)
	Total costs and costs per unit of CO₂eq	Low administrative cost. Climate impact reflected in associated electrification actions.

B-2.2.a: Individual action schemes in the transport sector		
Action scheme	Name of action	(5.1) Progressive electrification of the Bilbobus fleet
	Type of action	Renewal of the public transport fleet
	Description	Progressive replacement of diesel buses in the Bilbobus municipal network with electric models.



B-2.2.a: Individual action schemes in the transport sector		
		The action is part of the plan to modernise Bilbao's public transport fleet, prioritising the reduction of local emissions, improved service comfort and institutional exemplarity. The purchase of new vehicles and the installation of recharging infrastructure in depots and terminals are envisaged.
Reference to the impact pathway	Scope of emissions	Transport
	Systemic lever	Electrification of buses
	Result (according to module B-1.1)	Reduction of GHG emissions and air pollutants associated with urban public transport. Improved perception of public transport and air quality.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Sustainability Department
	Scale of action and target entities	Municipal urban bus network. Benefits all public transport users.
	Actors involved	City Council, Bilbobus operators, electric bus manufacturers, electrical infrastructure companies
	Comments on implementation	The renewal is being carried out progressively, according to the useful life cycles of existing vehicles. It is complemented by pilot projects and autonomy tests on lines with different operational requirements.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Replacement of diesel consumed by the Bilbobus fleet. Estimated reduction of 2.8 million litres/year upon completion of the transition.
	Estimated reduction in GHG emissions (total)	7.3 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €28 million (for complete renewal of ~86 buses). Cost per tonne avoided: ~€3,835/tCO ₂ over 10 years.



B-2.2.a: Individual action plans for the transport sector		
Action scheme	Name of the action	(6.1) Study of the use of loading and unloading zones
	Type of action	Urban logistics planning and optimisation
	Description	A technical study will be carried out in Bilbao to analyse the current use of loading and unloading zones (ZCD), including time schedules, occupancy levels, vehicle types, delivery frequencies, and geographic distribution. The findings will inform the design of measures to enhance the efficiency of urban logistics and support the transition to low-emission delivery fleets.
Reference to the impact pathway	Scope of emission	Transport – urban logistics
	Systemic lever	Sustainable urban logistics
	Result (according to module B-1.1)	Updated technical diagnosis, improvement proposal and roadmap for reorganising the ZCD
Implementation	Organisations/individuals responsible for implementation	Mobility Department of Bilbao City Council
	Scale of action and target entities	Municipal scale – logistics operators, shops, urban fleets
	Actors involved	Logistics companies, shops, transport associations, municipal technicians
	Comments on implementation	The study may be carried out in collaboration with universities or technology centres and will require participation from the logistics sector
Impacts and costs	Renewable energy generated (if applicable)	—
	Energy eliminated/replaced, volume or type of fuel	Slight reduction in fossil fuel through improved operational efficiency in the last mile
	Estimated GHG emissions reduction (total)	0.1 kt CO ₂ /year



B-2.2.a: Individual action plans for the transport sector		
	Total costs and costs per unit of CO₂eq	Low administrative cost. Climate impact reflected in the actions derived from the study results.

B-2.2.a: Individual action plans for the transport sector		
Action plan	Name of action	(7.1) Renewal of cleaning and waste fleets
	Type of action	Electrification and environmental improvement of urban services
	Description	Progressive replacement of street cleaning, waste collection and urban maintenance vehicles operated directly or indirectly by the City Council. The objective is to progressively eliminate the most polluting diesel vehicles by incorporating 100% electric, hybrid or fleets powered by low-emission alternative fuels.
Reference to the impact pathway	Scope of emissions	Transport
	Systemic lever	Electrification of trucks
	Result (according to module B-1.1)	Significant reduction in emissions from heavy-duty vehicles operating intensively in the city, improved air quality and reduced noise at night.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Services and Sustainability Department
	Scale of action and target entities	Fleets contracted or managed by the City Council. Urban cleaning and waste collection services.
	Actors involved	City Council, contractors (Urbaser, FCC, etc.), industrial vehicle manufacturers, citizens as beneficiaries of environmental improvements
	Comments on implementation	Renewals are coordinated with tenders for new service contracts. Strict environmental criteria are included in the specifications. Pilot projects are underway and a phased renewal with annual monitoring is planned.



B-2.2.a: Individual action plans for the transport sector		
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction of 5,640,581 kWh/year of diesel for heavy urban vehicles
	Estimated reduction in GHG emissions (total)	10 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €16 million. Cost per tonne avoided: ~€1,600/tCO ₂ (over 10 years).

B-2.2.a: Individual action plans for the transport sector		
Action plan	Name of action	(7.2) Progressive electrification of private freight transport fleets
	Type of action	Decarbonisation of urban logistics and last-mile distribution
	Description	Active promotion of the electrification of goods transport vehicles, both light (vans) and heavy (trucks), operated by companies with regular activity in Bilbao. Includes sectoral agreements, tax benefits, economic incentives and preferential access to low-emission zones (LEZs). Efforts will be made to mobilise private investment through green financing lines and the incorporation of clean fleet requirements in public procurement contracts.
Reference to the impact pathway	Scope of issuance	Transport
	Systemic leverage	Truck electrification
	Result (according to module B-1.1)	Reduction of emissions from the logistics sector, improvement of air quality in high-density urban areas and reduction of noise emissions.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Mobility and Economic Promotion Department



B-2.2.a: Individual action plans for the transport sector		
	Scale of action and target entities	Logistics companies, self-employed workers, urban and metropolitan transport operators, supply chains with distribution in Bilbao.
	Stakeholders	City Council, business associations, logistics operators, manufacturers, leasing companies, commercial sector
	Comments on implementation	Priority will be given to fleets operating in the city centre, annual targets will be set for each segment and the installation of charging infrastructure in industrial estates and logistics hubs will be facilitated. Coordination with regional and national aid (MOVES).
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Combined reduction of diesel and petrol by 8% of the current commercial vehicle fleet (15 GWh/year of fossil energy avoided)
	Estimated GHG emissions reduction (total)	21 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €35 million. Cost per tonne avoided: ~€1,932/tCO ₂ (over 10 years).

Buildings and Heating & Cooling Sector

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of action	(8.1) Renovation measures in municipal buildings and facilities
	Type of action	Energy renovation of municipal public buildings
	Description	Work on the main municipal buildings to improve their energy efficiency, reduce their thermal demand and optimise their facilities. The actions include renovation of building envelopes, replacement of windows and doors, improvements in insulation, incorporation of control and remote management systems, and upgrading of thermal equipment. The



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
		programme covers actions on administrative, cultural and sports buildings and municipal housing.
Reference to the impact pathway	Scope of emission	Building
	Systemic lever	Building renovation (envelope)
	Result (according to module B-1.1)	Reduction in energy demand, savings in operating costs, improvement in thermal comfort and contribution to the climate neutrality of the City Council.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Works and Services Department, General Services and Sustainability Department
	Scale of action and target entities	All municipally owned buildings: Udaletxea, Azkuna Zentroa, Bilbao Ekintza, Bilbao Arte, Bilbao Kirolak, Bilbao Musika, Bilbao Zerbitzuak, Arriaga Theatre, Municipal Housing.
	Actors involved	City Council, renovation contractors, energy solution providers, citizens who use the buildings
	Comments on implementation	The programme is being implemented in phases, prioritising buildings with the highest energy consumption. It is partially funded through European programmes and, in several cases, includes Energy Performance Contracts (EPCs). It is complemented by the electrification and self-consumption programme.
Impacts and costs	Renewable energy generated (if applicable)	Not directly; some roofs are connected to the municipal solar programme
	Energy eliminated/replaced, volume or type of fuel	Estimated savings of 20–30% in thermal and electrical demand in the buildings involved
	Estimated reduction in GHG emissions (total)	3.2 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €55 million. Estimated cost per tonne: ~€1,700/tCO ₂ avoided (10 years).



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(8.2) Promotion of energy renovation of buildings and homes
	Type of action	Subsidies and technical support for private residential renovation
	Description	Comprehensive programme of financial aid and technical assistance for homeowners' associations and residents to carry out energy efficiency improvement works. Managed by Surbisa, the programme includes several funding lines: Line 0 (preliminary costs), Line 1 (vulnerable households), Line 4 (energy efficiency and heritage value), Green Line A+ (energy audits and minor improvements), and management of Next Generation funds for deep renovation projects.
Reference to the impact channel	Scope of issuance	Building
	Systemic lever	Building renovation (envelope)
	Result (according to module B-1.1)	Reduction in energy consumption and emissions in the residential sector. Improvement in accessibility, thermal comfort and quality of the building stock.
Implementation	Organisations/persons responsible for implementation	Bilbao City Council – Urban Regeneration and Housing Department, Surbisa
	Scale of action and target entities	Private homes and residential buildings throughout the municipality. Special focus on vulnerable neighbourhoods.
	Actors involved	City Council, homeowners' associations, renovation technicians, energy agents, citizens
	Comments on implementation	The programme prioritises comprehensive interventions with verifiable energy impact. It integrates social (vulnerability), heritage and sustainability elements. Aid can be combined with qualified loans.
Impacts and costs	Renewable energy generated (if applicable)	Not directly applicable, but can be linked to residential self-consumption



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
	Energy eliminated/replaced, volume or type of fuel	Reduction in electricity and heat consumption (natural gas, diesel, conventional electricity)
	Estimated reduction in GHG emissions (total)	3.9 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated public investment: €75 million. Cost per tonne avoided: ~€435/tCO ₂ (over 10 years).

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(8.3) Inter-institutional agreements for energy efficiency in non-municipal public buildings
	Type of action	Institutional coordination and framework agreements for the decarbonisation of shared public buildings
	Description	Establishment of collaboration agreements with other public entities that own buildings in Bilbao (Basque Government, Provincial Council of Bizkaia, UPV/EHU, Osakidetza, etc.) to jointly promote energy efficiency measures. These include energy audits, renovation of building envelopes, improvement of installations, digitisation of consumption, and the promotion of renewable self-consumption. The initiative aims to align with the objectives of Law 4/2019 on Energy Sustainability in the Basque Public Sector.
Reference to the impact pathway	Scope of issuance	Building
	Systemic lever	Building renovation (envelope)
	Result (according to module B-1.1)	Reduction of emissions and energy consumption in institutional buildings not directly managed by the City Council. Institutional alignment and consistency in the local energy transition.
Implementation	Bodies/persons responsible for implementation	Bilbao City Council – Institutional coordination, in collaboration with the Basque Government, DFB, UPV/EHU, Osakidetza



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
	Scale of action and target entities	Public buildings located in Bilbao but managed by other administrations
	Actors involved	Public institutions that own buildings, energy agencies, public service companies, educational and health centres
	Comments on implementation	The action will serve as a framework for co-financing projects, developing common technical specifications and coordinating the mobilisation of European funds. It may include joint energy monitoring platforms and aggregated energy purchasing.
Impacts and costs	Renewable energy generated (if applicable)	Possible generation through solar self-consumption on public roofs (to be defined in each project)
	Energy eliminated/replaced, volume or type of fuel	Preliminary estimate: 15–25% savings in total consumption of municipal, healthcare and educational buildings in the city
	Estimated reduction in GHG emissions (total)	5.5 kt CO ₂
	Total costs and costs per unit of CO₂eq	Estimated shared investment: €120 million. Approximate cost: ~€1,090/tCO ₂ (over 10 years).

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of action	(8.4) Promotion of renovation in the tertiary sector
	Type of action	Subsidies, incentives and technical support for trade and the tertiary sector
	Description	Aid programme for commercial premises and buildings in the tertiary sector to promote energy efficiency improvements, urban image modernisation and adaptation to sustainability criteria. It includes the Commercial Urban Improvement Plan, Line 5 aid for commercial establishments and specific Bilbao Ekintza programmes. Eligible actions include efficient lighting, insulation, renovation of accesses and signs, and improved accessibility.



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Reference to the impact channel	Scope of application	Building
	Systemic lever	Building renovation (envelope)
	Result (according to module B-1.1)	Reduction in energy demand, improvement of the urban image and increased competitiveness of small local businesses, especially in areas with declining activity.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Department of Economic Development and Bilbao Ekintza
	Scale of action and target entities	Commercial premises, offices, small businesses and tertiary buildings on the ground floor or in vulnerable urban environments
	Actors involved	City Council, trade associations, property owners, designers, energy technicians
	Comments on implementation	Action is prioritised in areas such as Bilbao La Vieja, Irala and Olabeaga. Aid covers up to 40% of the cost of the work and is combined with advisory services. The programme is linked to urban regeneration and sustainable economic activation objectives.
Impacts and costs	Renewable energy generated (if applicable)	Not directly, but the installation of LED lighting and improvements to electrical systems are promoted
	Energy eliminated/replaced, volume or type of fuel	Reduction in electricity consumption in small premises, obsolete air conditioning systems and lighting
	Estimated reduction in GHG emissions (total)	12 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €57 million. Approximate cost: ~€475/tCO ₂ (over 10 years).

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(9.1) Review of energy and life cycle regulations in new buildings



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
	Type of action	Technical reform with an impact on public and private construction
	Description	Technical guidelines will be developed, and life cycle analysis will be included in municipal tenders. Low-impact materials (structural wood, recycled materials, local materials) will be promoted.
Reference to the impact pathway	Scope of emissions	Building
	Systemic lever	New high energy efficiency buildings
	Result (according to module B-1.1)	Simultaneous reduction in operational energy demand and emissions incorporated throughout the life cycle of the new building
Implementation	Responsible bodies	Bilbao City Council – Urban Planning, Sustainability and Finance Departments
	Scale of action	Direct application to new municipal buildings and progressive application in private developments
	Actors involved	City council, developers, architectural firms, materials manufacturers
	Comments on implementation	Requires cross-cutting work between urban planning, sustainability and procurement. Strengthens institutional leadership with tools for structural change.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced	Avoided energy demand and reduction in embedded carbon (estimated at 200–300 kgCO ₂ /m ² built)
	GHG emissions reduction (total)	Instrumental measure, no direct impact
	Total cost and cost per tCO ₂	~€330,000



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(9.2) Passive architecture and low-impact materials in new buildings
	Type of action	Demonstration and technical programme for the adaptation and decarbonisation of urban design
	Description	The programme promotes bioclimatic measures and the use of materials with a lower carbon footprint in new buildings. It promotes: (1) passive design adapted to climate change (green roofs, natural ventilation), (2) prioritisation of materials with a low carbon footprint, (3) the introduction of these criteria in municipal specifications and tenders, and (4) monitoring through evaluated pilot projects.
Reference to the impact pathway	Scope of emissions	Building
	Systemic lever	New high-energy-efficiency buildings
	Result (according to module B-1.1)	Combined reduction of thermal demand and embedded carbon in new public and private buildings
Implementation	Responsible bodies	Bilbao City Council – Sustainability, Housing, Works and Services
	Scale of action	Municipal facilities and future urban developments
	Actors involved	Technical services, suppliers, design and maintenance teams
	Comments on implementation	Complements regulatory programmes by incorporating passive adaptation to climate change into architectural and urban design
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced	Reduction in thermal demand through passive air conditioning (15–25%) and embedded carbon (up to 20%)



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
	Reduction in GHG emissions (total)	Instrumental measure, no direct impact
	Total cost and cost per tCO ₂	~€250,000

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(10.1) Electrification of public buildings
	Type of action	Replacement of fossil fuel heating systems in municipal buildings
	Description	Progressive replacement of diesel and natural gas boilers in municipal buildings with fully electric heating and air conditioning systems, mainly high-efficiency heat pumps. The action will be implemented in sports, educational, cultural and administrative centres. It will be accompanied by the digitisation and energy monitoring of consumption.
Reference to the impact pathway	Scope of emission	Building
	Systemic lever	Decarbonisation of heating generation
	Result (according to module B-1.1)	Elimination of fossil fuel consumption in public heating systems. Direct reduction of GHG emissions and improvement in energy efficiency.
Implementation	Organisations/persons responsible for implementation	Bilbao City Council – Sustainability, General Services and Works and Services Departments
	Scale of action and target entities	Municipal buildings with heating systems still based on fossil fuels
	Actors involved	City Council, energy service companies, municipal technicians, installation companies
	Comments on implementation	The action is coordinated with rehabilitation and self-consumption programmes in public buildings. Priority is given to buildings with high energy



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
		consumption and continuous annual use. It may include energy performance contracts (EPCs).
Impacts and costs	Renewable energy generated (if applicable)	Not directly, but compatible with electricity self-consumption
	Energy eliminated/replaced, volume or type of fuel	Elimination of more than 4 million kWh of fossil-based thermal energy per year. Replacement with clean electricity from the grid.
	Estimated GHG emissions reduction (total)	8.7 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €8 million. Estimated cost: ~€920/tCO ₂ avoided (over 10 years)

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(10.2) Thermal electrification of the residential and tertiary sector
	Type of action	Subsidy and advisory programme for the decarbonisation of heating
	Description	The programme promotes the electrification of heating systems in homes and commercial premises by gradually replacing individual and communal boilers fuelled by natural gas or diesel with air-water or geothermal heat pumps. It is implemented through financial aid, simplified procedures, technical advice and information campaigns. It includes specific incentives for vulnerable families and small businesses.
Reference to the impact pathway	Scope of issuance	Building
	Systemic lever	Decarbonisation of heating generation
	Result (according to module B-1.1)	Structural reduction of emissions in existing buildings, accelerating the transition to high-efficiency electric systems without fossil fuels.



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Implementation	Bodies/persons responsible for implementation	Bilbao City Council – Housing, Surbisa and Sustainability Department; Basque Energy Agency (EVE)
	Scale of action and target entities	Housing, homeowners' associations, private tertiary premises, micro-enterprises
	Actors involved	City Council, EVE, accredited installers, neighbourhood and commercial associations
	Comments on implementation	Coordinated with the rollout of energy communities, renovation programmes and electrification campaigns. Public-private financing models are being explored (ESCOs, green leasing).
Impacts and costs	Renewable energy generated (if applicable)	Indirect (through electrification with high penetration of renewables in the grid)
	Energy eliminated/replaced, volume or type of fuel	Estimated replacement of more than 65 GWh/year of fossil thermal energy (natural gas and diesel) in residential and tertiary uses
	Estimated GHG emissions reduction (total)	20 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €127 million. Cost per tCO ₂ avoided: ~€635/tCO ₂

B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Action scheme	Name of the action	(10.3) Implementation of geothermal district heating in Zorrotzaurre
	Type of action	Installation of urban renewable air conditioning infrastructure
	Description	Installation and commissioning of an urban climate control network powered by low-enthalpy geothermal energy in three sectors of the Zorrotzaurre district. It will connect municipal, residential and tertiary buildings, incorporating heat pumps, heat exchange systems, smart management and scalable design.



B-2.2.b: Individual action plans for the Buildings and Heating & Cooling Sector		
Reference to the impact pathway	Scope of emissions	Building
	Systemic lever	Decarbonisation of heating generation
	Result (according to module B-1.1)	Structural reduction of fossil fuel demand for heating in a new urban development through centralised renewable air conditioning (). Increased energy efficiency and direct reduction of operational emissions.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Bilbo Ener, Works and Services, Urban Planning and Sustainability; Basque Energy Agency (EVE)
	Scale of action and target entities	New and existing buildings in the Zorrotzaurre district (residential, tertiary, municipal)
	Actors involved	City Council, EVE, accredited installers, neighbourhood and commercial associations, and supra-municipal administrations
	Comments on implementation	Part of the structural design of the new Zorrotzaurre neighbourhood. Piping work already underway. Full operation expected from 2028. The model will be replicable in other neighbourhoods with similar characteristics.
Impacts and costs	Renewable energy generated (if applicable)	Yes, through low-enthalpy geothermal energy
	Energy eliminated/replaced, volume or type of fuel	65 GWh/year of thermal consumption (heating and DHW) currently planned with individual systems based on natural gas and diesel in new residential, tertiary and municipal developments in the district.
	Estimated GHG emissions reduction (total)	5.8 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	Estimated investment: €20 million. Cost per tCO ₂ avoided: ~€3,448/tCO ₂



Electricity sector

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of action	(11.1) Renovation of lighting systems and equipment in public buildings
	Type of action	Improvement of energy efficiency – renovation of lighting and installations
	Description	Progressive replacement of interior lighting and electrical equipment in municipal buildings with LED lighting and low-consumption devices. Priority will be given to schools, sports centres, administrative offices and cultural facilities. Includes the incorporation of presence sensors and remote management to adjust energy consumption to actual demand.
Reference to the impact pathway	Scope of emission	Municipal public buildings
	Systemic lever	Efficiency in lighting and electrical equipment
	Result (according to module B-1.1)	Sustained reduction in municipal electricity consumption, improved comfort and visibility, and reduction in indirect emissions.
Implementation	Responsible bodies/individuals	General Services of Bilbao City Council
	Scale of action and target entities	20 priority buildings between 2025 and 2027 (schools, sports centres, cultural and administrative centres)
	Actors involved	Bilbao Kirolak, Bilbao Musika, BilbaoArte, Bilbao Ekintza, Energy Department, electricity suppliers
	Comments on implementation	Implemented through energy performance contracts and batch tenders, prioritising buildings with the highest annual consumption. Possibility of co-financing through European funds (ERDF) or IDAE.
Impacts and costs	Renewable energy generated (if applicable)	N/A



B-2.2.c: Individual action plans for the electricity sector		
	Energy eliminated/replaced	Electricity from the grid, estimate: 3,900 MWh/year eliminated
	Estimated GHG emissions reduction	5.5 ktCO ₂ eq
	Total costs and costs per unit of CO ₂ eq	€20 million / €17.6 million/tCO ₂ eq avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of the action	(11.2) Actions on public lighting
	Type of action	Technological renewal – improvement of energy efficiency in urban lighting
	Description	Progressive replacement of outdoor lighting in Bilbao with state-of-the-art LED luminaires. The action also includes the incorporation of remote management, allowing dynamic adjustment of light flow and reducing unnecessary night-time consumption. The programme is divided into phases by neighbourhood and prioritised according to age and consumption.
Reference to the impact pathway	Scope of emission	Electricity in municipal services (street lighting)
	Systemic lever	Efficiency in lighting and electrical equipment
	Result (according to module B-1.1)	Reduction in electricity consumption for outdoor lighting and associated emissions
Implementation	Responsible bodies/individuals	Bilbao City Council services
	Scale of action and target entities	More than 15,000 street lights in the public lighting network replaced
	Actors involved	Energy service contractors, network operators, LED technology companies



B-2.2.c: Individual action plans for the electricity sector		
	Comments on implementation	Contracting through an ESCO (Energy Service Company) model with guaranteed return on savings. Possibility of integration with smart city systems. Co-financing possible via IDAE or ERDF.
Impacts and costs	Renewable energy generated (if applicable)	N/A
	Energy eliminated/replaced	Conventional electricity, estimated reduction: 7,200 MWh/year
	Estimated reduction in GHG emissions	3.4 ktCO ₂ eq
	Total costs and costs per unit of CO ₂ eq	€15 million / €3,823/tCO ₂ eq avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of the action	(11.3) Incorporation of high energy efficiency standards in public works
	Type of action	Regulatory and technical action to enable new municipal buildings and renovations
	Description	Revision of public construction projects to incorporate mandatory criteria for advanced energy efficiency (natural ventilation, efficient lighting, thermal envelope, sustainable materials, etc.). A technical guide will be developed, tender specifications will be reformulated and progressive requirements linked to NZEB standards will be included. Includes technical training for municipal staff and pilot tests.
Reference to the impact pathway	Scope of emission	Public buildings – electricity and heat consumption
	Systemic lever	Lighting and electrical equipment efficiency / High energy efficiency buildings
	Result (according to module B-1.1)	Structural improvement in the energy performance of all future public works and renovations



B-2.2.c: Individual action plans for the electricity sector		
Implementation	Responsible bodies/persons	Bilbao City Council – Public Works, Urban Planning, Procurement
	Scale of action and target entities	Application to all new construction and renovation public works promoted by the City Council
	Actors involved	Municipal technical services, architectural firms, contractors
	Comments on implementation	This is an enabling measure with a high indirect impact. It requires technical coordination between areas and progressive training of staff. Its impact will be assessed using indicators linked to emissions per m ² built.
Impacts and costs	Renewable energy generated (if applicable)	N/A
	Energy eliminated/replaced	N/A direct (cumulative impact on future public actions)
	Estimated GHG emissions reduction	N/A (instrumental measurement)
	Total costs and per unit of CO ₂ eq	€250,000 (regulatory development and technical guidance) – no unit cost calculation per tCO ₂ avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of the action	(11.4) Inter-institutional agreements for energy efficiency in non-municipal public buildings
	Type of action	Institutional agreement on technical and financial cooperation
	Description of the action	Establishment of agreements with other public administrations that own buildings in Bilbao (Basque Government, Provincial Council of Bizkaia, UPV/EHU, health, educational and cultural centres) to jointly promote energy efficiency measures (renovation of building envelopes, modernisation of heating systems, replacement of lighting, integration of renewable energy sources). The



B-2.2.c: Individual action plans for the electricity sector		
		programme seeks to coordinate investment schedules, share technical models and optimise the use of European and regional funds.
Reference to the impact pathway	Scope of issuance	Institutional building
	Systemic lever	Efficiency in lighting and electrical equipment / Energy renovation of buildings
	Result (according to module B-1.1)	Direct reduction of emissions in non-municipal public buildings in Bilbao
Implementation	Responsible bodies/individuals	Bilbao City Council – Sustainability and Urban Planning + collaborating entities as per agreement
	Scale of action and target entities	Schools, hospitals, universities, public sports and cultural centres not owned by the municipality
	Actors involved	Basque Government, Bizkaia Provincial Council, UPV/EHU, health consortia, IDAE
	Comments on implementation	The action will enable funds to be channelled to a significant type of building in terms of public consumption. Priority will be given to buildings with intensive use, high thermal demand or strong demonstrative value.
Impacts and costs	Renewable energy generated (if applicable)	Possible self-consumption in part of the refurbished facilities
	Energy eliminated/replaced	Estimate: >11,500 MWh/year in fossil electricity and heat consumption
	Estimated reduction in GHG emissions	1 ktCO ₂ eq
	Total costs and per unit of CO ₂ eq	€6 million / €6,000/tCO ₂ avoided

B-2.2.c: Individual action plans for the electricity sector		
Action plan	Name of the action	(11.5) Programme to promote electrical efficiency in the residential and tertiary sectors



B-2.2.c: Individual action plans for the electricity sector		
	Type of action	Aid, campaigns and incentives for the modernisation of electrical equipment
	Description	The programme promotes improvements in electrical efficiency in homes and commercial premises through subsidies and information campaigns. It encourages the replacement of obsolete electrical appliances and equipment with efficient models (class A or higher), the replacement of lighting with LED bulbs, and the use of consumption control systems. The programme will include practical guides, information days and agreements with distributors and professional associations.
Reference to the impact channel	Scope of implementation	Private residential and tertiary sector
	Systemic lever	Efficiency in lighting and electrical equipment
	Result (according to module B-1.1)	Progressive reduction in domestic and tertiary electricity consumption
Implementation	Responsible bodies/individuals	Bilbao City Council – Sustainability, Surbisa and Bilbao Ekintza; EVE
	Scale of action and target entities	Households, businesses, SMEs, service sector premises
	Actors involved	Electricity distributors, neighbourhood associations, retailers, installers
	Comments on implementation	Priority will be given to areas with greater energy vulnerability and traditional businesses in neighbourhoods undergoing transformation. Possibility of co-financing through European or Basque Government programmes.
Impacts and costs	Renewable energy generated (if applicable)	N/A
	Energy eliminated/replaced	Estimated savings: >8,300 MWh/year in electricity consumption



B-2.2.c: Individual action plans for the electricity sector		
	Estimated reduction in GHG emissions	2.4 ktCO ₂ eq
	Total costs and costs per unit of CO ₂ eq	€6 million / €338/tCO ₂ avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of action	(12.1) Renewable generation in municipal buildings
	Type of action	Installation of photovoltaic self-consumption systems in public facilities
	Description	Installation of photovoltaic systems in municipal buildings and facilities with high electricity demand (sports centres, schools, civic centres, administrative buildings). The programme is based on a technical inventory that estimates a potential of more than 13 MWp and 11 GWh of electricity generation per year. The installations will be for self-consumption with or without surpluses and will reduce conventional electricity consumption.
Reference to the impact pathway	Scope of emissions	Public buildings – electricity consumption
	Systemic lever	Decarbonisation of electricity supply / Renewable self-consumption
	Result (according to module B-1.1)	Direct reduction in grid electricity consumption in municipal buildings and increased energy autonomy
Implementation	Responsible bodies/individuals	Bilbao City Council – General Services and Sustainability; BilboEner; Bilbao Kirolak; Bilbao Zerbitzuak; EVE
	Scale of action and target entities	Municipal buildings with available roofs
	Actors involved	Installation companies, equipment managers, energy cooperatives, district office network
	Comments on implementation	Combined financing from municipal resources, European funds (IDAE, ERDF) and energy



B-2.2.c: Individual action plans for the electricity sector		
		performance mechanisms. Integration into local energy communities will be assessed.
Impacts and costs	Renewable energy generated (if applicable)	11 GWh/year
	Energy eliminated/replaced	Conventional grid electricity
	Estimated GHG emissions reduction	3.4 ktCO ₂ eq
	Total costs and costs per unit of CO ₂ eq	€25 million / €900/tCO ₂ avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of the action	(12.2) Municipal programme of aid for renewables
	Type of action	Subsidies, tax deductions and technical advice
	Description	Programme to promote photovoltaic self-consumption through non-repayable grants, tax rebates (property tax, construction tax) and technical advice. It is aimed at homes, homeowners' associations and small businesses. It also includes support for the creation of energy communities and is coordinated with Basque Government programmes and European funds. The programme is reinforced with awareness campaigns, administrative simplification and a one-stop technical service.
Reference to the impact channel	Scope	Residential, tertiary and small industries
	Systemic lever	Renewable self-consumption and energy empowerment
	Result (according to module B-1.1)	Increase in the number of solar photovoltaic installations on private and collective roofs



B-2.2.c: Individual action plans for the electricity sector		
Implementation	Responsible bodies/individuals	Bilbao City Council – Sustainability and Finance; Surbisa; EVE; Bilbao Ekintza; Bilbo Ener
	Scale of action and target entities	Households, neighbourhood communities, SMEs, building owners
	Actors involved	Installers, energy agents, cooperatives, neighbourhood associations
	Comments on implementation	Vulnerable areas are prioritised and intensity scales are applied according to income and size of installation.
Impacts and costs	Renewable energy generated (if applicable)	Estimate: 90 GWh/year by 2030
	Energy eliminated/replaced	Grid electricity in homes, shops and offices
	Estimated GHG emissions reduction	21 ktCO ₂ eq
	Total costs and costs per unit of CO ₂ eq	€93 million / €1,100/tCO ₂ avoided

B-2.2.c: Individual action plans for the electricity sector		
Action scheme	Name of the action	(12.3) Planning and regulation programme for the deployment of renewable energies
	Type of action	Diagnosis, planning and regulation
	Description	Development of technical and regulatory instruments to facilitate the deployment of renewable energy in Bilbao. This includes conducting an inventory of existing facilities, a study of the renewable potential of roofs, land and public and private environments, and the design of regulations setting out the urban planning and construction conditions for the installation of solar photovoltaic, thermal or renewable heating systems (district heating, geothermal energy, etc.). Priority areas, governance models and coordination with other urban plans are also identified.



B-2.2.c: Individual action plans for the electricity sector		
Reference to the impact pathway	Scope of emissions	Electricity and heat in all sectors
	Systemic lever	Enabling governance and energy planning
	Result (according to module B-1.1)	Increased viability, simplification and coordination of the deployment of renewables
Implementation	Responsible bodies/persons	Bilbao City Council – Urban Planning, Sustainability, Energy Office, Bilbo Ener
	Scale of action and target entities	The entire city; special focus on public buildings, communities and available land
	Actors involved	Professional associations, EVE, IDAE, renewable energy associations, property developers
	Comments on implementation	The programme is instrumental, with no direct impact on emissions, but necessary to remove technical, administrative and urban planning barriers. It will provide security for developers and investors.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable (facilitator of future installations)
	Energy eliminated/replaced	Not applicable
	Estimated GHG emissions reduction	Not applicable (indirect impact accounted for in other actions)
	Total costs and costs per unit of CO ₂ eq	€120,000 / not applicable

B-2.2.c: Individual action plans for the electricity sector		
Action plan	Name of action	(12.4) Business commitment to 100% renewable electricity consumption
	Type of action	Voluntary change in energy supply through institutional commitment and adherence



B-2.2.c: Individual action plans for the electricity sector		
	Description	This programme promotes the energy transition in Bilbao's business sector through a public campaign encouraging companies to join the Neutrality Mission. It is structured around commitment agreements with large energy consumers, verification of renewable electricity supply through guarantees of origin, and the creation of a public register calculating avoided emissions. The initiative aims to mobilise the economic sector as an active player in the energy transition.
Reference to the impact pathway	Scope of emissions	Electricity consumed in tertiary and industrial buildings
	Systemic lever	Participatory governance, decarbonisation of the productive sector, promotion of co-responsibility and voluntary adherence
	Result (according to module B-1.1)	Deployment of a business ecosystem with 100% renewable electricity consumption. Cumulative reduction of 175 GWh/year of fossil fuel-based electricity consumption.
Implementation	Organisations/individuals responsible for implementation	Bilbao Ekintza, Sustainability Department
	Scale of action and target entities	Large companies in the tertiary and industrial sectors, clusters and sectoral associations
	Actors involved	Companies, verification bodies, business associations, energy certification bodies, chambers of commerce
	Comments on implementation	The action is based on a logic of voluntary participation with incentives. It requires a strong institutional campaign, technical support and public visibility. It can be linked to tax incentives or competitive advantages associated with registration.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable (replacement of electricity supply with renewable energy from the market)
	Energy eliminated/replaced, volume or type of fuel	175 GWh/year of electricity from fossil fuels



B-2.2.c: Individual action plans for the electricity sector		
	Estimated GHG emissions reduction (total)	25 ktCO ₂
	Total costs and costs per unit of CO ₂ eq	Low estimated cost (campaign + technical management), <€80/tCO ₂ . Costs mainly borne by the participating companies themselves.

Waste sector

B-2.2.d: Individual action plans for the waste sector		
Action scheme	Name of the action	(13.1) New Municipal Waste Management Plan
	Type of action	Regulatory planning
	Description	Drafting and approval of the 2027 Municipal Plan, with a comprehensive focus on prevention, increased recycling, composting and the circular economy. Aligned with the Bizkaia Integrated Waste Management Plan (PIGRUB), it sets ambitious local targets and information and awareness-raising mechanisms for its implementation.
Reference to the impact pathway	Scope of emission	Municipal solid waste
	Systemic lever	Governance and regulation
	Result (according to module B-1.1)	Progressive reduction of the residual fraction; increase in selective collection and recovery of materials
Implementation	Bodies/persons responsible for implementation	Bilbao City Council Services and Quality of Life Department
	Scale of action and target entities	The entire municipality of Bilbao; households, businesses, economic agents and citizens
	Actors involved	City Council, citizens, waste operators, educational centres, neighbourhood associations



B-2.2.d: Individual action plans for the waste sector		
	Comments on implementation	Initial approval of the plan, launch of participatory campaigns and gradual roll-out with periodic reviews are expected
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in waste sent to energy recovery and landfill
	Estimated reduction in GHG emissions (total)	1.5 ktCO ₂ /year
	Total costs and costs per unit of CO ₂ eq	Low-medium cost (planning and campaigns); cost per tCO ₂ reduced estimated as efficient in relation to cultural and structural impacts

B-2.2.d: Individual action plans for the waste sector		
Action scheme	Name of the action	(13.2) Introduction of a new waste tax
	Type of action	Green taxation / economic instrument
	Description	Design and implementation of a municipal tax on urban waste linked to the use of brown (organic) bins and the number of people registered in the household. Includes discounts for frequent users of the selective collection system.
Reference to the impact pathway	Scope of issuance	Household waste
	Systemic lever	Economic incentives / behaviour change
	Result (according to module B-1.1)	Increased separation at source and selective collection of organic matter, improved waste quality
Implementation	Organisations/persons responsible for implementation	Finance Department and Services Department of Bilbao City Council
	Scale of action and target entities	Households in the municipality



B-2.2.d: Individual action plans for the waste sector		
	Actors involved	City Council, citizens, waste collection operators, neighbourhood associations
	Comments on implementation	It will be launched in January 2026, with gradual bonuses until 2027. It precedes logistical improvements and communication campaigns.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in volume of non-recyclable waste sent for recovery or landfill
	Estimated reduction in GHG emissions (total)	1.0 ktCO ₂ /year
	Total costs and costs per unit of CO₂eq	Low cost (mainly technical implementation and campaigns). Cost per tCO ₂ reduced very efficiently due to its multiplier effect on effective separation

B-2.2.d: Individual action schemes in the waste sector		
Action scheme	Name of the action	(13.3) Improvement of infrastructure and selective containers
	Type of action	Technical investment and logistics pilot
	Description	Renovation and expansion of containers for selective collection (textiles, hazardous waste, etc.), implementation of weighing and identification systems, and launch of door-to-door pilot projects for large generators or specific sectors.
Reference to the impact pathway	Scope of emission	Municipal solid waste
	Systemic lever	Operational innovation and logistical improvement
	Result (according to module B-1.1)	Increase in the rate and quality of selective collection, reduction in mixed waste
Implementation	Organisations/individuals responsible for implementation	Services and Sustainability Department of Bilbao City Council



B-2.2.d: Individual action schemes in the waste sector		
	Scale of action and target entities	Entire municipality; large generators and selected pilot sectors
	Stakeholders	City Council, logistics operators, waste companies, citizens
	Comments on implementation	Requires initial investment and the design of pilot tests tailored to each sector. Complements the implementation of the new waste tax.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Reduction in waste treated through energy recovery or sent to landfill
	Estimated reduction in GHG emissions (total)	0.2 ktCO ₂ /year
	Total costs and costs per unit of CO ₂ eq	Average cost (equipment purchase and modernisation). High operational efficiency and reduction of mixed waste.

Other sector (Industry and Recovery)

B-2.2.e: Individual action plans for the Other sector (Industry and Assessment)		
Action scheme	Name of the action	(14.1) Thermal decarbonisation of local industry in Bilbao
	Type of action	Mitigation – Energy transition
	Description	Technical support programme for the gradual replacement of gas and diesel-based heating systems with renewable solutions (geothermal, aerothermal, biomass or renewable electricity) in small and medium-sized industrial facilities in Bilbao. It includes information campaigns, technical advice and monitoring of results through the Climate City Contract adherence system.
	Scope of emissions	Thermal consumption in urban industrial processes



B-2.2.e: Individual action plans for the Other sector (Industry and Assessment)		
Reference to the impact pathway	Systemic lever	Reduction of industrial emissions and recovery
	Result (according to module B-1.1)	Replacement of more than 100 GWh/year of fossil thermal energy in local industries; improvement of competitiveness and reduction of the carbon footprint of the Bilbao production sector.
Implementation	Organisations/individuals responsible for implementation	Bilbao City Council – Economic Development and Sustainability Department; Bilbao Ekintza, Basque Energy Agency (EVE)
	Scale of action and target entities	Industrial companies located in Bilbao with thermal installations >70 kW
	Actors involved	Bilbao City Council, Bilbao Ekintza, EVE, chambers of commerce, local engineering firms, industrial installers, business associations (CEBEK, FVEM), beneficiary companies
	Comments on implementation	Sectoral segmentation, technological adaptation by type and financial support are required. The action is integrated into the CCC's climate commitment system for monitoring and visibility.
Impacts and costs	Renewable energy generated (if applicable)	N/A
	Energy eliminated/replaced, volume or type of fuel	≈107 GWh/year of fossil-based thermal energy (gas and diesel)
	Estimated GHG emissions reduction (total)	8 kt CO ₂ /year
	Total costs and costs per unit of CO ₂ eq	Estimated at €8 million at an approximate average cost of €90,000 to €120,000 per industrial installation (€ /tCO ₂). The cost per unit of CO ₂ would be €1,000/tCO ₂ (over 10 years).

B-2.2.e: Individual action plans for the Other (Industry and Assessment) sector		
Action scheme	Name of action	(14.3) Regional programme for environmental compensation associated with residual emissions of the industry



B-2.2.e: Individual action plans for the Other (Industry and Assessment) sector		
	Type of action	Natural drain / Residual compensation
	Description of the action	Progressive reforestation of at least 600 hectares of land in Bizkaia through agreements with forest owners and local councils, including monitoring of absorption certified by recognised methodologies (e.g. CO ₂ Veritas).
Reference to the impact pathway	Scope of emissions	Other (residual emissions)
	Systemic lever	Reduction of industrial emissions and recovery
	Result (according to module B-1.1)	Progressive natural capture of part of the residual emissions linked to other sources that cannot be directly eliminated.
Implementation	Organisations/individuals responsible for implementation	Provincial Council of Bizkaia, EVE and Sustainability Department of Bilbao City Council
	Scale of action and target entities	Provincial scale, with beneficiaries in rural and peri-urban municipalities
	Actors involved	Forest owners, local councils, certifying bodies
	Comments on implementation	Requires inter-institutional coordination and technical guarantees for carbon absorption certification; ideal as a complementary means of shared climate responsibility.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy eliminated/replaced, volume or type of fuel	Not applicable
	Estimated GHG emissions reduction (total)	10 kt CO ₂
	Total costs and costs per unit of CO ₂ eq	To be estimated according to hectares, species and absorption method



B-2.3: Summary of the strategy for residual emissions

Despite the ambitious deployment of transformative actions foreseen in the Climate City Contract, Bilbao expects to maintain a residual volume of greenhouse gas (GHG) emissions by the 2030 horizon. These emissions are estimated at around 200 ktCO₂e per year, to which must be added 227 ktCO₂e per year corresponding to the gap between achieving an 80% reduction compared to 2005 and compared to 2021.

It is important to distinguish between these two categories. Emissions associated with this gap are expected to be reduced beyond 2030, whereas residual emissions are those that will need to be compensated.

The emissions to be offset are mainly concentrated in industrial thermal energy consumption of fossil origin, particularly in sectors that are difficult to electrify or that require high-temperature processes.

As these emissions cannot be fully eliminated in the short term, the city will implement a partial climate compensation strategy, combining four complementary approaches:

Promotion of the Green Infrastructure Strategy and deployment of Nature-Based Solutions (NbS)

Urban renaturalisation interventions will be promoted—such as green corridors, green roofs, roadside trees and the restoration of peri-urban land—to enhance the city's atmospheric carbon sequestration capacity. While these sinks are modest in scale, their permanence and multifunctionality justify their inclusion as complementary compensation instruments.

Promotion of local carbon sequestration or absorption projects

More durable sequestration mechanisms will be explored in collaboration with scientific and technological actors (such as universities and R&D&I centres), to assess the potential for carbon storage in construction materials, biochar, or managed urban soils.

Voluntary offsetting by participating companies

Through the climate membership system, companies will be able to calculate their carbon footprint and channel resources into offsetting projects, such as the creation of forests inside or outside the city, the energy renovation of vulnerable homes, or the development of energy communities. These actions will be publicly recorded and certified as part of the city's collective effort.

This strategy prioritises solutions that are permanent, locally verifiable, and socially just, and explicitly rejects compensation mechanisms that are short-lived, reversible, or difficult to trace. Bilbao will commit to governance mechanisms that ensure the durability of carbon sinks, their long-term maintenance, and the monitoring of their actual climate impact.



MODULE B-3

Monitoring, evaluation and learning indicators

B-3.1.a: Impact pathways of the transport sector							
Results/impacts addressed	Action/project	Indicator or number	Name of indicator	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Reduction in motorised transport emissions	1.2 Implementation of the ZBE 1.3 Expansion of the cycle lane network 1.5 Pedestrianisation of city streets	TR-01	Demand for private motorised transport (Mpkm/year)	1,658	1,380	1,250	1,127
Promotion of public transport	1.1 Tram expansion 2.1 Promotion of BilbaoBizi	TR-02	Bus transport demand (Mpkm/year)	111	130	135	140
Electrification of private vehicle fleet	4.1 Municipal subsidies for electric vehicles 4.2 Promotion of measures for the municipal EV charging network	TR-03	% of private vehicle fleet 100% electric	3.8 %	18 %	25 %	32 %
Electrification of public transport	5.1 Bilbobus fleet renewal	TR-04	Percentage of bus fleet that is 100% electric	8 %	24 %	44 %	69 %
Urban logistics decarbonisation (heavy-duty vehicles)	7 Renewal of cleaning and waste fleets	TR-05	% of electric trucks (>3.5 t)	0 %	10 %	25 %	40 %
Urban logistics decarbonisation (light vehicles)	7.2 Progressive electrification of private freight fleets	TR-06	% of electric vans (<3.5 t)	4.7 %	40 %	65 %	90 %



Freight transport – intensity of use	6.1 Logistics digitalisation	TR-07	Freight transport: vans (Mkm-tonnes/year)	273	230	210	200
Goods transport – intensity of use	6.1 Logistics digitalisation	TR-08	Freight transport: trucks (Mkm-tonnes/year)	45	38	35	30

B-3.1.b: Impact Pathways for the Buildings and Heating & Cooling Sector							
Results / impacts addressed	Action / project	Indicator or number	Indicator name	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Reduction of energy demand in existing buildings	8.2 Promotion of energy renovation of buildings and homes	EC-01	% of the building stock renovated each year	1.5 %	2.0 %	2.5 %	3.0 %
Improvement of thermal comfort and energy efficiency	8.2 Promotion of energy renovation of buildings and homes	EC-02	Total thermal demand (GWh/year)	1,425	1,200	1,100	1,000
Reduction in the use of fossil fuels for local heating	10.2 Replacement of boilers with heat pumps	EC-03	% of local heating from fossil fuels	82 %	60 %	45 %	35 %
Promotion of efficient collective systems	10.3 Implementation of geothermal district heating in Zorrotzaurre	EC-04	% of heat consumed coming from central heating	1 %	1.5 %	1.8 %	2 %
Increase in renewable electric heating	10.4 Thermal electrification of the residential and tertiary sector	EC-05	% of local heating using electricity (heat pumps)	18 %	25 %	40 %	50 %



Increase in bioheating	10.4 Thermal electrification of the residential and tertiary sector	EC-06	% of local heating from bio-based sources	1 %	3 %	7 %	10 %
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B-3.1.c: Impact pathways of the electricity sector

Results / impacts addressed	Action/project	Indicator number	Indicator name	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Reduction in urban electricity consumption	11.5 Programme to promote electrical efficiency in the residential and tertiary sectors	EL-01	Total electricity demand in the municipality (GWh/year)	926	910	900	890
Development of local self-consumption	12.1 Renewable energy generation in municipal buildings	EL-02	% of renewable electricity generated locally	~1–2 %	2 %	4 %	5 %
Share of large-scale renewables	12.3 Planning and regulatory programme for the deployment of renewable energy	EL-03	% of renewable electricity from external parks	~44 %	58 %	68 %	80 %
Increase in the share of renewables in the mix	12.4 Business commitment to 100% renewable electricity consumption	EL-04	% of electricity consumed from renewable sources	46 %	60 %	72 %	85 %
Reduction in fossil fuel use for electricity	12.4 Business commitment to 100% renewable electricity consumption	EL-05	% of electricity consumed from fossil sources	33 %	25 %	20 %	15 %

B-3.1.d: Impact pathways of the waste sector



Results / impacts addressed	Action/project	Indicator number	Indicator name	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Reduction in municipal waste generation	13.1 New Municipal Waste Management Plan	RS-01	Total domestic and commercial waste generation (t/capita/year)	0.92	0.85	0.80	0.75
Increase in separate collection	13.1 New Municipal Waste Management Plan 13.3 Improvement of infrastructure and selective containers	RS-02	% of waste collected separately out of the total	65 %	70 %	75 %	80 %

B-3.1.e: Impact pathways of the Other Sector (Industry)

Results / impacts addressed	Action / project	Indicator number	Indicator name	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Reduction of emissions from industrial processes	14.1 Thermal decarbonisation of local industry in Bilbao	OT-01	Emissions from the industrial sector (IPPU)	22.54	18.2	16.2	14.3

B-3.1.f: Impact pathways of co-benefits

Results/impacts addressed	Action/project	Indicator number	Indicator name	Baseline values 2021	Target values 2026	Target values 2028	Target values 2030
Improvement in air quality	Urban environmental measurement	CB-01	PM2.5 concentration levels (µg/m³)	—	—	—	10



Improvement in air quality	Urban environmental measurement	CB-02	PM10 concentration levels ($\mu\text{g}/\text{m}^3$)	—	—	—	20
Improvement in air quality	Urban environmental measurement	CB-03	NO ₂ concentration levels (%)	—	—	—	40
Reduction in exposure to environmental noise	Preparation of strategic noise maps	CB-04	% of population exposed to noise levels Lden $\geq$ 55 dB	—	—	—	20
Reduction in urban heat stress	Urban climate monitoring	CB-05	Average maximum daily temperature (TXX) ($^{\circ}\text{C}$)	—	—	—	27
Reduction in urban heat stress	Urban climate monitoring	CB-06	Average daily minimum temperature (TNN) ($^{\circ}\text{C}$)	—	—	—	14
Resilience to extreme heat events	Municipal register of extreme events	CB-07	Incidence of heat waves (number per summer)	—	—	—	1
Equal access to green spaces	Inventory and improvement of urban green spaces	CB-08	Green spaces (ha / 100,000 inhabitants)	—	—	—	120
Reduction in energy poverty	Energy analysis per household	CB-09	Energy consumption per household (kWh)	—	—	—	500
Promotion of sustainable mobility	Urban mobility surveys	CB-10	Modal share of sustainable modes (%)	—	—	—	70



Digitalisation and energy efficiency	Implementation of smart systems in public buildings	CB-11	% of municipal buildings with energy management	—	—	—	100
Local economic cohesion	Economic structural analysis	CB-12	GDP per capita (€/cap)	—	—	—	35,000
Municipal financial commitment to climate	Climate budget planning	CB-13	% of municipal budget allocated to climate	—	—	—	15
Improvement in waste management	Review of the collection and recycling system	CB-14	% municipal waste recycling	—	—	—	65
Conservation and improvement of urban biodiversity	Vegetation cover census and green actions	CB-15	% tree cover in the city	—	—	—	30

B-3.2: Indicator metadata	
<i>These are the indicators included in the Net Zero Planner and in the Support Guide for Spanish Cities for the Inclusion of Co-benefit Indicators in their Climate City Contracts prepared by CitiES.</i>	



PART C - ACHIEVING CLIMATE NEUTRALITY BY 2030

Bilbao's ambition to achieve climate neutrality by 2030 cannot rely solely on a list of sectoral actions. **It demands deeper transformations in how the city is organised, how decisions are made, how collaboration is fostered, and how resources are mobilised.** This section of the Agreement addresses the enabling conditions for implementation: new forms of governance, dynamics of social innovation, and a financial approach capable of sustaining change over time. The aim is to ensure that the actions included in the plan are not only viable, but also truly transformative.

MODULE C-1

Innovative interventions in organisation and governance

Bilbao's climate transformation requires adapting its decision-making processes, coordination mechanisms, and public management structures. Acting on emitting sectors alone is not sufficient: it is essential to redesign how climate action is governed, how actors are coordinated, and how shared responsibilities are established. This module sets out the main organisational and governance interventions designed to consolidate an institutional architecture capable of sustaining climate neutrality as a structural city policy.

C.1.1: Organisational and governance interventions					
Name of the action	Description	Person and entity/body responsible	Actors involved	Impact	Co-benefits
Establishment of the Mission Committee	Creation of a political-strategic body responsible for coordinating, supervising and providing institutional impetus to the city's decarbonisation process.	Bilbao City Council, Sustainability Department	Municipal departments, public companies, collaborating entities	Ensures political leadership, alignment of competences and cross-cutting prioritisation of climate action.	Strengthens institutional coherence, accelerates decision-making and improves the effectiveness of public policies.
Climate Action Commission	Interdepartmental technical committee for	Sustainability Department	Areas of mobility, urban planning,	Ensures cross-cutting and internal	Improves administrative efficiency,



	the integration of the climate approach in all areas of the City Council.		housing, economy, education, participation, etc.	coordination, enables joint design of measures and monitoring of implementation.	generates a shared vision, promotes interdepartmental innovation.
Technical Office of the Mission	Permanent technical and operational support structure for the Climate Action Commission and the Mission Committee.	Sustainability Directorate	Municipal technical staff, external technical assistance, Mission ecosystem agents	Strengthens the operational governance of the process, ensures continuous technical monitoring and facilitates the implementation of measures.	Improves administrative efficiency, promotes daily coordination, and generates a results-oriented work culture.
Promotion of a Working Group (or several sectoral groups)	Creation of technical groups in key areas (energy, mobility, rehabilitation, nature, circular economy, etc.) with municipal and external representation.	Sustainability Department and the corresponding municipal sectoral area or entity (BlboEner, Bilbao Ekintza, Surbisa, Bilbao Etxebizitzak, etc.)	Municipal technicians, experts, sectoral clusters, organised citizens	Enables the development and implementation of specific measures with expert knowledge and multisectoral technical validation.	Promotes collaborative innovation and improves the quality of policy design and implementation.
Multilateral climate commitment system	An open system for companies, clusters, citizens and social entities to voluntarily join the Mission with quantifiable commitments.	Bilbao Ekintza and Sustainability Department	Companies, business associations, citizens, social entities	Establishes mechanisms for shared responsibility, reinforces the legitimacy of the process, mobilises the capabilities of the local ecosystem.	Generates social ownership, stimulates private investment, promotes transparency and public recognition.
Development of the Digital Climate Neutrality Platform	Digital governance platform to integrate data on energy, emissions, mobility, renovation and	Sustainability Department and BilboTIK	Municipal departments, citizens, research community, economic agents	Provides territorial intelligence, transparency in management and real-time monitoring of	Enhances accountability, improves decision-making and encourages informed participation.



	participation, with public access and interactive dashboards.			the climate process.	
Citizens' Climate Assembly	A deliberative space made up of a representative sample of citizens, convened to debate and propose recommendations on the priorities of the Climate Mission.	Sustainability Directorate and Technical Office of the Mission	Randomly selected citizens, facilitation team, experts, institutional representatives	Strengthens the democratic legitimacy of the process, incorporates the voice of citizens in strategic decisions and improves the acceptance of transformative measures.	Social inclusion and diversity, citizen empowerment, improved institutional links, generation of more balanced proposals with social support.

C-1.2: Description of organisational and governance interventions

The construction of an organisational framework to achieve climate neutrality in Bilbao arises from a complex institutional context, in which different municipal departments operate autonomously, with defined sectoral competences and their own internal dynamics. In this context, the Sustainability Department, as the technical driving force behind the Climate Mission, has begun to weave a collaborative governance architecture that facilitates the alignment of intent, the sharing of strategic information, and the creation of spaces for shared responsibility.

The political momentum provided by the City Council—particularly through interdepartmental meetings aimed at raising awareness of the Mission and reinforcing institutional commitment—is key to the effective implementation of Bilbao's 2030 Climate Mission. This leadership will strengthen cross-cutting coordination mechanisms and establish a permanent structure for interdepartmental dialogue. To maintain this momentum, a Mission Committee will be established to connect the Sustainability Department and the Mayor's Office—as the driving force—with the remaining municipal departments and entities.

The Energy Sustainability Commission, currently led by the General Services Department, has so far operated as a body focused on the internal energy management of the City Council, in line with the requirements of Law 4/2019. However, its remit does not extend to city-wide or integrated climate coordination. One of the key innovations proposed is therefore the creation of a broader Climate Action Commission, enabling the goals of the SECAP and the Mission to be linked with strategic areas of urban policy (urban planning, mobility, housing, the economy, participation, etc.), in accordance with the legal obligations established in Regulation 1/2024. ***Similarly, the consolidation of sectoral working groups will allow municipal technical staff to connect with external experts and local stakeholders, generating a hybrid governance model in which technical knowledge and institutional action are aligned.*** In this framework, the Sustainability Department—with support from the Mission Office's technical team—acts as a facilitator, providing methodological and operational assistance rather than exercising hierarchical leadership.

Beyond the City Council, the governance framework is structured around a supra-municipal network of strategic partners: the Provincial Council of Bizkaia, with key responsibilities in metropolitan mobility and financing; the Basque Government, through IHOB, URA and EVE; and the Spanish State, via its connection to the European framework through NetZeroCities and CitiES2030. Coordination with these actors will be led by the Mission Office, linked to the Sustainability Department.



At the same time, a system of multilateral climate commitments is being rolled out, aimed at engaging the private sector, associations, clusters, and organised civil society in the Mission. This mechanism will reinforce the legitimacy of the process and diversify implementation capacities through voluntary, visible and measurable commitments.

Citizens are a fundamental part of Bilbao's participatory model. Through the Energy Office, educational campaigns, workshops, and digital tools, the aim is to build a shared narrative on the climate transition that is both accessible and meaningful. The system of commitments also includes individual residents, and tools are being developed to visualise pledges and outcomes, in order to promote transparency and public recognition. The extension or transformation of the Citizens' Climate Assembly could serve as another mechanism for engaging citizens in this collective endeavour.

Finally, the launch of a Digital Climate Neutrality Platform – managed by BilboTIK and the Mission Office – will equip the city with an operational and transparency tool that centralises key data, supports shared monitoring of the process, and feeds into decision-making dashboards.

The governance structures described respond directly to the barriers identified in Module A-3: the lack of internal coordination is addressed through the expanded Climate Action Commission and sectoral groups; the absence of strategic coherence is tackled via the leadership of the Mayor's Office and the integration of the SECAP (Sustainable Energy and Climate Action Plan) into all major plans; and unequal participation is countered through the membership system and the opening of both social and digital engagement channels.

At the same time, these structures enable the activation of the impact pathways identified in Module B-1, by linking climate action to co-benefits such as green jobs, improved urban health, territorial equity and public sector efficiency.

Taken together, these interventions are not intended to impose a uniform model, but to enable a flexible, recognisable and functional framework through which each municipal department can advance its climate roadmap in alignment with the whole. Bilbao's Climate Mission is thus conceived as a space for coordination rather than control – where political leadership, technical coordination and collective intelligence converge to meet an unprecedented challenge for the city.



MODULE C- 2

Social innovation and other actions

Beyond programmes with direct impact, and the organisational and governance measures set out in the PACES (Climate Action and Sustainability Energy Plan), this Agreement includes a series of social innovation initiatives and other enabling actions necessary to advance the Mission within the city.

C.2.1: Social innovation and other interventions					
Name of the action	Description	Person and entity/body responsible	Actors involved	Impact	Co-benefits
Bilbao Climate Office	Personalised support service for citizens, businesses, and the tertiary sector on energy efficiency, available grants, energy communities, and self-consumption. The service includes a one-stop digital and in-person platform offering technical advice, grant application support, solar potential assessments, and guidance for the energy transition. The OpenGela pilot projects will continue, with local offices established in neighbourhoods.	Sustainability Department, Surbisa and Municipal Housing	Municipal departments, citizens, small businesses, service sector, EVE, neighbourhood and social associations	Improve access to available resources, accelerate individual and collective energy transition, and detect cases of energy poverty at an early stage.	Reducing inequalities, promoting energy justice, improving citizen training, energy empowerment, revitalising available aid and funds
Citizenship Adapted to Climate Change	Ongoing awareness programme on climate risks—such as heatwaves, floods, droughts, and storms—and dissemination of practical guides to help citizens understand how to respond to such events. The programme includes actions in educational centres, children's activities, municipal safety protocols, and training for both municipal staff and	Sustainability Department	Municipal departments, citizens, educational centres, social services, civil protection, municipal technical staff	Increases social resilience to extreme events, strengthens a culture of prevention and facilitates adaptation at neighbourhood and household level	Improve public health, reduce vulnerability, empower society, and improve institutional coordination in the face of climate emergencies



	citizens on climate change adaptation.				
Socialisation of the Energy Transition	Citizen awareness programme on decarbonisation, focusing on energy rehabilitation, sustainable mobility, self-consumption and renewable energies. Includes multi-channel communication campaigns, information activities, workshops, dissemination of grants, promotion of renewable electricity consumption and tools to encourage energy saving.	Sustainability Department	Citizens, businesses, neighbourhood associations, educational centres, media, energy sector	Facilitates individual and collective behavioural change, stimulates demand for sustainable solutions and improves public knowledge about energy and climate	Promotion of participation, citizen empowerment, promotion of self-consumption, economic savings, revitalisation of community and local initiatives
Criteria for financial assistance for vulnerable populations	Citizen awareness programme on decarbonisation, with a focus on energy renovation, sustainable mobility, self-consumption, and renewable energy. The programme includes multi-channel communication campaigns, information activities, workshops, dissemination of available grants, promotion of renewable electricity consumption, and tools to encourage energy saving.	Sustainability Department, Urbis, Municipal Housing	Social services, neighbourhood associations, third sector organisations, vulnerable citizens	Improves the efficiency of public policies, guarantees equity in access to aid and improves the territorial focus of the energy transition	Reduction of inequalities, greater efficiency in energy rehabilitation, fair access to resources, strengthening of the local social fabric
Digital Twin of the City	Development of an advanced virtual twin of the city of Bilbao, integrating dynamic data on energy, mobility, emissions, climate, and urban planning. It enables scenario simulation, policy impact assessment, and optimisation of climate interventions. The system is linked to municipal	BilboTIK, Sustainability Department	Municipal departments, technical community, citizens, academic and innovation sectors	Provides advanced capacity for real-time diagnosis, design and monitoring of climate policies	Improved urban planning, transparency, efficiency of public management, basis for R&D projects, reinforcement of data-based decision-making



	information platforms and will be accessible to technical staff, decision-makers, and citizens.				
Promotion of Collaborative Energy Ecosystems	Development of public-private partnership pilot projects to improve energy savings and the use of renewable energy in specific neighbourhoods or urban areas, through collaboration between citizens, businesses, technology firms, and the City Council. The pilots include trials of district heating systems, the creation of energy communities, and new shared management models, as well as the promotion of innovation and the testing of locally adapted solutions.	Sustainability Department, Bilbao Ekintza	Citizens, businesses, technology agents, municipal departments, collaborating companies	Activates new dynamics of social and technological innovation in the energy field at neighbourhood or district level	Energy savings, citizen empowerment, local economic activation, strengthening social cohesion, incubation of innovative climate solutions
Centralised Dissemination Platform	Creation of a centralised, multi-channel web platform that brings together all information, grants, tools, and resources related to climate action in Bilbao. This platform will facilitate access to calls for proposals, guidance materials, diagnostic tools, and progress reports, and will include interactive monitoring features. It will serve as the main interface for citizens and businesses interested in contributing to the Climate Mission.	Sustainability Department, BilboTIK	Citizens, businesses, social entities, municipal technicians	Improves accessibility, transparency and participation in local climate policies	Promote equitable access to information, greater citizen participation, strengthen public trust and visibility of the progress of the Climate Mission
Green Public Procurement	Progressive incorporation of environmental clauses into the City Council of Bilbao's procurement and purchasing specifications. Priority will be given to products with low environmental impact, low-	Procurement Department, Sustainability Directorate	Municipal departments, suppliers, bidding companies	Direct institutional purchasing power towards sustainable practices, reducing the administration'	Promotion of the green economy, transformation of the local market, exemplary public leadership, waste reduction



	emission services, and recycled or recyclable materials. The use of ecological standards and the assessment of life cycle impacts in public decision-making will be promoted.			s ecological footprint	and improvement of resource efficiency
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C-2.2: Description of social and other innovation actions

The actions included in this module directly address several of the **systemic barriers** identified in Module A-3: institutional fragmentation, low climate awareness, limited access to funding or technical information, and the lack of active public engagement. To tackle these challenges, **organisational, digital, participatory, and regulatory innovations** have been introduced to transform the cultural and operational foundations of municipal climate action.

These include the **Climate Office** as a central point for technical support; the **Digital Climate Neutrality Platform**, which integrates data and real-time visualisations; **collaborative energy ecosystems** that foster local innovation in real-world settings; and voluntary mechanisms for joining the Mission, aimed at actively engaging the city's economic and social fabric.

These actions **empower citizens** by offering accessible information, structured participation channels, tailored advice, and public recognition for those leading the transition. In particular, tools such as **energy awareness campaigns, adaptation guides, climate safety protocols, and an energy justice approach** to public support are designed to include groups that have traditionally been excluded from the benefits of the transition: older people, vulnerable households, small businesses, and young people.

The progressive integration of climate considerations into public policies—such as education, procurement, contracting, and taxation—together with the generation of territorial intelligence via the **Digital Twin**, lays the foundation for structural climate governance. This governance architecture ensures that climate impact does not rely solely on individual projects but becomes embedded in the everyday functioning of the local administration and the city's civic culture.

In short, Bilbao's social innovation actions **lower the barriers to climate transition, strengthen the capacities of local actors, and build lasting institutional structures** to sustain, scale up, and democratise decarbonisation.



MODULE C-3

Financing the portfolio of actions (Economic Case)

C-3.1: Summary of actions with related costs						
Name of action/measure	Person and entity responsible	Start and end date	Scope of action	Impact	Co-benefits	Total estimated cost
(1.1) Expansion of the Bilbao tram network	City Council – Mobility and Sustainability, Basque Government and ETS	2027–2030	Transport	GHG reduction (61 kt CO ₂)	Improved air quality, positive perception of public transport	€42 million
(1.2) Implementation of the ZBE	City Council – Mobility and Sustainability	2024-2026	Transport	GHG reduction (2.5 kt CO ₂)	Public health, noise reduction, social cohesion	€1,755,000
(1.3) Expand the cycle lane network	City Council – Mobility and Sustainability	2025–2030	Transport	GHG reduction (4.8 kt CO ₂)	Public health, noise reduction, social cohesion	€3.3 million
(1.4) Regeneration of Corazones Barrio	City Council – Works, Urban Planning and Sustainability	2026-2030	Transport	GHG reduction (15 kt CO ₂)	Social inclusion, renaturalisation, thermal and environmental improvement	€10,165,000
(1.5) Pedestrianisation of streets	City Council – Mobility and Works	2021-2030	Transport	Reduction of GHG (7 kt CO ₂),	Public health, noise reduction, local revitalisation	€4.875,000
(2.1) Promotion of the BilbaoBizi system	City Council – Mobility and Sustainability	2025–2030	Transport		Active mobility, social cohesion, health	€13 million



(2.2) Replacement of the municipal fleet	City Council – Mobility and General Services	2021–2030	Transport	GHG reduction (0.3 kt CO ₂ /year),	Noise reduction, institutional reference	€6.2 million
(2.3) Reduction in the number of polluting private vehicles	City Council – Mobility and Sustainability	2021–2030	Transport	Reduction in GHG (20 kt CO ₂ /year),	Reduction in NOx and particulate matter, less noise	Low administrativ e cost.
(3.1) Promotion of car sharing	City Council – Mobility and Sustainability	2026–2029	Transport	Reduction in GHG (15 kt CO ₂),	Less congestion, shared culture	Low administrativ e cost.
(4.1) Electric vehicle subsidies	City Council – Mobility and Sustainability	2021–2030	Transport	GHG reduction (19 kt CO ₂),	Reduction in NOx and particulates, less noise	€41 million
(4.2) Promotion of measures on the municipal EV charging network	City Council – Mobility and Urban Planning	2026–2027	Transport	Instrument s for electrificati on, indirect impact	Reduction in NOx and particulate matter, less noise	Low administrativ e cost
(5.1) Electrificatio n of Bilbobus	City Council – Mobility and Sustainability	2021–2030	Transport	Reduction of GHG (7.3 kt CO ₂),	Improved air quality, positive perception of public transport	€28 million



(6.1) Study of loading and unloading areas	City Council – Mobility and Technology	2027-2028	Transport	GHG reduction (12 kt CO ₂),	Reduction in congestion, improvement in air quality, better urban planning	Low administrativ e cost
(7.1) Renewal of cleaning and waste fleets	City Council – Services and Sustainability	2025–2028	Transport	GHG reduction (10 kt CO ₂)	Noise reduction, improvement in public health	€16 million
(7.2) Electrificatio n of private goods fleets	City Council – Mobility and Economic Promotion	2021-2030	Transport	GHG reduction (21 kt CO ₂)	Reduction of local emissions in urban centres, reduction of noise in residential areas, modernisation of logistics fleets, energy savings in urban distribution	€41 million
(8.1) Renovation work on municipal buildings and facilities	Town Council – Works and Services, General Services and Sustainability	2025–2028	Buildings and Air Conditionin g	GHG reduction (3.2 kt CO ₂)	Institutional exemplarity, budget efficiency, improved comfort	€55 million
(8.2) Promotion of energy renovation of buildings and homes	City Council – Housing and Surbisa	2025–2030	Buildings and air conditionin g	GHG reduction (3.9 kt CO ₂)	Improved comfort, reduction of energy poverty, urban regeneration	€75 million



(8.3) Inter-institutional agreements for energy efficiency in non-municipal public buildings	City Council + GV, DFB, UPV/EHU, Osakidetza	2025-2028	Buildings and air conditioning	GHG reduction (8.2 kt CO ₂)	Inter-administrative coordination, equity in improving public services, shared institutional support	€120 million
(8.4) Promotion of renovation in the tertiary sector	City Council – Economic Development, Bilbao Ekintza	2025–2028	Buildings and Air Conditioning	GHG reduction (12 kt CO ₂)	Local economic boost, reduction in consumption, revitalisation of degraded areas	€57 million
(9.1) Review of energy and life cycle regulations in new buildings	City Council – Urban Planning, Sustainability and Finance	2026-2028	Buildings and air conditioning	Instrumental measure, no direct impact	Structural energy savings. Promotion of local and circular materials. Reduction of indirect impacts. Affordable housing, energy equity, reduction of vulnerability	€330,000
(9.2) Passive architecture and low-impact materials in new buildings	City Council – Sustainability, Housing and Works	2025–2027	Buildings and Air Conditioning	Instrumental measure, no direct impact	Improvement of urban thermal comfort. Public health. Innovation in materials. Institutional leadership.	€250,000
(10.1) Electrification of public buildings	City Council – Sustainability and General Works and Services	2021-2030	Buildings and Air Conditioning	GHG reduction (8.7 kt CO ₂)	Public savings, institutional exemplarity	€8 million
(10.2) Thermal electrification of the residential	City Council – Housing, Surbisa and Sustainability; EVE	2021-2030	Buildings and air conditioning	GHG reduction (20 kt CO ₂)	Technological modernisation, improved comfort, reduced operating costs,	€127 million



and tertiary sectors					lower fossil fuel dependency, positive environmental image, public-private coordination	
(10.3) Implementation of geothermal district heating in Zorrotzaurre	City Council – Sustainability, BilboEner, Works and Services, and Urban Planning	2021-2037	Buildings and Air Conditioning	GHG reduction (5.8 kt CO ₂)	Structural reduction in fossil fuel demand for heating, technological innovation, climate resilience, long-term energy savings	€20 million
(11.1) Renovation of lighting systems and equipment in public buildings	Bilbao City Council – General Services	2021–2030	Electricity	Reduction of 3,900 MWh/year, 5.5 ktCO ₂ eq	Budget savings, improved lighting and thermal comfort, institutional energy saving culture	€20 million
(11.2) Public lighting measures	Bilbao City Council – Services	2021–2030	Electricity	Reduction of 7,200 MWh/year, 3.4 ktCO ₂ eq	Structural economic savings, improved visibility and night-time safety, reduction in light pollution	€15 million
(11.3) Incorporation of high energy efficiency standards in public works	Bilbao City Council – Urban Planning, Public Works	2025-2026	Electricity	Indirect structural impact on future buildings	Economic savings, improved visibility and safety, regulatory compliance	€250,000



(11.4) Inter-institutional agreements for energy efficiency in non-municipal public buildings	Bilbao City Council + Basque Government, DFB, UPV/EHU	2025-2030	Electricity	Reduction >11,500 MWh/year, 1.5 ktCO ₂ eq	Inter-administrative coordination, equity in improving public services, shared institutional support	€6 million
(11.5) Programme to promote electrical efficiency in the residential and tertiary sectors	Bilbao City Council – Sustainability, Surbisa, Bilbao Ekintza and EVE	2021-2030	Electricity	Savings >8,300 MWh/year, 2.4 ktCO ₂ eq	Reduction in electricity bills, improved comfort, revitalisation of the sector r local installer	€6 million
(12.1) Renewable energy generation in municipal buildings	Bilbao City Council – Public Works and Sustainability	2025–2030	Electricity	11 GWh/year generated, 1 ktCO ₂ eq	Energy autonomy, structural savings, institutional example	€25,000
(12.2) Municipal programme of aid for renewable energies	Bilbao City Council – Sustainability, Surbisa, EVE	2025-2030	Electricity	Generation 90 GWh/year, 21ktCO ₂ eq	Reduction in bills, citizen participation, promotion of the renewable energy sector	€93,000,000
(12.3) Planning and regulation programme for the deployment of renewable energies	Bilbao City Council – Urban Planning, Energy Office	2025-2027	Electricity	Indirect enabling impact, facilitates deployment of renewables	Technical and regulatory enabling, acceleration of investment, transparency and evidence-based decision-making, promotion of self-consumption and balanced territorial development	€120,000



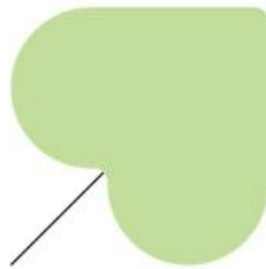
(12.4) Business commitment to 100% renewable electricity consumption	Bilbao Ekintza, Sustainability Department	2025-2030	Electricity	Reduction 175 GWh/year, 25 ktCO ₂ eq	Positive corporate reputation	Average cost
(13.1) New Municipal Waste Management Plan	Bilbao City Council – Services and Quality of Life	2025–2030	Waste	Reduction in waste sent to landfill, 1.5 ktCO ₂ eq	Promotion of a recycling culture, reinforcement of citizen co- responsibility	Low-medium cost
(13.2) Implementati on of new waste tax	Bilbao City Council – Finance and Services	2026–2027	Waste	Increase in selective collection 1 ktCO ₂ eq	Reduction in municipal costs, neighbourhood involvement, compliance with European regulations	Low cost
(13.3) Improvement of selective collection infrastructur e	Bilbao City Council – Services and Sustainability	2025–2027	Waste	Reduction in mixed waste, 0.2 ktCO ₂ eq	Increase in actual recycling, improvement in citizen experience, waste traceability	Average cost
(14.1) Thermal decarbonisati on of local industry in Bilbao	Bilbao City Council – Sustainability and Economic Promotion	2025–2030	Industry and Recovery	Reduction 100 GWh/year, 8 ktCO ₂ eq	Technological modernisation, competitiveness , energy savings, improved air quality	€8 million
(14.2) Improvement of natural sinks, local forest economy, institutional image	Provincial Council of Bizkaia, EVE, Bilbao City Council – Sustainability	2025-2035	Industry and Recovery	Progressiv e capture of 10 kt CO ₂ eq of residual emissions through certified reforestatio n ()	Improvement of natural sinks, local forest economy, institutional image	To be estimated according to hectares, species and absorption method



Establishment of the Mission Committee	Bilbao City Council, Sustainability Department	2025–2030	Governance	Instrumental measure, no direct impact	Political leadership and strategic coordination	€60,000
Climate Action Commission	Sustainability Department	2025–2030	Internal governance	Instrumental measure, no direct impact	Interdepartmental coordination and cross-cutting policies	Low cost
Technical Office of the Mission	Sustainability Directorate	2025–2030	Implementation and monitoring	Instrumental measure, no direct impact	Technical and operational management of the process	€60,000/year
Promotion of sectoral working groups	Sustainability Department and municipal sectoral entities	2025–2028	Technical participation	Instrumental measure, no direct impact	Specialisation and technical quality in key areas	Low cost
Multilateral climate commitment system	Bilbao Ekintza and Sustainability Department	2025–2030	Citizen and business involvement	Instrumental measure, no direct impact	Voluntary commitments and monitoring of progress in the local ecosystem	Low cost
Development of the Climate Neutrality Digital Platform	Sustainability Department and BilboTIK	2025–2028	Digitalisation of governance	Instrumental measure, no direct impact	Transparency, data visualisation, informed participation	€100,000
Citizens' Climate Assembly	Sustainability Department, Office of the Technical Mission of the City of Madrid	2025, 2027, 2029 (editions)	Deliberative democracy	Instrumental measure, with no direct impact on the environment	High citizen inclusion in strategic decisions	€150,000 (50,000 per edition)
Bilbao Climate Office	Sustainability Department, Surbisa, VVMM	2025–2030	Citizen services	Instrumental measure, no direct impact	Accelerates the energy transition, reduces energy poverty	€1,500,000



Citizenship Adapted to Climate Change	Sustainability Department	2025–2028	Education and resilience	Instrumental measure, no direct impact	Strengthens social resilience to extreme events	€320,000
Socialisation of the Energy Transition	Sustainability Department	2025–2028	Public awareness	Instrumental measure, no direct impact	Promotes sustainable habits, drives demand for climate solutions	€400,000
Criteria for financial aid for vulnerable populations	Sustainability Department, Surbisa, VVMM	2025-2028	Energy justice	Instrumental measure, no direct impact	Improves the territorial and social focus of public aid	€115,000
Digital Twin of the City	BilboTIK, Sustainability Department	2025–2028	Climate digitalisation	Instrumental measure, no direct impact	Optimises decisions based on science and real-time monitoring	€120,000
Collaborative Energy Ecosystems	Sustainability Department, Bilbao Ekintza	2025–2028	Neighbourhood innovation	Instrumental measure, no direct impact	Collaborative energy pilots and strengthening of the local fabric	€100,000
Centralised dissemination platform	Sustainability Department, BilboTIK	2025–2027	Climate communication	Instrumental measure, no direct impact	Improves access to information and participation	Low
Green procurement and public contracting	Procurement Department, Sustainability Directorate	2025–2028	Sustainable procurement	Instrumental measure, no direct impact	Transform the local market through public purchasing power	€10,000



ANNEX 2:
*Climate Neutrality
Investment Plan*



ANNEX II: CLIMATE INVESTMENT PLAN

PART A - CURRENT STATUS OF CLIMATE INVESTMENT

Bilbao presents this chapter as a starting point for understanding the scope, sources and mechanisms of climate financing currently in place in the city. Through the analysis of investments already deployed and associated public policies, both the strengths of the local financial ecosystem and the limitations that must be overcome to achieve the ambition of climate neutrality by 2030 are identified. **This diagnosis lays the foundations for a more structural, scalable and transformative investment strategy.**

MODULE A-1

Existing financing for climate action

Bilbao has a solid track record in financing actions linked to urban sustainability and ecological transition. **Over the last few years, the City Council has rolled out different budget lines targeting key sectors such as sustainable mobility, energy renovation, efficiency in public lighting, waste management and green infrastructure.** Many of these interventions have been co-financed through European programmes (ERDF, LIFE, NextGenerationEU), regional instruments (EVE, IHOBE) or with the City Council's own resources, through bodies such as Surbisa, Bilbao Etxebizitzak (municipal housing), Bilbao Ekintza and BilbaoEner.

Although **the city does not yet have a formal climate budgeting system aligned with the European Taxonomy**, it has made progress in progressively identifying items with a climate impact, especially since the approval of PACES 2024. This development has made it possible to begin grouping and interpreting investment efforts from a climate perspective.

During the period 2020–2024, cumulative investment in actions aligned with climate mitigation and adaptation objectives is estimated to have exceeded €200 million, with **an annual average of between 6% and 8% of the total municipal budget allocated to projects with a direct climate impact.** At the same time, additional resources have been



mobilised from municipal companies and public-private partnerships, although their climate traceability still needs to be systematised.

Success stories include projects such as the electrification of the Bilbobus fleet, energy renovation interventions in vulnerable neighbourhoods, the modernisation of public lighting and the deployment of photovoltaic self-consumption in municipal buildings. However, structural limitations have also been identified: fragmentation of financial information, dependence on external calls for proposals and low private sector participation in larger-scale investments.

With this first review, **Bilbao establishes a quantitative and qualitative basis that will guide investment efforts towards 2030**, aligning resources, actors and financial mechanisms with the priorities of the City Climate City Contract.



A-1.1: Historical municipal budget and budget for climate action					
	20	20	2	2	2024 (approved)
Total municipal budget (millions of €)	576.3	585.5	633.1	663.5	701
Identified Climate Budget (Millions of €)	3	38.6	46.2	51.7	58.1
% of municipal budget with climate impact	6	6	7	7	8

For the purposes of this table, climate actions have been defined as budget items with **a direct or indirect impact on climate change mitigation and adaptation, in accordance with the criteria used in PACES 2024**. Although the city does not yet formally apply the European Taxonomy for Sustainable Finance, this methodology will serve as a basis for future improvements in the climate traceability of the budget.

A-1.2: Sources of financing				
Issuing sector	Specific sector	Budget allocation for climate action (million €)		
		2021	2022	2023
Transport	BilbaoBizi, Bilbobus fleet	8.6	5.5	4.3
	Electric vehicles and subsidies for private fleets	1	2	2
	Charging infrastructure	0	0.6	0
	Low-emission zones, pedestrianisation, cycle lanes	2	2	2
Buildings	Residential renovation (SURBISA)	0.3	0	5
	Renovation of municipal buildings	3	3	4
	Energy efficiency in commerce/tertiary sector	1	2	2



Electricity	PV self-consumption in public buildings	0	0	0
	Municipal aid for private self-consumption	-	-	0
	Companies joining renewable energy schemes	-	-	-
Waste	Infrastructure renovation	1.3	1.6	1.4
	Improvement of containers, waste separation campaigns	0	0	0
Total in €		19	18.6	24.9



MODULE A-2

Assessment of strategic financial policy

Bilbao has a **solid financial structure** based on a combination of its own municipal revenue, current transfers from other administrations and specific funding through European, national and regional programmes. Although there is not yet a formalised climate finance strategy, the city is beginning to develop a more integrated approach to resource allocation in order to achieve its climate neutrality objectives.

The City Council has currently identified the main public sources of capital, including: its own municipal budgets, subsidies from the Basque Government (through entities such as EVE or Ihobe), European funds such as NextGenerationEU, ERDF and LIFE, and regional mechanisms. These sources are known in reasonable detail, although there is not yet a complete mapping that systematically integrates opportunities by type of action or sector. In the private sphere, Bilbao will initiate collaborations with energy and service companies, although the potential for co-investment remains underutilised and requires more structured mechanisms for its deployment.

Internally, **the City Council has growing technical capacity, especially in the areas of finance, sustainability and municipal public companies** (Surbisa, Viviendas Municipales, BilbaoEner, Bilbao Ekintza), to structure combined financing models and adapt projects to different financing windows. As climate governance is strengthened and the list of projects in the Action Plan takes shape, it will be possible to further develop budget alignment, the assessment of the climate cost of public policies and the design of specific financial instruments.

This assessment lays the foundations for a city climate financing strategy that combines own revenue, external financing, public-private partnerships and financial innovation geared towards the ecological transition.

A-2.1: List of types of city revenue		
Revenue category	City revenue	% of city budget
Own taxes (property tax, business tax, local fees, public prices and other income)	€215,177,000	30
Agreed and non-agreed taxes from municipalities in the Historical Territory of Bizkaia	€416,362,600	59



Current transfers from the Basque Government	€12,249,000	1
Current transfers from the Provincial Council of Bizkaia	€4,279,200	0
Transfers from the State	€202,700	0
European funding	€17,291,500	2.47
Revenue from municipal companies	€405,000	0
Capital transfers from the Basque Government	€1,240,000	0
Equity income, disposal of investments, other capital transfers	€30,316,00	4
Income from financial assets	€3,477,000	0
TOTAL	€701,000,000	100

<i>A-2.2: List of capital sources for achieving climate neutrality</i>			
<i>Type</i>	<i>Range (estimates)</i>	<i>Level</i>	<i>Description</i>
Regular municipal budget	€30–40 million/year	Public	Annual allocation from the City Council accounts; via direct investment or subsidies.
y municipal companies (Surbisa, BilbaoEner, etc.)	€3–4 million	Public	Direct investment in buildings, lighting, renewable energy.



Regional funds / agreement	€2–5 million/year	Public	Depending on agreements and shared programmes.
Basque Government programmes (EVE, Ihobe, etc.)	€5–8 million/year	Public	Subsidies for energy efficiency, planning, SBN, etc.
European funds (NextGenEU, ERDF, LIFE)	€15–20 million/year	Public	Funding for renovation, mobility and energy through state calls for proposals.
Energy service contracts (ESCO)	€2–3 million	Private	Participation of companies in energy efficiency with return on savings.
Private partnerships (Iberdrola, Repsol, etc.)	€4–6 million	Private	Initiatives in self-consumption, energy infrastructure or sustainable mobility.
Investment induced by regulations (private sector)	Not quantified	Private	Leverage effect of the regulatory and fiscal framework on private residential and commercial investment.



MODULE A-3

Understanding the financial barriers that prevent the proper allocation of capital

Despite progress in defining an ambitious and structured climate action plan, Bilbao still faces **a number of barriers that hinder the rapid and sufficient mobilisation of capital for transformative projects**. These barriers are not only due to budgetary constraints, but also to institutional, technical, regulatory and governance factors.

One of the main internal barriers is the limited **technical and human capacity to structure complex and combined projects**, especially in sectors such as large-scale energy renovation, energy communities and industrial decarbonisation. Although the City Council has qualified staff, it does not always have the necessary resources to manage projects with high financial requirements and demanding deadlines. Overcoming this barrier requires strengthening teams, improving coordination between municipal departments and providing specialised technical assistance.

On the other hand, **external structural barriers** have been identified, such as the difficulty of accessing financial instruments adapted to the local context, the fragmentation of aid programmes and the lack of stable mechanisms for public-private collaboration. In particular, the low level of private sector participation in the direct financing of climate projects is due to unattractive regulatory frameworks, high perceived risks and the absence of replicable co-investment models.

The Mission Platform can play a key role in providing technical support to design innovative financing instruments, facilitate access to blended finance and build partnerships with European financial institutions. Other stakeholders, such as the Basque Government, the Provincial Council of Bizkaia, public service companies and the financial sector, can also actively contribute to overcoming barriers through co-financing, regulatory changes, guarantees or joint investment platforms.

The clear identification of these barriers is a first step towards **enabling a financial environment that is more conducive** to climate transformation.



A-3.1: List of financial barriers			
Financial barriers to achieving climate neutrality	Type of barrier	Description	Sectors and actors involved
Limited technical capacity to structure complex projects	Institutional/internal	Lack of technical personnel specialised in climate finance and project structuring.	Municipal areas, SURBISA, BilbaoEner
Limited access to private financing	Market/investment	Limited culture of private climate investment in Bilbao; lack of shared return models.	Private sector, financial institutions, developers
Difficulty in co-financing with European funds	Regulatory/operational	Complexity in managing calls for proposals and need for prior liquidity.	Intervention, Treasury, municipal companies
Fragmentation of aid and calls for proposals	Political/institutional	Multiple levels of aid (EU, State, Basque Autonomous Community) without temporal alignment or common requirements.	Basque Government, State Government, City Council
Lack of local financial instruments	Instrumental/structural	Absence of specific and sustainable municipal or regional climate funds.	Provincial Council, Basque Autonomous Community, development agents, EU
Difficulty in scaling up pilot solutions	Scalability/replication	Many successful climate actions cannot find financial channels for expansion.	Technology providers, investors, public sector



PART B - INVESTMENT PATHWAYS TOWARDS CLIMATE NEUTRALITY BY 2030

This section of the Financial Plan sets out the economic roadmap that will enable Bilbao to achieve its climate neutrality target by 2030. Based on the Action Plan, **the investment needs associated with each of the strategic lines are identified and quantified**, as well as the operating costs expected for their implementation. The purpose of this part of the document is to guide the mobilisation of public and private resources in a coherent and efficient manner, in line with the transformative ambition of the Climate City Contract.

The analysis includes an estimate of the total costs by sector of intervention, an assessment of the direct climate impact of each measure, and **consideration of social, economic and environmental co-benefits**. It also includes capital-intensive projects that are eligible for specific financial structuring, which may channel investments from multiple sources.

Given its operational nature, this part of the Plan is based on **estimates made using technical tools such as the Net Zero Planner**, and will be drawn up in coordination with the municipal departments of Finance, Urban Planning, Works and Services, Housing, and Mobility and Sustainability, and with the local public entities involved in its implementation. These **estimates are expected to be updated periodically** as the project portfolio evolves and the sources and conditions of available financing are confirmed.

MODULE B-1

Cost scenarios for climate neutrality

There is a direct link between the Climate Action Plan and the Bilbao Investment Plan, through the quantification of the costs necessary to implement the transformative actions that will enable climate neutrality to be achieved by 2030. **The analysis covers both the investment costs (CAPEX) and the operating costs (OPEX)** of the main actions planned, structured by sector of intervention. The total volume of transformative investment required until 2030 is estimated to exceed €880 million, as set out in Module B-2 of this Agreement.

In addition to the economic calculation, the module includes the direct benefits in terms of **greenhouse gas (GHG) emission reductions and the indirect co-benefits associated with each intervention**, such as improved air quality, energy job creation, and urban



resilience. This dual dimension makes it possible to assess not only the financial viability but also the social and climate return of each measure.

Cost estimates are based on proven sectoral methodologies and supported by national and European references on unit costs, as well as the City Council's own experience in similar pilot projects. Costs have been adjusted to constant prices and **are presented with a 2025–2030 horizon**, and may be updated as the technical definition of the projects progresses.



B-1.1: Sectoral costs (Net Present Value - NPV)						
Area/Sector	Action/Indicator	Investment expenditure (CAPEX) – NPV (million €, 2021–2030)	Operating savings (OPEX) – NPV (million €, 2021–2040)	CO ₂ e emissions reduction (kilotonnes)	Investment cost per tonne of CO ₂ e reduced (M€/ktCO ₂ e) – NPV	Estimated co-benefits – NPV (cumulative million €, 2021–2040)
Transport	Reduction in the need for motorised transport	-	€	9	€0.56	€
	Switch to public and non-motorised transport	-35 €	€	2	1.75 €	€
	Increase in car sharing	0	€111	15	0	€
	Electrification of cars and motorcycles	-36	€2	1	€	€13
	Electrification of buses	-24 €	-1	7	3.35 €	5
	Logistics optimisation	0	€148	12	0	€15
	Truck electrification	-48	€46	31	1.54 €	€44
Buildings	Major renovations (excluding the heating system)	-€259	€	2	€10.36	€
	New nearly zero-energy buildings	€0	-	0	-	-1



B-1.1: Sectoral costs (Net Present Value - NPV)						
Area/Sector	Action/Indicator	Investment expenditure (CAPEX) – NPV (million €, 2021–2030)	Operating savings (OPEX) – NPV (million €, 2021–2040)	CO ₂ e emissions reduction (kilotonnes)	Investment cost per tonne of CO ₂ e reduced (M€/ktCO ₂ e) – NPV	Estimated co-benefits – NPV (cumulative million €, 2021–2040)
	Decarbonisation of heat generation	-132€	-57	35	3.77 €	€
Electricity	Efficient lighting and appliances	-€100	€322	12	€8.33	€
	Low-emission electricity generation	-€40	€282	€	€0.80	€
Waste	Increase in waste recycling	€0	€1	3	0	1
Total		-723 €	1,430	320	2.26€	€
The Net Zero Planner does not calculate the costs associated with the Other sector. As these measures are contingent on the participation of the private sector and supra-municipal institutions, we include them in the cross-cutting costs derived from actions that promote stakeholder involvement. The estimated additional expenditure is €53 million to reduce another 108 kt of CO₂.						
Cross-cutting costs	All organisational, governance and social innovation programmes for citizen participation and stakeholder involvement were included in the PACEs with an associated cost not exceeding €5 million.					€4.5 million



B-1.2: Capital-intensive projects					
Area/Sector	Action/Indicator	Investment / CAPEX	Operating Costs / OPEX	Profitability (EUR/tCO2e)	Investment (Breakdown by Stakeholders)
Buildings	Building renovation (envelope)	-	102,000,000	1	18% City Council, 24% Citizens, 58% Private sector
		Project description: Comprehensive energy renovation programme for vulnerable residential buildings (Surbisa and private funding)			
Buildings	Decarbonisation of heat generation	- 135,000,000	-57,000,000	3	13% City Council, 44% Citizens, 31% Private sector, 13% Service providers
		Project description: Replacement of fossil fuel boilers with renewable heat solutions (heat pumps, heat networks, geothermal energy, biomass).			
Electricity	Efficient lighting and appliances	-	8	1.9	21% City Council, 42% Citizens, 36% Private sector
		Project description: Replacement of waste disposal systems and electrical appliances with low-consumption, more efficient versions in the public sector, lighting and buildings, and in the private sector.			



MODULE B-2

Climate neutrality portfolio capital planning

The city needs to combine the capital sources outlined above in the investment plan so that they can achieve the targets to make progress in the course of implementing its Action Plan. The capital sources listed below can serve as a starting point. As the city implements its programme, **these should be aligned with the city's objectives** and relevant to the selected actions. Ideally, this should be a target and optimised by the city.

The economic case's estimate of the total investment required by the city is shown in the table below for the entire 2021-2030 period.

The City Council will need to make an **annual investment of around €18.5 million** during this period.

Capital planning		
Capital requirement	Possible sources of capital	Sector
€187 million	Own (City Council)	Public
€230 million	Citizens	Private
€282 million	Companies (tertiary sector)	Private
€100 million	Private sector (transport)	Private
€35 million	Private sector (energy services)	Private
€834 million	Total	



B-2.1: Capital planning by actor							
Area of action	Action / Indicator	Citizens (€)	Private sector (€)	City Council (€)	Transport operators (€)	Service providers (€)	Total (€)
Transport	Reduction in the need for motorised transport	0	€	-	-€42	€	-62
	Switch to public and non-motorised transport	-	€	- €	-	€	-42 €
	Increase in car sharing	€	€	€	0	0	0
	Electrification of cars and motorcycles	-31	-6	-1	€	-	-€41
	Electrification of buses	0	€	-28 €	€	0	-28 €
	Logistics optimisation	0	0	0	0	0	0
	Electrification of trucks	-1	0	-1 €	-35 €	-5	-57
Buildings	Major renovations (excluding the heating system)	-75 €	-17 €	- €	0	0	-307
	New nearly zero-energy buildings	0	0	0	€	0	0
	Decarbonisation of heat generation	-70	-50	-	€	- €	-155€
Electricity	Efficient lighting and appliances	-50	-€43	-€	€	€	-€118
	Low-emission electricity generation	€0	-6	-35	€0	-	-47
Waste	Increase in waste recycling	€	€	€0	0	0	0
Other	The Net Zero Planner does not propose indicators for other sectors.						
Total		-230€	-282 €	-215€	-100€	-29€	-857 €



B-2.2: Capital planning by actors (municipal percentage)				
Area of action	Action / Indicator	Cost of own funds Town Council	Cost of other actors	% of costs covered
Transport	Reduction in the need for motorised transport	-	-	32
	Switch to public and non-motorised transport	-€16	- €	50
	Increase in car sharing	€	€	
	Electrification of cars and motorcycles	-	-39.87	2
	Electrification of buses	- €	0 €	100
	Logistics optimisation	€0	€0	
	Truck electrification	- €	-35 €	28
Buildings	Major renovations (excluding heating systems)	-55	-€252.00	18
	New nearly zero-energy buildings	-	-0.12	1
	Decarbonisation of heat generation	-	-€140.00	12
Electricity	Efficient lighting and appliances	-€25.00	-€93.00	21
	Low-emission electricity generation	-	-€12.00	74
Waste	Increased waste recycling	€	€	
Other	The Net Zero Planner does not propose indicators for other sectors.			
Total		- €	-639.73 €	25



MODULE B-3

Economic and financial indicators for monitoring, evaluation and learning

The effective implementation of Bilbao's Climate Action Plan requires not only the mobilisation of adequate financial resources, but also their systematic monitoring over time. This module sets out a series of **financial and economic indicators designed to track the degree of alignment between the municipal budget**, the capital mobilised, and the city's climate neutrality objectives.

Bilbao already allocates public resources to several key actions of the Climate Action Plan, funded through both the municipal budget and regional and European programmes. These include investment in building renovation via SURBISA, the electrification of public transport, and photovoltaic self-consumption initiatives. At the same time, partnerships with the private sector are being strengthened through energy service contracts and strategic alliances with energy companies.

The City Council maintains a stable budgetary balance, enabling an increasing share of its investment capacity to be directed towards climate initiatives. However, achieving the total estimated funding requirement—**over €700 million by 2030**—will require optimising public capital, leveraging private investment, and exploring innovative financial mechanisms (blended finance, green instruments, innovation funds, etc.).

While the city has prior experience in structuring complex public-private partnership (PPP) projects in sectors such as energy and waste, there is a recognised need to develop a structured, investor-oriented climate portfolio. **This process will involve identifying financing gaps, advancing project maturity, undertaking risk assessments, and establishing guarantee mechanisms.**

To support this, a system of sectoral indicators is proposed to enable continuous learning, economic impact evaluation, and transparency in financial decision-making.



<i>B-3.1: Economic indicators by sector</i>				
<i>Emitting sector</i>	<i>Indicator</i>	<i>Indicator unit</i>	<i>Reference/base indicator</i>	<i>Target indicator for 2030</i>
Transport	Reduction in the need for motorised passenger transport	% reduction by 2030		32%
	Reduction in kilometres travelled by car through a shift to public and non-motorised transport	% reduction in passenger kilometres by car by 2030		18%
	Car sharing	Average number of passengers per car	1.2	1.38
	Electrification of cars and motorcycles	% of fleet electrified	4%	20%
	Electrification of buses	% of fleet electrified	8%	69%
	Transport logistics optimisation – light vehicles (< 3.5 t)	Average use of maximum load capacity for light vehicles (< 3.5 t)	40%	39%
	Transport logistics optimisation – heavy vehicles (> 3.5 t)	Average use of maximum load capacity for heavy vehicles (> 3.5 t)	55%	50%
	Electrification of light vehicles (< 3.5 t)	% of fleet electrified	5%	10%



	Electrification of heavy-duty vehicles (> 3.5 t)	% of fleet electrified	0%	0%
Buildings and air conditioning	Building renovation (envelope)	% annual renovation	1.5%	3.0%
	New buildings constructed to the highest standard	% of buildings constructed to the highest standard	0%	100%
	Heating technologies – district heating	% of heating as district heating	1%	2%
	Decarbonisation of district heating – use of fossil fuels	% of district heating produced with fossil fuels	0%	0%
	Decarbonisation of district heating – use of electric heat pumps	% of district heating produced with electric heat pumps	100%	98%
	Decarbonisation of district heating – use of biofuels	% of district heating produced with biofuels	0%	2%
	Heating technologies – local heating	% of heating as local heating	99%	98%
	Decarbonisation of local heating – use of fossil fuels	% of local heating produced with fossil fuels	82%	40%
	Decarbonisation of local heating () – use of electric heat pumps	% of local heating produced with electric heat pumps	18%	50%
	Decarbonisation of local heating – use of biofuels	% of local heating produced with biofuels	1%	10%



Electricity	Efficient lighting and appliances	% annual renovation	1.5%	4.0%
	Renewable/fossil electricity production	% of electricity produced from fossil fuels	33%	5%
Waste	Paper recycling	% recycling rate	80%	95%
	Metal recycling	% recycling rate	85%	95%
	Plastic recycling	Recycling rate (%)	55%	75%
	Glass recycling	Recycling rate (%)	75%	85%
	Organic recycling	Recycling rate (%)	60%	85%
Other	The Net Zero Planner does not propose indicators for other sectors			

B-3.2: Financial indicators by sector		
Area/Sector	Indicator	Indicator unit
Transport	Capital investment in sustainable transport	% of total city budget
	Private/public capital ratio	% of private capital relative to public capital in sustainable mobility
	Climate efficiency of investment	ktCO ₂ e avoided / M€ invested in transport
	Expected operational savings	M€ accumulated (2021–2040)



Built environment (buildings and air conditioning)	Capital investment in renovation and clean heat	% of total plan investment
	Private/public capital ratio	% private vs. public in renovation and thermal decarbonisation
	Cost per tonne of CO ₂ e avoided	M€/ktCO ₂ e
	Expected operating savings	M€ accumulated from energy efficiency and renewable heat measures
	Capital investment in renovation and clean heat	% of total plan investment
Energy systems (Electricity)	Capital investment in electrical efficiency and renewables	% of total investment
	Private/public capital ratio	% of private investment compared to public investment in self-consumption and efficiency
	Climate efficiency of investment	ktCO ₂ e avoided / M€ invested
	Estimated co-benefits	Estimated monetary value (M€) per improvement in air quality, employment, resilience
Green infrastructure and nature-based solutions	Capital investment in NBS	% of environmental budget
	Capital mobilised from external calls	% of funding from other administrations (EU, Basque Autonomous Community, DFB)
	Value of non-monetary co-benefits	Qualitative indicator / preliminary monetary estimate



Waste and circular economy	Public and operational investment in recycling and management	M€ invested annually
	Revenue generated or net savings	€ saved or collected through efficiency improvements
	Cost avoided per tonne of waste not emitted	€/t of waste not generated or recovered



PART C - CONDITIONS FOR CLIMATE NEUTRALITY IN 2030

This is the third section of the Investment Plan and aims to identify other favourable factors that the city should take into account when implementing the Investment Plan.

MODULE C-1

Climate policies for obtaining and deploying capital

Achieving climate neutrality targets in Bilbao requires not only robust technical planning, but also **a regulatory and political environment that enables the mobilisation of financial resources**. In this context, this module identifies a set of key public policies designed to optimise capital allocation and facilitate the deployment of sustainable investments. These policies, which are at different stages of development and implementation, **aim to establish enabling conditions for attracting public and private finance**, generating dedicated revenues linked to climate action, and incentivising behaviours aligned with the ecological transition.

Identifying and activating these instruments is essential to reinforce the financial viability of the Investment Plan and to ensure its coherence with municipal capacities and competences.

C-1.1: List of climate policies to enable the deployment of capital			
Climate policy	Status of the policy (in force, pending, under development, etc.)	Description of the policy (sector, target audience, etc.)	Expected result for the formation of the necessary capital
Revision of the Urban Master Plan (PGOU)	In progress	Includes sustainability and energy efficiency criteria in urban planning. Aimed at the entire municipality.	Greater attraction of green financing and public-private investment in sustainable urban development.
Regulation of low-emission zones (LEZ)	In force	Restricting access to polluting vehicles in central areas. Affects the private transport sector.	Reduction of emissions, raising of European funds and improvement of air quality.



Mandatory NZEB standards in new buildings	In force	Requires all new buildings to comply with NZEB standards. Developers and builders.	Reduction in future energy demand, alignment with NextGen funds and state subsidies.
Subsidies for residential energy renovation	In force	Financial assistance for insulation, window, roof and other renovations. Residential property owners.	Reduction in energy demand, improvement in thermal comfort and revitalisation of the local sector.
Tax credits for investments in self-consumption	Under review	Deductions on property tax (IBI) or construction tax (ICIO) for those who install solar panels. Citizens and SMEs.	Incentives for citizen and business investment in self-consumption, accelerating the energy transition.

MODULE C-2

Risk identification and mitigation

Bilbao's climate finance planning is **progressively integrating** risk analysis as a key component of the decision-making process. The early identification of potential risks – whether economic, technical, regulatory, social or climate-related – **has already been incorporated into the preliminary design of many sectoral actions**, particularly those requiring significant capital mobilisation.

At this stage, an initial risk identification exercise has been undertaken for each project, assessing potential impacts and proposing preliminary mitigation measures. This analysis will be updated regularly, in coordination with the relevant technical teams, based on the progress milestones of the Investment Plan.

In parallel, the gradual development of a more **structured risk management framework** is planned. This will enable the incorporation of monitoring mechanisms, residual risk assessments, and response capacities in the face of adverse scenarios. In doing so, Bilbao is strengthening the resilience of its climate investment strategy and enhancing its adaptive capacity in an uncertain transition context.



C-2.1: List of risks at project level

Area/Sector	Sectoral project	Identified risks	Risk description	Risk mitigation
<i>Transport</i>	Electrification of the urban bus fleet	Financial risk	Difficulty in accessing sufficient funds for fleet renewal	Diversification of funding sources: European funds, green loans, PPPs
	Expansion of the cycling and pedestrian network	Risk of social acceptance	Resistance from some sectors to modal shift and loss of space for cars	Awareness campaigns, early citizen participation, tactical urban planning
<i>Buildings and air conditioning</i>	Energy renovation of housing	Technical and cost risks	Increased cost of materials or shortage of qualified professionals	Vocational training programmes and early planning of tenders
<i>Electricity</i>	Installation of self-consumption systems in public buildings	Regulatory risk	Regulatory changes in tariffs or connection procedures	Regulatory monitoring, collaboration with the Basque Government and budget reserves
<i>Waste</i>	Increase in selective collection and composting	Operational risk	Low citizen participation or logistical problems in densely populated areas	Strengthening of educational campaigns and technological improvements in waste management
City-level risks (cross-cutting)	Overall implementation of the Investment Plan	Political and governance risk	Changes in political priorities or lack of interdepartmental coordination	Broad institutional approval, creation of cross-cutting technical units and regular monitoring



MODULE C-3

Capacity building and stakeholder participation

The transition to climate neutrality by 2030 will require Bilbao not only to allocate financial resources, but also to **strategically activate internal capacities and mobilise external financial actors**. While the city does not yet have a systematic or fully operational plan for coordinating these resources and partnerships, the need to structure such a plan is recognised as an immediate priority following the approval of the Climate City Contract.

This module therefore offers a preliminary approach—framed as both a diagnosis and initial guidance—on the key elements that will need to be addressed in the coming months. This is a provisional exercise that will be expanded and refined as part of the phased implementation of the Bilbao 2030 Climate Mission, through specific governance instruments, technical support, and targeted financial deployment.

Internal capacities

The municipal technical team currently has experience and expertise in various areas related to sustainability, urban planning, energy rehabilitation and sustainable mobility. However, in order to effectively support the roll-out of the Investment Plan, it will be necessary to strengthen specific capacities in the field of climate finance, including specialised profiles in:

- Design of mixed (public-private) financial instruments
- Economic and financial feasibility assessment of transformative projects
- Raising European funds and alignment with the green taxonomy
- Monitoring, traceability and verification of climate investments

The Mission's Technical Office is expected to **play a central role** in this reinforcement, channelling the creation of new capacities, promoting internal training and facilitating dialogue with the local, state and European financial ecosystem.

Participation of financial actors

At present, Bilbao has not yet deployed a structured system of alliances or formal commitments with financial actors linked to the Climate Mission. However, it is considered a priority to establish a roadmap for the progressive involvement of potential investor actors, including:

- Sustainable investment funds
- European financing platforms
- Institutional investors and ethical banking



- Private promoters of climate solutions (energy, mobility, construction, etc.)

This engagement strategy will be designed and activated after the signing of the Climate City Contract, linking each actor to specific action portfolios and seeking co-financing formulas adapted to the characteristics of each project.

C-3.1: Stakeholder identification map					
Parties involved	Investment requested (€)	Network	Influence	Interests	Level and type of commitment
Potential financial actors (banks, funds, investors)	To be defined	Under exploration	High	Investment with return, ESG compliance, visibility	To be defined after signing the Agreement
National and European green financing platforms	To be defined	Incipient link	High	Climate co-financing aligned with the Green Deal	Participation through calls for proposals
Supramunicipal public funding (regional/national)	To be defined by sector	Partially active	High	Alignment with higher-level climate policies and strategies	Agreements and framework programmes under development
European funds (ERDF, LIFE, Horizon, etc.)	To be defined by programme	Partially active	Very high	Structural support for transformative investments	Subject to competitive calls
Private sector with investment capacity (mobility, energy, etc.)	To be defined by sector	Under exploration	High	Reduction of own emissions, economic return	Progressive activation strategy
Note: This table only reflects working scenarios and future possibilities. Specific relationships will be developed after the Climate City Contract is formalised.					



Incentives and non-financial participation programmes

In addition to financial actors, the deployment of the Mission will require the active involvement of citizens, energy communities, businesses and local economic sectors. This will require public incentive programmes aimed at:

- **Promoting** residential energy **renovation**
- **Supporting the electrification** of private fleets and the adoption of self-consumption
- **Promoting** sustainable **behavioural changes** (active mobility, recycling, etc.)

These programmes will have a direct cost for the City Council, which must be estimated and quantified in the following phases of the Investment Plan, depending on the planned calls for proposals and the financing mechanisms available.

C-3.2: Cost of stakeholder activities		
Parties involved	Activity	Cost to the City Council (€)
Citizens and energy communities	Subsidy programmes for photovoltaic self-consumption and energy communities	Estimate: 8-10 million
Homeowners' associations	Aid for the comprehensive energy renovation of buildings	Estimate: 50-60 million
Small businesses and the tertiary sector	Incentives for electrical efficiency and improvement of premises	Estimate: 5-6 million
Public transport users	Discounts or free travel to encourage modal shift	Estimate: 2-3 million
Local SMEs	Support for sustainable investments and energy transition	Estimate: 5-7 million
These figures are indicative estimates based on the programmes included in the Climate Action Plan. The final cost will depend on the specific design, the intensity of the incentives and the capacity to mobilise external funds.		