Zaragoza
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Zaragoza Climate City Contract

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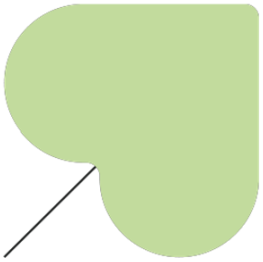

Zaragoza

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Abbreviations

CCC - Climate City Contract
CAP - Climate Action Plan
CIP - Climate Investment Plan
ZEI 2019 - Monitoring Emissions Inventory 2019
EIB 2005 - Baseline Emission Inventory 2005
BAU 2030 - Business as Usual scenario 2030
EMCD - Economic Model for Cities' Decarbonization
SECAP - Sustainable Energy and Climate Action Plan
SUMP - Sustainable Urban Mobility Plan
PNIEC - Spanish integrated Energy and Climate Plan
ECAZ 3.0 - Zaragoza Climate Change, Air Quality and Health Strategy
EACC - Aragonese Climate Change Strategy 2030
PACCZ - Zaragoza Climate Change Adaptation Action Plan
CitiES 2030 - Collaborative Platform for the Climate Neutrality of Spanish Cities
GHG - Greenhouse Gases

Introduction

At the crucial moment in the global response to climate-related emergencies, the European Union is committed to leading climate action and has set the goals and legislation to achieve this. Thus, the European Union must reduce its emissions by at least 55% by 2030 and reach climate neutrality by mid-century. In this context, cities have a key role to play, both in accelerating the decarbonization process and in ensuring a fair and equitable transformation that contributes to the well-being of society as a whole.

Not surprisingly, cities, despite occupying only about 3% of the land area, generate more than 70% of greenhouse gas emissions and consume more than 65% of energy globally. And it is important that they act as centres of experimentation and innovation in the transition to climate neutrality.

The European Union Mission '100 climate-neutral and smart cities by 2030' aims to support the transformation of cities to accelerate compliance with the Paris Agreement, and to be both a catalyst and driver for the implementation of the European Green Deal and a demonstrator that climate neutrality can be achieved by 2050.

Continuing this path, and in a geopolitical and economic context that has accentuated the need for strategic autonomy and resilience, the European Commission has also taken a decisive step to ensure that the climate transition is not only consolidated but also boosts the continent's industrial competitiveness in a renewed way. In this framework, the Clean Industry Pact was presented on 26 February 2025, a comprehensive strategy designed to accelerate the decarbonization of the European economy while fostering reindustrialization based on clean technologies and resilient value chains. This pact recognizes 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 developing the necessary skills.

Cities, as the epicentres of the European Mission, are now in an even more strategic position: They must not only accelerate their decarbonization but also become poles of attraction for new green industries. In this regard, the Clean Industry Pact and the various European funding instruments – including Green Deal funds, recovery mechanisms and support programs for innovation and reindustrialization – offer opportunities to mobilize investments, foster local innovation and promote the creation of skilled jobs in key sectors of the circular economy and clean technologies. In this way, the Climate Agreements take on a new dimension, integrating this perspective of sustainable industrial competitiveness and helping to actively explore European funding opportunities so that the green transition is also an engine 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 municipalities of Barcelona, Madrid, Seville and Valencia signed the Declaration 'Climate neutral cities in 2030', as a boost to the commitments and initiatives of the signatory cities and a support from the Government to the transformation of these cities to achieve climate neutrality and improve their resilience. Following the open path, the Municipalities of Soria, Valladolid, Vitoria-Gasteiz and Zaragoza adhered to the Declaration on 13 December.

In addition, on 15 September 2021, the Senate Plenary adopted a motion urging the government to boost the climate neutrality of cities in the framework of the European Mission of Cities. The motion acknowledges the critical role of cities in responding to the climate emergency and highlights the opportunity to accelerate the necessary and cross-cutting changes to make cities climate neutral by 2030. It also appreciates 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 regard, on 25 November 2021, the Cities Mission launched a call for expression of interest addressed to European cities with more than 50,000

inhabitants interested in participating. Of the 377 that were submitted, 100 were selected from the EU-27, including the Spanish cities of Barcelona, Madrid, Seville, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza.

The Mission's Implementation Plan foresees that each of the 100 selected cities will draw up a Climate Agreement adapted to its own reality, through a co-creation process and in close collaboration with civil society as a whole and with citizens, detailing the strategy for deploying and monitoring innovative and digital solutions to achieve climate neutrality; and to allow other cities to follow suit by 2050. This document is thus a clear political commitment, not just to the European Commission and national, regional and local authorities, but also to citizens, and includes a comprehensive climate action plan in the different sectors, such as energy, buildings, waste management and transport, together with the corresponding investment plans.

After the selection, the seven Spanish cities focused on the elaboration of their Climate Agreements. The co-creation work they promoted culminated in the delivery of these documents to the European Commission during 2023: the first five cities (Madrid, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza) submitted their Agreements in April 2023, while Barcelona and Seville submitted their Agreements in September 2023. As a result of this effort and following 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 presentation of a solid and viable Climate Agreement to reach climate neutrality in 2030, were precisely Madrid, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza. Spain's leadership in the Mission was consolidated in March 2024, when the European Commission awarded the Mission Label to Seville and Barcelona, making Spain the first country in the European Union in which all its cities designated in the Mission achieved this important recognition. Having obtained the Label, these cities are working on implementing their Agreements, rolling out specific actions and innovative projects on their path to 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 “Valencia Green Charter” Development Declaration. Presented at the 2024 Cities Mission Conference in Valencia, this declaration forms the core of a strategic alliance between the cities of the Mission with the aim of calling for more support and funding from the European Commission to accelerate the urban climate transition. Its main 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 gained the support of more than 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 first agreements, the Spanish Mission cities, with the support of the citiES 2030 platform, have begun the process of iteration of their Climate Agreements. This review and adjustment exercise, fundamental to incorporate the learnings of the first years of implementation and to adapt the roadmaps to the European context, has been opened collaboratively to the rest of the cities of the platform. With this, and in parallel to this iteration process, those cities that, without having been initially selected for the European Mission, aspire to climate neutrality, have been able to advance in the elaboration of their own Climate Agreements, benefiting from the experience and knowledge generated by the Mission cities. The cities of Bilbao and Viladecans have positioned themselves at the head of this group, delivering their Climate Agreements coinciding with the iteration of the seven Spanish Mission cities. This promotes a tractor effect and knowledge transfer that is vital for scaling up climate ambition at national level.

This document meets the requirements of the European Mission of Cities. It has been developed by the city, with the participation of other public and private actors, and sets out plans to achieve climate neutrality. In particular, it recognizes that the Mission cannot succeed without being firmly 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 enterprises, private industry, trade unions, academia and research, and the public sector, among others, in their corresponding roles as decision makers, users, consumers, producers and owners.

In addition, it integrates the city's own qualities and heritage, which guarantee the local dimension of the transition towards climate neutrality, but also its inclusiveness, in line with the values of the New European Bauhaus (art/culture, sustainability, society). It fosters the sense of belonging and ownership on the part of the inhabitants of the city and professional actors, showing that their unique contribution is relevant and that compliance with this Agreement will result in a better quality of life and a better environment for all.
On the other hand, 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 accession documents, thus bringing together other actors necessary for the city to achieve the established climate neutrality objective. In particular, the commitments that are set out may be extended or updated so that they effectively contribute to the achievement of climate neutrality in the city.

The document is divided into several parts: one relating to the cities' commitment to achieving climate neutrality; another relating to institutional support and coordination from the various public administrations; another part relating to monitoring and updating; and a final part comprising the annexes corresponding to the Climate Action Plan and the City Stakeholders Plan and commitments made, which follow the models developed by NetZeroCities.

Commitment of the city of Zaragoza towards climate neutrality

Introduction

In January 2022, Zaragoza applied for and was selected by the European Commission as one of the '100 Climate Neutral and Smart Cities', a recognition that opens the door to new European collaborations and support to achieve the goal of zero emissions by 2030. The Aragonese capital competed with 377 European municipalities, 24 of them Spanish, to be part of this ambitious initiative that turns the selected cities into centres of experimentation and innovation to guide the rest of European cities until 2050.

This European candidacy was very well received by citizens and local authorities: More than **115 letters of support** were received from companies, financial institutions, universities, foundations, collectives, professional associations and consumer associations, among others.

Zaragoza thus became a European benchmark for its **sustainable mobility, energy efficiency, renaturalisation and circular economy projects,** while opting to deepen these policies with the aim of achieving climate neutrality by 2030.

This is a challenge for the transformation of the city in the coming years, but also an incentive to accelerate and continue implementing an action plan marked by the city's governing bodies to achieve emission reductions. In this way, it also seeks **to improve the quality of life of citizens and** turn the Aragonese capital into a beacon of investment in sustainability and innovation.

Thanks to the work done in recent years, the city of Zaragoza is on a path to become more sustainable and has strived to reduce its emissions significantly in the last decade. In this sense, the initial Climate Agreement and this update are built on the strong foundations that the city has been building for the sake of sustainability, with strategies and plans in the implementation phase that have

been key to reach this point.

These policies include *the Zaragoza Climate Change, Air Quality and Health Strategy* (ECAZ 3.0), *the Aragonese 2030 Climate Change Strategy (EACC), the Climate and Sustainable Energy Action Plan (PACES) of the Municipality of Zaragoza 2030, the Sustainable Urban Mobility Plan (SUMP) of Zaragoza, the Zaragoza Green Infrastructure Master Plan, the Zaragoza Sustainable and Healthy Food Strategy, the Zaragoza 2030 Climate Change Adaptation Plan (PACCZ),* as well as the recent *Zaragoza Urban Agenda*, among others.

The image below shows a brief compendium of the main achievements made in the city'sroadmap towards climate neutrality in 2030:

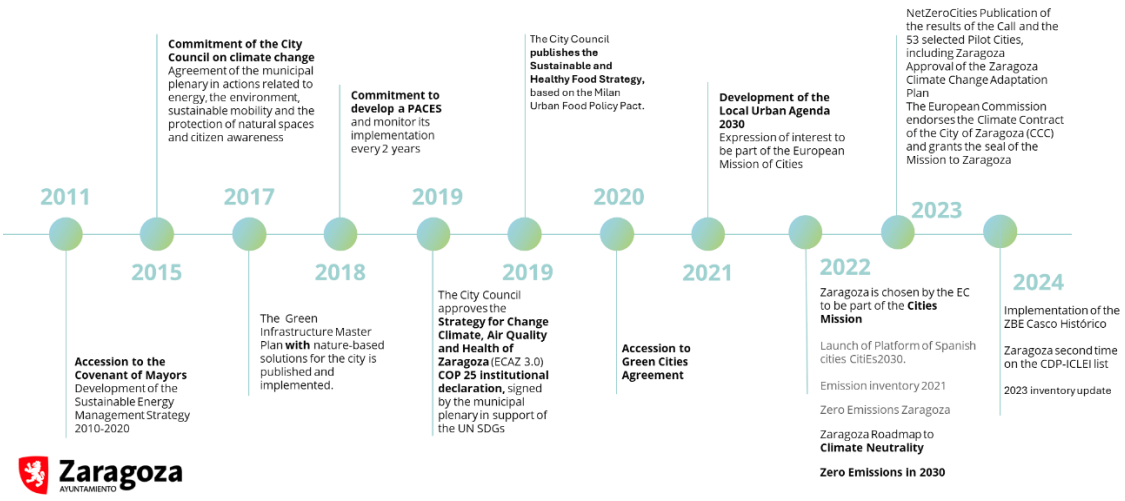


Figure 1. Zaragoza's roadmap towards climate neutrality.

It is also important to underline that Zaragoza is an active part of many key partnerships and agreements at European level that support sustainable cities. These include the Covenant of Mayors, EuroCities, EIT Climate-KIC, ICLEI, ERRIN and Green City Accord, to highlight some of the most relevant.

At national level, Zaragoza is also present in the Spanish Network of Cities for Climate of the EMFF, as well as in **the Collaboration Platform for Climate Neutrality of Spanish Cities (citiES 2030).** The city also explores synergies with

regional initiatives such as the Circular Aragon Strategy, with the aim of creating a political, economic and social framework that allows the transition to an innovative circular economy.

However, the path towards climate neutrality requires the implementation of a series of **transformative actions that** accelerate the green and digital transformation of the city, underpinned by a leadership model shared with key stakeholders in the environmental, social and economic dimensions, from civil society, to economic, academic and innovation agents, as well as governmental ones.

This climate challenge and the decarbonisation of the territory that European cities face and lead has the support of the European Commission, which makes tools and shared and collaborative knowledge available to cities, such as through multilevel and multi-stakeholder platforms, NetZeroCities (NCZ) or citiES2030, in which Zaragoza actively participates and works.

The uncertainty in the current environmental context and the different climate scenarios that the city will have to face in this time horizon 2030, require an adaptive and flexible approach, avoiding the elaboration and design of rigid strategies and action plans and betting on a continuous process of review and analysis that will be reflected in the successive iterations to which the Climate Agreement is submitted, providing resilience and responsiveness to the territory, prioritizing actions and responding to the needs of Zaragoza, under general and common principles underpinning action and management on the path towards climate neutrality 2030.

2030 climate neutrality target

The urgency to accelerate emission reduction processes has led to the need to increase the level of ambition in terms of decarbonisation targets and reduce the deadlines for reaching carbon neutrality.

In this context, Zaragoza's goal is to achieve climate neutrality by the end of this decade. The city has defined the objective of achieving an **80% reduction in emissions by 2030** (compared to the maintenance of the current circumstances or business-as-usual case) in the main sectors that will lead to a systemic transformation of the city. Natural sinks such as urban forests or renaturalisation of spaces will compensate for the remaining residual emissions.

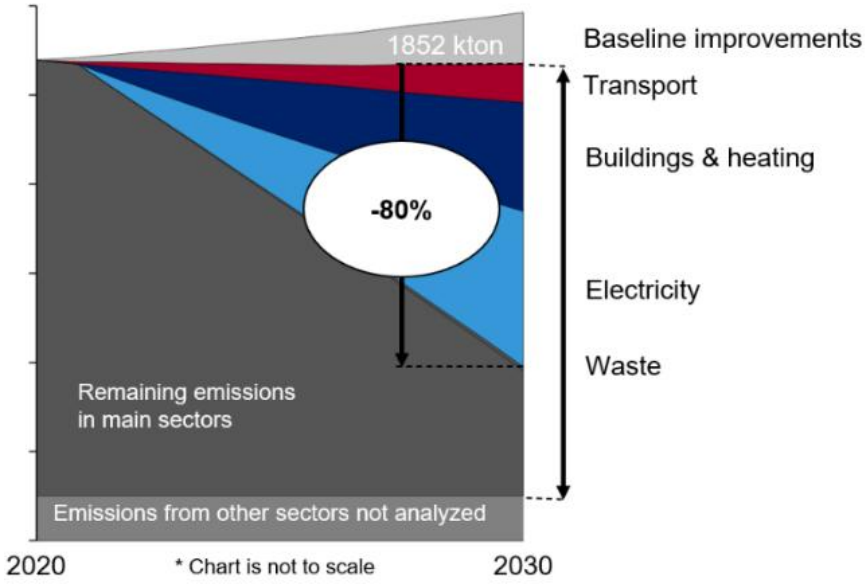


Figure 2 .Main decarbonisation sectors

The geographical limit that corresponds to this fixed objective of climate neutrality of Zaragoza for 2030 is the same as the administrative limit of the city, covering an area of 974 km2, corresponding to the whole of its municipality.

For its proper implementation and monitoring, the Climate Action Plan (CAP) of this Agreement breaks down these actions with a defined approach, concrete and achievable objectives that entail a measurable impact for the city.

In this sense, a number of sectors are highlighted, also shown in ***Figure 2***, which are identified as those with the greatest potential for decarbonization:

+ Transport
+ Buildings and their heating
+ Electricity generation
+ Waste.

It is estimated that these four sectors can jointly reduce **80% of total emissions.** According to the economic case developed for the city in the framework of this Agreement, the actions planned in the city, aimed mainly at these four sectors, would mean a reduction of 1,474,000 tons of carbon dioxide emissions until 2030.

These total emissions are calculated based on the aggregation of expected reductions through a series of levers for action. The graph in *Figure 3* breaks down the **expected emission savings for the different levers.** Specifically, actions aimed at decarbonising heat generation in buildings and electricity generation are those that project the highest estimates of emissions reductions.

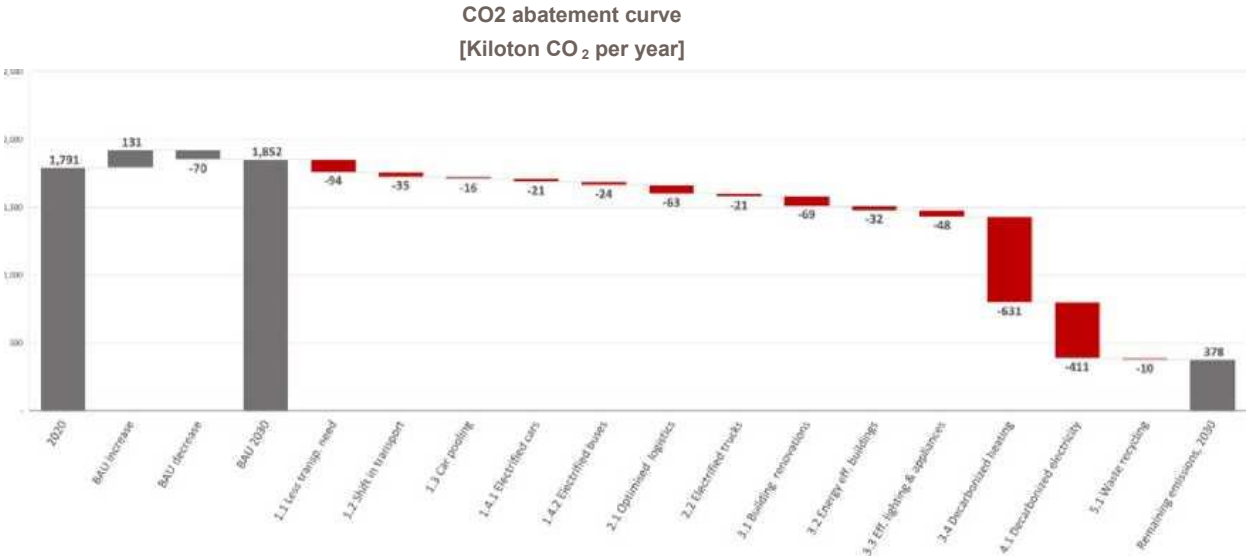


Figure 3. Reduction of CO_2 emissions (in kton of CO_2 per year) distributed by subsectors of action

With an **initial investment estimated at 3,925 million euros between 2020 and 2030** (corresponding to 6,887 euros per capita), benefits of 6,223 million euros are projected between 2020 and 2050. Specifically, the economic case analysed shows a return on investment (ROI) of 59%.

The expected benefits up to 2050 are distributed as follows: 82% direct benefits (€5,127 billion) and 18% (€1,097 billion) co-benefits, including improvements in employment, well-being, health and time savings, among others. *Figure 4* shows the return on investment and its distribution.

It is expected that the reduction in these sectors, using the levers for action outlined in greater detail in the following section and throughout the Action Plan, will enable the ambitious target to be achieved within the established timeframe. At the same time, the city is committed to carrying out this transition in a fair manner, leaving no one behind.

In addition, part of the city's residual emissions will be captured by a natural sink composed of existing urban and peri-urban forests, along with other nature-based initiatives that will be enhanced or launched from now until 2030.

Finally, although the main priorities identified for the transformation of the city towards climate neutrality are focused on **energy use and efficiency,** it is noteworthy that additional related issues such as circularity, sustainable food chains, and health, among others, are also being considered.

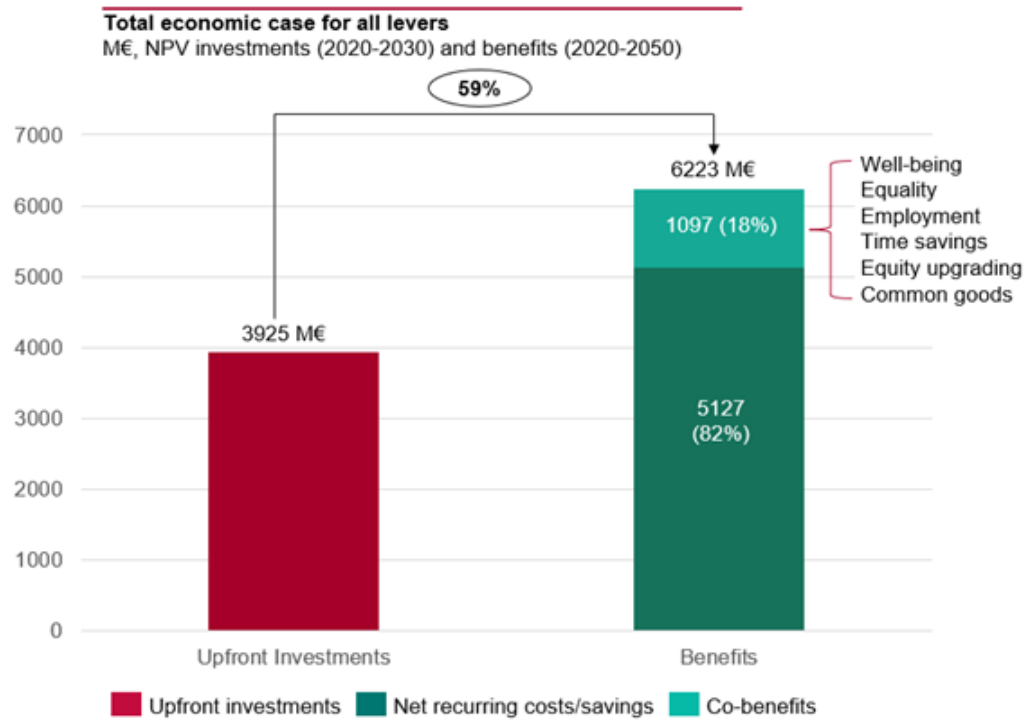


Figure 4. Conclusions of the economic case for the city of Zaragoza.

In short, the diversity and complementarity of Zaragoza's initiatives make the city an ideal centre for experimentation and innovation to develop solutions that can be easily replicated in other cities, helping all cities in the European Union to become climate neutral by 2050.

Strategic priorities and interventions

Zaragoza analysed the state of the current situation regarding the city's emissions prior to the publication of the first version of the climate agreement and identified three priority pillars for action, adding two more for this new version. These pillars articulate the systemic changes and strategic interventions that need to be addressed to achieve the 2030 climate neutrality objective:

1. Smart city projects.
2. Sustainable and smart mobility.
3. Efficiency and renewable energy.
4. Water and nature-based solutions.
5. Circular economy.

With these general sustainability priorities for the city, the CAP defines a series of actions towards climate neutrality that seek to tackle the main emitting sectors of the city and thus achieve the objectives of the city described in the previous section.

Specifically, in the study model prepared for Zaragoza, these priorities were investigated and reflected in the actions planned in the Action Plan, proposing specific measures aimed especially at the most polluting sectors, such as transport, home heating and electricity generation, combining mitigation measures with others such as the renaturalization of the city and the reduction of emissions through circular economy strategies.
Figure 5 below shows the **main reduction levers** studied, as well as their associated emission reduction percentage.

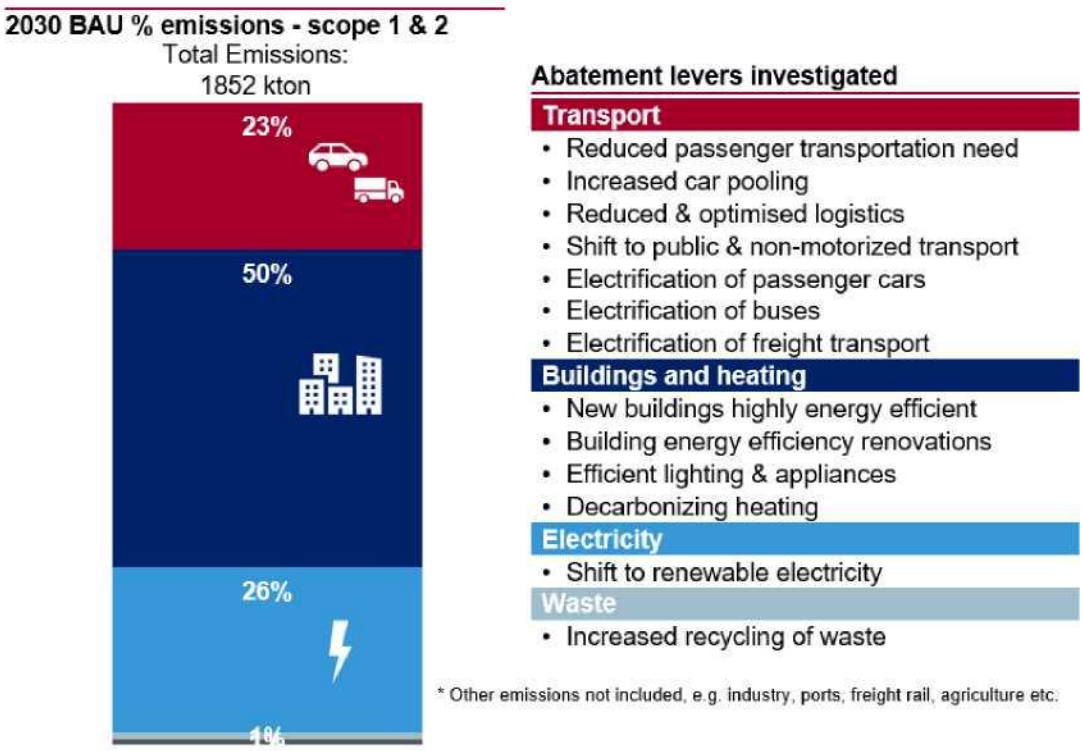


Figure 5. The Action Plan subsectors target 99 per cent of total Scope 1 and 2 emissions.

For example, in the mobility and transport sector, the city seeks to reduce an average of 274,000 tons of CO_2 annually, thanks to a set of interventions that include, among other measures of the SUMP of Zaragoza:

+ Electrification of urban transport with the transformation of the public bus fleet into electric vehicles and support for taxi services;
+ The installation of recharging points in bus garages;
+ Optimization in city logistics
+ The implementation of financial support plans for the electric transformation of taxis to a zero-emission fleet; the installation of recharging points for public use in the city.

With regard to energy efficiency in buildings, a significant average annual reduction of 780,000 tonnes of CO2 is expected. This sector includes key interventions such as the following:

+ The rehabilitation of 25,000 homes to reduce their thermal consumption;
+ Replacement of boilers powered by fossil fuels for heating buildings;

+ The design and promotion of renewable energy communities and solar parks such as the one already implemented in the Barrio del Actur through the installation of roofs in social rental buildings, public and private housing;
+ Creation of a company-oriented energy community in an industrial park with the same cadastral reference in the MercaEnergy project;
+ "Balsas Positivo", an urban regeneration project supported by two ongoing Horizon Europe initiatives (INCUBE and CHRONICLE) that aims to accelerate the pace of rehabilitation of social housing and promote a replicable strategy towards other types of buildings;
+ The development of "energy positive districts", such as the one being carried out thanks to the NEUTRALPATH project, funded through Horizon Europe, where Zaragoza is a lighthouse city that is developing a neighbourhood with positive energy generation on an annual basis.

In addition, the "**El Bosque de los Zaragozanos**" initiative focuses on solutions based on nature and is conceived as an opportunity to live in harmony with the territory, aligned with a global Green Infrastructure strategy in which urban areas merge with their territory, committing to a sustainable, healthy and resilient city.

This initiative, already underway, aims to improve health and biodiversity, reducing the carbon footprint and greening the city and its territory. At the same time, it is expected to promote circularity thanks to the generation of organic waste that can be used as compost or biomass. It will extend to a total of 1,000 hectares, planting 700,000 new trees and shrubs, and creating a natural sink to capture residual CO_2 emissions from the city. Currently, more than 200,000 trees have already been planted.

On the other hand, **"Circular Biochar"** was inaugurated in 2024 as the first industrial-scale biorefinery in Europe, with an investment of 23 million euros (15 million provided by the European Commission) and the creation of 700 jobs. This represents a breakthrough for Zaragoza in circular economy, treating a third of all organic waste generated, and fostering synergies with other initiatives such

as El Bosque de los Zaragozanos.

Due to its nature and consideration of a great diversity of factors, this Agreement seeks to launch a multi-stakeholder process that has the participation of all the actors involved. Therefore, in addition to the technical interventions and savings in emissions mentioned above, reaching climate neutrality will entail both a social and economic transformation, as well as an evolution of a large part of current urban models. In this way, it is necessary to emphasize the magnitude of the co-benefits that the city of Zaragoza will see as a result, all of them associated with the planned decarbonization actions.

In addition to the direct benefits already presented, these actions will yield various co-benefits, including improvements in employment, well-being, health, and time savings, among others.

For example, energy efficiency actions on the building stock will have the associated effect of improving housing quality, especially in the most vulnerable buildings and areas of the city, and will also improve the conditions of access to energy, reducing situations of energy poverty.

On the other hand, the evolution in mobility will have a direct effect on the air quality of the city and on the acoustic impact, due to the reduction of demand and the penetration of new technologies. The incorporation of behaviours such as teleworking or the development of an urbanism of proximity will cause the reduction of the demand for displacements and will expand the presence of non-motorized modes such as pedestrians and cyclists.

Likewise, the development of **mitigation mechanisms,** such as the creation of carbon sinks such as El Bosque de los Zaragozanos, will significantly increase the existence of biodiversity and nature and in Zaragoza, including the related benefits that this entails.

Also noteworthy are the restoration actions of the Huerva River, a project already underway, which will improve its river ecosystem, as well as mitigation,

adaptation to climate change and protection from flood risks, increasing biodiversity in urban environments and their conservation.

Finally, in addition to the mitigation actions set out above, which focus on reducing CO_2 emissions, it is also important to consider those dedicated to adaptation, that is, those that act on the consequences and include all actions aimed at avoiding or reducing the potential impacts and risks arising from climate change, reducing vulnerability and exposure to them and increasing the resilience of societies and ecosystems. These actions are set out in the Zaragoza Climate Change Adaptation Action Plan (PACCZ) 2022-2030.

The 2030 Climate Neutrality Action Plan below outlines these interventions alongside all those that are planned to be needed to reach the 2030 neutrality target.

Principles and process

The **Action Plan** has been implemented following an assessment of the city's emissions situation, which identified and analysed the main challenges posed by the various policies, plans, programmes and actions affecting Zaragoza's urban model, presented throughout the different sections of this Agreement.

Within the Action Plan (PAC), a series of actions are identified and proposed in a plan that integrates financing, governance, citizen participation, and exchange and dissemination in relation to urban phenomena within the framework proposed by the national and European platforms for Climate-Neutral and Smart Cities. Therefore, the PAC constitutes a genuine medium-term framework for action; it is not merely a sum of specific and circumstantial projects and actions. The integrated approach pursued by this Agreement and its various dimensions, as well as a strategic vision based on the participation and cooperation of the citizens of Zaragoza, are key to achieving the sustainable development of the city as a whole.

As a result, the Climate Agreement is based on the reality of the city of Zaragoza,

using it as a starting point to establish the main challenges and opportunities that the city will face in the coming years, also serving as a roadmap for the development of different plans and policies related to sustainability and climate neutrality..

In this sense, Zaragoza has developed structural processes that aim to involve citizens in decision-making and in the implementation of public policies, in order to achieve a fairer and more sustainable city. In the field of citizen participation, Zaragoza has promoted the creation of various mechanisms for consultation and dialogue with citizens, through the creation of sectoral councils and the holding of popular consultations. For example, the city will support the Mission process in other advances already made, such as those of the Data Government, with the direct consequence of promoting a common data exchange space between public, private and social actors.
In this way, it seeks to promote citizen co-responsibility in the management of the city, and promote transparency and accountability.

The search for **cooperation at regional, national and international level** is also maintained as a key element in the Zaragoza principles within the scope of this Agreement. In this sense, the city has worked on the implementation of a multilevel governance that allows a more effective and coordinated management of public resources and policies. In addition, shared learning and co-creation has been promoted, with special emphasis on active participation in work platforms directly related to the implementation of the European Mission of Smart and Climate Neutral Cities such as NetZeroCities and citiES 2030. Within the framework of this cooperation, the mayor of Zaragoza has been appointed as a member of the Cities Mission Mayors Advisory Group. This body plays an essential role in advancing the EU Cities Mission and gives urban leaders the opportunity to join forces, share knowledge and shape the future of urban governance and development, acting as speakers to community institutions. The members of the Advisory Group have been carefully selected based on their commitment to sustainability and their demonstrated leadership in urban climate transitions. Diversity criteria, such as geography and city size, were also taken

into account. During the initial two-year term, their collective experience and expertise will contribute to improving the well-being of our cities, fostering resilience, inclusion and prosperity for future generations. To date, 4 meetings of the members of the group have been held.

Strengthening internal capacities has also been a priority for the city of Zaragoza. To this end, training spaces have been created for public employees, in order to improve their skills and knowledge in environmental management and citizen participation.

Also, within the framework of this agreement, Zaragoza considers **climate justice** an important factor in its political agenda, reinforcing spaces for citizen dialogue and seeking new forms of learning and shared co-leadership, designing spaces for citizen participation and deliberation, in order to promote participatory and sustainable environmental management. Multi-stakeholder collaboration was and continues to be a key element in the Zaragoza Action Plan, promoting a new model of climate governance that gives voice to the different stakeholders of the city.

The measures proposed in the CAP have the **consensus of the different public and private actors** of Zaragoza society. Public processes and policies for adaptation and mitigation to municipal climate change are based on the principles of transparency and participation and have undergone prior consultation and information processes. Likewise, the structuring actions of the Plan are part of the roadmaps of such previously agreed strategies. In this way, the Action Plan integrates policies and measures previously submitted to the citizen debate. However, progress continues to be made in shaping a governance model that specifically facilitates the discussion and co-creation of the Climate Agreement itself, and the Action Plan based on the application of methodologies and opportunities such as the NZC City Expert Support Facility support programme.

Likewise, this process involves not only an open dialogue with Zaragoza society but a new approach to improving public governance within the City Council itself,

by involving the work of all areas of the City Council with a holistic and transversal approach. From the elaboration of the Climate Agreement to this first iteration, the new administrative structure after the local elections in 2023 has allowed to generate a cross-cutting working group between different municipal departments achieving a collaborative approach, led by the Directorate General of European Funds and the Area of Environment and Mobility of the City Council.

The process for the implementation of the Action Plan of this agreement was developed in several work blocks: an initial diagnosis, the design of strategic actions, their implementation, as well as their follow-up and possible correction, all accompanied by a communication and awareness-raising and training plan for citizens and the actors involved. With this iterative process, the initial data are reviewed and analysed, complemented and adding new municipal actions that contribute in the strategic pillars to the decarbonization objective and provides data to municipal managers to evaluate and support strategic decision-making and implementation.

In addition, to **strengthen communication and citizen participation in decision-making on** those issues that affect this Climate Agreement, the City Council will include a dedicated section on its website, which will serve as a public reference point for the progress achieved so far in the framework of the Mission, as well as relevant news for citizens.

On the other hand, the process will also follow a number of measures related to **monitoring and tracking progress**, which will be mainly based on measurable and verifiable climate action planning based on Zaragoza's baseline greenhouse gas emissions inventory. A clear identification of the main actions will be established and carried out, along with their descriptions within each sector of action, including provisional indicators according to their investment and capital needs, which will serve as a preliminary step to the creation and implementation of collection and financing measures. That is, it will be sought that all planning of climate neutrality actions in Zaragoza is based on co-creation processes: mobilising key stakeholders, involving citizens in decisions that affect them and

aligning actions to bring about systemic change leading to the rapid decarbonisation of the city. For this, the Sectoral Council of the Environment will also be involved since it is a body of participation, of an advisory, informative and advisory nature. Its purpose and objectives are to facilitate the participation of citizens and channel information from associations in municipal environmental matters.

The degree of implementation of the challenges set out in this Climate Agreement will necessarily be associated with possible variations in the **social and economic context** that accompanies the process. The complete implementation and fulfilment of a large part of the proposed actions will require a high investment of economic and financial resources, both in the public and private spheres, as well as an explicit objective of social cohesion and inclusive development.

Finally, it is noteworthy that it is a totally open process, in which **regular reviews must be made according to the reality and conditions of the city in continuous evolution.** For this, Zaragoza will articulate its strategic approach based on the integral theory of change, taking into account the general guidelines of the Mission Platform, NetZeroCities, to take advantage of social innovation and governance as horizontal factors that allow achieving success in all the transformations of climate neutrality of the city.

Mitigation and adaptation synergies in the Climate Agreement and Action Plan

As part of its commitment to a just and comprehensive climate transition, the city of Zaragoza is committed to mainstreaming the aspects of adaptation to climate change in all its actions. In particular, an urban climate risk assessment has been carried out.

In particular, the city prepared during 2022 its Plan for Adaptation to Climate Change of Zaragoza 2030 #PACCZ as part of the commitments made by the City of Zaragoza within the European Covenant of Mayors for Climate and Energy. This Plan was approved by the Government of Zaragoza on 13 April 2023. An urban climate risk assessment has been carried out in this Plan.

There are two pillars of climate action or response to climate change: mitigation and adaptation. Mitigation and adaptation are not alternative formulas but complementary and synergistic strategies. They are the two sides of the same coin of action in the face of the climate emergency.

If we do not reduce our emissions and enhance carbon sinks (mitigation), climate change will continue to be strengthened indefinitely, surpassing and overflowing any adaptive capacity. Above certain scenarios of rising temperatures, life on the planet will become tremendously difficult for billions of people.
Even in the best mitigation scenario, adaptation is essential to address the changes and impacts that climate change is already causing and will inevitably cause in the future. If we do not anticipate and protect ourselves as a society from risks, impacts and vulnerabilities to climate change and improve our resilience or resilience to damage, the climate crisis already means, and will mean much more in the future, dramatic impacts on health, social and environmental.
An adaptation that, in turn, is not low in GHG emissions is meaningless, since it intensifies the change whose effects we want to avoid.
Mitigation that does not integrate adaptation criteria puts us at risk from the

impacts of climate change.

Finally, adaptation is not at all resignation in the face of the causes and impacts of climate change, it is just the opposite, it is the creation of mitigation and adaptive capacity and of active, dynamic, collective, social, multidisciplinary, multifactorial, multidimensional and participatory resilience. (Preamble Climate Change Adaptation Plan of Zaragoza)

Committing to climate neutrality responds not only to an environmental obligation, but also to an urgent need for health. Climate change mitigation policies represent an unprecedented opportunity to reduce the disease burden 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 life-saving measures, especially among the most vulnerable groups. In this framework, climate action is also a policy with relevant impacts on health, based on scientific evidence and social justice criteria, as highlighted by bodies such as WHO Europe and its Pan-European Commission on Climate and Health.

Support from the Government of Spain and the Government of Aragon

As already demonstrated in the first version of this climate contract, the decarbonisation process of Zaragoza within the framework of the Mission of European Cities has the active support of the Government of Spain and the Government of Aragon.

The Spanish State expressed its commitment through the Declaration signed by the previous Third Vice-President and Minister for the Ecological Transition and the Demographic Challenge, in which it recognized the strategic role of Zaragoza and committed to accompany its transformation towards climate neutrality, through institutional, regulatory and financial support. This commitment has been reaffirmed with the Government's Declaration of Support for Climate Neutrality and Resilience of Spanish Cities

For its part, the Government of Aragon has expressed its support for Zaragoza as a key player in territorial governance, aligning its sectoral policies with the objectives of this Contract. In addition, a protocol has been signed to work together on adaptation measures.

DECLARACIÓN DE APOYO DEL GOBIERNO A LA NEUTRALIDAD Y RESILIENCIA CLIMÁTICA DE LAS CIUDADES ESPAÑOLAS

El Gobierno de España, mediante la presente Declaración, reitera su firme compromiso y voluntad de seguir avanzando hacia una agenda ambiental y climática que sea también una agenda para una **Sociedad del Bienestar**. Una agenda que proteja los ecosistemas y garantice la salud, la prosperidad y una transición justa para toda la ciudadanía.

La ciencia lleva décadas advirtiéndonos sobre la aceleración del cambio climático y sus consecuencias, cada vez más intensas y frecuentes. Pero aún estamos a tiempo de actuar y conocemos las oportunidades que la transición ecológica nos ofrece: cuanto antes actuemos, mayor será nuestra capacidad de adaptación, menores serán los costes y menos profundas serán las desigualdades, especialmente en las poblaciones más vulnerables. Afrontar el cambio climático es una oportunidad única para transformar nuestras ciudades en espacios más sostenibles, resilientes y cohesionados, y para construir un futuro más justo, seguro y próspero para las próximas generaciones.

Las ciudades, donde reside la mayoría de la población y donde se concentran el consumo energético y las emisiones, tienen un papel clave en esta transición verde.

Por ello, subrayamos el **valor transformador de las ciudades como** espacios de experimentación e innovación, con nuevas formas de gobernanza y participación ciudadana que sean motores de cambio frente a los grandes retos urbanos de nuestro tiempo.

Este proceso de transformación debe discurrir en paralelo a un importante esfuerzo de **adaptación de las ciudades a los nuevos escenarios climáticos**. Necesitamos espacios urbanos preparados para afrontar riesgos diversos y agravados: temperaturas en aumento y episodios de calor extremo, sequías, lluvias torrenciales e inundaciones, entre otros. Y necesitamos una administración y una ciudadanía más consciente y capacitada para responder adecuadamente a dichas amenazas.

Los **ecosistemas urbanos** representan un 22% de la superficie terrestre de la Unión Europea aportando hábitats importantes para la biodiversidad. Su papel es fundamental para afrontar los grandes retos del cambio climático, ya que son los garantes de la calidad de vida y salud para sus habitantes.

Estos ecosistemas urbanos se articulan en la infraestructura verde urbana, como una red estratégicamente planificada y constituida por diferentes elementos naturales de diversos tamaños y tipologías (como parques, jardines, corredores verdes, arbolado, cubiertas verdes, fachadas verdes, huertos, espacios agrícolas y forestales, márgenes de ríos en sus tramos urbanos, espacios de transición hacia el entorno no urbanizado, etc.), que potenciará el efecto de capilaridad verde y conectividad ecológica, mejorando a su vez los flujos de biodiversidad que garantizan su calidad.

Las **soluciones basadas en la naturaleza** han demostrado ser rentables en términos de coste-beneficio y eficaces en este proceso, impulsando la renaturalización y, con ello, obteniendo resultados en la mejora de la calidad del aire, la reducción de la temperatura urbana, en la reducción del efecto de isla de calor y el riesgo de incendios; la gestión sostenible del agua, reducción de inundaciones, mejora de infiltración y recarga de acuíferos; la promoción de la biodiversidad urbana y resiliencia ecológica y en el fortalecimiento del bienestar físico y mental de la ciudadanía.

Esta Declaración supone también un paso más hacia una agenda de salud urbana, orientada a mejorar la calidad ambiental en nuestras ciudades y núcleos urbanos, garantizar entornos saludables y avanzar hacia el objetivo de contaminación cero. En este sentido, trabajamos para asegurar el cumplimiento de la **Ley de Cambio Climático**, en especial lo relativo a las **Zonas de Bajas Emisiones**, y seguimos fortaleciendo la implementación de políticas alineadas con estos objetivos.

Desde este Gobierno **seguimos, por tanto, apostando por una transformación real de nuestras ciudades.** El Plan Nacional Integrado de Energía y Clima 2023-2030 (PNIEC 2023-2030) profundiza en la transformación de las ciudades con el despliegue de zonas e itinerarios peatonales y el impulso del uso de la bicicleta con la construcción de carriles bici, la adecuación de vías y el espacio urbano, la habilitación de aparcamientos seguros y el despliegue de servicios de alquiler de bicicletas o medidas para calmar el tráfico rodado.

La actualización del PNIEC refuerza el compromiso con la movilidad sostenible y recoge los avances logrados en los últimos años en España gracias a instrumentos como la Estrategia de Movilidad Segura, Sostenible y Conectada 2030, el Plan de Recuperación, el Proyecto de Ley de Movilidad Sostenible o el Real Decreto 1052/2022, que regula los requisitos mínimos de las Zonas de Bajas Emisiones conforme a la Ley de Cambio Climático.

Se refuerza asimismo nuestro compromiso con el **transporte público y colectivo**, incluyendo un impulso al ferrocarril y al desarrollo de soluciones digitales y sostenibles que mejoren la competitividad y la eficiencia del sistema de transporte.

Nos comprometemos también a seguir promoviendo la electrificación del parque móvil. En diciembre de 2025, hemos lanzado el Plan Auto+, dotado con 400 millones de euros en 2026 para ayudas directas a la compra de vehículos eléctricos; el lanzamiento de otro Moves Corredores, dotado con 200 millones, para desplegar puntos de recarga y 580 millones más para el PERTE VEC.

La **rehabilitación energética de los edificios existentes** y la construcción de **nuevos edificios con altos estándares de eficiencia** son esenciales para avanzar hacia ciudades climáticamente neutras, el PNIEC 2023-2030 contempla un incremento en el número de viviendas rehabilitadas hasta 1.377.000. Actuar sobre el entorno construido significa reducir las emisiones, mejorar el confort térmico, combatir la pobreza energética y generar empleo local de calidad. En este contexto, es prioritario acelerar la electrificación de los usos térmicos, impulsar el autoconsumo y las comunidades energéticas, promover soluciones basadas en energías renovables y avanzar hacia distritos de energía positiva. El **PNIEC 2023-2030** refuerza esta visión y establece medidas específicas para descarbonizar el sector de la edificación. En este camino hacia la descarbonización de las ciudades, la **transformación del parque edificado constituye una de las palancas clave** para alcanzar, también, los objetivos de la Misión de «ciudades inteligentes y climáticamente neutras» de la Unión Europea.

Por su parte, el **Plan Nacional de Adaptación al Cambio Climático** (PNACC) incluye a la ciudad y el urbanismo y la edificación entre sus campos de intervención prioritarios, ante la evidencia de que los espacios urbanos están sujetos a riesgos específicos que exigen políticas que se anticipen a los impactos, incrementando la capacidad adaptativa y reforzando la resiliencia de los espacios urbanos.

El Ministerio para la Transición Ecológica y el Reto Demográfico apoya a las ciudades no solo a través de nuestras políticas, sino también **mediante instrumentos de financiación específicos**. Este Gobierno ha financiado el impulso de la plataforma española (citiES 2030) con 810.000€, se han destinado 218 millones de euros a proyectos de renaturalización y resiliencia urbana y, más concretamente, se han aprobado ayudas por un importe de 16,5M€ en ciudades de la Misión través de convocatorias públicas, y se está trabajando en el desarrollo de una nueva iniciativa de inversión público-privada dedicada a las ciudades de la Misión. Continuamos con nuestro compromiso de apoyo a las ciudades Misión y a

otras ciudades que quieran iniciarse en este camino con 1,9 millones de euros para la **Plataforma de Colaboración para la Neutralidad Climática** de las Ciudades Españolas, una infraestructura de acción pública orientada a prestar servicios técnicos y estratégicos, de capacitación, intercambio de conocimiento y experiencias y seguimiento de los acuerdos climáticos, que faciliten y aceleren la descarbonización y fortalezcan la resiliencia urbana. Con esta declaración, reafirmamos, por tanto, también nuestro compromiso para que las ciudades desarrollen e implementen los acuerdos climáticos en el marco de la Misión Europea

Seguimos comprometidos. Porque al final del camino está lo más importante: la salud de las personas. La implementación del PNIEC 2023-2030 permitirá reducir en un 49% las muertes prematuras asociadas a la mala calidad del aire respecto a los valores de 2019. Por su parte, la implementación del PNACC 2021-2030 hará posible que las olas de calor, cada vez más intensas, largas y frecuentes, no se traduzcan en un incremento equivalente de la mortalidad asociada al calor extremo. Tendremos aire más limpio, hogares mejor climatizados, espacios urbanos más amables y un menor gasto energético. **Ese es nuestro compromiso.**

GOVERNMENT DECLARATION OF SUPPORT FOR THE CLIMATE NEUTRALITY AND RESILIENCE OF SPANISH CITIES

— Complimentary translation —

The Government of Spain, through this declaration, reiterates its firm commitment and determination to advancing an environmental and climate agenda that also serves as an agenda for a **Welfare Society**. An agenda that protects ecosystems while guaranteeing health, prosperity, and a just transition for all citizens.

For decades, science has been warning us about the accelerating pace of climate change and its increasingly severe and frequent consequences. However, there is still time to act, and we recognize the opportunities presented by the ecological transition: acting sooner increases our adaptive capacity, lowers costs, and reduces inequalities, particularly for the most vulnerable populations. Tackling climate change provides a unique opportunity to transform our cities into more sustainable, resilient, and cohesive spaces. It allows us to build a fairer, safer, and more prosperous future for generations to come.

Cities play a key role in this green transition, as they house most of the population and concentrate energy consumption and emissions. Therefore, we emphasize the **transformative value of cities** as hubs for experimentation and innovation, where new forms of governance and citizen participation can drive change against the major urban challenges of our time.

This transformation must run parallel to a significant effort to **adapt cities to new climate scenarios**. We need urban spaces prepared to handle diverse and worsening risks. These include rising temperatures, extreme heat events, droughts, torrential rains, and floods. Furthermore, we need governments and citizens to be more aware and capable of responding effectively to these threats.

Urban ecosystems account for 22% of the European Union's land surface, providing vital habitats for biodiversity. Their role is essential in tackling the major challenges of climate change, as they ensure the quality of life and health of their inhabitants.

These urban ecosystems form part of the urban green infrastructure, a strategically planned network consisting of various and diverse-sized natural elements, such as parks, gardens, green corridors, trees, and green roofs and facades. It also includes orchards, agricultural and forest spaces, urban riverbanks, and transition zones to non-urbanized areas. This network enhances green capillarity and ecological connectivity, which in turn improves the biodiversity flows necessary to maintain environmental quality.

Nature-based solutions have proven to be both cost-effective and efficient in this process. They drive renaturalization, leading to better air quality, lower urban temperatures, and a reduced urban heat island effect and fire risk. They promote sustainable water management, reduce flooding, and improve infiltration and aquifer recharge. Ultimately, these solutions foster urban biodiversity and ecological resilience while strengthening the physical and mental well-being of citizens.

This Declaration also marks another step toward an urban health agenda, aiming to improve environmental quality in our cities and urban centers, guarantee healthy environments, and advance toward the **zero-pollution** goal. In this regard, we are working to ensure compliance with the **Climate Change Law**, particularly concerning **Low Emission Zones**, and we continue to strengthen the implementation of policies aligned with these goals.

Therefore, **this Government remains committed to the real transformation of our cities.** The National Integrated Energy and Climate Plan 2023-2030 (PNIEC 2023-2030) details this urban transformation, outlining the deployment of pedestrian areas and routes, as well as the promotion of bicycle use. This includes building bike lanes, adapting roads and urban spaces, providing secure parking, rolling out bicycle rental services, and implementing traffic-calming measures.

The updated PNIEC reinforces our commitment to **sustainable mobility** and incorporates the progress Spain has made in recent years through various instruments. These include the Safe, Sustainable and Connected Mobility Strategy 2030, the Recovery Plan, the Sustainable Mobility Bill, and Royal Decree 1052/2022, which regulates the minimum requirements for Low Emission Zones under the Climate Change Law.

We are also reinforcing our commitment to **public and collective transport**. This involves boosting railways and developing digital, sustainable solutions to improve the competitiveness and efficiency of the transport system.

We further commit to continuously promoting the electrification of the vehicle fleet. In December 2025, we launched the Auto+ Plan, allocating 400 million euros in 2026 for direct subsidies to purchase electric vehicles. Additionally, we are launching another Moves Corredores program, providing 200 million euros to deploy charging stations, alongside an additional 580 million euros for the PERTE VEC.

The **energy retrofitting of existing buildings** and the construction of **highly efficient new buildings** are essential for advancing toward climate-neutral cities. The PNIEC 2023-2030 targets an increase in retrofitted homes to **1,377,000**. Improving the built environment reduces emissions, enhances thermal comfort, combats energy poverty, and generates high-quality local jobs. Within this context, we must prioritize accelerating the electrification of heating and cooling, boosting self-consumption and energy communities, promoting renewable energy solutions, and advancing toward positive

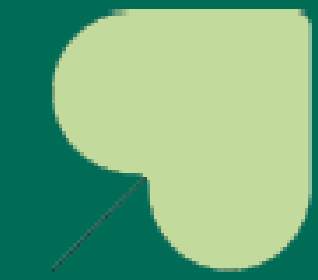
energy districts. The **PNIEC 2023-2030** reinforces this vision by establishing specific measures to decarbonize the building sector. **Transforming the building stock is a key lever** in decarbonizing cities and achieving the goals of the European Union's Climate-Neutral and Smart Cities Mission.

Meanwhile, the **National Climate Change Adaptation Plan (PNACC)** identifies cities, urban planning, and buildings as priority areas for intervention. Evidence shows that urban spaces face specific risks that require proactive policies to anticipate impacts, increase adaptive capacity, and strengthen urban resilience.

The Ministry for the Ecological Transition and the Demographic Challenge supports cities through policies, but also through specific financing instruments. This Government provided **€810,000** to fund the Spanish platform (citiES 2030). We have allocated 218 million euros to urban renaturalization and resilience projects. More specifically, we have approved €16.5 million in grants for Mission cities through public calls, and we are currently developing a new public-private investment initiative dedicated to these cities.

We maintain our commitment to supporting the Mission cities and other municipalities wishing to embark on this path with 1.9 million euros for the **Collaboration Platform for the Climate Neutrality of Spanish Cities**, a public action infrastructure providing technical and strategic services, training, knowledge exchange, and monitoring of Climate City Contracts, with the goal of facilitating and accelerating decarbonization while strengthening urban resilience. With this declaration, we also reaffirm our commitment to helping cities develop and implement Climate City Contracts within the framework of the European Mission.

We remain committed. Because at the end of the road lies the most important thing: people's health. Implementing the PNIEC 2023-2030 will reduce premature deaths linked to poor air quality by 49% compared to 2019 levels. Furthermore, the PNACC 2021-2030 will ensure that increasingly intense, long, and frequent heatwaves do not result in a corresponding spike in extreme heat-related mortality. We will achieve cleaner air, better climate-controlled homes, more pleasant urban spaces, and lower energy costs. **That is our commitment.**



Zaragoza

citiES 2030

ANNEX 1:
Climate Neutrality Action Plan

Annex I: Climate action plan for the city of Zaragoza

Introduction

Zaragoza continues to consolidate its commitment to climate neutrality, integrating and reinforcing a set of public policies aligned with the objectives of the Cities Mission. This iteration of the 2030 Climate Neutrality Action Plan builds on a comprehensive diagnosis of local emissions and builds on previous already active strategies, such as the PACES 2030, the ECAZ 3.0 Strategy, the Adaptation Plan (PACCZ 2022–2030), the Urban Agenda or the Sustainable Urban Mobility Plan. Together, they form a coherent, up-to-date and operational strategic ecosystem that guides the city's climate action in the short, medium and long term. In addition, the Plan is aligned with the Aragonese Climate Change Strategy (EACC 2030), ensuring coherence between institutional scales.

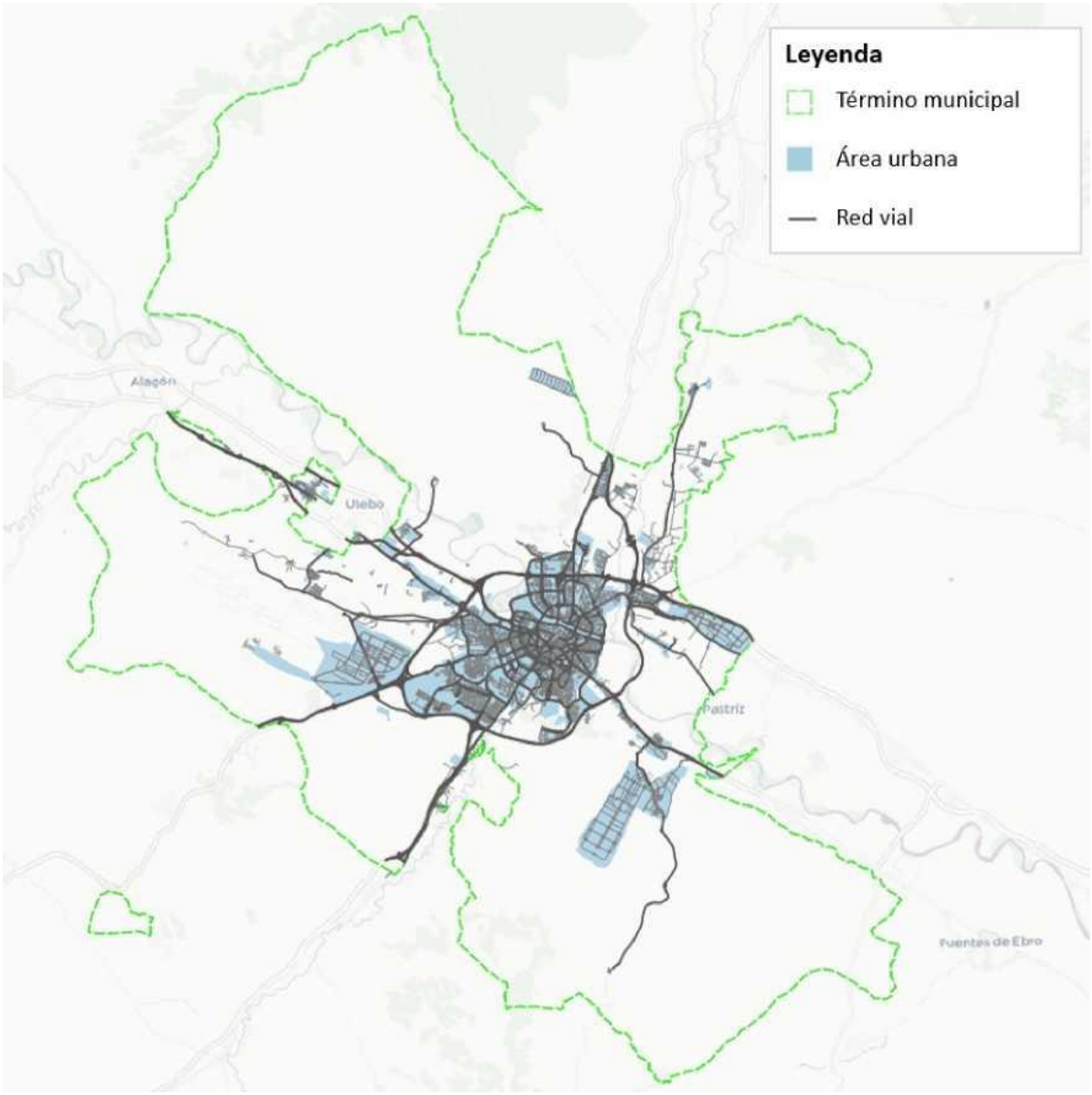
The process has been participatory and structured, with the active involvement of citizens, the economic and academic sectors, and methodological support from platforms such as NetZeroCities and citiES 2030. This new version incorporates lessons learned from the first planning cycle, strengthens multi-level cooperation and expands the mobilisation of key actors to accelerate the transformation. With this, Zaragoza consolidates a flexible and evolving strategic framework that articulates mitigation, adaptation and investment measures and will be monitored periodically, with updates planned every two years, as established by the European Mission framework. This renewed roadmap reflects a city that is moving determinedly towards climate neutrality in 2030, under the principles of inclusion, sustainability and shared responsibility.

Table I-1.1 is presented again with the aim of showing a structured vision of the key sectors involved in Zaragoza's climate neutrality commitment for 2030, clearly indicating the levels of inclusion of emissions according to the three defined scopes (1, 2 and 3), as well as the justified exclusions in each case. This

classification allows establishing a transparent baseline for monitoring emissions and facilitates the prioritization of actions according to their impact and relevance. The definition of the geographical limit equal to the municipal term ensures consistency with the emission inventory and the local powers of intervention.

Table I-1.1: 2030 Climate Neutrality Targets			
Sectors	Scope 1	Scope 2	Scope 3
Stationary power	Included Facilities included in the EU ETS (system European emissions trading) are excluded.	Included They are not considered as specific installations covered by the EU ETS.	
Transport	Included Sectors not significant as off-road transport o Inland navigation could being excluded if they are marginal.	Included Includes recharging of electric vehicles.	
Waste/wastewater	Included Is exclude Emissions not energy (CH_4 and N_2O in landfills and WWTPs) if not foreseen measures associates.	NA	Included Waste generated within the municipality even if they're treated outside.
Industrial processes and product use	Included (if significant) Excludes gases such as HFC, PFC, SF_6, NF_3 yeah represent less than 5% of total emissions.	NA	
Agriculture, forestry and land use	Included	NA	
Other	Cross-cutting measures on digitalisation, consumption, e green infrastructure.		

Geographical boundary	Equal to the administrative limit of the city	Smaller than the administrative limit of the city	Larger than the administrative limit of the city
Map			



Work process

The current iteration of Zaragoza's Climate Neutrality Action Plan is the result of an intense process of work, coordination and active listening. Since the presentation of the first contract in 2023, the City Council has promoted a comprehensive technical and strategic update that has involved numerous meetings with the different municipal departments, the detailed collection of sectoral information and alignment with other city plans and strategies. This review phase has been guided by a firm commitment to the effective implementation of the measures, in line with the objectives set by the Cities Mission and Zaragoza's commitment to climate neutrality by 2030.

This new planning cycle maintains an open, adaptive and collaborative approach. The Plan will continue to evolve iteratively, incorporating new resources, agents and solutions as its implementation progresses. Channels for participation, transparency and monitoring will be strengthened through the evolution of the Open Government Platform, the continuous dissemination of progress and the consolidation of an active network of actors committed to the Mission. In addition, governance based on quality, open and interoperable data will be promoted as a lever for informed decision-making and responsible urban innovation. Through this dynamic approach, Zaragoza is positioning itself as a benchmark for local climate governance, demonstrating technical capacity, political commitment and a results-oriented approach.

PART A - CURRENT STATE OF CLIMATE ACTION

This module contains the city's starting point towards climate neutrality and informs the subsequent modules and the outlined pathways to accelerate climate action.

The city of Zaragoza has a consolidated track record in climate planning, supported by a solid technical foundation and continued political commitment. Within this framework, eight emission inventories have been drawn up for the years 1991, 1996, 2005, 2015, 2018, 2019, 2021 and 2023. The 2005 inventory has been adopted as the Reference Emissions Inventory (REI), in accordance with the requirements of the Covenant of Mayors for Climate and Energy, and the 2019 inventory served as the basis for verifying compliance with the 20% mitigation target set for 2020.

In this period, total CO_2 emissions decreased by 11% between 2005 and 2019, despite population growth in the city, while compared to 2023 total CO_2eq emissions have been reduced by 34%. These reductions have been achieved, in part, thanks to the measures promoted by the City of Zaragoza in terms of mobility and decarbonization in other sectors, as well as the incorporation of renewable energies into the national electricity mix.

This commitment materialised with the development of the Sustainable Energy and Climate Action Plan (SECAP 2030) in 2021, which updated the ESAP 2012, adopted the 2005 inventory as the baseline and presented a mitigation plan with an ambition of 55% emission reductions in the key sectors of the Pact. In parallel, Zaragoza prepared the Zaragoza Climate Change Adaptation Plan (PACCZ) 2022–2030, a living document complementary to SECAP, which incorporates climate adaptation measures and complies with the requirements of the Covenant of Mayors in its maturity phase.

In January 2022, the ZEI 2019 values and the SECAP and ECAZ 3.0 measures were used for Zaragoza's application to the European Mission for Climate-

Neutral and Smart Cities, and it was selected by the European Commission on 28 April 2022. This designation made Zaragoza one of 100 European cities pioneering climate neutrality by 2030.

In addition to the Emissions Inventory, Zaragoza has a second technical reference tool: the Economic Model for Decarbonising Cities (EMDC), developed within the framework of the Spanish citiES2030 Platform and adapted to the reality of Zaragoza based on the original model by Material Economics.

This model allows to evaluate the economic viability of different decarbonization strategies, considering the entire life cycle of the measures and the associated costs and benefits (including renewable energy, energy efficiency and transformation of the mobility system) and this year it has been implemented in a web platform promoted by Net Zero Cities: Net Zero Planner.

The EMDC has been instrumental in the development of this CCC as it provides a detailed estimate of the emission savings, required investments, economic return and transformative potential of each strategy. It is based on a Business As Usual 2030 (BAU 2030) baseline scenario that projects emissions if no additional measures beyond those already planned or underway are implemented.

Although both SECAP and EMDC share common objectives – developing effective strategies to reduce emissions and improve energy efficiency – they use different methodologies for calculating emissions. These methodological differences result in slightly different values for the estimated emissions:

Both include Scope 1 and Scope 2 emissions, but there are differences in the emission factors used (especially in electricity and waste). The EMDC does not explicitly count urban sinks, unlike the Emissions Inventory that does consider the absorption of CO_2 by urban woodland.
The level of disaggregation and granularity of the EMDC is higher, which allows a systemic and more detailed analysis of urban behaviour.

In the elaboration of this CCC, it has been chosen to use the data of the Economic

Model of Decarbonization as the main source for the quantitative tables, since it allows to directly link the proposed actions with their cost, benefit and expected return, although the renaturalization measures have been included in the different tables. However, it has been considered key to also reflect the emissions inventory data, especially in the first tables of Annex I (A-1.1, A- 1.2, A-1.3 and A-1.4), to ensure traceability and consistency with the commitments made under the Covenant of Mayors and the European Mission.

In 2024, Zaragoza has been awarded the distinction for the best national initiative aimed at decarbonization in the 'IX Transformation Awards towards a Sustainable Economy', organized by Expansión, Bankinter and Moeve. Zaragoza has received this award in the category of institutions and organizations. It has been the only city awarded, together with Madrid, for its comprehensive Climate Agreement project, which guides the City Council, local entities and citizens towards climate neutrality by 2030.

Finally, it is important to note that, in 2024, and for the second consecutive year, Zaragoza has been included in the ‘List A’ of the international organisation CDP-ICLEI, the highest rating a city can receive in this global assessment. This recognition distinguishes those populations that demonstrate ambitious, transparent and aligned climate action with international best practices in mitigation, adaptation and reporting. The inclusion in this category validates Zaragoza's political and technical commitment to climate action, and reinforces its position as a reference city within the framework of the European Mission towards climate neutrality.

MODULE A-1

Inventory of Line Base of and emissions of gases of Greenhouse Effect

Descriptive text
This module describes the greenhouse gas (GHG) emissions inventory that Zaragoza has established as a baseline to guide its roadmap towards climate neutrality in 2030. The inventory has been prepared in accordance with the guidelines of the Cities Mission's Info Kit for Cities and the City Climate Contract (CCC) Action Plan Guide, and is structured in accordance with the internationally recognised methodological framework. The inventory refers to the territorial scope defined by the administrative boundaries of Zaragoza. For calculation purposes, the sectors established within the framework of the Covenant of Mayors have been included, and Scope 1 (direct) and Scope 2 (indirect due to energy consumption) emissions have been considered. However, limited data is identified in certain Scope 3 sources, or in sectors such as agriculture or aviation that are not locally controlled. There is currently some misalignment between the scope of the emissions inventory and the set of emissions that should be considered to achieve climate neutrality. Data collection has integrated local sources (such as energy billing, municipal statistics, mobility operator data, etc.) together with national and European conversion factors, following current practices and methodological recommendations.

A-1.1: Final energy use by sectors of origin				
Base year	2019			
Unit	MWh/year			
Issuing sector	Scope 1	Scope 2	Scope 3	Total
Transport	1,852,999.32	6,814.93	NO	1,859,814.25
(Type from fuel/energy used)	Diesel, Gasoline, LPG, Natural Gas	Electricity	-	-
Buildings	4,240,419.17	1,528,179.46	NO	5,768,598.63
(Type from fuel/energy used)	Gasoil, Gas Natural, Biomass	Electricity	-	
Waste	NO	NO	NO	NO
(Type from fuel/energy used)				
Others (IPPU & AFOLU)	NE	NE	NO	NE
(Type from fuel/energy used)				

A-1.2: Emission factors applied

In the Zaragoza Emissions Inventory 2019, used in the framework of the Zaragoza 2030 Climate and Sustainable Energy Action Plan (SECAP), the emissions of Carbon Dioxide (CO_2), Methane (CH_4) and Nitrogen Oxides (N_2O) were calculated from the following reference sources:

- IPCC Fifth Assessment Report (2013)
- EMEP/EEA 2019 Air Pollutant Emissions Inventory Guide. Technical guidance for national emission inventories. EEA Report No 13/2019
- Guide prepared by the JRC/Covenant of Mayors: *How to develop a Sustainable Energy and Climate Action Plan (SECAP),* 2018
- Reports from Red Eléctrica de España (REE), which directly report the emission factor in CO_2- eq
- In 2019, purchases of electricity from the public sector had a Guarantee of Renewable Origin

Compared to the economic model used for the elaboration of the CCC, some key differences are identified with respect to the 2019 Emissions Inventory:

- In the transport sector, emission factors for heavy-duty vehicles have been equated to those recorded for the city of Madrid.
- In the ZEI 2019, the emission factor reported by REE corresponding to the national electricity mix of 2019 (0.19 T/MWh) was used. However, the economic model homogeneously uses the value of the peninsular electricity mix of 2018 (0.22 T/MWh) as a reference for all Spanish cities participating in the Mission of Cities with Climate Neutrality.

EMISSIONS AND CO2 EMISSION FACTOR EQ. OF GENERATION (tCO2 eq. | tCO2 eqJMWh) | ELECTRIC SYSTEM: Penins

From 2018 to 2020

		2018	2019	2020
Coal	93	33.485.7	10.284.336	4.635.399
Fuel + Gas		0	0	0
Combined cycle	2	9.769.08	18.923.005	14.191.886
C ogeneration	77	11.009.2	11 240.670	10.055.670
Non-renewable waste	6	550.52	497 185	683 343
Total emissions	78	54.814.6	40.945.196	29.566.297
tCO2 eqJMWh		0,22	0,17	0,12

Data status

—— Definitive data": until 31/12/20 "Note: dates without underline present definitive data

EMISSIONS AND CO2 EMISSION FACTOR EQ. OF GENERATION (tCO2 eq. | tCO2 eqJMWh) | ELECTRIC SYSTEM: Nation

From 2018 to 2020

		2018	2019	2020
Coal	86	36.001.7	12.384.273	4.884.685
Fuel + Gas		0	0	0
Diesel engines	8	2.234.46	1.998.445	1.641.040
Gas turbine	6	1.045.09	675.945	430.930
Steam turbine	9	2.209.88	1.970.362	1.259.999
Combined cycle	21	11.841.9	21.183.920	17.133.424
Cogeneration	68	11.022.5	11.253.753	10068.746
Non-renewable waste		584.391	533.391	712.029
Total emissions	20	64.940.1	50.000.090	36.130.855
tCO2 eqJMWh		0,25	0,19	0,15

Status of data

= Definitive data": until 31/12/20 "Note: dates without underline present definitive data

The emission factors (EFs) used by the Economic Model are detailed below. Although MS specifically requires CO_2 EF, results are reported in CO_2eq. This conversion is done internally within the model itself.

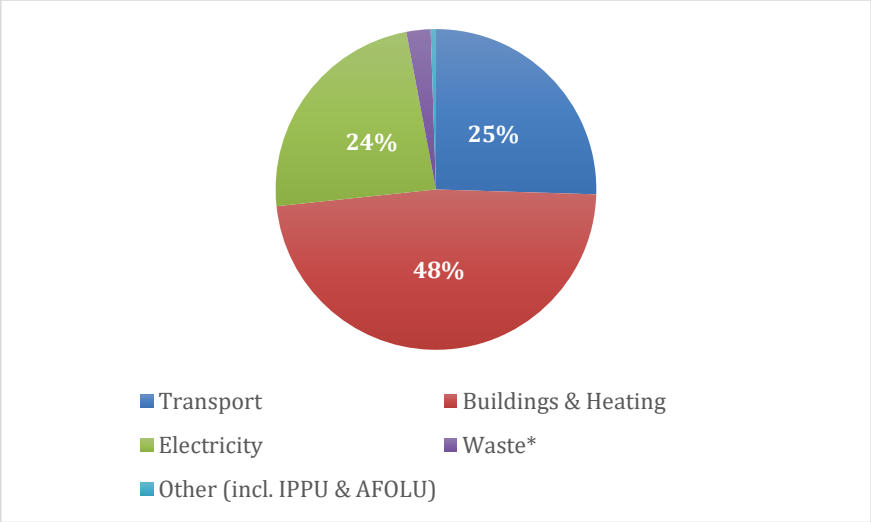
Primary energy/ Source of energy	Carbon dioxide (CO_2)	Methane (CH_4)	Nitrous oxide (N_2O)	Hydrofluorocarbons and perfluorocarbons Sulfur hexafluoride (SF_6)	Nitrogen trifluoride (NF_3)
Private transport (g/km)	153				
Bus transport (g/km)	796				
Commercial transport (<3.5 t) (g/km)	260				
Commercial transport (>3.5 t) (g/km)	374				
Heat production (District heating) (g/kWh)	200				
Heat production (Local heating) (g/kWh)	212				
Electricity (Mix national) (g/kWh)	190				

A-1.3: Activities by sector of origin			
Base year		**2019**	
	Scope 1	Scope 2	Scope 3
Transport			
Demand for private vehicles (M km/year)	1,920.77		
Bus demand (M km/year)	24.44		
Train/metro demand (M km/year)	1.32		
Commercial transport demand (<3,5 t) (M km/year)	64.00		
Commercial transport demand (>3.5 t) (M km/year)	1,023.00		
Buildings			
Heating demand and ACS (GWh/year)	4,240.00		
Electricity			
Electricity demand (GWh/year)		2,009.00	
Waste			
Total collected within the city (tonnes)			236,222.00

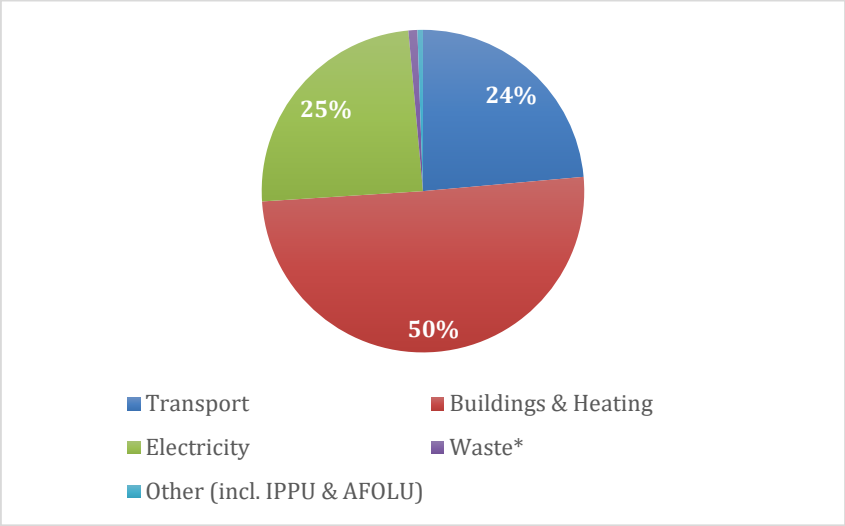
A-1.4: GHG emissions by sectors of origin				
Base year	**2019**			
Unit	t CO_2 equivalent/year			
	Scope 1	Scope 2	Scope 3	Total
Buildings	900,211.15			900,211.15
Transport	479,537.64			479,537.64
Electricity		445,998.00		445,998.00
Waste			45,835.12	45,835.12
Others (IPPU and AFOLU)	10,000.00		10,000.00	
Total	1,389,748.79	445,998.00	45,835.12	1,881,581.91

A-1.5: Charts and tables

Zaragoza 2019 emissions inventory of SECAP Zaragoza 2030.



Economic Model for the Decarbonization of Cities



MODULE A-2

Evaluation of current policies and strategies

Module A-2 "Current Policies and Strategies" lists and evaluates existing policies, strategies, initiatives or regulations at the local, regional and national levels, relevant to the city's transition to climate neutrality. This assessment helps identify the gap (if any) between emission reductions due to existing initiatives and the city's 2030 climate neutrality target. Filling this gap by identifying additional actions and levers to achieve the city's emissions reduction target is the focus of this Action Plan. Assessing current policies and strategies therefore provides a starting point for exploring impact pathways (see Part C). The module includes:

- Comprehensive list of policies, strategies, concepts relevant at the local level, as well as regional and national legislation that impacts local climate action.
- Descriptive assessment of the current climate-relevant policy context, summarising objectives and implementation concepts, addressing e.g. spatial planning, energy, local economy, circularity/bioeconomy, waste, transport, housing, urban greening/nature-based solutions.
- Quantification of the emissions gap (i.e. the emission reduction target minus reductions already addressed through existing climate action plans).

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions needed
Policy	EU / World	Paris Agreement	Agreement to fight climate change and achieve a sustainable low-emission future	Limit global temperature rise below 2°C	Align all municipal plans with your goals, strengthen accountability
Mission	EU	Covenant European Green	Commitment to solving important social problems.	Transform the cities towards climate neutrality	Translate into effective municipal policies, prioritize innovation and just transition
Strategy	EU	Covenant European	Strategy from growth for the	Reduce net GHG emissions from the	Periodically report progress,

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions needed
		Mayors	EU	Union by 55% by 2030	reinforce local governance
Policy	EU	Spanish Urban Agenda	Commitment to implement climate and energy objectives	Supporting the achievement of the objective from 50% GHG reduction by 2030	Promote models from compact city and resilient; coordinate with European funds
Action Plan	National	Mission 100 Cities	National strategy consistent with the the Paris Agreement and the EU Green Deal	Reduction of Spain's net GHG emissions by 23% by 2030 in reference to 1990.	Submit Contract Climate, define clear roadmap, generate local innovative ecosystem
Action Plan	National	NACCP	Tool from national planning for coordinated action in climate change	81 lines of action across 18 work areas	Translate lines State a concrete local measures, training municipal technicians
Strategy	National	ELP 2050 (Long-term Decarbonisation Strategy)	Defines the path to achieving climate neutrality by 2050	Set objectives sectoral milestones and targets	Establish intermediate local milestones (2030, 2040), foster long-term innovation
Law/ Policy	National	Law 7/2021 on Climate Change and Energy Transition	Regulatory framework to reach climate neutrality by 2050	It obliges municipalities to apply plans consistent with NECPs and NACCPs	Ensuring local compliance (plans, ordinances), integrate neutrality in budgets and regulations

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions needed
Strategy	Regional	EACC Horizon 2030	The Government of Aragon adheres Firmly to Climate Agreement	Targets for a 40% reduction in GHG emissions, a 26% reduction in emissions from the diffuse sector and an increase in renewable energies to 32%.	Align municipal and regional policies, coordinate data and actions between levels of government

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions needed
Strategy	Local	ECAZ 3.0	Strategic tool of the city of Zaragoza	Define sustainability objectives	Implement prioritized projects, update goals periodically, secure resources and follow-up
Action Plan	Local	SECAP Municipality of Zaragoza 2030	Key actions to support the implementation of the European GHG reduction target of 55% by 2030	Common approach to climate change mitigation and adaptation. Includes Emissions Inventory	Execute the actions key, review the inventory from emissions, monitor progress
Plan	Local	Zaragoza 2030 Climate Change Adaptation Plan	Addresses adaptation actions that are necessary and complementary to the mitigation actions of the SECAP.	It will allow the city to be better prepared for the consequences of climate change.	Identify vulnerable areas, integrate measures in urban planning and municipal services
Strategy	National	State Sustainable Mobility Strategy (EEMS)	Defines measures for safe, connected, clean and sustainable transport	Marco for the Zaragoza SUMP development and urban mobility	Access a State funding, prioritise integrated projects from active and connected mobility
Strategy	Local	SUMP 's Zaragoza	Integration of natural processes in the urban environment	Vocation to become a municipal management tool for the next 20 years	Review his Coherence with ECAZ and EU Mission, securing funding, encouraging citizen participation
Action Plan	Local	2021-2030	Improving the transport system and improving its quality	14 strategies that cover all the aspects from the urban mobility	Accelerate electrification, strengthen public transport, expand bike lanes and ZBE

A-2.1: List of relevant policies, strategies and regulations					
Type	Level	Name and/or title	Description	Relevance	Actions needed
Strategy	National	NECP 2023-2030 (Plan National Integrated Energy and Climate)	Sheet from route national energy: renewables, efficiency and emission reductions	Mandatory and binding instrument for regions and municipalities	Align local investments (energy, building) with goals of the PNIEC
Strategy	Regional	Aragon Energy Plan 2023–2030	Boosts self-consumption, renewable and energy efficiency	Energy base for the Zaragoza transition	Promote actions towards energy efficiency, as well as urban renewable facilities,
Strategy	Local	Plan Director of Infrastructure ura Verde Zaragoza	Trajectory from implementation of the urban SDGs	Planning that integrates funding, governance, citizen participation (etc.) for the urban phenomena	Develop ecological corridors, improve maintenance, integrate in urban planning
Strategy	National	Urban Agenda Zaragoza	A strategy paper for sustainability in urban development policies	A working method and process for all actors, public and private	Strengthen coordination between municipal departments
Strategy	Local	Zaragoza Sustainable and Healthy Food Strategy (2019)	Marco of City Council to move towards a more sustainable and healthy food system for the city	It guides municipal food policies, in line with the Milan Pact.	Encourage short circuits, improve public procurement green, raising public awareness

A-2.2: Description and evaluation of policies

The climate and urban planning of Zaragoza is framed in a multilevel strategic ecosystem that articulates local, regional, national and European policies. This network of strategies and plans provides the normative, technical and operational basis on which the 2030 Climate Neutrality Action Plan and the CCC as a whole are built.

Strategy for Climate Change, Air Quality and Health of Zaragoza (ECAZ 3.0)
Adopted in 2019, it is the municipal strategic tool for addressing the climate crisis, improving air quality and protecting public health. It sets sustainability targets aligned with a 40% reduction in GHG emissions by 2030 across all sectors, and has been the conceptual basis for subsequent strategies, with an emphasis on mitigation.

Zaragoza 2030 Climate and Sustainable Energy Action Plan (SECAP)
Drawn up in 2021 following Zaragoza's renewal of its membership of the Covenant of Mayors, it replaces the previous SEAP of 2012. It defines the key actions to achieve a 55% reduction in GHG emissions in the mandatory sectors of the covenant, taking 2005 as the reference year (IER). It includes a Baseline Emissions Inventory updated to 2019, a climate risk and vulnerability assessment, and a commitment to biennial review.

Zaragoza 2030 Climate Change Adaptation Plan (PACCZ)
Complementary to the SECAP, the PACCZ collects the necessary adaptation measures to face the impacts of climate change in the city. Its development responds both to the requirements of the Covenant of Mayors and to the commitments made after the selection of Zaragoza in the Mission of the 100 Climate Neutral Cities for 2030. It is conceived as a living document and in constant revision.

Sustainable and Healthy Food Strategy of Zaragoza (2019)
It guides municipal food policy in coherence with the Milan Pact, promoting a fairer, more sustainable and healthier food system. It proposes specific measures and an urban food governance model.

Zaragoza Sustainable Urban Mobility Plan (SUMP)
A key instrument for the decarbonisation of urban transport, it addresses improving the efficiency, safety, accessibility and intermodality of the transport system through 14 integrated strategies. It is articulated as a fundamental component in the reduction of emissions from the mobility sector.

Zaragoza Green Infrastructure Master Plan
It defines a 20-year strategy for the conservation and restoration of relevant natural spaces at the municipal level. It seeks to integrate ecological processes into the urban fabric and contribute to climate resilience and the improvement of quality of life.

Urban Agenda of Zaragoza
Within the framework of the Spanish Urban Agenda (AUE), Zaragoza has been selected as a national pilot project. The Agenda proposes an integrated framework of urban actions aimed at achieving the SDGs from a cross-cutting approach that incorporates financing, governance, participation and territorial planning.

Regional and national strategies
Aragon Climate Change Strategy (EACC) Horizon 2030
Strategic document of the Government of Aragon aligned with the Paris Agreement, the 2030 Agenda and European commitments. It sets targets such as a 40% reduction in GHG emissions and a 26%

reduction in diffuse sectors, and a minimum share of 32% of renewables in energy consumption. In 2022, Aragon was selected for the EU Climate Change Adaptation Mission.energy consumption. In 2022, Aragon was selected for the EU Climate Change Adaptation Mission.

National Climate Change Adaptation Plan (NCACP) 2021–2030

Guiding instrument at state level to promote coordinated adaptation policies. It covers 18 areas of work and 81 lines of action, with a cross-cutting and multisectoral approach.

Integrated National Energy and Climate Plan (NECP) 2021–2030
It sets a national GHG emission reduction target of 23% compared to 1990. It is aligned with the European Green Deal and the goals of the Paris Agreement, and seeks to accelerate the transition to a low-carbon energy model.

European and multilateral initiatives
Covenant of Mayors for Climate and Energy
European Commission initiative bringing together thousands of local authorities committed to decarbonisation and climate adaptation. It requires the submission of an action plan within two years of accession, and regular reports including emission inventories and climate risk assessments.

European Green Deal
Roadmap to achieving climate neutrality in the EU by 2050. It includes the binding target of a 55% reduction in net GHG emissions by 2030 compared to 1990 levels.

Mission 100 Climate-Neutral and Smart Cities by 2030
Zaragoza was selected by the European Commission as one of the 100 cities to lead the urban climate transformation in Europe. This mission makes the city a European benchmark for climate innovation and allows it to access funds and technical cooperation to reach climate neutrality by 2030.

Paris Agreement (2015)
International agreement that sets as a goal to limit global warming below 2 °C, with an additional effort not to exceed 1.5 °C. It constitutes the global framework on which national and local climate commitments are articulated.

Table A-2.3 shows, as indicated above, the quantification of emissions using the baseline reference, as well as the reduction targets in each sector and the gap between the two scenarios. Thus, greater efforts are proposed in the reduction in the buildings sector, as well as through the decarbonisation of electricity, achieving the 80% reduction target set out in the plan.

A-2.3: Emission gap										
	Baseline emissions kton CO 2eq	**2030 Emissions Reduction Target 1**		**Emissions reduction through other Action Plans**	**Emissions Gap. 2**		**Emissions reduction through the CCC Action Plan to address the Gap**		**Residual emissions 3**	
Transport	428	286	67%	IE	17	4%	269	63%	142	33%
Buildings	915	773	85%	IE	17	2%	756	83%	141	15%
Electricity	446	374	84%	IE	9	2%	365	82%	72	16%
Waste	16	11	66%	IE	1	4%	10	62%	6	34%
Others (IPPU & AFOLU)	10	8	82%	IE	0	2%	8	80%	2	18%
Total	1,815	1,452	80%	IE	44	2%	1,408	78%	363	20%
Comments	*1 Baseline reduction target = Baseline emissions - residual emissions.* *2 Emission gap = Reference emission reduction target - Emission reduction in existing strategies.* *3 Residual emissions are those that cannot be reduced by climate action and are offset. Residual emissions can amount to a maximum of 20%, as indicated in the Mission Info Kit.*									

MODULE A-3b

Systemic approaches to climate neutrality by 2030

A-3.1: Description of systemic barriers and opportunities

The current climate emergency is characterised by high systemic complexity, in which multiple factors interact interdependently, even from seemingly distant areas. In this context, obstacles may arise which, although they have different origins, converge to slow down or condition the necessary climate action. In the case of Zaragoza, the main uncertainty lies not in the technical feasibility of achieving climate neutrality, but in the realistic pace and timetable for achieving the targets by 2030, given the current socio-economic circumstances.

From a technical standpoint, the developments already achieved make it feasible to consider that the objectives set out in this CCC will be met. However, doubts remain regarding the future scope of certain technological innovations, such as the development of battery energy storage, the consolidation of electricity distribution networks adapted to renewable energies, the implementation of hydrogen as an energy vector, and advances in waste classification and treatment, as well as the costs associated with their deployment in the coming years. Despite this, technology is not expected to be the main risk factor for achieving Zaragoza's climate objective.

One of the key dependencies will be determined by the pace of decarbonisation of the national electricity mix. If the milestones and deadlines set at national and European level are not met, this could have a significant impact on the effectiveness of local actions. Similarly, processes such as infrastructure adaptation, the transformation of the transport fleet, the extensive energy refurbishment of existing buildings, the expansion of clean energy air conditioning systems and the improvement of waste collection and treatment processes involve long development periods and require the incorporation of

technical improvements that could alter the initially planned speed.

At a structural level, the process of transformation towards a climate-neutral Zaragoza requires a profound reconfiguration of the urban model from a social, economic and environmental perspective. The main challenge lies in overcoming the inertia and resistance to change that limit this transformation. Only when new regulatory, cultural and governance frameworks are consolidated, internalising the principles of sustainability and equity, will dynamics be generated that naturally drive climate neutrality.

Based on a preliminary analysis of the local context, the following systemic barriers that could condition climate action have been identified, along with possible enabling measures to overcome them:

Firstly, in the social sphere, there is little public awareness of the real impacts of climate change in urban environments, such as the effects of extreme heat or exposure to polluting gases that are harmful to health. To overcome this barrier, Zaragoza City Council will promote awareness-raising actions and improve communication and early warning systems for environmental risks.

With regard to behavioural barriers, habits of high resource consumption persist, particularly in relation to energy and water use. Changing these practices will require awareness campaigns targeting both the general public and the sectors with the highest levels of consumption, with the aim of promoting the responsible use of resources..

From an economic perspective, achieving the ambitious goal of climate neutrality will require very high levels of investment, especially in sectors such as urban planning and the comprehensive renovation of residential buildings, where high initial costs are required and returns are realised in the long term. In this regard, the focus will be on strategically mobilising public and private resources, optimising the management of infrastructure and human capital.

At the organisational level, the neutrality process requires a high degree of

coordination between multiple actors, both public and private. This need for multi-level governance can create barriers if there are no adequate mechanisms for coordination between municipal areas or other levels of government. In response to this, Zaragoza will promote the creation of permanent spaces and instruments for intersectoral coordination and will develop contingency plans that incorporate identified climate risks, as well as mechanisms for early detection and response to critical events.

The establishment and maintenance of green infrastructure also poses a challenge, given Zaragoza's harsh climate, with cold winters and extremely hot summers. These conditions make it difficult to introduce plant species and regenerate natural spaces. To address this barrier, priority will be given to the use of native species adapted to the environment, and technical improvements in revegetation, planting and efficient irrigation will be promoted.

Finally, in the natural environment, certain urban interventions without adequate environmental assessment can have negative impacts on biodiversity and simplify urban ecosystems. To avoid this, Zaragoza will promote ecological connectivity between green spaces, support the spontaneous emergence of flora and fauna in the urban fabric, and strengthen environmental education programmes. Alliances will also be established or consolidated with entities committed to preserving the city's natural capital.

A-3.2 Mapping of systems and stakeholders				
Description of the system	Actors involved	Network	Influence	Interest
Social	Citizens, City Council, large resource consuming companies, electricity companies.	- Task Force on Missions - Multi-actor platform - Business networks (CEPYME, CEOE)	Public awareness and information	Improving communication and early warning systems
Behaviour			Awareness-raising among the population and large consumers	Reduction of consumption
Economic	City Council and private entities		Efficient resource management and investment attraction	Economic evaluation of the impacts to be achieved
Organisation	City Council		Creation of spaces and instruments for intersectoral coordination	Improvements in coordination systems
Green infrastructure	City Hall and Citizenship		Advances in planting and renaturation techniques	Establishment, progress and maintenance of green infrastructure
Nature	All		Creation of biodiversity nodes and connectors.	Promotion and enhancement of the natural capital of the city

A-3.3: Description or visualisation of the participatory model for climate neutrality of the city

Achieving climate neutrality cannot be addressed solely by reducing emissions at source, but requires a profound social transformation that changes current cultural, economic and lifestyle paradigms. This is a collective challenge that involves concerted and coordinated action by a wide range of actors, including public administrations at all levels, the private sector, academia, organised civil society and citizens.

Participation, as a cross-cutting dimension of all social relations, plays an essential role in building resilient and sustainable cities. In the case of Zaragoza, citizen involvement has historically been a fundamental axis in urban intervention processes. This participatory tradition responds to the conviction that the planning and implementation of public policies must integrate the real needs of the inhabitants, thus strengthening their legitimacy and effectiveness.

In addition, the strategic vision, the legal-regulatory framework and the economic impulses emanating from the different administrations, whether regional, state or European, are decisive for the success of local actions. In this sense, the City of Zaragoza assumes a proactive role, but recognizes that its capacity to act depends in part on the coherence and alignment of supramunicipal policies.

Therefore, the socialization of the objectives, measures and commitments described in this CCC is conceived not as a final act, but as an integral part of its own implementation process. The communication and citizen participation strategy will be structured in an adaptive way, adjusting the contents according to the target audience, the communication channels used and the specific objective of each informative action. This adaptability will be key to maximising the understanding, ownership and active involvement of different social groups.

In addition, it is also a priority to ensure that this CCC is fully known and included within the City of Zaragoza itself. Since its approval, work is being done on its internal dissemination and the involvement of all municipal departments in order to transversally align public policies and ensure institutional coherence of climate action.

At the same time, it will be essential to encourage the complicity of the private sector, social entities and the general public. The key messages, the commitments made and the climate ambition of Zaragoza must be communicated in a clear, segmented and relevant way, taking into account the capacities, interests and possibilities of action of each group. This is the only way to ensure meaningful participation leading to a more effective, fair and shared implementation of the Action Plan.

To this end, the Action Plan envisages the creation of collaborative platforms as permanent spaces for participation (Sectoral Environment Council) aimed at enriching, reviewing and accelerating actions aimed at climate neutrality. These platforms are conceived as dynamic environments of collaboration and learning, with the following characteristics:

- Technical approach, which allows for the identification of weaknesses, threats, strengths and opportunities in the urban system, and leads to the definition of specific actions.
- Advisory function, aimed at the exchange of information, visions and perspectives among various actors, with the aim of obtaining useful feedback for the continuous improvement of the Plan.
- Proactive guidance, focused on defining and co-creating concrete actions and projects that contribute to the sustainable development of the city.
- Coordinated management of joint initiatives, facilitating the aggregation of proposals, the identification of synergies and the articulation of integrated responses.
- A practical model, based on agile tools, flexible structures and clear, simple and predefined consultation cycles, enabling efficient monitoring.

- Specialised organisation by thematic areas, allowing for greater efficiency and depth in addressing the different areas of work (energy, mobility, building, urban nature, etc.).

PART B - WAYS TO CLIMATE NEUTRALITY IN 2030

This module represents the core of the 2030 Climate Neutrality Action Plan composed of the essential elements: scenarios, strategic objectives, impacts, portfolios of actions and indicators for monitoring, evaluation and learning.

MODULE B-1

Climate neutrality scenarios and impact pathways

B-1.1: Impact pathways					
Issuing sector	Systemic levers	Short-term changes (1-2 years)	Long-term results (3-4 years)	Direct impacts (emission reduction), kton CO **2**eq	Indirect impacts (co-benefits)
Mobility and transport	Technology / Infrastructure Financing Training and skills	Reducing the need for motorised passenger transport		96	Improvement of air quality. Equitable distribution of public space. Reduction of accidents. Health improvement associated with active mobility. New economy around electrical technologies.
		Shift to public and non-motorised transport		41	
		Increased car sharing		15	
		Electrification of cars and motorcycles		18	
		Bus electrification		21	
		Optimization of logistics		59	
		Truck Electrification		20	

Waste and Circular Economy	Technology / Infrastructure Social Innovation	Increased waste recycling	10	Reduction of water consumption. Creating green jobs. Saving raw materials.
Buildings and heating	Technology / Infrastructure Financing	Building renovation (envelope)	39	Greater energy independence. Jobs associated with maintenance of distributed infrastructure Greater democratization of the energy sector..
		New energy efficient buildings	13	
		Decarbonisation of heat generation	704	
Electricity	Technology / Infrastructure Financing	Efficient lighting and appliances	64	
		Decarbonisation of electricity generation	300	
Other	Renaturalisation	Achieving territorial balance and urban renewal A renaturalisation of the city, changing the management model of green, greening the city and its territory and connecting the city through nature (Natural Zaragoza), designing and implementing solutions based on nature Improving citizens' health and increasing biodiversity Collaborative projects open to citizens, companies, organizations, associations, etc.	370 (88 already absorbed by existing urban trees)	Green infrastructure ecosystem services Reduction of heat islands.

Buildings and heating	Technology / Infrastructure Financing	Building renovation (envelope)	39	Greater energy independence. Jobs associated with maintenance of distributed infrastructure. Greater democratization of the energy sector.
		New energy efficient buildings	13	
		Decarbonisation of heat generation	704	
Electricity	Technology / Infrastructure Financing	Efficient lighting and appliances	64	
		Decarbonisation of electricity generation	300	
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B-1.2: Description of impact pathways

Based on the results of the Economic Model for the Decarbonization of Cities (EMCD), the city of Zaragoza has reformulated its strategy towards climate neutrality around five main pillars. Each is linked to specific sectors and sub-sectors with high emission reduction potential, in line with the urban, technological and social transformations needed to reach the net-zero target by 2030.

PILAR 1: Smart City Projects

Main sector: Urban governance, planning, digitalisation

Policy sub-sectors : Data-driven urban management, digital transformation, technological innovation, citizen participation.

The development of a smart city is a structural condition for accelerating the transition towards climate neutrality. This pilar promotes the implementation of advanced technological solutions, the digitalisation of urban services and data-driven governance, aimed at optimising operational efficiency, improving quality of life and reducing emissions across multiple sectors.

Zaragoza's strategy in this area is articulated around the following axes of action:

- Promote digital infrastructures and integrated platforms that enable more efficient, proactive and results-oriented urban management.
- Apply predictive models and geographic information systems to improve decision-making in planning, mobility, energy and municipal services.
- Promote innovative and participatory governance, based on open data, transparency and citizen involvement.
- Accelerate technological innovation through urban experimentation, the use of digital twins and public-private collaboration.
- Promote more resilient and inclusive urban environments through the use of emerging technologies, from urban sensors to artificial intelligence.

PILAR 2: Sustainable and smart mobility

Main sector: Transport

Policy sub-sectors: Reducing the need for motorised transport, modal shift towards public transport and non-motorised modes, car sharing, electrification of the car and bus fleet, logistical optimisation of freight transport, electrification of lorries.

The transition to sustainable mobility is one of the key elements of Zaragoza's climate transformation. This pillar promotes a profound reorganisation of the urban and metropolitan transport system, driving technological, modal and behavioural changes, with the following lines of action:

- Promote cleaner, smarter and more accessible mobility, supported by low-emission energy sources.
- Promoting sustainability in all modes of transport, including commuting, public transport and freight distribution.
- Deploy key infrastructures: metropolitan green ring, network of bike lanes, electric fleets, platforms reserved for public transport, charging points for electric vehicles, and new emerging technologies such as urban drones for logistics.
- Implement appropriate incentives to accelerate modal and technological change in urban mobility.
- Expand and generalise the offer of sustainable alternatives in an integrated and efficient multimodal system.

PILAR 3: Efficiency and renewable energy

Main sectors: Building and associated services; Electricity

Policy sub-sectors: Energy refurbishment of existing buildings, construction of new nearly zero-consumption buildings (nZEB), efficiency in lighting and appliances, low-emission heat generation, low-carbon electricity production.

Energy efficiency and the transition to renewable energy sources constitute a second axis of structural transformation in Zaragoza. This pilar seeks to drastically reduce energy demand and decarbonise the urban energy system, through:

- Promote the generation and use of renewable energy, both centralized and

distributed.

- Enhance the energy rehabilitation of the building stock, improving insulation, air conditioning systems and the efficiency of domestic and tertiary consumption.
- Apply intelligent management mechanisms to optimize energy use, minimizing losses and waste.
- Promote the creation of local energy communities, through the legal model of collective self-consumption, thus strengthening distributed energy governance.
- Promote the efficient use of available energy resources, in line with the principle of efficiency as a key driver of decarbonisation.

PILAR 4: Water and nature-based solutions

Main sectors: Water management, urban environment

Policy sub-sectors: Green infrastructure, urban renaturalisation, climate resilience, water cycle.

The integration of nature into urban planning and sustainable water management are essential for increasing climate resilience and improving liveability. This pillar proposes an ecological transition of the urban environment through the following actions:

- Connect the different areas of the city through ecological corridors and green spaces, under the 'Natural Zaragoza' approach, promoting comprehensive ecological connectivity.
- Design and implement nature-based solutions to increase resilience to climate impacts, such as heat waves, heavy rains or biodiversity loss.
- Contribute to territorial balance and urban regeneration, especially in neighbourhoods with greater socio-environmental vulnerabilities.

PILAR 5: Circular economy

Main sectors: waste; industry; consumption

Policy sub-sectors: Recycling and recovery, organic waste, industrial symbiosis, waste minimization

This pillar proposes developing an urban circular economy, which will enable progress towards a more efficient and sustainable urban model, reducing pressure

on natural resources and significantly decreasing emissions associated with the life cycle of products, by minimising waste, reusing materials and increasing recycling and recovery capacity.

MODULE B-2

Portfolio of transformative stocks

This section should contain a description of each action planned in the CCC Action Plan. These actions also include interventions aimed at creating/improving carbon sinks to address residual emissions.

The actions described here should not repeat the actions resulting from existing policies and plans, described in Section A-2.1. Those actions, by definition, are not part of the proposed portfolio of actions.

- Table of planned interventions grouped by field of action, including interventions by local businesses and industries (B-2.1).
- Summary of each action. The table contains all the information for implementation (e.g., topic, type of intervention, emissions sector, scope, allocation, responsible actors, GHG reduction by gases, and estimated costs), including interventions aimed at addressing residual emissions (including carbon sinks) (B-2.2).
- Summary of planned actions and impact to address residual emissions. (B-2.3).

B-2.1: Description of portfolios of converting shares		
Issuing sector	Description of the portfolio of converting shares	
	List of actions	Overview
Mobility and transport	Reduced need for motorized transport	SECAP 2030 includes measure AM12, 'Control urban expansion,' with the aim of reducing transport demand by 10%, which would prevent the emission of 43 kton CO_2e and save 174 GWh per year. For the baseline scenario (BAU 2030), this reduction needs to be increased to 35%, which would mean a mitigation of 96 kton CO_2e per year.
	Bus electrification Electrification from automobiles Truck Electrification	The Zaragoza SUMP proposes actions that would reduce CO_2e emissions by 186 ktonnes and save 120 GWh per year. Based on this approach, the SECAP 2030 incorporates measure AM13, 'Electric and Low-Emission Mobility Plan'. The Economic Model requires the electrification of 100% of the public transport fleet by 2030, with an estimated reduction of 21 kton CO_2e per year. The Economic Model requires the electrification of 32% of the passenger car and motorcycle fleet by 2040, representing a mitigation of 18 kton CO_2e per year. The Economic Model forecasts: • Electrification of 15% of trucks <3.5 t by 2040: 20 kton CO_2e mitigated. • Electrification of 40% of trucks >3.5 t by 2040: an additional 20 kton CO_2e mitigated.
	Modal shift: shift to public and non-motorised transport	The Zaragoza SUMP proposes measures with a reduction potential of 186 kton CO_2e and energy savings of 120 GWh per year. In line with this plan, SECAP 2030 incorporates measures AM14 (mobility and health), AM15 (promotion of intermodality) and AM16 (universal accessibility).The Economic Model requires a 30% reduction in km/passenger in private vehicles, with a mitigation of 41 kton CO_2e per year.

	Shared transport	The Economic Model sets a target of increasing transport efficiency by 15% through carpooling measures, which would represent an additional mitigation of 15 kton CO_2e per year.
	Optimisation of freight transport logistics	The SUMP envisages improvements in urban logistics. The Economic Model estimates that a 10% reduction in the distance traveled through route optimization would contribute to mitigating 59 kton CO_2e compared to the trend scenario (BAU 2030).
Urbanism / half built	Renovation of buildings	SECAP 2030 includes measures AM1 and AM2, which focus on the energy renovation of homes. The Economic Model establishes that, compared to the BAU 2030 scenario, the annual renovation rate must be increased from 1% to 4% of the existing building stock, which would result in a mitigation of 39 kton CO_2e.
	New nearly zero-energy buildings (decarbonisation of heating)	SECAP 2030 includes measures AM5, AM9 and AM11, aimed at the use of renewable energies in residential, municipal and tertiary heating systems. To achieve the objectives of the Economic Model, 67% of local heating must be generated with electricity by 2030, mitigating 704 kton CO_2e.
Energy system	Low-emission electricity generation	SECAP 2030 includes measures AM4, AM8 and AM10 to promote renewable electricity generation in homes, public buildings and the tertiary sector. It also includes measure AM3 on the acquisition of energy with Renewable Origin Certificates. For its part, ECAZ 3.0 incorporates measure 27 for the industrial sector. According to the Economic Model, 85% of current fossil fuel production must be replaced by renewable sources by 2030, which translates into mitigating 300 kton CO_2e.
	Efficient lighting and appliances	SECAP 2030 includes measures AM6 (optimisation of contracts and supply conditions) and AM7 (improvement of electrical equipment efficiency). In BAU 2030, 100% of lighting must be renovated between 2020 and 2030, achieving a 40% improvement in efficiency. According to the Economic Model, this would mitigate 64 kton CO_2e.

Waste and circular economy	Waste recycling	ECAZ 3.0 covers measures 30 to 33 on food waste reduction, reuse and recycling of clothing, WEEE and organic waste. The Economic Model calls for a mitigation of 10 kton CO_2e through waste recycling by 2030.
Nature-based solutions	Renaturalisation	This action promotes the restoration of natural and peri-urban spaces, the improvement of ecological connectivity and the incorporation of nature-based solutions (NBS) in urban design, contributing to reducing heat islands, managing rainwater and improving environmental quality and citizen well-being.

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 2: SUSTAINABLE AND SMART MOBILITY
	Type of action	Reduced need for motorized transport
	Description of the action	PACES 2030 includes measure AM12: Curbing urban expansion, which involves a 10% reduction in transport demand. This would prevent the emission of 43 kton CO2eq and save 174 GWh per year. Compared to BAU 2030, the reduction would need to be increased to 35% to mitigate 96 kton CO2eq per year. For the management and optimisation of urban transport, Zaragoza is working on: - The DiTRA Project (Digitalisation of urban traffic and reduction of its emissions) based on a digital system for the control, management and reduction of actual road traffic emissions. - The Road Safety Plan has also incorporated the addition of AI-programmed traffic lights, using the green light application.
Reference to the impact pathway	Scope of emission	Reduced need for motorized transport
	Systemic lever	Technology/Infrastructure; Funding; Learning and skills
	Result (according to module B-1.1)	Coordinate all necessary infrastructure: green belt, cycle lanes, electric fleets, vehicle chargers, tramways, etc. Generalise the availability of sustainable alternatives in a multimodal transport system. Adopt new digital solutions and mobility optimisation.
Implementation	Responsible bodies/persons from the implementation	City Hall, Urban Mobility Service.
	Scale of action and target entities	Municipal

	Actors involved	National governments or agencies; subnational governments or agencies; businesses and the private sector; NGOs and civil society.
	Comments on the implementation	-
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	Included in SECAP 2030: 174 GWh/year
	Estimated GHG emission reduction (total)	Included in SECAP 2030: 43 GHG tonnes/year.
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 2: SUSTAINABLE AND SMART MOBILITY Vehicle Electrification
	Type of action	Technical interventions
	Description of the action	The Zaragoza SUMP proposes measures that would reduce 186 kton CO2eq and save 120 GWh annually. Based on the SUMP, PACES 2030 includes measure AM13, 'Electric and Low-Emission Mobility Plan.' In terms of the Economic Model, the following is required - Electrify 32% of the passenger vehicle fleet by 2040 to mitigate 18 kton CO2eq. - Electrify 100% of the public transport vehicle fleet by 2030 to mitigate 21 kton CO2eq. - Electrify 15% of trucks <3.5 tonnes by 2040 and electrify 40% of trucks >3.5 tonnes by 2040 to mitigate 20 kton CO2eq. Among the initiatives currently underway, the following stand out: - Electrification of the urban bus fleet: The city plans to have 228 clean buses by 2030: Currently (30 June 2025) 112 of the buses have been renewed. - Installation of e-Bus charging infrastructure in Zaragoza's urban bus depots: supply of electricity to 260 100 kW chargers, one 300 kW emergency charger for electric buses in the depots, including SET and line. First phase: 75 100 kW chargers, one 300 kW emergency charger. Electrification of urban transport: €39,199,212. The second phase of garage electrification has been approved. The installation of 47 charging points is planned to power the 40 city buses and 3 tourist buses that will be added to the fleet in 2025. Adaptation of depots: £10,387,721.14. In a scenario of neutrality in 2030, it would be necessary to electrify 100% of the fleet. - At the same time, work is being done to promote the conversion of the taxi fleet to electric vehicles. The implementation of subsidies for the electric and accessible transformation of taxi services (10% every two years until reaching 50% in 2030): The annual investment in this area is 200,000 euros for the renewal of the fleet to electric, with a contribution per vehicle of 10,000 euros. With this budgetary availability, it will be possible to promote the replacement of 20 taxis per year. Considering that the taxi fleet exceeds 1,700 taxis, it is not possible that by 2030, with this investment, electric taxis will have been incorporated into the fleet. Likewise, £110,000 is invested each year for the incorporation of accessible and electric vehicles into the taxi fleet, which in the case of purchasing a vehicle that meets both conditions, the subsidy amounts to £20,000 per vehicle.

		- In collaboration with the CTAZ, a new transport service to Zaragoza airport was launched, consisting of an on-demand line, depending on the flights scheduled, with zero-emission vehicles. With this budget availability, the change of 20 taxis per year can be promoted. Considering that the taxi fleet exceeds 1,700 taxis, it is not possible that in 2030, with this investment, electric taxis have been incorporated into the fleet. Likewise, every year 110,000 euros are invested for the incorporation of accessible and electric vehicles into the taxi fleet, which in the case of acquiring a vehicle that meets both conditions, the aid amounts to 20,000 euros per vehicle. - Finally, the capacity of tram line L1 has been increased with the acquisition of two new units, which will improve frequency during rush hour, reducing the current frequency of 5 minutes and increasing the line's transport capacity by up to 20%. Purchase price of the two tram units: €9,312,131 (excluding VAT). In turn, the Zaragoza City Council has approved the extension of night-time tram services on Fridays, Saturdays and the eve of public holidays until 1.30 a.m. -- The network of charging points that has been put into operation consists of 37 locations throughout the city, including 89 semi-fast 22 kW chargers, 30 fast 50 kW chargers and 24 ultra-fast 150 kW chargers. There are currently no specific plans for new points in the future, but funding is available for this objective. - Granting of spaces in surface car parks for the installation of photovoltaic power plants. The proposal is to install a total of 3.4 MW, with an approximate investment by the concessionaires of around 3.5 million euros. As this is a concession, the City Council has no expenses, but it does have income. Installation of photovoltaic panels in four public car parks in the city, which will come into operation in December 2025, generating savings of 38.36 MWh.

Reference to track impact	Scope of emission	Bus electrification Car electrification Truck Electrification
	Systemic lever	Technology/Infrastructure; Funding; Learning and skills
	Result (according to module B-1.1)	Electrification of public transport, widespread availability of sustainable alternatives in a multimodal transport system, introduction of appropriate incentives to drive the transition to mobility, financial support for the purchase of electric taxis.
Implementation	Organisations/individuals responsible for implementation	City Hall, Urban Mobility Service.
	Scale of action and target entities	Municipal
	Actors involved	National government or agencies; Sub-national governments or agencies; Businesses and the private sector

	Comments on the implementation	The public transport fleet currently consists of 129 diesel buses, 111 hybrid buses and 112 BEVs. Of these 72 BEVs, 68 have been financed through call 1 of the programme of grants to municipalities for the implementation of low-emission zones and the digital and sustainable transformation of urban transport and mobility, within the framework of the Recovery, Transformation and Resilience Plan - Financed by the European Union - NextGenerationEU, and another 40 will be financed through call 2. According to data from the Department of Mobility, the estimated investment required is €101 million. An estimated investment of €185 million would be necessary to renew the entire fleet with clean vehicles. Plus €40 million for the electrification of depots.
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	The Zaragoza SUMP proposes measures that would save 120 GWh per year (total SUMP contribution, not just electrification).
	Estimated GHG emission reduction (total)	The Zaragoza SUMP proposes measures that would reduce 186 kton CO_2eq per year (total contribution of the SUMP, not just electrification). In terms of the Economic Model, the following is required - Electrify 32% of the passenger vehicle fleet by 2040 to mitigate 18 kton CO_2eq. - Electrify 100% of the public transport vehicle fleet by 2030 to mitigate 21 kton CO_2eq. - Electrify 15% of trucks <3.5 tonnes by 2040 and electrify 40% of trucks >3.5 tonnes by 2040 to mitigate 20 kton CO_2eq.
	Total costs and costs per unit of CO_2eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 2: SUSTAINABLE AND SMART MOBILITY Modal change and car sharing
	Type of action	
	Description of the action	The Zaragoza SUMP proposes measures that would reduce CO2eq emissions by 186 ktonnes and save 120 GWh per year. Based on the PMUS, PACES 2030 includes measures AM14 'Develop mobility actions aimed at improving citizens' health'; AM15 'Promote intermodality between modes of transport' and AM16 'Ensure accessibility to all mobility spaces and services'. In terms of the Economic Model, the following is required - Achieve a modal shift that reduces passenger-km in private vehicles by 30% to mitigate 41 kton CO2eq per year. - Increase transport efficiency by 15% with car-sharing measures, which will mitigate 15 kton CO2eq per year. Zaragoza is continuously expanding its pedestrian and cycling infrastructure. Work is currently underway on the construction of the previously announced 35.5 km, of which more than 18 km will be built throughout 2025. The following have already been implemented: The Almozara, Miralbueno-Utebo, Garrapinillos cycle lane. 276 stations and 2,500 bicycles. These elements will continue to be expanded over the next five years. In addition, there are plans to remodel Plaza Salamero and its surroundings, as well as the connections to the underground car park. The construction of cycle lanes and metropolitan transport interchange areas in Zaragoza. Measures to improve the connectivity of urban and metropolitan public transport in the municipality of Zaragoza. For the management and optimisation of urban transport, Zaragoza is developing: A MaaS (Mobility as a Service) platform to promote the use of public transport. The investment will be made through the CTAZ (including applications and validation systems).

Reference to the impact pathway	Scope of emission	Modal change: shift towards public and non-motorised transport Shared transport
	Systemic lever	Technology/Infrastructure; Funding; Training and capacity building
	Result (according to module B-1.1)	Articulate all necessary infrastructure: green ring, bike lanes, electric fleets, vehicle charging points, tram, etc. Generalise the availability of sustainable alternatives in a multimodal transport system.
Implementation	Organisations/individuals responsible for implementation	City Hall, Urban Mobility Service.
	Scale of action and target entities	Municipal
	Actors involved	National government or agencies; governments or sub-national agencies; companies and the private sector; NGOs and civil society
	Comments on the implementation	Regarding the elements implemented for decarbonisation: • 8,800,000 will be used for the 35.5 km New Cycling Infrastructure • €11.4 million (€6,572,918) from the Recovery, Transformation and Resilience) for the new shared e-bike system
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	Zaragoza's Sustainable Urban Mobility Plan (SUMP) proposes measures that would enable savings of 120 GWh per year (total contribution of the SUMP, not only from modal shift).
	Estimated reduction of GHG emissions (total)	The SUMP of Zaragoza proposes measures that would result in a reduction of 186 kton of CO_2e per year (total SUMP contribution, not just for modal shift). According to the Economic Model, it is required: Modal change: 41 kton CO_2e per year Shared car: 15 kton CO_2e per year
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 2: SUSTAINABLE AND SMART MOBILITY Optimization of freight transport logistics
	Type of action	
	Description of the action	The Sustainable Urban Mobility Plan (SUMP) of Zaragoza proposes measures that would allow a reduction of 186 kton of CO_2e and savings of 120 GWh per year. In terms of urban logistics, a 10% reduction in the distance travelled through route optimisation is required, in order to contribute to a mitigation of 59 kton of CO_2e compared to the 2030 trend scenario (BAU). Ongoing strategies include: Regulated parking, Low Emission Zone (ZBE), access control to Residential Priority Areas (APR) and loading and unloading control. The concession of regulated parking contemplates that the concessionaire company implements this system in different areas of the city, reaching about 25,000 places. This measure seeks to discourage the use of private vehicles. The concession will include the management system for the implementation of the ZBE, the control of access to restricted streets in the historic centre and the management of loading and unloading operations, which will result in a better urban distribution of goods. The planned investment for the 10 years is approximately 15 million euros (11,128,727 €/year). The City Council does not make the direct expense, but receives the royalty offered by the concessionaire.
Reference to the impact pathway	Scope of emission	Optimisation of freight transport logistics

	Systemic lever	
	Result (according to module B-1.1)	Adoption of new digital and mobility optimisation solutions.
Implementation	Responsible bodies/persons from the implementation	City Hall, Urban Mobility Service, logistics companies.
	Scale of action and target entities	Municipal
	Actors involved	National government or agencies; governments or sub-national agencies; companies and the private sector; NGOs and civil society
	Comments on the implementation	
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	59 kton CO_2e/year
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 1: SMART CITY PROJECTS PILAR 3: EFFICIENCY AND RENEWABLE ENERGY New energy efficient buildings
	Type of action	Technical interventions
	Description of the action	In the BAU (Trend) 2030 scenario, the economic model requires that 80% of new buildings be built to the highest energy efficiency standards.
Reference to the impact pathway	Scope of emission	New buildings with almost zero consumption.
	Systemic lever	Technology / Infrastructure Governance and public policies Social innovation Democracy and participation (appears twice; could be an editing error) Finance Learning and skills development
	Result (according to module B-1.1)	Optimization of energy consumption. Implementation of mechanisms for energy saving, avoiding losses. Combating energy poverty by bringing in vulnerable people free of charge.
Implementation	Organisations/individuals responsible for implementation	City Council Business
	Scale of action and target entities	Neighbourhood/Urban Scale
	Actors involved	Business and private sector NGOs and civil society
	Comments on the implementation	INCUBE (rehabilitation and sustainable construction of buildings) CHRONICLE (digitalisation of processes for energy efficiency and urban planning)
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	Included in SECAP 2030: 32 kton CO_2e/year

	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 1: SMART CITY PROJECTS PILAR 3: EFFICIENCY AND RENEWABLE ENERGY Decarbonisation of heat generation
	Type of action	Technical interventions
	Description of the action	PACES 2030 includes measures AM5 (Promotion of renewable energy thermal generation systems in homes), AM9 (Installation of renewable energy thermal generation systems in municipal buildings) and AM11 (Promotion of renewable energy thermal generation systems in the tertiary sector). Mitigation of 27.7 ktonnes of CO_2eq and 137 GWh/year is estimated.With regard to the BAU 2030 scenario, 67% of local heating must be produced using electricity. This would mean a total mitigation of 704 ktonnes of CO_2eq. Among the unique projects being carried out by Zaragoza City Council, several actions stand out: - First positive neighbourhood, which includes different types of residential and educational buildings (NEUTRALPATH project). - Neighbourhood heating network with hydrothermal energy that will eliminate individual gas from residential buildings and use renewable photovoltaic energy installed on the roofs of buildings. With regard to the Neutralpath project, the City Council is providing neighbourhood organisations with details of the project processes for creating the first Clean Energy District. The NeutralPath project in Zaragoza involves creating a Positive Clean Energy District comprising six buildings. To this end, "a representative area has been chosen in the Actur neighbourhood, which includes two residential buildings constructed in 1992, owned by Zaragoza Vivienda (ZV), with 96 homes in each block; a public nursery school (built in 2008) owned by the City Council; and a public school (three buildings constructed in 1997) owned by the Government of Aragon.

Reference to the impact pathway	Scope of emission	Low-emission heat generation (decarbonisation of heating)
	Systemic lever	Technology/Infrastructure; Governance and public policies; Social innovation; Democracy and participation; Funding; Training and skills; Democracy and participation.
	Result (according to module B-1.1)	Promotion of the creation of local energy communities through the TBT, a community transformation office for the advice and promotion of energy communities and through the legal instrument of collective self-consumption. Implementation of mechanisms to save energy, avoiding losses. Efficient and solidary use of available energy sources. Combat energy poverty by bringing in vulnerable participants free of charge.
Implementation	Responsible bodies/persons from the implementation	Town Hall, companies, Zaragoza Housing.
	Scale of action and target entities	Neighbourhood / urban scale.
	Actors involved	Businesses and the private sector; NGOs, civil society.
	Comments on the implementation	NEUTRALPATH (positive district with community heating networks) RESPONSE (pilot projects in resilient and energy-positive urban environments)
Impacts and costs	Renewable energy generated (if applicable)	Included in the PACES 2030: 137 GWh/year of local production
	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	Included in the PACES 2030: 27.7 kton of CO_2e / year
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 3: EFFICIENCY AND RENEWABLE ENERGY Efficient lighting and appliances
	Type of action	Technical interventions
	Description of the action	Within the CAPES 2030, for municipal buildings and street lighting, the following are envisaged: • Measure AM6 o Optimization of contracts and improvement of supply conditions. The City Council's contract with Iberdrola has been amended. • Measure AM7 o Energy savings, reduced consumption and improved energy efficiency of electrical equipment With respect to the BAU 2030 trend scenario, 100% renovation of luminaires is required between 2020 and 2030, with the aim of improving their efficiency by 40%. In line with this action the City Council has executed: The renovation of 428 luminaires by LED in Condes de Aragón, Strategic city scale • PPP: Bilateral 100% renewable energy procurement or Power Purchase Agreement This translates into CO_2 savings of 13,500 kg/year and annual energy savings of 81,300 kWh.
Reference to the impact pathway	Scope of emission	Efficient lighting and appliances
	Systemic lever	Technology/Infrastructure; Funding
	Result (according to module B-1.1)	Implementation of mechanisms to save energy and prevent losses. Efficient and fair use of available energy sources. Combating energy poverty by providing free access to vulnerable participants. Municipal aid for housing renovation.

Implementation	Organisations/individuals responsible for implementation	City Council Urban Planning Area Zaragoza Housing
	Scale of action and target entities	Urban scale
	Actors involved	Government or national agencies; citizenship
	Comments on the implementation	
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	Included in the PACES 2030: 32 kton CO_2e / year Economic Model Result: 64 kton CO_2e / year
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 1: SMART CITY PROJECTS PILAR 3: EFFICIENCY AND RENEWABLE ENERGY Low-emission electricity generation
	Type of action	Technical interventions
	Description of the action	PACES 2030 includes measures AM4 (Promotion of renewable electricity generation systems in homes), AM8 (Installation of renewable electricity generation systems in municipal buildings) and AM10 (Promotion of renewable electricity generation systems in the tertiary sector). Mitigation is estimated at 6.8 kton CO2eq/year and production at 74 GWh/year. To match the renewable electricity production levels of the PNIEC 2030, the PACES includes measure AM3 'Promotion of the purchase of energy with Renewable Origin Certificates', which implies a mitigation of 120 kton CO2eq/year. In addition, ECAZ 3.0 contains measure 27, 'Promotion of renewable electricity generation systems in the industrial sector.' A mitigation of 45.5 kton CO2eq/year is estimated. Among the projects being developed by the city of Zaragoza, the following stand out: • Solar Neighbourhood in Actur. A total of 240 solar panels for the generation of 100% renewable, local and solidarity-based energy, which has a positive impact on 200 homes, including 20 vulnerable families and a potential reduction of 0.024 ktonnes of CO2 eq. This is a first pilot project that will make Actur the first renewable and solidarity-based solar neighbourhood in Spain, with a photovoltaic installation for shared self-consumption in residential buildings. Residents and businesses within a 500 m radius of the installation participate and benefit from energy savings of around 30% on their bills. • The Zaragoza City Council has a pre-feasibility study for the installation of photovoltaic energy in municipal buildings, which identifies 214,571 m² of usable surface area with the capacity to generate 28,671 MWh per year. This analysis is part of the European URBANEW project (Horizon 2020, 2023–2025), which promotes self-consumption and energy communities in Zaragoza. Its objectives include overcoming regulatory barriers, proposing governance models and assessing the city's energy generation and demand. The City Council is participating in URBANEW with an allocated budget of €100,000, as part of a €1.5 million overall project. • Solar energy community in MERCAZARAGOZA: The aim of the project is to install a 1 MW photovoltaic facility in Zaragoza, which will be operated by the MERCAENERGY, S. COOP. energy community. This initiative will directly benefit stakeholders located within the same cadastral reference within the industrial estate, in terms of energy, social and economic aspects.

Reference to the impact pathway	Scope of emission	Low-emission electricity generation
	Systemic lever	Technology/Infrastructure; Governance and politics; Social innovation; Democracy and participation; Funding; Learning and skills; Democracy and participation.
	Result (according to module B- 1.1)	Install local renewable energy generation infrastructure; Encourage the creation of local energy communities through the legal instrument of collective self-consumption; Implement mechanisms to save energy, avoiding losses; Efficient and solidarity-based use of available energy sources; Combating energy poverty by bringing in vulnerable participants free of charge; Create a 'Solar Quarter' office to raise awareness, inform and advise neighbours on energy issues; Create a 'Solar Quarter' office to raise awareness, inform and advise neighbours on energy issues.
Implementation	Responsible bodies/persons from the implementation	Solar neighbourhoods: EDP Solar, Zaragoza City Council and ECODES will form a consortium or similar legal entity to enable public-private collaboration and the establishment of an energy community. Others: City Council, companies.
	Scale of action and entities recipients	Neighbourhood / urban scale.
	Actors involved	Business and private sector; NGOs, civil society.
	Comments on the implementation	Associated projects: RESPONSE (smart energy districts with photovoltaics and storage) NEUTRALPATH (installations renewable collectives in buildings in the Actur neighbourhood)
Impacts and costs	Renewable energy generated (if applicable)	Included in PACES 2030: 74 GWh/year produced locally.

	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	Included in PACES 2030: 126.8 kton CO_2eq / year. From ECAZ 3.0: 45.5 kton CO_2eq/year. Economic model: 300 kton CO_2eq / year.
	Total costs and costs per unit of CO_2 eq	

B-2.2: Individual action schemes		
Outline from acting	Name of the action	PILAR 5: CIRCULAR ECONOMY Waste recycling
	Type of action	Technical interventions
	Description of the action	ECAZ 3.0 includes measures 30 "Reducing food waste"; 31 "Collection, reuse and recycling of clothing"; 32 "Collection and reuse of electrical and electronic equipment"; and 33 "Use of organic waste for energy production and/or composting". With respect to the BAU 2030, the EMCD requires a reduction of 10 kton CO_2 eq due to waste recycling. In line with this action, a circular economy project, Circular Biochar, has been developed, whose mission is to achieve a sustainable bioeconomy and optimize the management of municipal solid waste and sewage treatment sludge (EDAR), which become resources, obtaining from them final products of high added value. Some of the final products that can be obtained thanks to the recovery of this waste will be: coated tools and moving mechanical parts with increased durability, cameras vision night, night devices telecommunications with 5G technology, biodegradable and compostable bags for waste collection, biodegradable films for soil padding, microalgae-based biostimulants with fertilizer properties, or personalized biofertilizers. This circular economy initiative is a milestone for the whole of Europe, both for its scale of implementation (industrial level) and for its replication capacity. It will also be connected to other initiatives in the city, such as the Bosque de los Zaragozanos, which will benefit from the waste treated in this project. The City of Zaragoza has developed several actions eligible under the PRTR, financed by the European Union – Next Generation EU, in accordance with the lines defined in the state regulations: • Line 1. Implementation, extension or improvement of separate collection of bio-waste for biological treatment. • Line 2. Domestic and community bio-waste composting. • Line 3. Construction or improvement of composting facilities. • Line 4. Construction or improvement of clean points.

		Line 1 – Separate collection of bio-waste destined for CTRUZ Within the framework of the PRTR (funded by the EU – Next Generation EU), Zaragoza City Council is implementing measures to improve the separate collection of bio-waste destined for the Zaragoza Urban Waste Treatment Complex (CTRUZ), with a requested budget of €2,708,591. Main objectives: • Extend the selective collection of organic waste throughout the municipality. • Improve recycling rates and separation at source. • Promote citizen participation through information and campaigns. Featured actions: • Acquisition of a CL CNG collector with weighing, identification and GPS. • Supply of 2,100 containers of 1,800 L with sensors. • Delivery of 15,000 citizen cards. • Communication and awareness campaigns. **Improvement of the packaging sorting plant** Also charged to the PRTR, Zaragoza receives a grant of €1,273,750 to improve the sorting plant for selectively collected packaging. The project includes: • Installation of a new inductive separator (aluminium) and an optical separator (PP and PS). • Replacement of old optical separators (PET, PEAD, cardboard drinks, plastic mix) with more efficient models. The objective is to increase the recovery of recoverable materials in the municipality and its environment.
Reference to the impact pathway	Scope of emission	Waste recycling
	Systemic lever	Technology/Infrastructure; Social innovation
	Result (according to module B-1.1)	

Implementation	Responsible bodies/persons from the implementation	Zaragoza City Council Green Infrastructure Circular Biochar: Urbaser
	Scale of action and target entities	Urban scale
	Actors involved	Business and private sector
	Comments on the implementation	The biorefinery located at Urbaser's Alfonso Maíllo R&D&I Centre and the Zaragoza Urban Waste Treatment Complex (CTRUZ) in the Recycling Technology Park (PTR). was inaugurated in 2024 and has a treatment capacity of 10,000-15,000 tonnes (organic fraction and sewage sludge).
Impacts and costs	Renewable energy generated (if applicable)	
	Removed/replaced energy, volume or type of fuel	
	Estimated GHG emission reduction (total)	From ECAZ 3.0: 340 kton CO **2**eq / year Economic model: 10 kton CO **2**eq / year
	Total costs and costs per unit of CO_2 eq	

B-2.3: Summary of the strategy for residual emissions

PILLAR 4: WATER AND NATURE-BASED SOLUTIONS

The City Council will develop a plan to geolocate the city's green areas and forest and wooded areas. The aim of this plan is to measure, with the help of satellite images, their capacity as CO_2 sinks. This will enable the necessary expansion of these green areas to be planned with the aim of achieving a 5-7% reduction in total emissions generated in the city of Zaragoza.
To this end, the use of state-of-the-art technologies is proposed as an analytical basis for the construction, development and monitoring of ecosystem indicators, including carbon sequestration capacity (e.g. analysis and interpretation of very high spatial resolution multispectral satellite images for use as an analytical basis), as well as scientific research to facilitate the assessment of the ecosystem services provided by vegetation.

The possibility of immediate use of high-precision satellite technology is integrated as a tool for the automatic compilation of inventories of species and elements associated with green areas, as well as in the construction of terrestrial observation indices (aligned with the European USAGE project – Urban Data Space for Green Deal) for the assessment of the vegetative state in the municipality, as well as the characterisation of urban heat island phenomena (these will be identified as areas for priority action).

Bosque de los Zaragozanos (Zaragoza Forest): with the overall goal of planting 700,000 trees and shrubs by 2030, creating one of the most important carbon sinks at the local level through a collaborative project involving companies, organisations, educational centres, associations and citizens, greening and connecting the city and its territory. Three types of forest will be used: Mediterranean, riverside and urban. With one campaign planned per year until 2030, the project has reached the final stage of its fourth season, with 205,000 trees and shrubs planted.

Recovery of the urban section of the Huerva River: The project envisages the ecological, urban and landscape development of the Huerva River from the Fuente de La Junquera to its mouth at the Ebro River, with greater intensity between the Blasco del Cacho bridge and the Emperador Augusto bridge, the latter section being where the actions will be most effective, seeking to improve the ecological status of the river system and restore the identity of the Huerva River as the backbone of the city.
The objectives pursued are:

Greening-renaturalisation: environmental action that respects and values the environmental and ecological value of the Huerva River as a green space within the city. Conservation and valorisation of existing trees and fauna, channelling of spills and cleaning of debris in slopes and channel.

Connectivity: Low-cost, low-impact landscape project that allows reduced pedestrian accessibility and linear continuity on the three main levels (course, intermediate slopes and upper urban streets), providing urban use areas that enhance the relationship and respectful encounter between citizenship and the natural ecosystem of the Huerva River. The river corridor of the Huerva River must become an axis of mobility, and this more urban objective must be concretized in an urban, green and pedestrian street, which vertebre the system of free spaces of the city, being fundamental the longitudinal and transversal continuity.

Safe city: action to ensure the safe use of this new natural space in the city against vandalism, deterioration and aggression.

Adaptation to climate change: to be an example of sustainable and ecological action, with criteria for action to curb climate change: porous pavements with low emissivity, plantings that prevent the generation of 'heat islands'.
Estimated cost: €37 million.

Green infrastructure plan: ecosystem services: Action plan for the management of green infrastructure in Zaragoza – Ecosystem benefits: the ecosystem benefits currently generated by green infrastructure have been assessed through the Baseline project for the city of Zaragoza. Based on these, a system of indicators associated with a spatial geographical representation has been generated in order to facilitate decision-making when planning public spaces, specifically for Zaragoza, to measure, evaluate and specify objectives for improving these benefits. They comprise a total of 26 ecosystem indicators represented in 150x150 m grids and accompanied by a graphic representation by neighbourhood, in what are called ecosystem wheels. It also supports diagnosis and evaluation in the implementation of high-definition satellite technology, specifically with the VERSAT project, a project by OHL Servicios Ingesan S.A. for the characterisation, adaptation and implementation of an environment for the analysis and interpretation of multispectral satellite images (16 bands) with very high spatial resolution (15 cm/pixel – 30 cm/px – 50 cm/px) for complementary use in the construction, development and monitoring of ecosystem indicators..

Naturalisation of school playgrounds: Adapt your playground. In 2025, Zaragoza City Council will expand the Adapt your playground programme, which aims to transform school playgrounds into green and resilient spaces. Action will be taken in five new public schools with an investment of €250,000, prioritising climate- and socially-vulnerable centres and including a special education centre for the first time. Each intervention involves planting between 15 and 20 trees and shrubs, which strengthens the urban network of carbon sinks. The design of the playgrounds will be carried out in a participatory manner and with municipal technical support, integrating nature-based solutions such as native vegetation, permeable paving and shaded areas. With 83 public schools in the city, the programme has high potential for scalability within the municipal climate change adaptation strategy.

Other actions planned as part of urban green infrastructure management: Planting empty tree pits with tree species to give cohesion and connectivity to the urban green fabric.

MODULE B-3

Monitoring, evaluation, and learning indicators

In this first iteration of climate agreements, some additional indicators, called 'co-benefits', have been included, which can be seen in Tables B-3.2. Co-benefits are positive impacts additional to the reduction of greenhouse gas emissions resulting from climate actions, such as improved air quality, public health, social inclusion, innovation, and job creation. Identifying and evaluating them properly is key to gaining political and social support for climate neutrality, as they demonstrate that this transition not only protects the environment but also improves quality of life. However, it is also necessary to monitor possible negative effects (co-risks), such as job losses or increased cost of living, to ensure a fair and sustainable transition. Rigorous and transparent monitoring using key indicators that integrate quantitative and qualitative data is therefore essential.

B-3.1: Impact pathways						
Results/impacts addressed	Action/project	N.º Indicator	Indicator name	Target values		
				2025	2027	2030
	Reduced need for motorized transport	1	Reduction in passenger-kilometres travelled in private vehicles.	5%	20%	35%
	Modal shift: shift towards public and non-motorised transport	2	Reduction in passenger-kilometres travelled in private vehicles due to modal shift.	5%	15%	30%
	Carpooling	3	Increased transport efficiency through car-sharing measures.	2%	10%	15%

Car electrification	4	Percentage of the electrified car fleet by 2040.	2%	10%	32% (2040)
Bus electrification	5	Percentage of the electrified bus fleet by 2030.	30%	60%	100%
Optimisation of freight transport logistics	6	Reduce travel distance by optimizing routes.	1%	5%	10%
Truck Electrification (1)	7	Percentage of truck fleet <3,5 t electrified by 2040.	1%	5%	15% (2040)
Truck Electrification (2)	8	Percentage of truck fleet >3.5 t electrified by 2040.	1%	5%	40% (2040)
Refurbishment of buildings	9	Ratio of renovations per year to total existing buildings.	2%	4%	4%
New nearly zero-energy buildings	10	Percentage of new buildings built to the highest energy efficiency standards.	50%	60%	80%
Efficient lighting and appliance	11	Percentage of luminaires renovated between 2020 and 2030 (efficiency improvements of 40%)	20%	50%	100%
Low-emission heat generation	12	Percentage of electric local heating.	10%	30%	67%

	Low-emission electricity generation	13	Percentage of current electricity production from fossil fuels that is being replaced by renewable energy sources.	10%	30%	85%
	Waste recycling	14	Percentage of collected waste that is recycled.	60%	70%	90%

B-3.2: Indicator metadata	
Indicator name	$PM_{2.5}$ concentration levels
Indicator unit	µg/m³
Definition	This indicator corresponds to the average annual PM2.5 concentration value recorded in a particular year in an urban or suburban station. Until 2023 in the urban station of Paseo de Renovales. Punctually in 2024 in the suburban station of Actur.
Calculation method	Data from the Zaragoza Automatic Air Quality Network. The network consists of eight stations whose locations comply with the macro- and micro-location criteria and guidelines established by legislation for air quality measurement points. The minimum requirements according to the EU and WHO are: EU limit: 25 µg/m3, from 2020 the limit is 20 µg/m3; WHO guidelines: 5 µg/m3.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area are the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Air quality / health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Sustainable and smart mobility
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Automatic Air Quality Network of the City of Zaragoza. Legislation in force on air quality.
Expected availability	Annual
Planned collection interval	Annual
References	
Results describing the indicator	Concentration levels of PM2.5 (µg/m³): 2024: 7; 2023: 11; 2022: 11; 2021: 9; 2020: 10; 2019: 10; 2018: 10
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	NO2 concentration levels
Indicator unit	µg/m3
Definition	This indicator corresponds to the average annual value of nitrogen dioxide (NO2) concentrations recorded in a particular year at the A. Soria urban traffic station of the Zaragoza Automatic Air Quality Network.
Calculation method	Data from the Zaragoza Automatic Air Quality Network, urban traffic station A. Soria of the Zaragoza Automatic Air Quality Network. The network consists of eight stations whose locations comply with the macro- and micro-implementation criteria and guidelines established by legislation for air quality measurement points.The minimum requirements according to the EU and WHO are: EU limit: 40 µg/m3; WHO guidelines: 10 µg/m3.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area are the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health, improved air quality due to mobility
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Sustainable and smart mobility
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Automatic Air Quality Network of the City of Zaragoza. Legislation in force on air quality
Expected availability	Annual
Planned collection interval	Annual
References	
Results describing the indicator	Concentration levels of NO_2 ($\mu g/m^3$): 2024: 16; 2023: 21; 2022: 25; 2021: 25; 2020: 19; 2019: 21; 2018: 33
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	PM10 concentration levels
Indicator unit	µg/m3
Definition	This indicator corresponds to the average annual PM10 concentration value recorded in a particular year in an urban or suburban station.
Calculation method	Data from the Zaragoza Automatic Air Quality Network. The network is composed of eight stations whose location meets the criteria and guidelines of macro-implantation and micro-implantation established by legislation for air quality measurement points. The minimum requirements according to the EU and WHO are: EU limit: 50 µg/m3; WHO guidelines: 45 µg/m3 (average 24 h). The data are analysed in accordance with the current legislation applicable to each of the pollutants. European Directives, transposed into national law.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Air quality / health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Sustainable and smart mobility
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Automatic Air Quality Network of the City of Zaragoza. Legislation in force on air quality.
Expected availability	Annual
Planned collection interval	Annual

References								
Results describing the indicator	Concentration levels of PM_{10} (µg/m³)	2024	2023	2022	2021	2020	2019	2018
		18	24	16	24	19	17	20
Other indicator systems using this indicator								

B-3.2: Indicator metadata	
Indicator name	Percentage of population exposed to day-afternoon-night noise levels (Lden) ≥ 55 dB
Indicator unit	%
Definition	The indicator represents the level of noise to which a citizen is exposed during the day, evening and night throughout a year. The Lden indicator is associated with overall disturbance and is generated by integrating the Ld, Le and Ln indicators.
Calculation method	It is assessed at 4 m above ground level. Three sources are considered: road traffic, railways and industry.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area are the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Reduction of road traffic, health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Sustainable and smart mobility
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Zaragoza City Council
Expected availability	Yes, next data for the year 2026
Planned collection interval	5 years, five years
References	
Results describing the indicator	Population exposed to day-evening-night noise levels Lden ≥ 55 dB: 83.2% (2022) Road traffic is the main cause of urban noise pollution. Industry has a limited impact. Railways have no impact.
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Average daily maximum temperature (TXX)
Indicator unit	°C
Definition	Average daily maximum temperatures observed over a specific period of time, to detect the temperature increase.
Calculation method	Measure the maximum temperatures each day of a period (June-September), and then calculate the average of those temperatures. AEMET
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Renewable Energy and Efficiency, Water and Nature-Based Solutions
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	State Meteorological Agency, AEMET
Expected availability	Annual
Planned collection interval	Months of June, July, August and September
References	
Results describing the indicator	Average value temperature daily maximum 2018 2019 2020 2021 2022 2013 2014 31.2ºC 32.1ºC 30.8 °C 32.2 °C 35.1 °C 31.9 °C 31.1 °C
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Average daily minimum temperature (TNN)
Indicator unit	°C TNN
Definition	Average of the daily minimum temperatures (TN) observed during a specific period of time, to detect the increase in night-time temperatures.
Calculation method	Measure the minimum temperature (TN) each day of a period, and then calculate the average of those temperatures. AEMET
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area are the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Renewable Energy and Efficiency, Water and Nature-Based Solutions
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	State Meteorological Agency, AEMET
Expected availability	Annual
Planned collection interval	Months of June, July, August and September
References	
Results describing the indicator	2018 2019 2020 2021 2022 2023 2024 Average value temperature minimum daily 18.6 °C 18.6 °C 17.6 °C 18.4 °C 20.3 °C 19 °C 18.3 °C
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Number of days of exceedance of maximum trigger temperature threshold of mortality
Indicator unit	Number of days, nº
Definition	Number of days exceeding the maximum temperature threshold for mortality in the Meteosalud Zone: Zaragoza Ribera del Ebro in Zaragoza, maximum temperature threshold 37 °C, 94th percentile
Calculation method	The threshold temperatures for health impacts due to high temperatures have been calculated by analysing the association between time series of mortality and temperature at the MeteoHealth zone level. This procedure is based on a methodology that is well established in the scientific literature. The methodological criterion used to establish the reference threshold temperatures for health impacts due to high temperatures is based on using those temperatures at which mortality begins to increase significantly due to high temperatures, known as the 'trigger temperature'.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Water and Nature-Based Solutions
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	
Additional information	
Expected data source	Government of Aragon. AEMET.
Expected availability	Annual
Planned collection interval	Summer (June-September)
References	
Results describing the indicator	Nº of days exceeding maximum temperature threshold triggering mortality 2018 22 2019 34 2020 26 2021 18 2022 45 2023 12 2024 40

Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Green spaces
Indicator unit	Hectares/100,000 inhabitants (ha/100,000 inhabitants)
Definition	The number of green spaces in a city per 100,000 inhabitants
Calculation method	Total area of green spaces in hectares * 100,000) / Number
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	
If yes, to which emission area are the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health, ecosystem benefits IV, heat island reduction
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Nature-based solutions
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Zaragoza City Council
Expected availability	
Planned collection interval	
References	
Results describing the indicator	108.5 ha/100,000 ha (year 2024)
Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Percentage of population within 300 meters of Green Infrastructure
Indicator unit	%
Definition	Percentage of the municipality's total population living within 300 metres of green infrastructure
Calculation method	The Euclidean distance from the portal where the person resides has been calculated, thus obtaining the percentage that meets the condition of being less than 300 metres away.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Health, ecosystem benefits IV, heat island reduction
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Nature-based solutions
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	City of Zaragoza. Publisher: Chair Territory, Society and Geographic Visualization, Unizar
Expected availability	Biennial
Planned collection interval	Biennial
References	
Results describing the indicator	Year: Percentage frompopulation less than 300 m from IVZ, % 2024: 93.2 2022: 92.2 2020: 92.8 Trend: increasing the percentage of the population to less than 300 out of an IV
Other indicator systems using this indicator	

<table>
<tr><th colspan="2">B-3.2: Indicator metadata</th></tr>
<tr><td>Indicator name</td><td>Energy consumption per household</td></tr>
<tr><td>Indicator unit</td><td>kWh</td></tr>
<tr><td>Definition</td><td>Measured trend of energy consumed by a household in kWh. Annual comparison</td></tr>
<tr><td>Calculation method</td><td>Energy consumption (thermal and electrical) associated with heating and domestic hot water systems, as well as electricity consumption in homes.</td></tr>
<tr><td>Background</td><td></td></tr>
<tr><td>Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)</td><td></td></tr>
<tr><td>If yes, to which emission area are the co-benefits linked?</td><td>Residential</td></tr>
<tr><td>Does the indicator measure indirect impacts (i.e. co-benefits)?</td><td>Yes</td></tr>
<tr><td>If yes, what co-benefit does it measure?</td><td></td></tr>
<tr><td>Can the indicator be used to monitor impact pathways?</td><td>Yes</td></tr>
<tr><td>If yes, for what impact pathway?</td><td>Energy system. Medium built urbanism</td></tr>
<tr><td>Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?</td><td></td></tr>
<tr><td>Additional information</td><td></td></tr>
<tr><td>Expected data source</td><td>Zaragoza City Council</td></tr>
<tr><td>Expected availability</td><td>Energy marketers and distributors</td></tr>
<tr><td>Planned collection interval</td><td>National Institute of Statistics, INE</td></tr>
<tr><td>References</td><td></td></tr>
<tr><td>Results describing the indicator</td><td>Energy consumption per household has decreased since 2019.
The latest data from 2023 shows an 8% decrease compared to
<table><tr><th>Year</th><th>Energy consumption per household kWh</th></tr><tr><td>2023</td><td>10,087.4</td></tr><tr><td>2021</td><td>11,454.6</td></tr><tr><td>2019</td><td>11,076.5</td></tr></table></td></tr>
<tr><td>Other indicator systems using this indicator</td><td>Zaragoza Emissions Inventory, Covenant of Mayors</td></tr>
</table>

B-3.2: Indicator metadata	
Indicator name	Use of public transport
Indicator unit	Number, n.º (travel or validation)
Definition	Number of annual validations of any type of ticket recorded in vehicles on each line, with each direction being considered a different line.
Calculation method	Number of validations, journeys or annual trips of any type of ticket recorded in vehicles on each line, with each direction being considered a different line.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Yes
If yes, what co-benefit does it measure?	Improved health associated with active mobility, improved air quality, reduced uses private transport
Can the indicator be used to monitor impact pathways?	Yes
If yes, for what impact pathway?	Shift to more sustainable forms of mobility (public and non-motorised transport). Multimodal transport.
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Yes
Additional information	
Expected data source	Zaragoza City Council
Expected availability	Annual
Planned collection interval	Annual
References	
Results describing the indicator	Desirable trend of increased use of public transport

	2024	2023	2022	2021	2020	2019
Urban bus	94,347,214	87,147,956	73,782,652	65,577,947	54,360,893	94,163,210
Tram way	30,722,430	28,557,344	24,356,761	19,946,678	15,743,237	28,874,078
Public bike	637,713	942,316	1,064,937	1,055,615	900,729	1,588,065
Public VMP	1,715,911	1,150,378	386,093			
Peri-urban bus		4,136,341	3,681,327	3,081,478	2,463,205	3,795,686
Total	127,423,268	121,934,335	103,271,770	8,661,718	73.468.064	128,421,039

Other indicator systems using this indicator	

B-3.2: Indicator metadata	
Indicator name	Percentage of municipal buildings equipped with energy management systems
Indicator unit	
Definition	% (of public buildings)
Calculation method	The indicator counts the number of municipal buildings equipped with building energy management systems (BEMS). It takes into account public buildings defined as non-residential buildings (e.g. office buildings, schools, fire stations, etc.) owned by the city. BEMS are defined as 'integrated building automation and energy management systems, using IT or ICT, intelligent and interoperable digital communication technologies that promote a holistic approach to controls and provide adaptive operational optimisation'.
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	
If yes, what co-benefit does it measure?	
Can the indicator be used to monitor impact pathways?	
If yes, for what impact pathway?	
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	
Additional information	
Expected data source	Zaragoza City Council
Expected availability	
Planned collection interval	
References	
Results describing the indicator	Desired trend increase in the number of municipal buildings with this technology. 839 municipal facilities of which 176 have GHS: 21 %
Other indicator systems using this indicator	

<table>
<tr><th colspan="2">B-3.2: Indicator metadata</th></tr>
<tr><td>Indicator name</td><td>Average net income per household (per year)</td></tr>
<tr><td>Indicator unit</td><td>Euros, €</td></tr>
<tr><td>Definition</td><td>Average net income per household, in the context of the Atlas of Household Income Distribution, refers to the average income a household receives after subtracting taxes and social contributions from its gross income, in one year.</td></tr>
<tr><td>Calculation method</td><td>Average net income per household, according to the Atlas of Household Income Distribution, is the average income a household receives, after deducting taxes and social contributions.</td></tr>
<tr><td>Background</td><td></td></tr>
<tr><td>Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)</td><td>No</td></tr>
<tr><td>If yes, to which emission area is the co-benefits linked?</td><td></td></tr>
<tr><td>Does the indicator measure indirect impacts (i.e. co-benefits)?</td><td>Yes</td></tr>
<tr><td>If yes, what co-benefit does it measure?</td><td>Just transition</td></tr>
<tr><td>Can the indicator be used to monitor impact pathways?</td><td></td></tr>
<tr><td>If yes, for what impact pathway?</td><td></td></tr>
<tr><td>Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?</td><td></td></tr>
<tr><td>Additional information</td><td></td></tr>
<tr><td>Expected data source</td><td>Atlas of Household Income Distribution (ADRH)-(INE); Association for the Strategic Development of Zaragoza and its Environment (Ebrópolis).</td></tr>
<tr><td>Expected availability</td><td>Annual</td></tr>
<tr><td>Planned collection interval</td><td>Annual</td></tr>
<tr><td>References</td><td></td></tr>
<tr><td>Results describing the indicator</td><td>There has been an increase in value over the years.
<table>
<tr><th></th><th>2022</th><th>2021</th><th>2020</th><th>2019</th><th>2018</th></tr>
<tr><td>Net income Average Per household, €</td><td>37,213</td><td>35,503</td><td>34,753</td><td>34,648</td><td>33,448</td></tr>
</table>
It is also a higher value than that of the community and the province.
Also from Spain, although in this case the methodology is somewhat different.</td></tr>
<tr><td>Other indicator systems using this indicator</td><td>Urban Audit, Urban Agenda of Zaragoza</td></tr>
</table>

B-3.2: Indicator metadata	
Indicator name	Percentage of municipal waste recycling
Indicator unit	%
Definition	The indicator measures the share of recycled municipal waste in the
Calculation method	total municipal waste generation
Background	
Does the indicator measure direct impacts (i.e. reduction of greenhouse gas emissions?)	No
If yes, to which emission area is the co-benefits linked?	
Does the indicator measure indirect impacts (i.e. co-benefits)?	Waste sector
If yes, what co-benefit does it measure?	Yes
Can the indicator be used to monitor impact pathways?	Energy savings, reduction of pollution and emissions, reduction of waste to landfill.
If yes, for what impact pathway?	Yes
Is the indicator collected by the existing CDP/SCIS/Covenant of Mayors platforms?	Waste and circular economy
Additional information	
Expected data source	City of Zaragoza. **Directive (EU) 2018/851** of the European Parliament and of the Council of 30 May 2018, **Directive (EU) 2019/904** of the European Parliament and of the Council of 5 June 2019, **Law 7/2022** of 8 April 2022 on waste and contaminated soils for a circular economy. Integrated Waste Management Plan of Aragon, Prevention and Circular Economy 2024-2030 (GIRAPEC Plan) (pending approval)
Expected availability	Annual
Planned collection interval	Annual
References	
Results describing the indicator	
Other indicator systems using this indicator	

	2023	2022	2021	2020	2019
Percentage of municipal waste recycling, %	51.06	52.29	50.44	50.15	47.01

PART C - ACHIEVING CLIMATE NEUTRALITY IN 2030

This module aims to outline any enabling interventions – i.e. related to the organisational environment or governance models, or to social innovations – designed to support and implement the climate action portfolios described in module B-2, as well as to achieve the co-benefits described in the impact pathway (module B-1). These interventions also address the opportunities, gaps and barriers identified in Modules A-2 and A-3.

MODULE C-1

Innovative interventions in organization and governance

It consists of a summary table, indicating organizational and governance actions and describing their impact (C-1.1), and a section for more detailed descriptions and comments (C-1.2).

C.1.1: Organisational and governance interventions					
Name of the action	Description	Person and Entity/organ/responsible	Actors involved	Impact	Co-benefits
Political presentation Mission Zaragoza	Detailed explanation of the Climate and climate agreement Plan from Action	Address General of Funds European	Councillors of the Municipal Government Team and General Coordinator	Dissemination, knowledge and information	

Interdisciplinary meetings res Municipal technical services	Regular meetings, twice a year, with the various municipal services involved in the Zaragoza Mission.	Directorate-General for European Funds / Office for the Environment, Climate Action and Public Health	Municipal technical services	Connection to the project, knowledge of information, updating the status of driving projects	
University Chairs	Partnership agreements with various departments at the University of Zaragoza	Councillors, Municipal technical services,	Councillors, municipal technical services, institutional representatives and technical staff from the University of Zaragoza	The development of training activities, the generation of knowledge through scientific research, dissemination or technology transfer in a specific cultural, scientific or technical field	
Collaboration Centres of Research and Technology	Collaboration agreements	Councillors, Municipal technical services	Councillors, municipal technical services and research and technology centres	Generation of scientific knowledge, technological support and innovation for the climate agenda	
Public-private partnership	Accessions to the Zaragoza Climate Agreement	Institutional representatives of municipal government and municipal technical services	Companies, private sector entities of Zaragoza	Commitment to the Mission of climate-neutral cities, as an Ambassador or Climate Partner	

Public-private partnership	Public-private partnerships in European projects	Representatives from the local government and municipal technical services	Private sector companies and organisations	Collaboration between the local council and businesses to develop and co-design low-carbon technologies or solutions	
Civil Society Partnership	Governance mechanisms shared: Municipal Collective Intelligence Platforms, Climate Labs	Technical services municipal	Non-governmental organisations, associations, members of the public and municipal technical services	To create spaces for dialogue, learning and collective intelligence in order to generate knowledge and innovative solutions to the climate challenge through collaboration and the exchange of ideas.	
Dissemination, awareness and innovation	Presentations at forums, conferences and statutory consultative bodies	Office of the Environment, Climate Action and Public Health	Zaragoza society as a whole, institutions	Promotion, awareness-raising and information about the Zaragoza Mission.	

C-1.2: Description of organisational and governance interventions

The challenge of decarbonising the city of Zaragoza and its surrounding area requires an innovative approach that creates an inspiring ecosystem that promotes spaces for dialogue and knowledge sharing with Zaragoza society as a whole. The aim is to promote an innovative model of collaboration through cooperation and the exchange of ideas between key players, public administration, academia, businesses (economic sector) and individuals (civil society) in order to address complex environmental challenges from a comprehensive perspective and promote sustainable and inclusive development.

Managing climate change and promoting a 'sustainable, resilient and inclusive recovery' requires adequate cross-sectoral, multi-level and multi-stakeholder coordination.

This climate governance model seeks more effective solutions that are adapted to local realities by involving all sectors of society in a process of collaboration, innovation and learning. It ensures that environmental decisions are more informed, fair and legitimised by society as a whole, promotes the adoption of sustainable practices at the individual and collective levels, and generates cultural change.

The climate governance system proposed in this first iteration is based on the European quadruple helix innovation system and can be summarised as follows:

This model represents a dynamic and interconnected system, where each sphere contributes to and benefits from collaboration with the others. The bidirectional arrows symbolise constant communication and the flow of information and resources between them. A graphic conceptual map is included.

1. PUBLIC AREA: ADMINISTRATION

Local government facilitates political, legal and institutional coordination and incorporates into environmental policy the need to build local capacity to address climate change.

The governance system for climate neutrality is not limited temporarily to the design and approval of the Zaragoza Decarbonisation Strategy, but is conceived as an architecture with a vocation for continuity and permanence, which guarantees the monitoring, at all levels, of the implementation of municipal environmental policy, as well as the evaluation of strategies and plans and, where appropriate, the renewal of policies according to results.

As mentioned above, Zaragoza has a long environmental history and has numerous legal instruments that shape the framework and legal context of environmental and climate action

in response to the environmental commitments signed, and in particular the climate agenda, aligned with the objectives and policies emanating from the different levels of European, national and regional government.

Zaragoza is at the forefront of climate mitigation planning, as evidenced by its selection among the top 100 carbon-neutral cities by 2030. Likewise, the city is moving in the same direction in terms of adaptation, with the ratification of its commitment to the Covenant of Mayors for Climate and Energy and with the drafting of the Zaragoza Climate Change Adaptation Plan (PACCZ) with a 2030 horizon.

To promote environmental action and governance, Zaragoza has an administrative structure that responds to commitments and policies for climate change mitigation and adaptation, such as the creation of the Office for the Environment, Climate Action and Public Health.

In this sense, the climate governance model also requires coordination and participation at both the political and technical levels of the local administrative and political structure itself. The General Directorate of European Funds presented to the Councilors of the municipal government the decarbonization strategy and the path towards climate neutrality and on two occasions it has been presented to the General Coordinators of the different Areas of the City Council

On a technical level, the aim is to establish the **Climate Neutrality Committee** as a space for cross-cutting and proactive internal dialogue for sharing knowledge, lessons learned and proposals for incorporating the different strategic sectoral measures into the Zaragoza Climate Agreement and its Action Plan.

Annual meetings are held twice a year with each municipal department involved in the climate agenda. However, there are still numerous challenges and needs for more active, motivated and coordinated participation.

At this level of governance, the short-term challenge and opportunity is focused on capacity building for municipal officials.

In the quadruple helix model it is specified in:

1. **PUBLIC AREA: ADMINISTRATION**

1.1. Local government: Transversal Municipal Technical Team

Description: The core of the local administration, with multidisciplinary teams that ensure the

coordination of policies and projects across different departments.

Interconnections: It collaborates with all spheres to implement regulations, facilitate initiatives and provide public services.

1.2. Instrumental strategic sector (Zaragoza Housing, Ecocity, Ebropolis)

Description: Public or semi-public entities with specific functions in key areas (housing, environment, urban development), acting as strategic policy implementers.

Interconnections: It works closely with local government and the private sector in project implementation, and with the civil sphere for community implementation.

The barriers and challenges faced by local government itself in the administrative sphere of local government climate governance focus on the need to establish institutional partnerships with different levels of territorial government, especially with the regional government, seeking political, legal and administrative formulas that provide support for climate action from a comprehensive and coherent perspective. Internally, it is necessary to develop and train the capacities and skills of civil servants to motivate and reinforce their participation in a driving force that leads the municipal ecological transition in a cross-cutting and joint manner.

2.- PRIVATE AREA: COMPANY

The aim is to co-design and implement climate solutions, actions and policies, as well as to build capacity and seek solutions that enable conditions conducive to increasing the private sector's climate ambition, such as collaboration between governments and businesses to develop low-carbon technologies. The principles underpinning the European Clean Industry Pact, which positions and shapes industrial decarbonisation as an opportunity for economic growth for the private sector, must be considered and integrated into climate governance.

The integration of the private sphere into the climate governance model is implemented through:

- Expression of interest: Accession to the Zaragoza Climate Agreement: two forms of accession are designed, as

  - **Ambassador**, implies a voluntary commitment, a declaration of the different companies, associations and entities of Zaragoza in which they express their support and commitment to the objectives of climate neutrality and sustainability that the city has established, and in his capacity as Ambassador of the Zaragoza 2030 Climate Agreement, expresses his support and commitment to sustainability and with his participation in the ecological transition within the framework of the European Mission of Smart and Climate-Neutral Cities to 2030. Ambassadors commit to a series of actions that are based on the principles of collaboration, dissemination, inclusion and innovation.

- **Climate partner**: this entails adherence to the Zaragoza Climate Agreement with quantitative decarbonisation targets that companies voluntarily add to the city's overall mitigation efforts and to the climate neutrality objective, quantified and calculated within their own decarbonisation plans. This form of adherence requires a business engagement strategy that encourages and justifies the incorporation of the private sector into Zaragoza's decarbonisation pathway. Work is currently underway in this regard, including contact with different strategic private entities such as ZEPYME and CEOE, with which Zaragoza City Council has signed respective cooperation agreements. Nevertheless, the first step towards engaging the private sector has been achieved through the submission of a proposal to the European Data Space for Smart Communities – Call for Pilots (Round 3) with the project IPPCP: Intelligent Private-Public Neutral Carbon Platform (IPPCP). The IPPCP pilot project seeks to address inefficiencies in the management of climate, energy, environmental and pollution data in urban sectors. By establishing a strong data cooperation framework, it seeks to optimise data collection and sharing, making it easier for cities to monitor and quantify their progress towards climate neutrality. This initiative will strengthen collaboration between public and private actors, driving impact solutions and contributing to the broader objectives of the European Green Deal of achieving net-zero emissions and zero pollution. The objective is to develop and demonstrate a scalable and interoperable public-private digital platform, based on a governance model of Government as a Platform, for data cooperation in a collaborative ecosystem. It aims to improve zero pollution actions (as part of the Green Deal), in particular the development of emission inventories and the integration of climate action and energy efficiency into the business models and operations of urban organisations. The urban digital platform shall be designed taking advantage of the involvement of stakeholders.

Likewise, public–private collaboration models in certain environmental economic sectors facilitate the implementation of new technologies with economic returns, such as the deployment of energy communities or joint participation in European innovation projects with the private sector. One of the most significant examples is the Circular Biocarbon project, which acts as a flagship initiative within the decarbonisation pillar of the circular economy sector and the Zaragoza Zero Waste Strategy.

2. PRIVATE AREA: COMPANIES

2.1. Ambassadors

Description: Leading companies or business figures that actively promote governance and sustainability objectives, acting as role models and catalysts for change in the sector.

Interconnections: They influence other companies and collaborate with the administration and the educational sphere in awareness-raising and development initiatives.

2.2. Climate partners

Description: Companies committed to climate action that provide solutions, technologies and resources for climate change mitigation and adaptation.

Interconnections: They collaborate with the public sector on decarbonisation projects, with the education sector on research and development (R&D), and with civil society in the implementation of solutions at the community level.

3.ACADEMIC, TECHNOLOGICAL AND INNOVATION AREA

It generates knowledge, research and development of new technologies. Collaboration between academic and research institutions is sought to generate scientific knowledge on climate change.

The University of Zaragoza has a large university community located in the city of Zaragoza, with more than 30,000 people, which includes students, teaching and research staff, and technical staff to support management, administration and services. It is a generalist University, which has specialists in all branches of knowledge. Given its size and its capacity to generate and transfer knowledge to society, the University of Zaragoza has a significant impact on the city, both economically and socially, culturally and environmentally.

A specific collaboration will be established with the University of Zaragoza to promote the climate governance model of the city of Zaragoza, with the new team of the Vice-Rectorate of Infrastructure and Sustainability and the Observatory of Sustainability of the Institution within the framework of the European Mission.

The University of Zaragoza will have a scientific role as a generator of knowledge (from all its research and teaching centres) and functional (in its Zaragoza city campuses).

The scientific role of the University of Zaragoza will integrate its entire research and teaching structure for the achievement of the city's climate neutrality objectives through its research institutes and groups, centres and departments, as well as university research chairs. Those most clearly related to climate neutrality objectives are listed:

Research institutes comprising research groups related to climate neutrality objectives: University Institute for Environmental Science Research (IUCA), University Institute for Engineering Research of Aragon (I3A), University Institute for Mixed Agri-Food Research of

Aragon (IA2), University Institute for Mixed Energy and Resource Efficiency Research of Aragon (ENERGAIA), University Institute for Research in Employment, Digital Society, and Sustainability (IEDIS), Institute of Chemical Synthesis and Homogeneous Catalysis (ISQCH), Institute of Nanoscience and Materials of Aragon (INMA), University Institute of Mathematics and Applications (IUMA), and University Institute for Research in Biocomputation and Physics of Complex Systems (BIFI).

Chairs: It is worth noting the promotion by the municipal government of university research chairs, conceived as collaboration agreements signed with the University of Zaragoza. The Chairs are structures of collaboration of the University with other public or private entities for the development of training activities, generation of knowledge through scientific research, dissemination or technology transfer in a certain cultural, scientific or technical area and it is worth highlighting:

- Chair of Urban Naturalization (Date of creation 17/10/2024): It pursues, inter alia: Develop cooperation between the University of Zaragoza and the City Council of Zaragoza, carrying out work that provides an innovative vision, basically at a conceptual level, to publicize, understand and value green infrastructure in a broad sense, public cleaning and management of urban waste, and ecosystem services that provide quality of life, enjoyment and health to citizens.

- Chair of Municipal Energy Transition: Its main objective is to participate in the design of the Energy Promotion Plan of Zaragoza; carrying out feasibility studies and designing individual and collective self-consumption projects; and local energy communities; drafting of technical specifications for the tendering of the necessary installations and works; research on municipal energy transition initiatives; Advice to the City Council on the contracting of electricity and gas.

- Chair for Digital Transformation of the City of Zaragoza (Date of creation 10/12/2021): The main objective of the Chair is the design of a resilient Action Plan for the Networks and Systems Service (RYS) of the City of Zaragoza in the period 2022-2024. This Plan aims to adapt the service to act as one of the bases that help to prepare and achieve the modernization of the Local Public Administration and its adaptation to the second quarter of the 21st century in its response to the expectations and aspirations of citizens and companies.

- Chair Territory, Society and Geographical Visualization (Date of creation 07/12/2016): It aims to integrate physical reality and digital environments to create knowledge, offer quality sociodemographic indicators, reference infrastructures and analyse and

assess the accessibility of services for citizens. It continues to innovate to provide the City of Zaragoza with tools that facilitate disaggregated and georeferenced information, which allow knowledge that strengthens decision-making and participatory governance processes.

- Chair of Open Government and Democratic Innovation (Date of creation 04/05/2016): The Chair was signed on 6 September 2022, its activities continuing the previous Chair of Participation and Democratic Innovation. Its objectives are the development of lines of research of common interest on theoretical and legal foundations of open government, the legal design of participatory processes, diagnosis of participation, associationism, participatory budgets, and the use of information and communication technologies in participation and open government. It will also work on accompaniment in participatory processes, on advice for innovation and development in transparency and open government, and on the elaboration of regulations related to participation, transparency and the use of technologies in open government.

Campus of the University of Zaragoza located in the city of Zaragoza are part of its metabolism, and due to their size, they will be part of the solution to the challenge of climate neutrality, being able to function as a laboratory. In addition, sharing primary emission data and environmental impacts between institutions, as well as their calculation methods, may facilitate their integration.

Furthermore, a specific collaboration will be established with the University of Zaragoza to promote the climate governance model of the city of Zaragoza, together with the new team of the University's Vice-Rectorate for Infrastructure and Sustainability, within the framework of the European Mission.

On the other hand, collaboration agreements are being drafted with **RESEARCH AND TECHNOLOGY CENTRES:**

- Fundación CIRCE – Research Centre for Energy Resources and Consumption is a research centre founded in 1993 to provide innovative solutions that contribute to sustainable development. CIRCE's mission is to promote the improvement of energy efficiency and the deployment of renewable energies through the development of R&D&I activities and training actions that respond to the needs of the national and international productive sectors.

In 2021, a cooperation agreement was signed to carry out actions in the fields of energy and climate change that promote the sustainable urban development of the city of Zaragoza, with

the aim of achieving its climate neutrality targets by 2030.

- RESEARCH & INNOVATION TECNALIA FOUNDATION: Center for Research and Technological Development, a collaboration agreement is being prepared for the technological deployment of the Zaragoza Resiliente strategy.

In the model of quadruple propellers is specified in:

3. **ACADEMIC, TECHNOLOGICAL AND INNOVATION AREA**

3.1. University of Zaragoza

Description: The central academic institution, generating knowledge, research and talent.

3.1.1. Institutional collaboration through the Vice-Rectorate for Infrastructure and Sustainability and the Sustainability Observatory

Interconnections: Collaborate with government and the private sector, and support civil-sector initiatives.

3.1.2. Creation of a Joint Knowledge Laboratory

Description: Integration of the different fields of knowledge existing at the University of Zaragoza necessary to achieve the holistic approach necessary in achieving the objective of a climate-neutral city. The experience of the Research Institutes and their groups, the different existing Departments and Chairs will be incorporated.

Interconnections: They provide applied research and specialised training in all spheres.

3.1.3. Technology and Innovation Partners: CIRCE and TECNALIA

Description: Technology and applied research centres that develop innovative solutions and transfer knowledge to the market.

Interconnections: They collaborate with companies in the development of products and processes, and with management in the implementation of advanced technologies.

- CIVIL AREA: CITIZENSHIP, ENTITIES AND ASSOCIATIONS

The transformation of the economy towards decarbonisation is an unprecedented social milestone and a significant democratic challenge. The civil society sphere in climate governance, non-governmental organizations, local communities and citizens, bring their

needs, perspectives and experiences to co-create relevant and sustainable solutions.

Responding to this societal challenge requires a new innovative approach to collective engagement and co-leadership, based on collective climate intelligence to address the climate challenge through citizen participation and collective decision-making based on the group's ability to generate knowledge and innovative solutions on the climate challenge through collaboration and the exchange of ideas.

In recent years, new forms of citizen participation and involvement have emerged. In Zaragoza some of these initiatives that have used collective intelligence to encourage the participation of civil society and are new ways of collective dialogue in climate governance:

- The City Council of Zaragoza has created the Idea Zaragoza citizen participation platform, which aims to grow and develop the city, at the same time as the citizens who live and enjoy it. Through the creation of challenges launched by the City Council itself, citizens can express their opinion or contribute ideas that solve the needs of their fellow citizens. The Climate Change Adaptation Plan of Zaragoza or the Diagnosis of Energy Poverty are some of the milestones of the climate agenda of Zaragoza that have been enriched and improved through Idea Zaragoza.

- Citizen laboratories: Through the NET ZERO CITIES platform, and the CESF – Community Expert Support Facility – Zaragoza programme, it has obtained specialized technical support for the development of an external communication strategy and support for the improvement of internal communication activities between the different departments of the city for the correct implementation of the City Climate Contract.

The overall goal is to turn the Climate Mission into a shared civic journey. This will be achieved by empowering citizens and fostering joint leadership, while improving institutional communication to reinforce this collective effort and support the implementation of climate actions.

The strategy will focus on making the mission identifiable and viable for different target audiences, including municipal departments, private sector organizations and civil society. It will also lay the groundwork for a cohesive narrative that fosters cooperation and improves coordination between municipal departments, reinforcing the coherence of messages to the public and generating trust and a sense of shared responsibility among all stakeholders.

Likewise, the local government articulates and makes available to the city regulated participation mechanisms such as the Sectoral Council of Environment and its Commissions.

The Sectoral Council for the Environment is a participatory, consultative, informative and advisory body. Its purpose and objectives are to facilitate the participation of citizens and channel information from associations in municipal environmental matters.

In the session of April 3, 2024, in extraordinary call, the Zaragoza Climate Agreement was presented with the participation of all the social, institutional, educational and social actors of the city.

In the quadruple helix model it is specified in:

4. **CIVIL AREA: CITIZENSHIP, ENTITIES AND ASSOCIATIONS**

4.1. Climate Lab

Description: Space for citizen participation and experimentation to develop and test local solutions to climate change, often with a bottom-up approach.

Interconnections: It collects ideas and needs of citizens and collaborates with the administration and the educational sphere to validate and scale solutions.

4.2. Sectoral Environment Council

Description: Advisory body that brings together representatives of associations, NGOs and environmental experts, providing a collective voice and advice to the administration.

Interconnections: It advises the public sphere and facilitates citizen participation in environmental decision-making.

4.3. Social governance partner: ECODES

Description: Organization specialized in the promotion of sustainability and participatory governance, acting as a facilitator and connector between different actors.

Interconnections: It strengthens the capacity of civil society, articulates demands and proposals, and collaborates with all spheres to ensure inclusive and effective governance.

TRANSVERSAL ISSUES TO CLIMATE GOVERNANCE

Information, awareness and communication are essential elements that should transversally support and strengthen the climate governance system of Zaragoza.

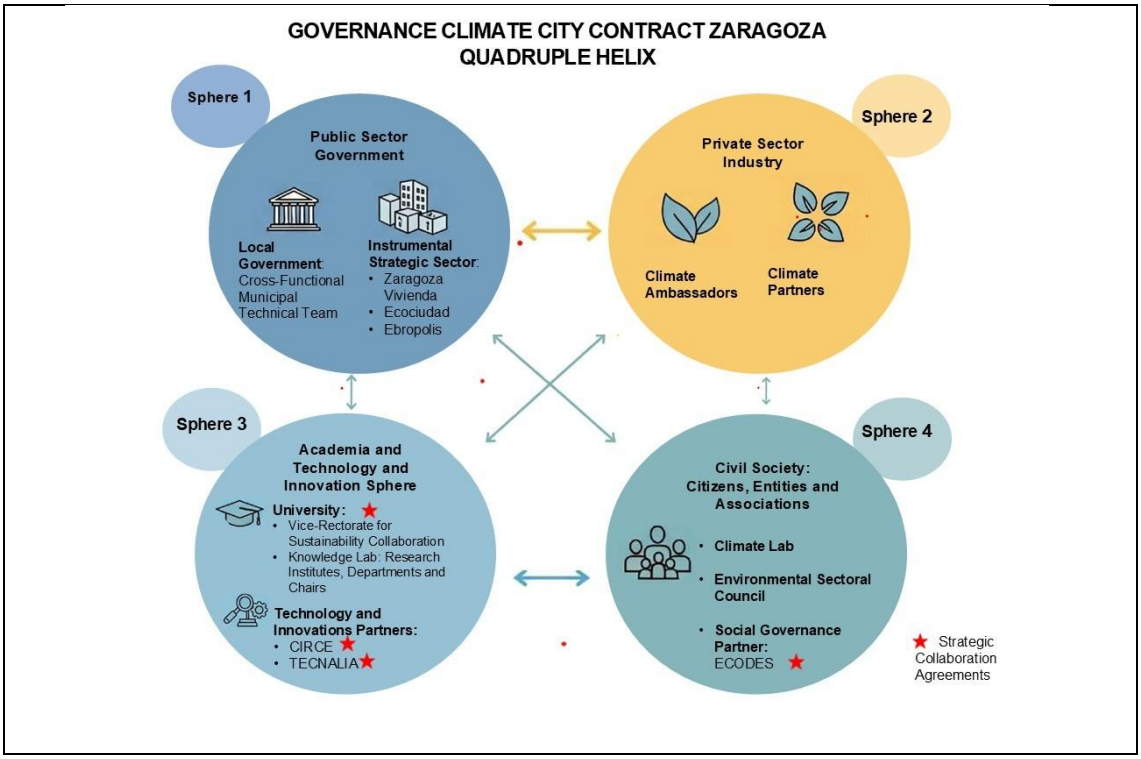
In relation to communication and information, in addition to web and social media resources,

the contracting of the Design, Planning and Creativity Service will be launched this year for the elaboration and implementation of a communication and dissemination strategy for climate, environment and public health actions of the City of Zaragoza.

The objective of this contract is to design and develop the framework that will enable the communication, dissemination and active involvement of citizens, as well as the different sectors of society, in the various plans, programmes, lines of action, commitments and initiatives undertaken by Zaragoza City Council in the fields of climate action, environment and public health within the scope of its competences. Specifically, Zaragoza City Council needs to inform citizens about its actions and activities and to communicate the programmes and initiatives it develops that are of social relevance and public interest, including the EU Mission for 100 Climate-Neutral and Smart Cities, of which Zaragoza is a member.

Likewise, the Zaragoza Mission has been presented in different forums, disseminating and informing about the decarbonization strategy of the city and the challenges assumed:

- Zaragoza at the forefront of climate neutrality in Europe 22 March 2024
- Sectoral Council for the Environment 3 April 2024
- Winter School Eurocities- Zaragoza 27 November 2024
- Aragon Climate Week- Zaragoza October 2024
- Meeting Gothenburg-Zaragoza- Zaragoza September 2024
- Technical Committee of the Sectoral Council for the Environment - Zaragoza September 2024.
- Ebrópolis General Assembly – Zaragoza June 2025
- Conference “Let’s Change the Rules to Protect the Planet” – University of Zaragoza, June 2025



General Flows and Connections:

- Bidirectional Arrows: Indicate that interaction is mutual and collaborative among all spheres.
- Centrality of Innovation: The system as a whole revolves around the generation and implementation of innovative solutions to governance and sustainability challenges.
- Participation and Transparency: The interconnection of spheres promotes the active participation of all actors and transparency in decision-making processes.

Partnerships with the technological and innovation partners (CIRCE and TECNALIA), as well as the governance partner (ECODES) and the academic partner (University of Zaragoza), will be strengthened through the establishment of strategic collaboration agreements, using the most appropriate administrative arrangements.

MODULE C-2

Social innovation and other actions

It consists of a summary table setting out actions on social and other innovation and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

C.2.1: Social and other innovation interventions					
Name of the action	Description	Person and Responsible entity/body	Actors involved	Impact	Co-benefits
#1 - Right to energy	Specific measures against the energy poverty, including one point from energy advice: Synthetic indicator from vulnerability and energy poverty plan. And the Energy Poverty Diagnosis and Plan	Services Social Community Zaragoza Housing and office from Environment, Action Climate and Public Health	First Attention Program, Zaragoza City Council, Citizenship	Advisory to Energy the citizenship through audits of habits, facilities and characteristics of the home	Increased public awareness and expert advice on energy saving measures
#2 - Zaragoza Activa (ZAC)	Promotion of an entrepreneurial, innovative, creative and collaborative ecosystem.	ZAC	City Hall, ZAC Companies	Support for initiatives generating economic activity, including some promoting climate neutrality	New initiatives by locals companies to climate neutrality and awareness-raising

#3 – Climate empowerment	Social tools: education, communication, awareness-raising, training, capacity-building and climate participation.	City Council,	Citizenship Technical Office of Participation and Transparency, Office from Environment, Action Climate and Public Health, Office from	Empowering citizens to participate in climate neutrality actions	Promoting a social culture of climate neutrality; improvement of the socio-environmental (climate) determinants of health

C-2.2: Description of social and other innovation actions

Right to energy and fight against energy poverty: The City of Zaragoza has addressed the fight against energy poverty through the First Attention Program of the Community Social Services, through specific measures such as information, guidance and personalized advice; group interventions aimed at rationalising costs; the issue of certificates to access the social voucher; advice on legislative changes; and the processing of emergency aid to cover electricity and gas debts. This approach is reinforced by the Energy Advisory Point (Zaragoza Vivienda), which offers audits on housing habits, facilities and characteristics, especially aimed at people at risk of energy poverty.

In the framework of continuous improvement, the City Council continues to work in this line. As an example of the actions carried out in recent years, from the Area of Environment and Mobility (specifically from the Office of Environment, Climate Action and Public Health), a detailed diagnosis was made on energy poverty in the city, which has had a consultative process to see the citizen perception of this problem in IDEA ZARAGOZA. The objective of this study is to accurately identify vulnerable households and design concrete and effective measures to mitigate the problem. In addition, an Energy Poverty Plan was carried out for the municipality, establishing a series of measures and monitoring indicators.

In addition, there is the "Oliver Brilla" initiative, promoted by the Ecology and Development Foundation (ECODES), in the neighbourhood of Oliver. This proposal seeks to promote energy education and culture from an inclusive and accessible perspective, reinforcing the municipal commitment to energy justice and citizen empowerment.

Zaragoza Active: Municipal service aimed at promoting an entrepreneurial, innovative, creative and collaborative ecosystem in the city, integrating environmental sustainability as a transversal axis. Through training programs, outreach events and collaboration spaces, Zaragoza Activa supports projects capable of generating economic activity, employment and a transformative social impact.

In recent years, Zaragoza Activa has continued to strengthen the city's entrepreneurial ecosystem. In 2025, the ninth edition of the program "Convert your idea into a business" was held, which culminated in the accompaniment of 18 entrepreneurship projects. In addition, the program "Flip&Do 2025" has been launched, which seeks to train new generations of young people to be critical thinkers, agents of change, communicators and leaders. This project promotes a more inclusive, sustainable and innovative city

Climate empowerment: education, awareness raising, training and participation: The transition towards climate neutrality requires education, training and active involvement of all people from different social and economic sectors (citizenship, businesses, organisations, governments and in particular decision-makers) and in various fields (energy savings and efficiency across all sectors, renewable energy, transport and sustainable mobility, healthy and sustainable food, responsible and critical consumption, circular economy, biodiversity and green infrastructure...) to reduce and adapt to the health, environmental, economic and social impacts of the climate crisis, and achieve a low-emission, decarbonised, climate-resilient and fair future.

Zaragoza, as a city committed to this objective, is preparing to use the tools established by the Climate Empowerment Action, such as education and communication on the climate crisis, training, public awareness, citizen participation, public access to information and cooperation between them in these elements.

In this sense, municipal plans and programs integrate actions such as:

- Incorporate clear and accessible information on the causes, consequences, solutions and possible actions and commitments to visualize and reduce energy consumption and greenhouse gas emissions in everyday actions, promoting energy savings and efficiency.
- Develop educational instruments, programs and actions for different social sectors and educational levels, as well as campaigns, programs and tools for communication, awareness and awareness.
- Implement training tools that train different professional sectors with practical skills and competences in climate neutrality.
- Enable participation in decision-making, through the available legal instruments,

involvement in the development of plans and programs, and practical and concrete actions in which citizens can be involved.

- Establish synergies and cooperation links with other climate-neutral cities for common learning and exchange of good practices and experiences.

In summary, the objective is to extend sustainable and low-carbon lifestyles to the entire population, supported by robust public policies that activate and accompany citizens' action towards climate neutrality. In this regard, this approach has been translated into concrete actions in recent years, such as the Environmental Education Programme 2024–2025, which includes activities for all levels of formal education, with a specific module dedicated to the environment and sustainability. Its aim is to educate and raise awareness within the educational community about key issues such as climate change, air quality, sustainable food, biodiversity and green infrastructure, promoting active environmental awareness from an early age.

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MODULE C-3

Financing of the portfolio of actions (Economic Case)

The following costs come from the Economic Model of Decarbonization of Cities (EMDC), developed within the framework of the Spanish Platform citiES2030 and adapted to the Zaragozan reality from the original Material Economics model. This model makes it possible to assess the economic viability of different decarbonisation strategies by considering the full life cycle of the measures and the associated costs and benefits (including renewable energy, energy efficiency and the transformation of the mobility system). This year, the model has been implemented in a web-based platform promoted by Net Zero Cities: Net Zero Planner.

C-3.1: : Summary of actions with associated costs

Name of action/action	Responsible person and entity	Start and end date	Scope of action	Impact			Estimated total cost (MEUR - NPV 2020 2030)
				GHG reduction (kton CO_2eq)	Operating cost savings (MEUR - NPV 2020-	co-benefits (MEUR - NPV 2020 2050)	
Reduction in the need for motorised passenger transport		2020-2030	Transport	96	€ 847	€ 235	€ -
Transition to public and non-motorised transport		2020-2030	Transport	41	€ (25)	€ 865	€111
Increase in shared vehicle use		2020-2030	Transport	15	€ 120	€ 42	€ -
Electrification of cars and motorcycle		2020-2040	Transport	18	€ (27)	€ 5	€ (46)
Electrification of buses.		2020-2030	Transport	21	€ (26)	€ 11	€ (37)
Optimization of logistics		2020-2030	Transport	59	€ 860	€ 121	€ -
Electrification of trucks		2020-2030	Transport	20	€ (221)	€ 29	€ (184)
Building renovation (envelope)		2020-2030	Buildings and heating	39	€ 559	€ 14	€ (638)

New energy efficient buildings		2020-2030	Buildings and heating	13	€ 185	€ 5	€ (20)
Decarbonisation of heating generation		2020-2030	Buildings and heating	704	€ 3,045	€ 154	€ 1,964
Efficient lighting and appliance		2020-2030	Buildings and heating	64	€ 975	€ 26	€ (397)
Decarbonisation of electricity generation		2020-2030	Electricity	300	€ 282	€170	€ (170)
Increased waste recycling		2020-2030	Waste	10	€ 3	€ -	€ -
Total				1,400	€ 6,577	€ 1,677	€ (3,568)

Perspectives and next steps

The iterative process of the City Climate Contract, although voluntary in nature, represents an opportunity to strengthen the territory's decarbonisation strategy by incorporating progress, improvements and lessons learned every two years. This revision analyses all the projects that the city has implemented in order to meet its objective of achieving climate neutrality by 2030. In particular, it includes projects awarded under national funding calls (such as those of the Recovery, Transformation and Resilience Plan), European calls (such as Horizon Europe or INTERREG), as well as private initiatives promoted by actors within the municipality's business ecosystem.

The City Climate Contract will be reviewed again in two years' time. During this period, work will continue on improving the Climate Action Plan and incorporating new initiatives and projects in order to progress towards achieving climate neutrality. The following sections outline the steps and lines of work that will guide the continuous improvement of the Action Plan as part of the CCC.

1. **Revision of the Economic Model:** Work will continue on revising and adjusting the economic model in order to broaden its scope and refine its analysis, so that it more accurately represents the level of ambition of the Climate Action Plan, as well as the related investment and capital needs.
2. **Review of the initiatives and projects included in the Action Plan:** A review will be carried out of the actions and initiatives currently included in the Action Plan and, where necessary, new actions will be defined to achieve the climate neutrality objectives.
3. **Encourage interdepartmental collaboration to advance the implementation of the Climate Action Plan:** It refers to the need to continue promoting collaboration between the different departments and work areas involved in the implementation of the Climate Action Plan, in order to improve its coordination and increase its effectiveness.
4. **Boosting the accession of new agents to the City's Climate Contract:** The

accession of new public and private actors to the JCC will be promoted. The accession of these new players has been raised to a double level. On the one hand, accession as ambassadors, with general commitments and, on the other hand, accession for SMEs with specific commitments. These actors will commit to actively support the objectives of climate neutrality, disseminate the principles of the agreement in their networks, collaborate with municipal initiatives and act as referents and speakers of the climate commitment of Zaragoza, both at local, national and international level**.** Attached to the document is both the document of accession as ambassador to the Zaragoza climate agreement, and the letter from the mayor addressed to the different agents to invite them to join as ambassadors to the city's climate agreement (see documentation in Annex III).

Monitoring the indicators of the City Climate Contract and its co-benefits: The indicators defined in the City's Climate Contract will be monitored, with the aim of measuring the degree of progress in the implementation of the plan and evaluating the co-benefits generated. This process will make it possible to assess the positive effects associated with climate actions.

Analysis of baseline indicators and degree of progress in achieving emission reduction targets: The objective is to assess the degree of progress in achieving the emission reduction targets set out in the CCC against the baseline indicators.

5. **New revision of the City's Climate Contracts:** We will work on a new review of the Climate Contract based on the results obtained through the monitoring and evaluation process, including the analysis of its effectiveness and the identification of improvement opportunities for the next update.

The indicative deadlines for carrying out these tasks are presented below. Set to month 1 (M1) July 2025. The deadlines indicated are indicative and may be amended and adapted as necessary.

T	Task	Start	Final
T1	Revision of the Economic Model	M1	M9
T2	Review of initiatives and projects included in the Action Plan	M1	M19
T3	Encourage interdepartmental collaboration to advance the implementation of the Climate Action Plan	M1	M19
T4	Promotion of the accession of new agents (ambassadors and SMEs) to the City Climate Contract	M1	M12
T5	Monitoring the indicators of the City Climate Contract and its co-benefits	M1	M19
T6	Analysis of baseline indicators and degree of progress in achieving emission reduction targets	M1	M19
T7	New revision of the City's Climate Contract	M13	M19
T8	Drafting of the third version of the Climate Agreement based on the results of the evaluation and monitoring process	M16	M24
2ND CA	3ª version of City Climate Contract	M1	M24

Annex II: Accession documents as ambassadors to the Zaragoza climate agreement

Letter from the Mayor

Dear friend,

I am writing to you as Mayor of Zaragoza to share an initiative that is both a source of pride and a historic opportunity for our city.
As you know, Zaragoza was selected by the European Commission as one of the 100 European cities to accelerate the transformation towards climate neutrality in 2030, within the framework of the European Mission of Smart and Climate Neutral Cities. This designation positions Zaragoza with a competitive advantage for attracting financing, investments and strategic alliances, decisively promoting collaboration between the public and private sectors.
The key instrument to achieve these objectives is the City Climate Agreement, which includes the commitments assumed by the City of Zaragoza and to which other entities, companies, organizations and administrations that share this collective purpose of building a greener, inclusive, safe, resilient and sustainable city can adhere.
In recognition of these commitments, the European Commission has recently awarded Zaragoza the "Mission Seal", ***a badge that consolidates our city as an*** *international reference in the fight against climate change and as a pole of attraction for sustainable investment and innovation.*

In this context, I am pleased to invite you to join the Zaragoza Climate Agreement as ***an Ambassador,*** *contributing from your field of activity and influence. We attach for this purpose an editable template of the accession document, which can be adapted to reflect the characteristics and priorities of your entity.*
After this important challenge that has been possible thanks to the shared commitment, the support received and the sustainable itinerary that many companies and organizations have been developing in our city, we want to count on you to continue moving forward together. Their experience, capacity for action and transformative will are essential to achieving this common goal.

I sincerely thank you for your involvement and encourage you to be an active part of this exciting project. Only with the collective effort will we be able to overcome barriers and make Zaragoza, by 2030, a smart and climate neutral city.

With all my thanks and commitment, Natalia Chueca
Mayor of Zaragoza

Accession document as ambassador to the Zaragoza 2030 climate agreement

DOCUMENTO DE ADHESIÓN COMO EMBAJADOR AL ACUERDO CLIMÁTICO DE ZARAGOZA 2030

La ciudad de Zaragoza ha sido una de las 112 ciudades seleccionadas por la Comisión Europea para formar parte de la Misión Ciudades Inteligentes y Climáticamente Neutras en 2030. Este reconocimiento no solo es un honor, sino también una llamada a la acción para convertirnos en referentes, inspirando y acelerando el cambio esencial hacia la descarbonización en otras ciudades.

La adopción de esta Misión por parte de Zaragoza representa una oportunidad única para mejorar la calidad de vida de nuestra comunidad, avanzar hacia la sostenibilidad, favorecer la transición ecológica, adaptarnos al cambio climático, atraer inversiones, promover la economía baja en carbono, crear empleo y fomentar la investigación e innovación. Todo ello, con el objetivo de posicionarnos estratégicamente para captar financiación e impulsar la colaboración entre los sectores público y privado.

La implementación de la Misión Europea de Ciudades "100 ciudades climáticamente neutras e inteligentes antes de 2030", supone el compromiso del Ayuntamiento de Zaragoza a impulsar la transformación de la ciudad hacia la neutralidad climática en 2030 a través de un Acuerdo Climático de Ciudad.

El Acuerdo Climático se configura como un proceso iterativo y como un documento vivo que estará sujeto a seguimiento, actualización y revisión. Así, pueden adherirse a él todos los actores, ya sean públicos o privados, instituciones, administraciones y cualesquiera entidades que quieran apoyar y contribuir a la consecución del objetivo de neutralidad climática en la ciudad de Zaragoza para el año 2030.

Logotipo Entidad

En este contexto, [Nombre Entidad], manifiesta su apoyo y compromiso con los objetivos de neutralidad climática y sostenibilidad que la ciudad ha establecido, y en su calidad de Embajador del Acuerdo Climático de Zaragoza 2030, manifiesta su apoyo y compromiso con la sostenibilidad y con su participación en la transición ecológica en el marco de la Misión Europea de Ciudades Inteligentes y Climáticamente Neutras al 2030.

Como embajador del Acuerdo Climático de Zaragoza 2030, [Nombre Entidad], se compromete a:

1. Promover y difundir los principios y objetivos del Acuerdo Climático de Zaragoza entre sus redes, stakeholders y comunidad, contribuyendo a la sensibilización y concienciación sobre la importancia de la acción climática.
2. Apoyar las iniciativas impulsadas por el Ayuntamiento de Zaragoza en el marco del Acuerdo Climático, colaborando en la difusión de proyectos, eventos y actividades que fomenten la transición hacia una ciudad climáticamente neutra.
3. Facilitar la conexión entre diferentes actores públicos, privados y sociales, fomentando la colaboración y el intercambio de buenas prácticas que contribuyan a alcanzar los objetivos de sostenibilidad y neutralidad climática.
4. Actuar como altavoz de las acciones y logros de Zaragoza en su camino hacia la neutralidad climática, tanto a nivel local como nacional e internacional, destacando el papel de la ciudad como referente en innovación y sostenibilidad.
5. Participar en espacios de diálogo y colaboración promovidos por el Ayuntamiento de Zaragoza, contribuyendo con su experiencia y conocimiento al desarrollo de estrategias y soluciones innovadoras para enfrentar los retos climáticos.

Logotipo Entidad

PRINCIPIOS DEL COMPROMISO COMO EMBAJADOR

El compromiso como Embajador del Acuerdo Climático de Zaragoza se basa en los siguientes principios:

- **Colaboración:** Trabajar de manera conjunta con el Ayuntamiento de Zaragoza y otros actores para impulsar la transición hacia una ciudad climáticamente neutra.
- **Difusión:** Actuar como altavoz de los objetivos y logros del Acuerdo Climático, promoviendo su visibilidad y reconocimiento.
- **Innovación:** Fomentar la adopción de soluciones innovadoras y sostenibles que contribuyan a la descarbonización y la resiliencia climática.
- **Inclusión:** Promover la participación de todos los sectores de la sociedad en la acción climática, asegurando que nadie quede atrás en esta transición.

Logotipo Entidad

FIRMA Y COMPROMISO

En reconocimiento a la importancia de la acción climática y al papel clave que desempeña Zaragoza como ciudad pionera en la transición hacia la neutralidad climática, [Nombre Entidad], se adhiere como Embajador del Acuerdo Climático de Zaragoza 2030, comprometiéndose a promover y apoyar sus objetivos en el ámbito de su influencia.

De acuerdo con la normativa vigente en materia de Protección de Datos de Carácter Personal (Reglamento europeo UE) 2016/679 de 27 de abril y Ley Orgánica 3/2018, de 5 de diciembre), se le informa de que los datos personales que ha proporcionado en esta comunicación, así como aquellos que proporcione en un futuro, serán tratados con la finalidad de gestionar los datos de contacto necesarios para el cumplimiento de los objetivos del Acuerdo Climático de la Ciudad de Zaragoza, siendo éste el interés legítimo para el tratamiento. Los datos se conservarán mientras no solicite su supresión y no se cederán a terceros salvo que exista una obligación legal. Le asisten los derechos de acceso, rectificación, oposición, portabilidad, supresión y limitación del tratamiento, sobre sus datos personales, pudiendo ejercerlos mediante escrito dirigido a la siguiente dirección: Delegado de Protección de Datos, Ayuntamiento de Zaragoza. Casa Consistorial. Plaza del Pilar 18, 50071 Zaragoza. dpd@zaragoza.es

Finalmente, con la firma de este documento [Nombre Entidad] acepta el tratamiento de los datos o enlaces de su sitio web relativos a sus actuaciones o planes de descarbonización o sostenibilidad para que puedan publicarse en el sitio web de la Misión de Ciudades del Ayuntamiento de Zaragoza. Además, a fin de agilizar las comunicaciones, [Nombre Entidad] indicará la persona de contacto para esta iniciativa.

Firmado en Zaragoza, a [día] de [mes] de [año].

Por el Ayuntamiento de Zaragoza:	Por [Nombre Entidad]:
[Representante Ayuntamiento]	[Representante entidad]
[Cargo]	[Cargo]
Firma del representante:	Firma del representante: