

Barcelona Climate City Contract



Barcelona City's Commitment to Climate Neutrality

A solid and recognized track record in the fight against climate change

Barcelona has a long history in the field of climate change mitigation. Regarding mitigation, its origins date back to the Solar Thermal Ordinance and the Energy Improvement Plan of 2002. The most significant milestones were the Barcelona Energy, Climate Change and Air Quality Plan 2011-2020 and the **Barcelona Environmental Ordinance** (2011), which included the mitigation of climate change and adaptation to its effects as municipal policy objectives, regulating various topics, including solar generation, among others.

In 2015, during the COP21 in Paris, the City Council presented the **Barcelona Climate Commitment** (BCC), promoted by over a thousand companies, civic entities, schools, and institutions associated with the Barcelona+ Sustainable network, signatories of the Citizen Commitment for Sustainability 2012-2022. This declaration reaffirmed the municipal commitments made (Covenant of Mayors on Energy and Adaptation) and outlined Barcelona's roadmap. Three years later, the Municipal Council Plenary approved the [Climate Plan 2018-2030](#), co-produced by hundreds of city organizations, which reinforced existing climate measures and incorporated many others. The Plan received the Covenant of Mayors award for the best initiative from a major city.

In 2019, the **Climate Emergency Board** was established, with representatives from over two hundred organizations participating in its working groups. This process led to the [Climate Emergency Declaration](#) (January 2020), which mandated increasing ambition, specifying, accelerating, and strengthening actions already outlined in the Climate Plan, adding new ones, and urging other competent authorities to address the climate emergency. Seven model changes were identified (urban planning, mobility and infrastructure, energy, economy, consumption and waste, food, culture, and education), along with the eighteen action lines of the Climate Plan, shaping the [2030 Climate Emergency Action Plan](#) (CEAP), published in November 2021.

Furthermore, **Barcelona has been an active and even pioneering participant in various climate cooperation initiatives and city networks**. In November 2021, with the Mayor of Barcelona serving as the European Vice-President of the global Steering Committee of the C40 network, the city joined the "[Cities Race to Zero](#)," a commitment to reduce global carbon emissions by 50% by 2030 and acquire only zero-emission buses from 2025 onwards. Barcelona also adhered to the "C40 - Fossil Fuel Free Streets" commitment to create a fossil fuel-free zone in the city.

Faced with the climate challenge and other complex urban issues, **Barcelona has distinguished itself by its commitment to seeking solutions through scientific knowledge and technological and social innovations, in collaboration with its citizens and multiple stakeholders**. Its policies to promote and guide the "smart city" model, with a focus on generating public value, are widely recognized. The Smart City World

Congress in Barcelona, probably the world's leading event on this topic, is a result of this commitment.

In this context, we view the **European Mission "100 Smart and Climate-Neutral Cities by 2030"** as an innovative public policy instrument that **offers Barcelona the opportunity to increase its level of commitment and enhance its climate action**, while also serving as a catalyst and example for other cities and regions in the decarbonisation effort.

2030 Goal: Achieving Climate Neutrality

Law 7/2021, of May 20, on climate change and energy transition, includes among its minimum objectives for 2030 a reduction of emissions for the entire Spanish economy by at least 23% compared to the year 1990. Likewise, Catalonia's Climate Change Law 17/2017 establishes that every five years, the Government of Catalonia must present to the Catalan Parliament a proposal for greenhouse gas emission reduction objectives, taking into account the reduction goals set by the European Union and the burden-sharing among member states. Catalonia's current objective is to reduce emissions by 51% compared to those of 2005 (27% compared to 1990).

At the local level, commitments to reduce emissions have been encouraged through cooperation initiatives among cities (such as the [Local Covenant of Mayors on Climate and Energy](#)), often leading in terms of time and ambition compared to state actions. In the specific case of the city of Barcelona, in November 2015, the Barcelona Climate Commitment set a goal for the city to reduce 40% of its per capita GHG emissions by 2030 compared to 2005. In 2021, following the agreements made in the Climate Emergency Declaration, Barcelona committed in the 2030 Climate Emergency Action Plan (CEAP) to reduce greenhouse gas emissions by 50% by 2030 compared to 1992¹ and to achieve climate neutrality by 2050.

Barcelona's participation in the European Mission 100 Smart and Climate-Neutral Cities by 2030 in 2023 **requires an upward adjustment of mitigation objectives, providing greater intensity to policies and greater speed to energy and climate transitions**. Thus, the Barcelona City Council commits to working with the city's administrations, the business community, and social stakeholders, using all available means **to achieve the city's neutrality in greenhouse gas emissions (Scope 1 and 2) by 2030**. The intention is **to achieve an 80% reduction in these emissions compared to what would be expected in a continuity scenario**, without climate policies (Business as Usual, BAU) in 2030 (3.87 million MT of CO₂ equivalent), which differs very little of those registered in 2019 (3.82 million). To make such an ambitious goal achievable, **we must ensure that it is understood and embraced by citizens** and finds support and cooperation from the European, Spanish, and Catalan governments.

Barcelona's commitment focuses on emissions generated in key sectors for the city's functioning, which are also major sources of GHG emissions:

¹ Despite European and state legislation referring to reductions compared to the year 1990, in Barcelona, year 1992 has been chosen as reference because it is the first year for which a complete emissions inventory is available.

To achieve a drastic reduction in emissions, **transformation levers** will be pushed to the maximum in all of these sectors, always acting with climate justice criteria.

For the Mission purposes, **emissions generated by clearly supramunicipal infrastructure will be excluded from the calculation**, because they are subject to specific regulations and must comply with European, national, and regional emission reduction standards. Specifically, this refers to the Port of Barcelona and the Josep Tarradellas International Airport, located in the municipality of El Prat de Llobregat. However, the Barcelona City Council commits, within the framework of the Mission, to promote the electrification of these sectors and the reduction of their emissions.

Regarding emissions generated by electricity production, **it is assumed that, in accordance with the commitments of the Spanish and Catalan governments, Barcelona will have a predominantly renewable energy mix by 2030** (with a potential contribution from the city of Barcelona of around 1,080 MWp). In this scenario, emissions generation will significantly decrease. The incorporation of renewable energies must continue to grow rapidly in the 2030-2040 decade, in large part to compensate for the gradual closure of nuclear power plants.

Residual emissions expected for 2030 **will be offset**, on one hand, **by increasing the city's green infrastructure** ([Nature Plan2030](#)). On the other hand, **through a significant reduction in level 3 emissions embedded in construction and consumer products**. To achieve this, Municipal policies will be developed in the areas of food ([Healthy and Sustainable Food Strategy 2030](#)), waste prevention and reduction ([Zero Waste Plan](#)), and building construction and renovation. The widespread use of sustainable materials like sustainable sourced wood in construction activities will also increase the city's built environment's carbon sequestration capacity. Together, these measures form a comprehensive circular economy strategy that will intensify from 2024 onward.

Priorities and strategic interventions to advance towards climate neutrality

Reaching the Mission's objectives will require **a genuine systemic change, capable of combining disruptive innovations in various sectors with a significant and structural reduction in energy demand and consumption**. The strategy will be structured around the five sectors we have identified as crucial for Barcelona's functioning and decarbonisation.

Transportation Sector

- **Expand public transportation infrastructure and services**, improving the reliability, competitiveness, and capacity of the basic and proximity bus network, collaborating with the Government of Catalonia to increase interurban bus services and create bus lanes on access roads to the city, completing the tram network, enhancing the metro system, improving surface public transportation interchange areas, intermodal stations, and regional and metropolitan bus terminals and promoting in front of the competent administration the necessary investments in suburban and regional rail transportation to achieve a significant improvement in regional rail public

transportation quality.

- **Transform the urban fabric with sustainable mobility criteria**, improving accessibility and comfort for pedestrians (wider sidewalks, vertical mobility - escalators and elevators-, pedestrian priority streets), and provide safe and high-quality cycling infrastructure, as well as park & ride areas, in collaboration with other authorities.
- **Change the rules of the mobility game** through measures such as low-emission zones, the prioritization of road networks, the extension of regulated parking throughout the city for all motorized vehicles, the introduction of fees on the goods distribution activity of large online sales platforms, and the consideration of complementary measures like congestion pricing.
- **Upgrade public transportation vehicle fleets** with low-carbon technologies, moving towards zero-emission vehicles: municipal vehicle fleets (including waste collection vehicles), buses and coaches, taxis.
- **Promote electric vehicles** (cars, vans, trucks, motorcycles, bicycles, machinery, etc.) in the private sector through the expansion of charging infrastructure and tax incentives for acquisition, charging, and parking.
- **Implement the 2030 Urban Freight Distribution Strategy (UFD)**, facilitating the creation of off-street distribution and collection spaces (pickup points and urban freight distribution centres), promoting the greening of UFD fleets (including cycle logistics), and applying a fee on the distribution activity of major e-commerce platforms.
- Encourage the **reduction of forced work-related mobility** through sustainable mobility strategies and plans for organizations and businesses that normalize practices such as telecommuting and teleconferencing.

Building Sector

- Advance in the knowledge of **new construction systems and solutions to enhance heat protection and passive heating and cooling** of buildings, as well as the cost-benefit balance (economic, social, and environmental) of different construction and renovation options. This includes, among other things, energy monitoring of residential buildings, spaces dedicated to the tertiary sector (commerce, hotels, etc.), and public facilities.
- Promote **changes in the sector's rules** by introducing new technical specifications regarding thermal comfort standards in residential buildings, a regulatory framework for heating/cooling in the tertiary sector, and an ordinance to encourage productive roofs in new construction, extensive renovation, and changes in building use.
- Foster through communication, information and training, the necessary **mindset change among all stakeholders** (developers, builders, technicians, users, etc.) in both the residential and tertiary sectors **regarding design, construction, usage, maintenance, and renovation of buildings**. This involves promoting a positive attitude towards new building methods, materials, and

decarbonisation-supportive technologies, as well as a culture of energy savings and maintenance. In this regard, enhance energy advisory points, turning them into comprehensive climate advisory points, and encourage property owners' organization, with the support of property managers, to overcome the collective action dilemma in horizontally-owned buildings.

- **Increase incentives for building renovation** by private entities through reducing and simplifying associated procedures, mechanisms to facilitate private project financing, and an appropriate offering of subsidies and tax incentives, always incorporating climate justice criteria.
- **Promote innovation** through project competitions and challenges focused on finding efficient construction solutions specifically adapted to the Mediterranean climate.
- Encourage the **replacement of heating** and hot water systems that use combustion systems with equipment operating on renewable energies (solar thermal, geothermal) or highly efficient electric equipment (heat pumps and aérothermal systems). In this regard, support regulatory and market changes that accelerate the transition and prevent the commercialization and installation of new heating and hot water systems that rely on combustion mechanisms.
- Encourage, through incentives, communication, and information, the **replacement of household appliances and lighting elements** with high energy efficiency models.

Energy Sector

- Increase **public infrastructure for energy generation and efficient energy use**, accelerating the implementation of renewable generation in municipal buildings (educational, cultural, sports facilities, etc.) and in public spaces (through pergolas as well as pavements and road infrastructure); creating green roofs and facades on municipal buildings and promoting the development of productive roofs (with vegetation, solar panels, cisterns, and/or reflective surfaces) through agreements with the private sector; developing and consolidating existing district heating and cooling networks and promoting new ones.
- **Enhance incentives** for private entities **to install renewable energy sources**, through specific regulations (mentioned in the previous paragraph), streamlining associated procedures, mechanisms to attract private financing for such projects, and a suitable offering of subsidies and tax incentives.
- Encourage the **establishment of energy communities** that include not only residential buildings but also tertiary and industrial facilities and spaces.

Waste Sector

- Promote **locally sourced products**, second-hand trade, exchange markets, bulk distribution, and the consumption of products and supplies derived from **waste**

valorization. Using for this purpose spaces such as repair workshops, libraries of things, and specific events.

- **Implement environmental measures** at festivals, fairs, conferences, and other **public events**, making the use of reusable cups and tableware mandatory.
- Deploy **individualized collection systems for household and commercial waste** throughout the city and mechanisms that incentivize participation in selective waste collection.
- Enact **regulatory changes to enable the implementation of new extended producer responsibility (EPR)** systems and promote the establishment of deposit, return, and refund (DRR) systems.
- Reach **voluntary agreements with the private sector to establish best practices in reducing packaging**, single-use plastics, and more. Provide guidance to companies to facilitate the planning and implementation of these measures.
- **Optimize transportation routes** to reduce travel and emissions generated in waste collection

Green infrastructure and water Sectors

- **Significantly increase the city's green space**, applying the criteria of the Green and Biodiversity Charter in green area and urban tree projects, prioritizing areas with the most deficits. Promote urban green corridors, especially the Ciutadella-Collserola corridor, create ephemeral or seasonal gardens (ten per year, one per district), restore the Rec Comtal (irrigation canal), and beyond the municipal boundaries, re-naturalize the riverbeds of the Llobregat and Besòs rivers.
- **Expand green infrastructure in buildings** encouraging the incorporation of plants on roofs, facades, and interior spaces of all types of buildings, both private and public, to contribute to their energy efficiency.
- Promote **tree and forest management with a climate change perspective**. Prioritize tree species based on their resilience to extreme climatic conditions and their capacity to provide ecosystem services, including carbon capture. Furthermore, prevention and firefighting services will focus on protecting the most vulnerable areas in mountain neighbourhoods.
- Ensure that urban planning legislation and supra-municipal planning instruments, such as the Metropolitan Urban Planning Master Plan and the Collserola Natural Park Plan, **regulate and manage the territory with a climate change perspective**, promoting the creation of green corridors and reserved space for groundwater infiltration, the protection of areas at risk from climate events, and the metropolitan-scale agricultural uses.
- Generate **knowledge and innovations applied to water management** in a context of structural scarcity to improve efficiency and create alternative supply systems (reclaimed water, rainwater harvesting, use of greywater,

desalination, etc.), prioritizing those with low impact in terms of energy expenditure and emissions generation

Cobenefits: decarbonizing the city to gain quality of life

The direct economic benefits of the Mission will be highly relevant in the medium and long term, but **the complete return on investment, leading to a clearly positive financial balance, only becomes possible when considering the substantial co-benefits, both, social, economic, and environmental, associated with decarbonisation.**

Co-benefits are evident in all sectors: in transportation (reduced air pollution from NOx and particles, resulting in decreased respiratory ailments and deaths from pollution; less noise, leading to reduced psycho-emotional and health-related issues and an improved quality of life; reduced congestion, allowing for vital time savings; improved physical fitness and overall health due to increased active transportation), **in the building sector** (increased comfort for occupants of renovated buildings; reduced health problems resulting from poor energy conditions in homes -mold due to humidity, colds and pneumonia in winter, heat-related discomfort and poor sleep due to high temperatures in summer; reduced energy poverty; decreased fire risk from the use of braziers and stoves in economically disadvantaged homes; generation of local jobs in building rehabilitation), **in the energy sector** (reduced dependence on imported fossil fuels and increased energy sovereignty; decentralization and democratization of energy infrastructure, with greater consumer participation; creation of direct local jobs in the installation and maintenance of photovoltaic systems and other renewable energy sources; promotion of innovation through the development and installation of new renewable energy sources such as marine and small-scale wind energy), **and in the waste management sector** (resource and energy savings through the extension of product lifecycles and material recovery through recycling; reduced requirements associated with waste management -transportation, space occupation, treatment energy, and incineration emissions-; creation of local jobs related to the circular economy).

Other co-benefits are associated with the transformation of the urban model. The expansion of public spaces available for social interaction, play, or contemplation also improves social cohesion and quality of life. The incorporation of more vegetation into the city also enhances biodiversity and air quality, in addition to reducing the urban heat island effect. In summary, **the expected co-benefits will contribute to creating a much healthier urban environment with new economic opportunities and a higher quality of life, as well as playing an essential role in adapting the city to climate change and achieving a just energy transition.**

Principles of the climate neutrality strategy

Barcelona's strategy is based on 12 principles, of which four are goal guiding, while the remaining eight point to the methodological approaches and working methods that will be used to achieve the goals of the Climate City Contract of Barcelona (CCCB).

Substantive Principles	Operational Principles
1. Comprehensive conception of sustainable development: environmental, social, and economic.	5. Cross-cutting design and management
2. Comprehensive approach to combating climate change: mitigation and adaptation; Scope 1, 2, and 3 emissions.	6. Proximity
3. Local and global climate justice.	7. Knowledge and innovation
4. Democratic planning: transparency and participation	8. Communication and education for cultural change
	9. Proactive and exemplary municipal action
	10. Metropolitan focus and multi-level cooperation
	11. Cooperation between cities and localist advocacy
	12. Accountability and evaluation

Comprehensive Approach to Sustainable Development

The CCCB is approached with an integrated perspective on sustainable development, in line with the United Nations' 2030 Agenda. Therefore, social and economic factors will be carefully considered when designing decarbonisation actions and assessing their impacts. In the social dimension, the priority is to ensure the health and well-being of the population, with special consideration for the most vulnerable individuals and the preservation of social cohesion. Critical objectives include guaranteeing the supply of water and energy and ensuring access to basic services and infrastructure. Regarding the economy, the repercussions on various sectors of activity will be taken into account to implement, when necessary, actions that reduce potential damage and facilitate the adaptation to change. Moreover, a proactive approach will be adopted to identify and harness all economic opportunities arising from decarbonisation. In this context, training will also be strengthened in sectors such as energy retrofitting, installation and maintenance of solar panels, sustainable food, or electric mobility. Barcelona already has a [Roadmap for the 2030 sustainability economy](#) that includes all these aspects. It commits to accompanying companies in the transformation of their business models, through the application of innovative solutions and the training and development of new professional skills and profiles.

Comprehensive Approach to Climate Change

Policies to mitigate global warming cannot disregard the need for adaptation to climate change, which is inexorable and, to a large extent, already present in the city. For this reason, the CCCB prioritizes approaches and measures that allow simultaneous and synergistic progress in both mitigating climate change and adapting to it. This approach promotes the well-being of the population during the climate transition and

better balances current needs with those of future generations. Nature-based solutions, such as increasing green spaces, are particularly useful in this regard. Additionally, the CCCB expands its focus to cover, at least in part, Scope 3 emissions (those that are generated outside the city to produce products consumed or used within the city). This is because a city that is emissions-neutral for Scope 1 and 2 but has high Scope 3 emissions is not sustainable on a global scale.

Local and Global Climate Justice

The Mission is a commitment to intergenerational climate justice. The CCCB also seeks a socially equitable distribution of the costs and benefits, in the short, medium, and long term, generated by the decarbonisation process. The goal is to ensure that the shift to more sustainable practices for the planet does not come at the expense of the opportunities and quality of life of certain individuals and social groups. This involves eliminating energy poverty in households, thus ensuring that no one lives exposed to temperatures that are incompatible with health. Furthermore, the technological and social innovations being adopted, such as electric mobility or renewable energy self-consumption, must also be accessible to vulnerable households. Applied globally, the principle of climate justice entails a commitment that climate neutrality will not be achieved through the export of emissions, as well as the obligation to cooperate with cities in the Global South, seeking a model of fair and sustainable development.

Democratic Planning: Transparency and Participation

The CCCB must ensure access to climate information for the entire population, including information about the impacts of climate change (such as pollution episodes, extreme heat, droughts, or torrential rains) and information related to mitigation and adaptation policies (cost, outcomes, impacts). It will be essential to regularly update and report on the progress of greenhouse gas emissions. All relevant information will be published on the corresponding section of the [municipal website](#), as well as in the [statistics](#) and [open data](#) sections.

The CCCB also embraces a participatory approach, aiming to engage and hold all sectors of the city co-responsible. To develop this approach, the extensive participation toolkit already available will be used, and collaborative decarbonisation projects (mini-missions) will be worked on. The [Citizen Council for Sustainability](#) will play a key role as a permanent space for coordination and collective learning, supplemented by other participatory mechanisms and processes, such as participatory budgets or climate assemblies. [The digital platform Decidim](#) enables the articulation of participatory processes at all levels, offering a versatile space for participation by associations and individual citizens, while also fostering a productive hybridization between online and in-person participation.

Furthermore, autonomous citizen action will be supported, expressed through the creation of energy communities or other mechanisms that can empower individuals in the climate transition. In this vein, the City Council will consolidate its policy of providing financial assistance to climate projects initiated by civil society, favouring collaboration between organizations and alignment with the CCCB agreements. To fully harness this potential, clear, accessible, and up-to-date information will be provided about grant programs and, in general, about all proposals requiring active

participation from the private sector and/or the associative sector. Municipal communication platforms will be used to showcase the commitments, actions, and best practices of various stakeholders.

Cross-Cutting Design and Management

The City Council will have a dedicated team to drive and implement the CCCB, and internal coordination mechanisms will be established to ensure the communication of advances and the follow-up of binding sectorial strategic plans. To achieve this, it is essential to establish a joined-up coordination and monitoring committee composed of representatives from all municipal departments and from all entities within the so-called Municipal Group (the Council plus its autonomous bodies and the municipal owned companies) whose participation is deemed relevant.

Simultaneously, an internal training plan will be developed, with specific training activities for positions directly involved in climate action, as well as informative and awareness sessions designed for the entire municipal workforce. Systematizing the use of climate information among municipal technicians is crucial, enabling the tools that allow effective sharing of new knowledge and equipping individuals to use it (through necessary training, such as in GIS, for example). Another focus area will be the impacts of climate change on the continuity of essential city services and infrastructure.

Through the CEAP and the reinforced commitments of the CCCB, the City Council will undertake a robust and sustained long-term action, reinforcing its commitment to decarbonisation and significantly contributing to accelerating the demand for low or zero-carbon technologies, thus promoting the local productive sector dedicated to retrofitting, electrification, and renewable energy installation.

Proximity

Consistent with the principle of participation, the CCCB will promote a proximity-focused approach to climate action. To help operationalize this principle, each district will have a dedicated technician and municipal equipment as a reference point for sustainability and climate change.

The contribution of each district and neighbourhood to greenhouse gas emissions generation will be assessed, and how climate change specifically affects them will be analysed. The participation of the local social fabric will be strengthened through neighbourhood councils and other mechanisms in defining urban, green, and mobility proposals to mitigate the effects of climate change. The creation of citizen networks and neighbourhood-scale climate action groups will also be encouraged through the instruments of the Neighbourhoods Plan and the Nature Plan. Special efforts will be made to ensure the participation of vulnerable individuals in these spaces and processes of participation.

Knowledge and Innovation

The accelerated transition to a climate-neutral economic and social model will require systematic and continuous improvements in the operation of the administration and in how urban challenges are addressed. Therefore, the CCCB will work from a public

policy perspective that is open to experimentation and innovation. Barcelona's scientific and technological ecosystem has the potential to meet the needs of Barcelona's climate transition and even generate cutting-edge European and global knowledge on the subject.

The [Barcelona Science Plan](#) and other innovation promotion programs will be used to increase basic and applied research on climate change and climate policies. Participation in Horizon program projects, such as RESCCUE (on how climate change will affect Barcelona), LOCALISED (on the generation of decarbonisation models and scenarios adapted to cities), and SUN4ALL (on expanding local renewable energy generation in vulnerable environments), also plays an important role in this area.

Communication and Education for Cultural Change

The CCCB will promote an ambitious and innovative communication strategy in line with the consideration of climate neutrality as a city objective. In this regard, the Energy and Climate Change Interpretation Centre at the city level will be strengthened, along with information and discussions on climate emergency and future models in cultural programming, as well as the inclusion of climate themes in major city events and neighbourhood festivals. Existing programs that support schools, organizations, and businesses as spaces for awareness and climate action will also be enhanced.

All of these actions are part of the [Plan Let's Change for the Climate](#) (strategy for the culture of sustainability), approved by the Government Commission on February 2, 2023. This plan aims to promote changes in the prevailing culture and help develop and disseminate a new culture of sustainability that intensifies climate action in the city.

In this context, mechanisms such as nudges will also be studied and applied. Nudges involve making small changes in the design of incentives that encourage citizens to act in a certain way without prohibiting any options, through correcting cognitive biases, and recognizing the influence of the context on behaviour.

Proactive and Exemplary Municipal Action

The CCCB will only be credible if the City Council acts consistently and serves as an example in the decarbonisation of its buildings, vehicles, and practices in general. The Program for a Carbon-Neutral City Council will bring together, enhance, and accelerate on-going efforts to reduce greenhouse gas emissions across all areas of municipal administration. This involves collecting projects and sharing experiences, identifying barriers to decarbonisation in each sector, and working, with support from the Program, to overcome them.

Metropolitan Approach and Multi-Level Cooperation

The CCCB is aligned with the Metropolitan Strategic Plan of Barcelona 2030. This plan, the first designed within the framework of the 'city of 5 million' configured by the Metropolitan Region of Barcelona, is structured around eight missions, one of which relates to the environmental and climate emergency ('To mitigate the effects of climate change and ensure a healthy habitat based on a just transition in the energy

model and sustainable resource management'). It commits to reducing greenhouse gas emissions in the metropolitan region by 45% by the year 2030.

Building on this common framework, efforts are underway to establish the necessary external coordination and communication mechanisms among administrations (especially the Metropolitan Area of Barcelona, the Barcelona Provincial Council, and the Government of Catalonia) to create synergies and facilitate the achievement of the goals of the CCCB.

Cooperation between Cities and advocacy for localism

The CCCB will be developed in close collaboration with the European cities participating in the Mission, especially those in Spain, through CitiEs and the Spanish platform of the Mission. The aim is to exchange best practices and undertake joint projects that allow for greater and faster progress in the different Mission areas.

Efforts will also be made to cooperate with cities in the metropolitan area of Barcelona and in Catalonia, with the intention of assisting in the decarbonisation of the region. On the international front, participation in organizations and city networks like Eurocities, C40, or the Covenant of Mayors for Climate will be strengthened.

Beyond the willingness to collaborate, networking with other cities is aimed at establishing strong advocacy action to achieve regulatory and public policy changes at the European, Spanish, and Catalan levels, as deemed necessary to accomplish the Mission.

Furthermore, international cooperation in the context of climate justice will continue to be promoted, both through projects developed by NGOs and through direct city-to-city cooperation, with a focus on the Mediterranean region. In this context, efforts will also be made to generate knowledge about the impact of the climate crisis on global inequalities, migration movements (climate refugees), and human rights.

Accountability and Evaluation

Methodologies and tools that allow for the calculation, at a reasonable cost, of both the effort and the impacts of the actions undertaken within the framework of the climate agreement will be adopted. The tracking indicators of the CCCB will form the basis of annual monitoring reports, as well as evaluation work that may be agreed upon. At the municipal level, one of the most relevant measures will be the implementation of the climate assessment of the municipal budget, with the aim of linking public expenditure to the established objectives and quantifying its effects in terms of greenhouse gas emissions reduction, as well as the identification of potential emission gaps that need to be addressed. The activity reports of sectorial and territorial management units will also include a section dedicated to climate action.

The anticipated process for completing, implementing, and reviewing the City Climate Agreement

The Commitment to Barcelona's climate neutrality is implemented through its annexes (the Action Plan, the Investment Plan, and the Support of Local Actors), which together

form the Climate Agreement of the City of Barcelona. In line with the Mission's philosophy, the annexes are conceived as open documents that will be refined and updated through an iterative process of review, adjustment, and expansion as deemed necessary, while always keeping the objectives outlined in this Commitment in focus.

The mandate arising from the municipal elections held on May 28, 2023, offers an opportunity to develop the CCCB in perfect alignment with the action plan and investment plan of the City Council, seeking the collaboration of the political groups present in the Municipal Plenary.

The first step will be the development, between November 2023 and April 2024, of a Government Measure for Climate Neutrality 2030. This measure will define the objectives, management responsibilities and necessary resources to guide the mission in the 2024-2027 period. Simultaneously, the Municipal Action Plan and the Municipal Investment Plan for 2024-2027 will be developed, allowing for the participation of the public and the refinement of specific actions and financial allocations for the CCCB.

During the fall of 2023, systematic efforts will be made to gather support and commitments for the Mission, prioritizing the participation of over 2,000 organizations (NGOs, business and labour agents, schools, etc.) that make up the Barcelona +Sustainable Network, as part of the renewal process of the Commitment to a Sustainable Barcelona. The obtained support, all with specific commitments from each organization, will complete Annex 3 of the CCCB. Support from metropolitan political institutions and Catalonia will also be formalized.

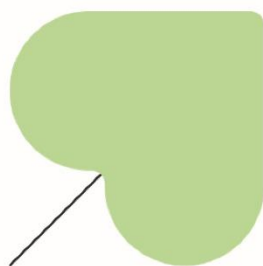
Upon completing all these processes, the first review and update of the CCCB will take place in September 2024, providing the annexes with a higher level of solidity and specificity.

This first review will also consider, logically, the orientation of climate policies of the new Government of Spain and, specially, the new European Commission, resulting from the European Parliament elections scheduled for June 6-9, 2024. We hope that both institutions will reaffirm and expand their support for the Mission and everything it entails.

From that point on, considering the municipal mandate cycle, we tentatively anticipate a second review in the fall of 2026 (prior to the municipal elections of 2027) and a third in the fall of 2028 (feedback and alignment with the Municipal Action Plan 2028-2031), along with a final assessment during the first half of 2031.

Barcelona, September 15th, 2023

Jaume Collboni Cuadrado
Mayor of Barcelona



Barcelona

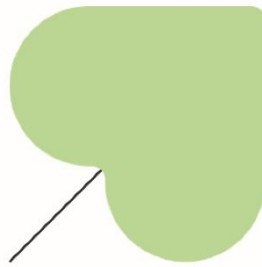


Index

Index.....	2
Annex 1: Climate Action Plan for the city of Barcelona	5
Introduction.....	5
City Context.....	5
Barcelona and the climate change.....	8
Work process	13
PART A - CURRENT STATE OF CLIMATE ACTION.....	16
MODULE A-1: Baseline inventory of greenhouse gas emissions	16
MODULE A-2: Assessment of current policies and strategies.....	21
MODULE A-3: Systemic Barriers to Climate Neutrality by 2030.....	48
PART B - PATHWAYS TO CLIMATE NEUTRALITY BY 2030.....	66
MODULE B-1: Climate Neutral Scenarios and Impact Pathways	66
MODULE B-2: portfolio of transformative actions.....	80
MODULE B-3: Monitoring, evaluation and learning indicators	165
PART C - ACHIEVING CLIMATE NEUTRALITY BY 2030	176
MODULE C-1: Organisational and governance innovation interventions	176
MODULE C-2: Social and other innovation actions.....	179
MODULE C-3: Equity portfolio financing (<i>Economic Case</i>)	186
Annex 2: Climate Investment Plan for the city of Barcelona.....	190
PART A - CURRENT STATE OF CLIMATE INVESTMENT.....	190
MODULE A-1: Existing finance for climate action	190
MODULE A-2: Strategic financial policy assessment.....	191
MODULE A-3: Understanding the financial barriers to the proper allocation of capital.....	198
PART B - INVESTMENT PATHWAYS TOWARDS CLIMATE NEUTRALITY BY 2030	200



MODULE B-1: Cost scenarios towards climate neutrality	200
MODULE B-2: Capital planning of the climate neutral portfolio	203
MODULE B-3: Economic and financial indicators for monitoring, evaluation and learning.....	205
PART C - CONDITIONS FOR CLIMATE NEUTRALITY IN 2030	207
MODULE C-1: Climate Policies for Capital Procurement and Deployment.....	207
MODULE C-2: Risk identification and mitigation.....	209
MODULE C-3: Capacity Building and Stakeholder Engagement	211
Annex 3: Membership of organisations	218



ANNEX 1:
Climate Neutrality
Action Plan



Annex 1: Climate Action Plan for the city of Barcelona

Introduction

City Context

The City of Barcelona has an area of 101.7 square kilometers and a population of 1.66 million (as of January 1, 2023), which represents a population density of 13,327 inhabitants per square kilometer. Considering the floating population (students and other non-registered inhabitants), [the real population was estimated in 2020](#) at 1,783,556 people (751,378 households). Barcelona's economy is based on services, which represent more than 90% of the employed population. The industry has lost relevance in recent decades, largely because it has moved to other areas of the [increasingly extensive metropolitan region of Barcelona](#).



Source: Barcelona City Council



The City of Barcelona enjoys a certain degree of autonomy for the government of its public interests, recognised and regulated by the Spanish Constitution and the Statute of Autonomy of Catalonia. Local autonomy reached its peak in the 1990s and the first decade of the 21st century, with the approval of the Barcelona Municipal Charter (1998, which granted new powers), the Law on Measures for the Modernisation of Local Government (2003, which recognised the specificity of large cities), and the new Statute of Autonomy of Catalonia (2006). This evolution was truncated with the Law for the Rationalisation and Sustainability of Local Administration (2013), which reformed the Law on the Bases of Local Government, limiting or suppressing municipal competences (such as the provision of heating) and increasing ex ante control over local administration, thus making it more difficult to create new services and service activities. One of the most significant changes is the suppression of Article 28, which allowed municipalities to complement the action of other administrations in policy fields such as the protection of the environment. This possibility still exists, but it depends on the sectoral legislation of the State or the Autonomous Community.

The City of Barcelona, however, has a [Municipal Charter](#) with the status of a law (1/2006, of 13 March, which regulates the Special Regime of the municipality of Barcelona), which offers its municipal government greater scope for action. The Charter (Art. 42) enshrines environmental policy as a duty, which includes, among other aspects, the *"promotion of the use of non-polluting vehicles as opposed to those that may produce some kind of pollution", as well as the "use of renewable energies in all its installations and will promote their application to the municipality's housing and industries"*. It also enshrines the *"general principle of municipal finance that activities or goods that produce pollution or any other type of nuisance should be taxed more heavily than those that are harmless"*. Article 102 of the Charter makes explicit the *"commitment to a sustainable city"* and lists the contents of *"policies aimed at preserving, restoring and improving the urban and natural environment"*. The aim is to *"ensure good water and air quality; adequate noise levels, in accordance with international recommendations; the quality of urban space; the maintenance and promotion of public health; the minimisation, reuse, selective collection, recycling and treatment of municipal waste; the saving and efficient and effective use of energy; the efficient management of natural resources, as well as the defence and protection of animals"*.

There is a pending reform of the Municipal Charter to make the fight against climate change a top-level objective. Even though, the current distribution of powers already allows the Barcelona City Council to have a significant impact in three areas: Urbanism (which includes urban planning and the conservation/rehabilitation of



buildings), the urban environment, in the broad sense, and mobility (which includes the regulation of mobility and the provision of public transport). To this we must add the provision of basic services, such as water (considering the whole cycle) and waste collection and management. Barcelona's Environmental Protection Ordinance (1999) regulates the different elements of the environment that fall under local competence, in accordance with current legislation.

On the other hand, Barcelona is the head of a metropolitan area whose first ring (36 municipalities, 636 km², 3.3 million inhabitants) enjoys since 2010 institutional status, through the [Metropolitan Area of Barcelona](#), which manages, by delegation of the municipalities that make it up, metropolitan public transport (bus and metro network), water supply, waste management and urban/territorial planning.

The regulation and management of public transport beyond the AMB (suburban networks, buses and the tram service) is the responsibility of the Generalitat de Catalunya, through the Metropolitan Transport Authority (ATM). The same applies to the territorial planning of the metropolitan region.

The regulation of energy and climate issues cascades down from the broad guidelines set by the European Union, applied in basic state legislation and developed by the autonomous regions in the areas in which they have competencies. The process is neither linear nor free of conflict. In the last two years, budgetary and legislative agreements have been reached that have made it possible to align the agendas of the different administrative levels, within the framework of the European Green Deal and the Next Generation EU Funds. The regulatory framework is now fairly favourable to decarbonisation, but with some key elements still to be completed.

With regard to the political context, it should be noted that in the 2019-2023 term of office the municipal government was formed by a coalition of two parties, Barcelona en Comú, which held the office of Mayor, and the Socialist Party of Catalonia (PSC-PSOE). It has been a minority coalition government, which was obliged to reach an agreement with at least one opposition group in order to be able to approve the budget and all major measures. During these years, the Covid19 pandemic and the need for the city's recovery, also supported by the opportunity of the Next Generation EU Funds, favoured the generation of broad consensus on the major objectives of the moment, including the fight against climate change. However, there were also notable disagreements on the implementation of concrete measures, especially those related to mobility.

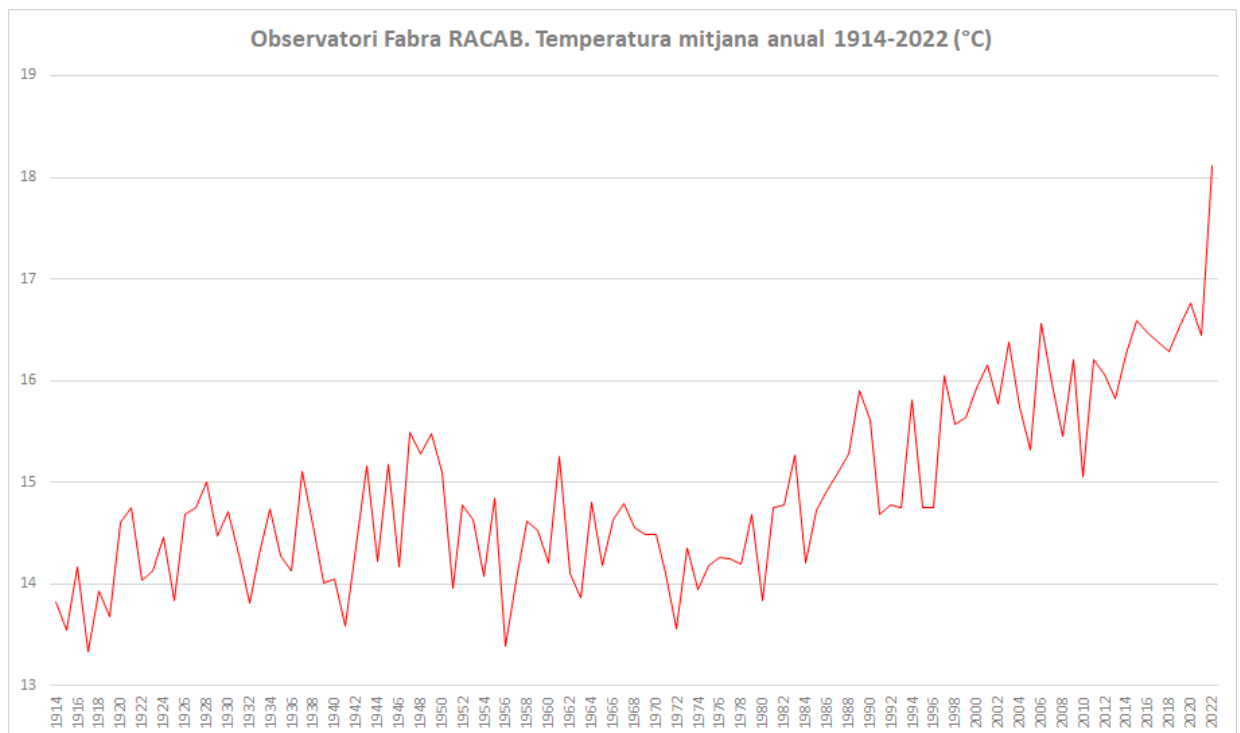
The May 2023 elections confirmed the high level of political fragmentation. In the first plenary session of the new City Council, PSC candidate Jaume Collboni was elected mayor and formed a minority government.



Barcelona and the climate change

In its [Sixth Assessment Report](#) (2022), the IPCC confirmed that the models predict with a high level of consistency that the Mediterranean basin will experience an above-average increase in temperatures, as well as a reduction in rainfall and a gradual rise of the sea level. Given the fragility of Mediterranean ecosystems and the density of its human settlements, this area of the planet is particularly vulnerable to climate change. Among the negative effects expected, and already evident in many cases, are extreme summer temperatures (increased by the heat island effect), reduced water availability, increased flooding, receding beaches, poorer air quality, more forest fires and loss of biodiversity.

In the specific case of the city of Barcelona, climatological data show a gradual increase in the average temperature in the city since the 1980s, and **the change seems to have accelerated in the last 2-3 years**. The summers of 2022 and 2023 have brought heatwaves of unprecedented intensity. August 23rd 2023 was the hottest day in Barcelona since existing temperature records. At the Fabra Observatory (located in the Collserola mountain range, at an altitude of 415 metres), the average temperature was 34.1°C, with a minimum of 29.4°C, also a record high, and a maximum of 39°C. There has been a proliferation of so-called "torrid" nights, with minimum temperatures above 25°C, a phenomenon that has arrived much earlier than predicted in previous studies.



Average annual temperature [recorded by the Fabra Observatory in Barcelona](#).



Between September 2022 and August 2023 the same observatory recorded [the lowest annual amount of precipitation of its 110 years old registers \(319 l/m²\)](#). The accumulated water deficit since autumn 2020 has jeopardised not only agricultural, but also industrial and domestic water supply. Significantly, these three years of drought were preceded by the Gloria storm, which caused severe damage to the city's infrastructure and beaches.

Climate change is already having a negative impact on the city's living conditions, and the magnitude of future impacts will depend directly on the intensity of global warming. Faced with this situation, Barcelona affirms its commitment to the collective struggle to stabilise the climate and to improve the city's capacity to adapt to climate change, prioritising people's health and quality of life.

The [European research project RESCCUE](#) ("Resilience to cope with climate change in urban areas") has studied two possible climate change scenarios (among the various scenarios defined by the IPCC): the committed scenario (RCP4.5) and the passive scenario (RCP8.5). The "committed" scenario assumes that the emission reduction targets of the 2015 Paris agreement are achieved on time and on budget. In this case, GHG concentrations would be higher than they are today by the end of the century, but the increase would slow down from 2030 onwards, so that the maximum increase in global temperature would be limited to 1.5 or 2 degrees Celsius.

In contrast, the "passive" scenario assumes that the targets set in Paris will not be met, which will mean that GHG concentrations at the end of the century will be much higher than they are today and the increase in global temperature will be well over 2 degrees Celsius. The Foundation for Climate Research (FIC) has carried out simulations of ten global climate models for the Barcelona region, and the results are an increase in average temperatures of 1.7°C by the end of the 21st century in the committed scenario and up to 4.5°C in the passive scenario.

This Climate Action Plan takes up the challenge of achieving climate neutrality in Barcelona by 2030, assuming a starting point that is far from optimal:

- In the mobility sector, the means of transport considered as 'eco-mobility' (survey question: [self-declared preferred means of transport](#)) combined have recovered to pre-pandemic levels and even improved by one point. Public transport use, which fell by 6 points during the pandemic, stood at 36.2% in the first months of 2023, less than one point below the 2019 figures. Private motorised transport (cars and motorbikes) had an opposite trajectory, falling from 18.7% in 2020 to 16.3% in 2023. The sum of people who mainly use bicycles and e-scooters equals motorbikes (7.7%), while 11.5% declare themselves as mainly walkers/pedestrians. It is interesting to note the strong increase in eco-mobility in the younger age groups (18-44 years), which more than offsets the decrease observed in the 45+ age group. This evolution could be partly related to concerns about sustainability, partly to the growing residential mobility and job insecurity, especially among the



young population, as less stability means less money and incentives to buy a car. In any case, there seems to be clear generation gap in this issue. On the negative side, we have a very low share of electromobility, although it is making a strong start. In 2022, 6.3% of a representative sample of the population claimed to own an electric vehicle, almost doubling the figure obtained in 2021.

Beyond the problem of GHG emissions, which is global, Barcelona has a local problem of poor air quality, mainly due to the very high density of motor vehicles present in its urban fabric. A [report by the Barcelona Public Health Agency](#) estimates that in the period 2018-2019 the city suffered 1,900 premature deaths as a result of this problem, while in the period 2019-2020, which includes the COVID19 confinement and mobility reduction phase, the figure fell to 1,200. Noise pollution, traffic noise, also has negative impacts on emotional and psychological health. It can lead to sleep disorders and cardiovascular diseases. [A recent report](#) by the Barcelona Public Health Agency found that 57% of Barcelona's population is exposed to noise levels above those already considered negative for health by the WHO, and 27% is exposed to levels well above this threshold.

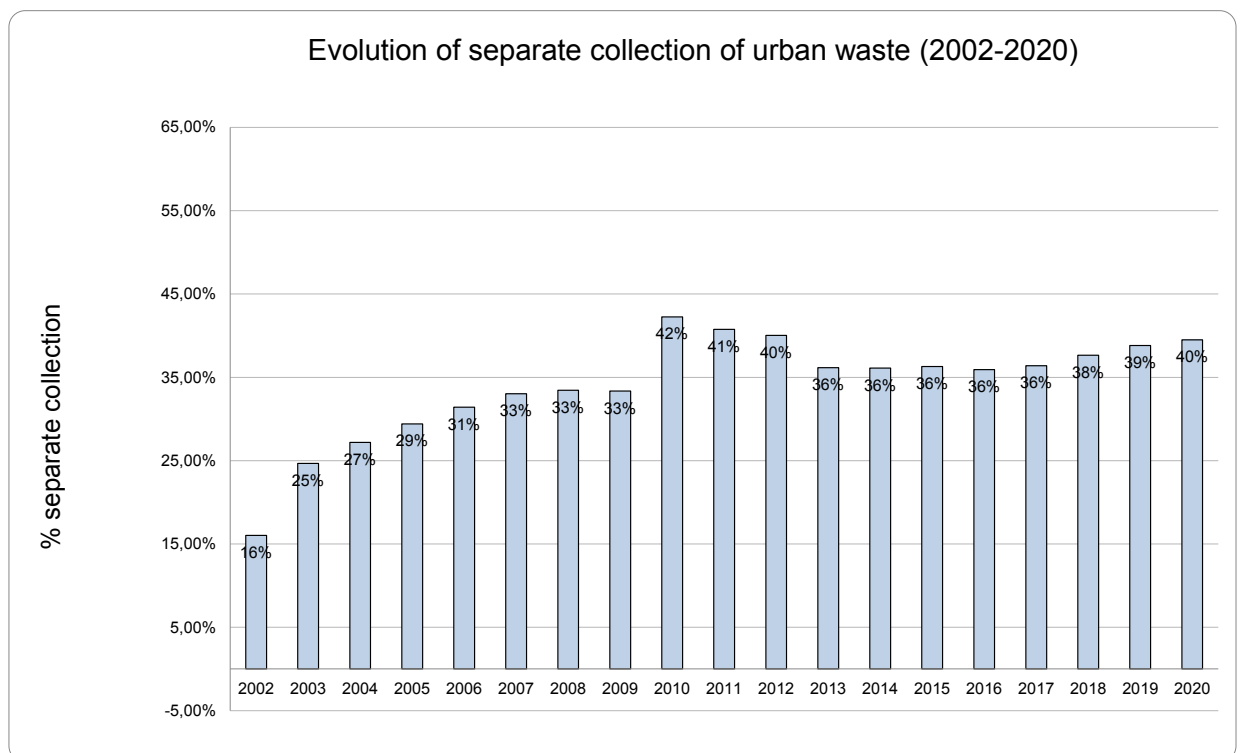
- In the building sector, the starting situation is less promising. Of the total number of buildings in the city, categories D and E account for 58.2 % of the certifications and categories F and G for 36.4 %. Only 5.2% correspond to efficient categories (B and C) and 0.2% to the very efficient A category. In the case of new buildings, of which there are very few (the city is almost completely built up), 38.3% are rated D and E, 45.8% B and C and only 15.8% A¹. According to the EMA 2022, only around 60% of dwellings have adequate window and door insulation. There is still a long way to go in terms of energy efficiency. With regard to the decarbonisation of heating, the EMA notes a slight increase in the availability of heat pumps, but they account for just over 22% of installed heating systems; considering, moreover, that around 15% of Barcelona's inhabitants do not have a heating system and over 40% do not have air conditioning.
- Fuel poverty has risen sharply in recent years, in parallel with the increase in energy prices and the cost of living in general. In 2020, 13.4% of the population said they could not keep their home at the right temperature in the cold months². The problem is increasing and is also becoming more pressing in the warmer months, with the normalisation of daytime and night-time extreme temperatures that are detrimental to health.

¹ [Climate emergency action plan for 2030](#) (CEAP), p. 92.

² [Barcelona Sociodemographic Survey 2020](#), p. 89 of the results report. More recent sources, such as the Living Conditions Survey 2021, put the [energy poverty rate at around 17%](#).

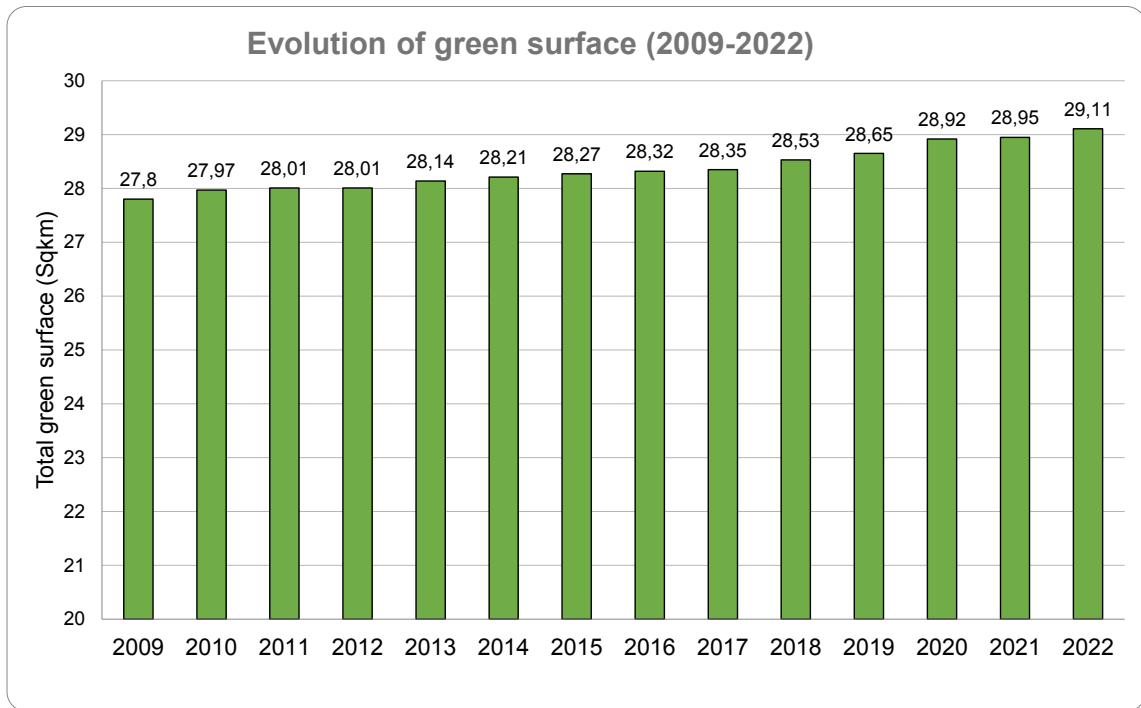


- Renewable energy generation, both at regional and local level, is very underdeveloped. The city produces on its territory and from renewable sources just over 1% of the energy it consumes. In 2022, 5% of Barcelona's inhabitants had solar energy in their homes (EMA 2022). On the other hand, the electricity supply depends to a large extent on nuclear energy from plants with only a few years of service lifetime left, which makes it even more urgent to massively expand renewable electricity generation capacities.
- In waste management, despite slight progress in recent years, it is proving very difficult to increase the recycling rate of municipal waste beyond 40%. There is also a long way to go in the field of prevention/reduction and reuse.



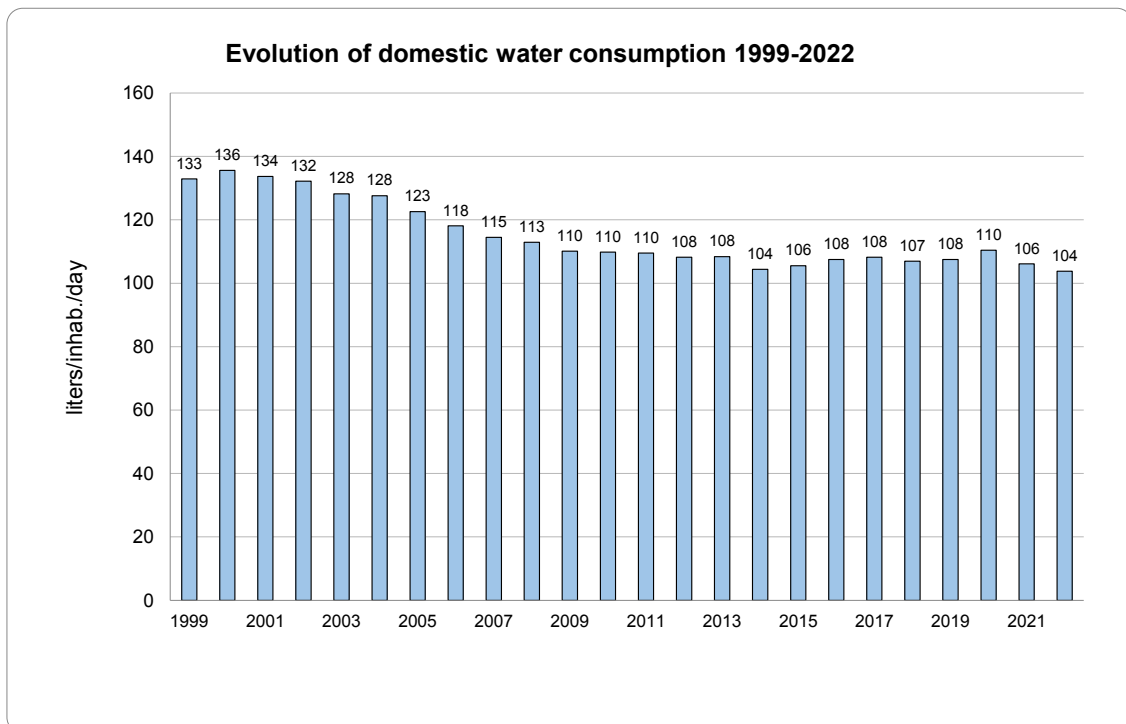
Source: [Climate Emergency Declaration Assessment \(2023\)](#).

- Green infrastructure has grown clearly and consistently in recent years, although the potential for growth is highly conditioned by the small size and high population density of the municipality.



Source: [Climate Emergency Declaration Assessment \(2023\)](#).

- Finally, with regard to water, it has been possible to consolidate guidelines for efficiency and savings in water consumption that are very useful -although perhaps not sufficient- for dealing with situations of structural drought, as well as for reducing emissions linked to water treatment and management.



Source: [Climate Emergency Declaration Assessment \(2023\)](#).



Work process

Considering the starting point, the path to achieving climate neutrality by 2030 involves an increasing ambition and putting in place the precise mechanisms and instruments to decarbonise the city's economy in a few years. This is a major city challenge, which will require disruptive innovations in different sectors and a rethinking of production and consumption patterns, including values and lifestyles, in terms of sustainability.

The city of Barcelona has been committed to Local Agenda 21 from the outset and has been developing policies to promote a sustainable development model for more than 30 years. In 2002 the first [Citizens' Commitment to Sustainability \(2002-2012\)](#) was approved, which was renewed and extended 10 years later (2012-2022). At the end of 2020, [the City Council adopted the 17 Sustainable Development Goals of the United Nations 2030 Agenda](#) as guiding principles of its development strategy, providing quantifiable targets adapted to the city and committing to annually assessing the city's performance in relation to the SDGs.

In the more specific area of the fight against climate change, since the first Covenant of Mayors for Energy (2008) Barcelona has been present in all European and global initiatives led by city governments, including the Pact for Adaptation (2014), the Paris Declaration of Commitment of Cities to Combat Climate Change (2015) and the Global Climate and Energy Pact of 2017.

In terms of public policies, the first energy-related policies adopted were the Solar Thermal Ordinance (1999), the Energy Improvement Plan (2002) and the Solar Photovoltaic Ordinance, included in the Environmental Ordinance which in May 2011 which compiled the regulation of municipal action in this field. Another milestone was the Energy, Climate Change and Air Quality Plan 2011-2020, which included an Energy Saving and Improvement Plan for municipal buildings. In 2015, the adoption of the Barcelona Climate Commitment, following in the wake of the Paris Agreement, led to the drafting of the [Climate Plan 2018-2030](#), awarded by the Covenant of Mayors, which reinforced existing climate measures and incorporated many others. Subsequently, the [Declaration of Climate Emergency](#) of January 2020 increased the level of demand for the measures envisaged, which led to the merger of the two documents into the [Climate Emergency Action Plan 2030 \(CEAP\)](#), published in November 2021.

To draw up the CEAP, several participative face-to-face sessions were held in 2017, with 119 participants and more than a hundred proposals for action received through the digital platform [Decidim.Barcelona](#). To draw up the Declaration a Climate



Emergency Committee was set up, made up of more than 300 people representing more than 200 organisations, who met in four face-to-face working sessions. In addition, the digital platform Decidim was made available to the process.

In parallel, over the last few years, various government measures and strategic plans have been developed, related to the achievement of climate objectives pursuing a new, greener, more equitable, more efficient and healthier city model:

- [Bicycle strategy](#) (2015)
- [Creation of energy advising and basic supply guarantee points](#) (2016)
- [Strategy against the feminisation of poverty and precariousness \(2016-2024\)](#)
- [Barcelona Neighbourhood Plan \(2016-2024\)](#)
- [Barcelona Right to Housing Plan \(2016-2025\)](#)
- [Strategy for Inclusion and Reduction of Social Inequalities \(2017-2027\)](#)
- [Programme to promote solar energy generation in Barcelona](#) (2017-2019)
- [Government measure on the democratisation of care](#) (2017-2020)
- [Barcelona Electric Mobility Strategy](#) (2018)
- [Trees for life : Master Plan for Barcelona's Trees 2017-2037](#)
- [Olympic Port Master Plan](#) (2018)
- [Strategic plan for the city's coastal areas \(2018-2025\)](#)
- [Action plan to prevent the health effects of heatwaves](#) (annual)
- [Urban Mobility Plan 2024](#)
- [Plan for the Use of Alternative Water Resources in Barcelona](#) (PLARHAB)
- [Barcelona Integrated Sanitation Master Plan](#) (PDISBA)
- [Barcelona Science Plan \(2020-2030\)](#)
- Zero Waste Strategy (2016) and [Zero Waste Plan \(2021-2027\)](#)
- [Barcelona Nature Plan 2021-2030](#) (2021)
- [Strategy for the Social and Solidarity Economy in Barcelona 2030: reactivation and strengthening of an economy for life in the city](#) (2021)
- [Healthy and Sustainable Food Strategy 2030](#). (a road map for transforming the city's food system (2022)
- [Resilience Profile Barcelona](#) (2022)
- [Plan for Global Justice Cooperation 2023-2026](#) (2023)
- [Barcelona Sustainability Economy Roadmap 2030](#) (Boosting and promoting the sustainability of economic sectors in the framework of the Barcelona Green Deal) (2023)
- [Let's Change for Climate 2030 Plan. Barcelona's 2030 Sustainability Culture Strategy](#) (2023)

The Action Plan for the Barcelona City Climate Agreement (CCC) is based on the CEAP, complemented by contributions from more recent strategies and plans. As we



have pointed out, stakeholder and citizen participation was very present in the CEAP and in almost all planning processes.

The implementation of the Action Plan and of the whole Climate City Contract (CCC) will be based on 12 principles, of which four are of a substantive, goal-oriented nature, while the remaining eight refer to methodological approaches and ways of working that will be used to achieve the objectives of the Agreement.

Substantive principles	Operating principles
1. Comprehensive approach to sustainable development: environmental, social and economic	5. Cross-cutting design and management
2. Comprehensive approach to tackling climate change: mitigation and adaptation; Scope 1, 2 and 3 emissions	6. Proximity
3. Local and global climate justice	7. Knowledge and innovation
4. Democratic planning: transparency and participation	8. Communication and training for cultural change
	9. Proactive and exemplary municipal action
	10. Metropolitan approach and multi-level cooperation
	11. City-to-city cooperation and municipal action
	2. Accountability and evaluation

The adoption of the CCC will be a very important incentive to put climate action at the top of the political agenda in the term 2023-2027.

The first step will be the elaboration, between November 2023 and April 2024, of a **Government Measure (GM) for Climate Neutrality 2030**, which will delimit the objectives, management responsibilities and resources necessary to carry out the mission in the period 2024-2027. At the same time, the **Municipal Action Plan and the Municipal Investment Plan 2024-2027** will be drawn up, with citizen participation, which will make it possible to fine-tune the specific actions and economic allocations of the CCC, seeking agreement and collaboration at all times with the political groups present in the Municipal Plenary.

At the conclusion of all these processes, the **first review and update of the CCC will take place in September 2024**, which will make the Action Plan more precise and robust.



PART A - CURRENT STATE OF CLIMATE ACTION

MODULE A-1: Baseline inventory of greenhouse gas emissions

A-1.1: Final energy use by sector of origin (Energy Balance 2019)				
Base year	2019			
Unit	GWh/year			
Issuing sector	Scope 1	Scope 2	Scope 3	Total
Transport	3.403,18	340		3.743,18
Fossil-fuelled road transport	3.403,18			3.403,18
Railway		326,78		326,78
Electric vehicle		13,22		13,22
Buildings and heating	3.986,48	5.836,27		9.822,75
Domestic	2.454,58	2.003,92		4.458,5
Tertiary	1.531,90	3.832,35		5.364,25
Waste and reforestation				
(Type of fuel/energy used)				
Other	1.136,87	617,67		1.754,54
Industry	1.136,87	510,58		
Primary		12,2		
Energy sector		58,31		
Construction and public works		31,48		



A-1.2: Emission factors applied (source: economic model input data) ³							
Base year	2019						
For the calculation in t or MWh primary energy							
Principles Intergovernmental Panel on Climate Change (IPCC), Covenant of Mayors for Climate and Energy methodology_ Methodology for calculating material economics: Emission=activity data*Emission Factor							
Issuing sector	Primary energy/ source of energy	Carbon dioxide (CO2)	Methane (CH4)	Nitrous oxide (N2O)	Hydrofluorocarbons and Perfluorocarbons	Sulphur hexafluoride (SF6)	Nitrogen trifluoride (NF3)
Transport	Private Transport (g/veh-km)	168,53					
	Transport Buses (g/veh- km)	1319,52					
	Commercial transport (<3.5 t) (g/veh-km)	54,05					
	Commercial transport (>3.5 t) (g/veh-km)	597,34					
Buildings and heating	Heating Production (District Heating) (g/kWh)	16,40					
	Natural gas (g/kWh)	201,96	0,0047	0,0036			
	LPG (butane and methane) (g/kWh)	227,16	0,0039	0,0025			
Electricity	(Emission factor of the national mix 2019) (g/kWh)	222					

³ To calculate the direct and indirect emissions, costs and benefits that form the basis of the City Climate Agreement [the Material Economics model](#) offered by CitiEs to the seven Spanish cities participating in the Mission has been used.



A-1.3: Activity volume by sector of origin (source: input data of the economic model)			
Base year 2019			
	Scope 1	Scope 2	Scope 3
Transport			
Private vehicle demand (Mveh-km/year)	3594		
Bus demand (Mveh-km/year)	66		
Commercial transport demand (<3.5 t) (Mveh-km/year)	750		
Commercial transport demand (>3.5 t) (Mveh-km/year)	32		
Buildings and heating			
Domestic natural gas (GWh/year)	2330		
Tertiary natural gas (GWh/year)	1532		
Domestic LPG (GWh/year)	125		
Electricity			
Domestic (GWh/year)		2004	
Tertiary (GWh/year)		3832	
Electric traction (GWh/year)		327	
Electric vehicle (GWh/year)		13	
Industry (GWh/year)		511	
Others (GWh/year)		107	
Waste			
Total collected within the city (tonnes)			744081
Other			
Industrial natural gas (GWh/year)	1122		
Industrial LPG (GWh/year)	15		

A-1.4b: GHG emissions by sector of origin (data source: Barcelona Energy Agency)					
Base year	2019				
Unit	KT CO2 equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
Transport	906			906	24%
Buildings and heating	813			813	21%
Electricity		1505		1505	39%
Waste*			366	366	10%
Other	229			229	6%
Total	1948	1505	366	3819	100%

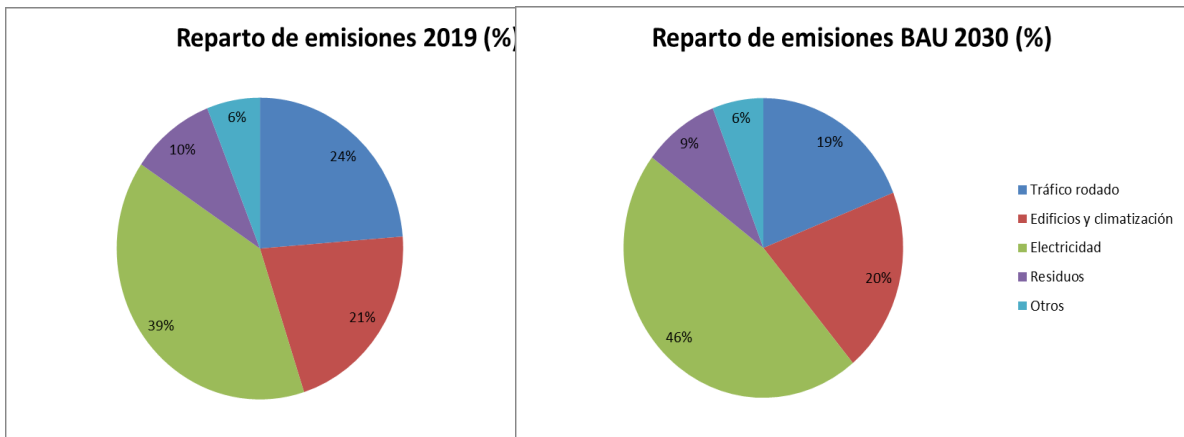
*Includes Scope 1 Waste (produced and processed in the city) and Scope 3 Waste (produced by the city but processed outside) emissions.



A-1.4c: GHG emissions by sector of origin (data source: Barcelona Energy Agency)					
Base year	BAU 2030 (Business as Usual 2030)				
Unit	KT CO2 equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
Transport	735			735	19%
Buildings and heating	772			772	20%
Electricity		1796		1796	46%
Waste*			340	340	9%
Other	228			228	6%
Total	1735	1796	340	3871	100%

*Includes Scope 1 Waste (produced and processed in the city) and Scope 3 Waste (produced by the city but processed outside) emissions.

A-1.5: Graphs and tables



Emissions 2019 vs Emissions in BAU scenario 2030

A-1.6: Description and assessment of the Baseline GHG Inventory

Barcelona's energy consumption grew by 3.9% between 1992 and 2017, although it has been declining since its peak in 2005. In contrast, greenhouse gas (GHG) emissions, which also peaked in 2005, have decreased by 28% since 1992. In terms of energy intensity, which relates energy consumption to the generation of goods and services, Barcelona moved from 261.6 Wh/€ in 1999 to 175.3 Wh/€ in 2019. This means that the city has been able to consume less energy per euro generated, and the trend seems to be structural. However, there are still major inefficiencies in the city's energy system. Thus, to satisfy the 15,321 GWh of final energy that Barcelona



consumed in 2019, 27,164 GWh of primary energy were needed, which implies a loss of 45% of it in the generation and transport processes.

Barcelona's greenhouse gas (GHG) emissions in 2019, considering Catalonia's electricity mix, were 3,557,000 tonnes of CO2 equivalent (CO2-e), 2.7 tonnes per inhabitant. The city's largest energy-consuming sectors were the commercial and services sectors, closely followed by the domestic and transport sectors, and at a greater distance by industry and other sectors. If we look at GHG emissions, the order changes: transport becomes the largest emitter, with a contribution of 27%, followed by building (20.7%) and services (21.4%).

Of the city's total final energy consumption in 2019, 50.3% came from fossil fuels, 44.9% from nuclear plants and only 4.8% from renewable sources (according to the Catalan energy mix). By energy format, in 2019 Barcelona consumed 45.5% electricity, 31.7% natural gas, 21.8% automotive fuel and 1.0% liquefied petroleum gas (LPG). With regard to the origin of electricity, 55.1% of the electricity consumed came from nuclear energy (which is why Barcelona's electricity mix has a low emissivity) and only 17.1% came from renewable sources. Finally, it should be noted that 357.65 GWh were generated in 2019 from the use of local renewable and residual energies, including the incineration of solid urban waste at the Sant Adrià de Besòs plant (54%) and solar thermal (15%).

In 2020, due to the Covid19 pandemic, there was a forced confinement of the population for weeks, as well as a sharp drop in economic activity recorded by GDP. As a result, CO2-e emissions fell very significantly, by almost one million MT, of which more than 200,000 MT in transport, 100,000 MT in buildings and 600,000 MT in electricity generation.

A-1.4b: GHG emissions by sector of origin (data source: Barcelona Energy Agency)					
Base year	2020				
Unit	KT CO2 equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
Transport	688			688	24%
Buildings and heating	722			722	25%
Electricity		904		904	32%
Waste*			297	297	10%
Other	240			240	8%
Total	1649	904	297	2850	100%

*Includes Scope 1 Waste (produced and processed in the city) and Scope 3 Waste (produced by the city but processed outside) emissions.



In 2021, GHG emissions grew again, but the level reached was still well below the 2019 level, despite the lifting of most pandemic restrictions and the rapid recovery of economic activity. The data for that year and the advanced data for 2022 point to a structural reduction in emissions in transport and even more in electricity generation.

A-1.4b: GHG emissions by sector of origin (data source: Barcelona Energy Agency)					
Base year	2021				
Unit	KT CO2 equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
Transport	840			840	27%
Buildings and heating	855			855	27%
Electricity		927		927	29%
Waste*			294	294	9%
Other	250			250	8%
Total	1944	927	294	3165	100%

*Includes Scope 1 Waste (produced and processed in the city) and Scope 3 Waste (produced by the city but processed outside) emissions.

MODULE A-2: Assessment of current policies and strategies

A-2.1: List of relevant policies, strategies and regulations						
No.	Type	Level	Name and/or title	Description	Relevance	Necessary actions
1	Policy	European	European Green Deal (2020)	Adopted in 2020, it is a set of European Commission policy initiatives with the overall objective of making the European Union (EU) climate neutral by 2050. This means achieving net zero greenhouse gas emissions for EU countries as a whole, mainly by reducing emissions, investing in green technologies and protecting the natural environment. The plan aims to revise existing laws and introduce new legislation on circular economy, building renovation, agriculture and innovation.	Very high. It is the policy framework that legitimises and underpins the goal of climate neutrality.	Political and institutional support and enforcement.
2	Regulations	European	European Climate Law (2021)	The European Climate Act turns into law the target set in the European Green Pact for Europe's economy and society to be climate neutral by	Very high. It is the main legal translation	Enforce compliance; apply its principles at



				2050. The law also sets the interim target of reducing net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The law aims to ensure that all EU policies contribute to this target and that all sectors of the economy and society play their part.	of the European Green Deal.	local level;
3	Regulations	European	Fit for 55 Package (2021)	<p>It is a major package of proposed legislation to make EU climate, energy, land use, transport and taxation policies fit for purpose to reduce net greenhouse gas emissions by at least 55% by 2030. The proposals contained in the package support a sharp reduction in greenhouse gas emissions over the next decade:</p> <ul style="list-style-type: none"> - increasing the ambition of the existing EU Emissions Trading Scheme (EU ETS) - make the necessary adjustments to the Market Stability Reserve - extending the EU ETS to the maritime sector - implement CORSIA for aviation - establishing a new ETS to cover emissions from fuels used in buildings and road transport - increasing Member States' emission reduction targets in a fair and cost-effective manner - Introduce new and more ambitious CO2 emission targets for new cars and vans from 2030 onwards. - putting the agricultural sector on the path to climate neutrality - providing targeted funding to Member States to help citizens finance investments in energy efficiency, new heating and cooling systems and clean mobility 	Very high. It is the legal translation of the European Green Deal into the various public policy sectors involved.	Demand its transposition into state and regional legislation; apply its principles at local level.
4	Strategy	European	A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives (2020)	The strategy aims to unleash a wave of resource-efficient housing renovation in Europe by breaking down structural barriers to energy renovation, supporting new investments over a sustained period (starting with public and less efficient buildings), stimulating digitalisation and creating jobs and growth	High. It is the document that defines the roadmap to achieve decarbonisation in a key	Ensure the implementation of the strategy at national and regional level. Translate and implement the strategy



				opportunities along the renovation supply chain. The aim is to at least double the annual energy renovation rate of residential and non-residential buildings by 2030 and encourage deep energy renovations, to reach 35 million renovated building units by 2030.	sector for cities.	at city level.
5	Regulations	European	Energy efficiency directive (amendment)	The Council adopted in July 2023 an amendment to the directive to reduce final energy consumption at EU level by 11.7% in 2030. The annual energy savings target for final energy consumption will gradually increase from 2024 to 2030. Member States will ensure further annual savings of 1.49% of final energy consumption on average during this period, progressively reaching 1.9% by 31 December 2030. The new rules set out a specific obligation for the public sector to achieve an annual reduction in energy consumption of 1.9% which may exclude public transport and the armed forces. In addition to this, Member States will be obliged to renovate each year at least 3% of the total floor area of buildings owned by public bodies.	Very high. It is an essential standard to boost energy savings and, specifically, the decarbonisation of public buildings.	Ensure the transposition of the directive at state level and fulfil the mandate to "lead by example" by the City Council and all entities of the group.
6	Regulations	European	Energy performance of buildings directive (revision of)	In December 2021, the Commission proposed a revision of this directive. It aims to improve the existing regulatory framework, adapting its ambition to the pressing needs of climate and societal action, while giving EU countries the flexibility to take into account differences in the building stock across Europe. It also sets out how Europe can achieve a zero-emission and fully decarbonised building stock by 2050. The proposed measures will increase the renovation rate, particularly for the worst performing buildings in each country. The revised directive will modernise the building stock, making it more resilient and affordable. It will also promote better air quality, the digitisation of buildings' energy systems and the	Very high. It is an essential standard to drive the decarbonisation of buildings.	Provide political and institutional support for the proposed reform. Ensure that the specific characteristics of housing and buildings in cities with a Mediterranean climate are adequately taken into account.



				deployment of infrastructures for sustainable mobility.		
7	Regulations	European	Ambient Air Quality Directives (revision of)	In October 2022, as part of the European Green Pact, the Commission proposed to revise the Air Quality Directives. The revision aims to align standards with World Health Organisation recommendations. The long-term goal, by 2050, is to achieve unpolluted urban air.	Very high. It is an essential standard to improve public health in cities and, indirectly, to boost the decarbonisation of mobility.	Carry out at municipal level the necessary policies to achieve its fulfilment
8	Regulations	European	Waste Framework Directive (and revision of)	In order to comply with the objectives of this Directive, EU countries shall take the necessary measures to achieve the following objectives: - by 2020, the preparedness for re-use and recycling of waste materials (such as paper, metal, plastic and glass) from households will be increased to a minimum of 50 % by total weight - by 2020, the preparation for re-use, recycling and recovery of other materials, including backfilling operations using waste to replace other materials, of non-hazardous construction and demolition waste is increased to at least 70 % by weight - by 2025, the preparation for re-use and recycling of municipal waste shall be increased to a minimum of 55%, 60% and 65% by weight by 2025, 2030 and 2035 respectively. Following a thorough analysis including stakeholder consultations, the Commission has proposed a specific amendment to the Waste Framework Directive, focusing on textile waste. The proposal aims to achieve a more circular and sustainable management of textile waste, in line with the vision of the EU Strategy for Sustainable and Circular Textiles. Under EU waste rules, Member States are obliged to set up separate collection of textiles	Very high. It is an essential standard to drive the reduction of emissions associated with the waste sector.	Once the directive has been transposed into state legislation (2022), implement at municipal level the necessary policies to achieve compliance.



				by 1 January 2025.		
9	Plan	European	Repower EU (2022)	The EU launched REPowerEU to rapidly reduce dependence on oil and gas imports from Russia. While the policy proposal includes a substantial acceleration of renewable energy deployment, it also contains the expansion of fossil fuel infrastructure from alternative suppliers.	Media. Updates the EU Green Deal strategy in the wake of the Ukraine war and its geopolitical implications.	Implement at municipal level the necessary policies (especially energy saving policies) to achieve compliance.
10	Regulations	State	Law 7/2021 on Change Climate and Transition Energetics	It establishes minimum targets for the year 2030 for the reduction of GHG emissions, the penetration of RES-E in final energy consumption, its minimum participation in the electricity system, and the reduction of primary energy consumption. It includes the PNIEC and ELP2050 as instruments. It also regulates aspects of mobility, such as the mandatory establishment of Low Emission Zones in municipalities with more than 50,000 inhabitants.	Key. Establishes standards with the status of law in the key sectors of decarbonisation.	Ensure its implementation in municipal policies and demand its enforcement.
11	Regulations	State	Law 7/2022 on waste and contaminated soils for a circular economy.	It aims to regulate the legal regime applicable to the placing on the market of products in relation to the impact on the management of their waste, as well as the legal regime for the prevention, production and management of waste, including the establishment of economic instruments applicable in this field.	High	Ensure its regulatory development and compliance in Catalonia. Apply its guidelines to the design of municipal waste policy
12	Regulations	State	Technical Building Code	The Technical Building Code (CTE) is the regulatory framework that establishes the basic quality requirements that buildings must meet in relation to the basic safety and habitability requirements set out in Law 38/1999 of 5 November 1999 on Building Regulations (LOE). It also incorporates requirements in terms of energy saving and generation.	High	Ensure compliance in all public and private works projects.
13	Regulations	State	Law 7/1985, Regulating the Bases of Local Government	Defines the general framework of local administrations in Spain, their organisational model and their competences.	Very high	Make the most of the tools they offer.



14	Regulations	State	Royal Legislative Decree 2/2004 (revised text of the Law Regulating Local Treasuries).	It defines the general framework for the financing of local administrations, regulating all types of financial resources to which they can have access.	Very high	Promote its reform to extend local autonomy
15	Strategy	State	Strategy for Long Term Decarbonisation (ELP 2050)	It shows a path towards decarbonisation that will guide investments in the coming years, underpinning the model shift towards an emission-free economy. It imposes obligations on local administrations and other actors	Media	Ensure coherence between the ELP 2050 and Barcelona's decarbonisation strategy.
16	Plan for Action	State	National Plan Integrated Energy and Climate (PNIEC) (2021-2030)	It defines the targets for reducing greenhouse gas emissions, the penetration of renewable energies and energy efficiency, as well as the lines of action to achieve them. In June 2023, the draft of the new Integrated Energy Plan (PNIEC) 2023-2030 was presented, a reform that increases the targets for 2030: <ul style="list-style-type: none"> • 23% to 32% reduction in greenhouse gas emissions compared to 1990. • From 42% to 48% renewables in energy end-use. • From 39.5% to 44% improvement in energy efficiency in terms of final energy. • 74% to 81% of renewable energy in electricity generation. This draft has been submitted for public hearing and information until 4 September.	Very high. Specifies decarbonisation targets at state level.	Advocate for an increase in its targets, to achieve greater consistency with climate neutrality objectives. Adapt policies to meet these objectives.
17	Plan for Action	State	Recovery, Transformation and Resilience Plan	It details a comprehensive investment and reform agenda specifying goals, objectives and indicators for monitoring and control. Spain is one of the main beneficiaries of the European Facility, with €140 billion (€69.528 billion in transfers, access to more than €70 billion in loans until 31 December 2026). It has 30 lines of action, 7 of which are directly related to the mission:	Very high, because it defines the guidelines for the granting of public financial aid.	Submit sound and mature projects to successive calls for grants under the Plan to finance strategic decarbonisation actions. Enable the city to directly



				<p>C1 Sustainable, safe and connected mobility shock plan in urban and metropolitan environments, C2 Housing rehabilitation and urban regeneration plan, C6 Sustainable, safe and connected mobility, C7 Deployment and integration of renewable energies, C8 Electricity infrastructures, promotion of smart grids and deployment of flexibility and storage, C9 Renewable hydrogen roadmap and its sectoral integration and C10 Just Transition Strategy.</p>		<p>manage aid to citizens and businesses, related to energy efficiency, the installation of renewables and the deployment of electric vehicles.</p>
18	Regulations	Autonomous	Law 16/2017 on climate change	<p>It establishes commitments on electricity, provides for the establishment of three CO2-related taxes (which will be used to finance climate policies) and provides for the elimination of subsidies and similar measures on fossil fuels.</p>	Media	<p>Ensure compliance with the law and the use of the funds collected in accordance with the provisions of the law.</p>
19	Regulations	Autonomous	Decree Law 16/2019, on urgent measures for the climate emergency and the promotion of renewable energies.	<p>Its purpose is to accelerate compliance with Law 16/2017. It amends, among others, the Urban Planning Law to facilitate the implementation of solar energy and wind energy facilities and establishes the requirements for the authorisation of wind energy and photovoltaic solar energy production facilities.</p>	High because it concretises the operational requirements for renewable energy generation	<p>Adapt municipal policies to the requirements of the Law. Promote changes to the Law where deemed necessary</p>
20	Regulations	Autonomous	Decree Law 24/2021, on accelerating the deployment of distributed and shared renewable energies.	<p>It amends Decree Law 16/2019, incorporating measures to achieve greater consensus with the territory, favouring social dialogue in the implementation of renewable energy facilities.</p>	Media	<p>Ensure that the implementation of renewable energies in Catalonia is not paralysed.</p>
21	Regulations	Autonomous	Energy Transition Law (in the pipeline; expected 2023)	<p>In coherence with the objectives of the Climate Change Law, it must promote a sovereign, democratised, sustainable, 100% renewable and local energy model.</p>	High	<p>Promote the processing and approval of these laws as soon as possible.</p>



22	Regulations	Autonomous	Draft bill on waste prevention and management and efficient use of resources in Catalonia (Start of processing: 1st semester 2023)	It will have to work on prevention and, particularly, on improving production and consumption patterns, including more classical strategies such as eco-design or industrial symbiosis, as well as others such as dematerialisation, product-service techniques, or others aimed at reducing the consumption of resources and keeping consumed resources in circulation.		Ensure that the specific needs and competences of the city of Barcelona are incorporated into these laws.
23	Regulations	Autonomous	Preliminary draft law on atmospheric quality (Start of processing: 2nd half of 2023)	The aim is to bring regulations into line with the European framework, providing tools for managing the causes that contribute to the lack of adequate levels of atmospheric quality. Defining axes for tackling odour pollution		
24	Action Plan	Autonomous	Draft decree approving the Plan for the Improvement of Air Quality in Catalonia (expected to start processing: first half of 2023)	The aim is to define the actions necessary to improve air quality throughout Catalonia, to comply with the limits set by the EU and the recommendations of the WHO.		
25	Regulations	Autonomous	Preliminary draft law on the tax on port emissions from large ships (Processing already underway)	Tax provided for in Law 16/2017, on climate change, along the lines of implementing taxes that make economic agents assume, at least partially, the environmental costs derived from their economic activity.		
26	Strategy	Autonomous	"Commitment 2030 Horizon 2050", Roadmap for the Energy Transition in Catalonia (2021)	It lists the legislative and public policy measures to be taken in the coming years to realise the energy transition.	Media	Ensure coherence with Barcelona's energy transition strategy. Ensuring the implementation of the planned measures



27	Strategy	Autonomous	Catalonia Energy Outlook 2050 (PROENCAT) (2022)	It analyses the transition towards a new energy model, with decentralised and distributed generation that empowers citizens in energy policies, in order to reach 100% renewable energy by 2050.	Medium-low	Ensure coherence with Barcelona's energy transition strategy.
28	Strategy	Autonomous	Climate Change Adaptation Strategy 2021-2030 (ESCACC30)	It is the strategic framework for the 2030 horizon, which provides continuity to the ESCACC20, approved in 2012 for the 2020 horizon.	Medium-low	Ensure coherence with the Climate Action Plan. Ensuring its implementation
29	Strategy	Autonomous	Horizon 2030: INDC. GHG emission reduction target in Catalonia for 2030.	Catalonia has recalculated its reduction target for total emissions and diffuse emissions in 2030 in line with the EU's Fit for 55 legislative package.	Media	Ensure coherence with the Barcelona Climate Action Plan.
30	Strategy	Autonomous	Bioeconomy Strategy of Catalonia 2030	Develop a business fabric based on the circular bioeconomy; 3. Promote the use and consumption of bioproducts, bioenergy and biomaterials in the market; 4. Promote resilient agroforestry landscapes and the sustainable provision of ecosystem services; 5.	Media	Adopt measures, within the framework of the Climate Action Plan, that promote the development of this strategy.
31	Strategy	Autonomous	Catalonia's food strategy	It is an action plan to move towards a more sustainable, secure, fair, cohesive, resilient, healthy and universally accessible food system.	Media	Adopt measures, within the framework of the Climate Action Plan, that promote the development of this strategy.
33	Strategy	Autonomous	Catalan Bicycle Strategy 2025	It establishes planning and development, promotion and training tools to promote cycling as an active and sustainable mode of transport.	Media	Adopt measures, within the framework of the Climate



						Action Plan, that promote the development of this strategy.
34	Strategy	Autonomous	Draft Decree approving the National Mobility Guidelines (Start of processing: 1st half of 2023).	The aim is to guarantee mobility planning that is appropriate to the social and economic reality of Catalonia today in terms of sustainability, to reduce CO2 emissions generated by transport and to make mobility throughout the country more effective and efficient.	Medium-high	Promote their processing. Comply with approved guidelines.
35	Action Plan	Autonomous	Draft Decree approving the Territorial Sectoral Plan for Renewable Energies (forecast end of 2023).	The Plan shall determine the general guidelines for the territorial distribution of renewable energy installations and other installations necessary to make the energy transition effective.	High average	Promote their processing.
36	Action Plan	Autonomous	Public Public Transport Infrastructure Master Plan 2021-2030	This is an infrastructure plan to decarbonise, digitalise and decongest mobility, with the aim of planning the infrastructures within the scope of the Barcelona Metropolitan Transport Authority (ATM). It covers the entire metropolitan region (5.5 million people) and takes into account all modes of transport.	High. In terms of content, the plan is essential to decarbonise mobility.	Promote its implementation and make it mandatory.
37	Action Plan	Autonomous	10/30 Strategic Agenda of the Catalan Government's Railways	Forecast of investments to improve and extend the service in Barcelona and connections with the territory, by the two suburban rail operators.	Upper middle. These plans are essential to achieve a massive modal shift in metropolitan and regional transport.	Promote its implementation by: Political pressure, negotiation, collaboration, monitoring.
38	Action Plan	Autonomous	Update of the Catalan Suburban Railway Plan 2020-2030			
39	Strategy	Metropolitan	TMB Strategic Plan 2025 (Transports Metropolitans de Barcelona)	It marks the lines of future development of Barcelona's main public transport operator.	High. Essential for modal shift in the city.	Ensure its implementation. Drive forward the 2030 Plan,



						with the goal of zero emissions.
40	Strategy	Metropolitan	Metropolitan Territorial Plan of Barcelona (2010)	Partial territorial plan for the metropolitan region, which includes the territory of the counties of Alt Penedès, Baix Llobregat, Barcelonès, Garraf, Maresme, Vallès Occidental and Vallès Oriental.	Medium-low. Designed for a territory that does not have an institutional reference point.	Promote its modification if inconsistencies with the accelerated decarbonisation objective are detected.
41	Strategy	Metropolitan	Barcelona Demà. Metropolitan Commitment 2030	Also designed for the metropolitan region. Structured around 8 missions, one of which on environmental and climate emergency.	Medium high. It is closely aligned with the goal of climate neutrality.	Ensure coherence with the Strategy. Collaborate in the implementation of your climate mission
42	Strategy	Metropolitan	Llobregat Delta Strategy	An instrument agreed between the city councils of Barcelona, El Prat de Llobregat and L'Hospitalet de Llobregat and the public operators in the area to achieve a more sustainable management paradigm and model for the economic platform of the Llobregat delta.	Media	Ensure coherence with the Climate Action Plan.
43	Strategy	Metropolitan	Metropolitan Strategy in the Besòs area	It formulates a strategy for public intervention in the metropolitan area around the River Besòs and defines a series of actions that contribute to social cohesion and to the economic and territorial dynamisation of the urban system structured along the final stretch of the river.	Media	Ensure coherence with the Climate Action Plan.
44	Action Plan	Metropolitan	Metropolitan Programme for the Prevention and Management of Municipal Resources and Waste 2019-2025 (PREMET25)	Defines the actions necessary to ensure compliance with the objectives set by the circular economy in the field of waste.	Medium-high	Ensure coherence with the Climate Action Plan. Collaborate in its implementation



45	Action Plan	Metropolitan	Metropolitan Urban Development Master Plan (in public information phase)	It sets out the main objectives and guidelines for 20 years in terms of infrastructure, green areas, urban fabric and open spaces.	Media. It is a key document, but with longer-term effects.	Promote the final approval of the plan
46	Action Plan	Metropolitan	Special Plan for the Protection of the Natural Environment and Landscape of the Serra de Collserola Natural Park (2022)	It incorporates the perspective and criteria of adaptation to climate change in the largest wooded area of Barcelona.	Media	Ensure its implementation. Protect the Park with the fire prevention and extinguishing service.
47	Regulations	Local	Barcelona Municipal Charter (1998 /2006) (and possible reform of the Charter)	It defines the special regime of self-government for the city of Barcelona. A process is underway to promote and update the Municipal Charter, which would entail, among other things, incorporating the fight against climate change as an objective and broadening competences in the sectors involved in it.	High. It establishes the legal limits and the forms of action of the City Council with regard to the objective of climate neutrality.	Discuss and eventually endorse the reform proposed by the groups of experts (set out in the work "La Carta Municipal de Barcelona y el derecho a la ciudad" (Font i Llovet, 2022).
48	Regulations	Local	Environment Ordinance	It regulates the different elements of the environment that fall under local jurisdiction and the services attributed to the City Council: the rights and duties of individuals in relation to the protection of the atmosphere; the control of pollution by physical agents; the use of mines, water wells and aqueducts; the control of pollution and water consumption; the evacuation of waste water; the collection, recycling, transport, recovery and final disposal of municipal waste; responsible energy consumption; and green spaces and biodiversity.	High	Ensure compliance. Promote its reform to bring it in line with the objective of climate neutrality.
49	Regulations	Local	Barcelona Low	It sets the access criteria,	High.	Ensure



	ons		Emission Zone Ordinance (new version, initially approved on 15/11/2022)	circulation and parking of vehicles in Barcelona's Low Emission Zone and promotes zero-emission mobility.	Restricts the right to mobility of the most polluting vehicles, in the interest of air quality and climate neutrality.	compliance. Promote progressively tighter restrictions, or ultra-low emission zones, consistent with the goal of climate neutrality.
50	Regulations	Local	Tax ordinance regulating property tax 2023	It establishes a 50% (residential and tertiary uses) or 30% (industrial uses) subsidy for 3 years for companies and individuals who install solar thermal or electrical systems.	Media. It is an important incentive to promote renewable energy in households and businesses.	Rethink the bonus system, adapting it to the evolution of the installation costs of this type of system.
51	Regulations	Local	Tax ordinance regulating the tax on mechanical traction vehicles 2023	Vehicles classified as zero-emission by the DGT are entitled to a 75% reduction in the tax rate. Vehicles classified as ECO that use petrol, with emissions of up to 120 gr/km of CO2 enjoy a 50% rebate.	Media. These are important incentives to promote electric mobility in households and businesses.	Maintain bonuses and exemptions, and progressively adapt them to technological and market developments.
52	Regulations	Local	Charges for the regulated parking of vehicles on public roads 2023	It establishes a set of exemptions and bonuses for vehicles classified as "zero emission" or "eco".		
53	Regulations	Local	Public prices in the area of urban ecology for the year 2023	It includes a rebate on waste collection service prices for signatories of the Citizen Commitment to Sustainability and the Barcelona Plastic Zero Commitment.	Media. It is an incentive that affects few but highly relevant actors.	Maintain the bonus and modify it if deemed necessary to advance the zero waste policy.
54	Regulations	Local	Protocol for the implementation of green roofs on municipal buildings.	Promotes the implementation of green roofs on municipal buildings	Medium. Negligible impact on emissions, but significant in co-benefit	Provide this policy with the necessary budget for its implementation.



					generation.	
55	Regulations	Local	Instruction for the adoption of measures to promote and make effective energy saving and efficiency in Barcelona City Council.	In compliance with Royal Decree Law 14/2022, of 1 August, on economic sustainability measures in the field of transport, in terms of grants and study aids, as well as energy saving and efficiency measures and measures to reduce energy dependence on natural gas.	Media	Ensure its compliance
56	Strategy	Local	Barcelona Agenda 2030 (2020)	Localising the 17 SDGs and their respective targets, based on existing municipal strategies and plans	Medium high. It is the plan that most fully integrates the municipal sectoral strategies.	Refine its targets and indicators, in coherence with the new approved 2030 sectoral strategies; make it a basic reference for Barcelona's commitment to sustainability.
57	Strategy	Local	Integrated Territorial Strategy for Barcelona (ETI)	Integrated territorial strategy, based on existing municipal strategies and plans. Prepared in order to access resources from European structural funds (especially ERDF).	Medium high. It is also a holistic document, worked out at project level.	Approve it. Apply it in the application for structural funds
59	Strategy	Local	Barcelona Resilience Profile	Definition of risks and opportunities. With 3 priority themes: 1st. Right to adequate housing and access to basic services 2nd. Public space: accessibility, health, uses and social cohesion and 3rd. Population ageing and demographic change.	Low medium. It is a strategic reflection document.	Incorporate its main contents into the most relevant planning documents.
60	Strategy	Local	"This is not a drill". Declaration of Climate Emergency (2020)	Reasons for the emergency; need for joint action; proposals for accelerated action	High. Potential cross-cutting impact on all sectors	Implement the plans and policies already adopted to address the emergency. Increase its ambition to



						match the Mission's objectives.
57	Strategy	Local	Roadmap for the Economy for Sustainability in Barcelona 2030	Boosting and promoting the sustainability of economic sectors in the framework of the Barcelona Green New Deal	Medium. Potential cross-cutting impact on various sectors: industry, waste, tertiary, mobility, energy.	Implement the measures included in the strategy. Define concrete, measurable targets at a level of ambition consistent with the Climate Action Plan.
61	Strategy	Local	Electric Mobility Strategy 2018-2024	Defines framework and lines of action to promote electric mobility	High. Key role in transforming mobility	Implement it and develop a 2025-2030 strategy, hand in hand with the PMU and consistent with the goal of climate neutrality.
62	Strategy	Local	Barcelona Bicycle Strategy (2015)	Establishes the lines of action to promote cycling in the city.	High. Key role in transforming mobility	Implement it
63	Strategy	Local	Food Strategy Healthy and Sustainable Barcelona 2030	It is a compass to guide the transformation of Barcelona's food system, prioritising health and sustainability.	Medium high. Highly relevant for residual emissions strategy	Implement it
64	Strategy + Action Plan	Local	Zero Waste Strategy (2016) and Zero Waste Plan 2021-2027	The strategy includes: philosophy, diagnosis, strategic orientation and proposed measures. The plan specifies measures, quantified targets for 2027 and a comprehensive system of indicators.	High. It is the basic municipal reference on waste	Implement the Plan. Extend its validity to 2030, at a level of ambition consistent with the Climate Action Plan.



65	Action Plan	Local	Climate Emergency Action Plan 2030	It is the main planning document for climate action. It covers all sectors. It establishes a commitment to reduce GHG emissions by 50% by 2030 and 100% by 2050 compared to 1992 levels.	Very high.	Implement it. Update its targets in line with the 2030 climate neutrality goal.
66	Action Plan	Local	Climate Change 2030 Plan	Defines the strategy, objectives and actions related to education and culture of sustainability.	Very high, as its field of action is essential for the change of mentality.	Implement it
67	Action Plan	Local	Natura Barcelona Plan 2021-2030	It defines and plans objectives and commitments to increasing the city's green infrastructure, to the conservation of biodiversity, and to how citizens know, enjoy and improve urban nature and care for it.	High. Impact on the reforestation sector; low relevance in terms of emissions; co-benefit generator.	Implement it
68	Action Plan	Local	Barcelona Tree Master Plan 2017-2037 ("Trees for life")	It sets the strategy for the quantity, typology and locations of the trees to be planted, as well as their maintenance, taking into account the expected climatic changes.	High average. Regulates technical aspects.	Implement it
69	Action Plan	Local	Urban Mobility Plan 2019-2024	It establishes the objectives and actions necessary for the coexistence of different modes of transport on public roads.	Very high. Key document for the mobility sector	Implement it and develop the 2025-2030 plan in a consistent way with the goal of climate neutrality.
70	Action Plan	Local	Housing Rights Plan 2016-2025	It incorporates the promotion of energy rehabilitation of housing. It plans to intervene in 50 buildings (2,400 dwellings).	Medium high. Rehabilitation is not central to this plan	Implement the plan and develop the next one, consistent with the goal of climate neutrality.
71	Action Plan	Local	Superblock to regenerate	It is a global and comprehensive intervention strategy to transform	High for the transformati	Assess their impacts on



			<i>Barcelona and its neighbourhoods (2022)</i>	<i>the city, based on regenerating, rehabilitating and reactivating the urban fabric.</i>	<i>on of urban mobility</i>	<i>climate neutrality. Analysing its continuity</i>
72	Action Plan	Local	<i>Climate + Enxarxem Plan 2022-2027</i>	<i>The aim is to strengthen the involvement of the associative fabric in the response to the climate emergency. It regulates the "climate grants" programme.</i>	<i>High average.</i>	<i>Implement it</i>
73	Action Plan	Local	<i>Barcelona Urban Regeneration Programme</i>	<i>A global, unitary and multidisciplinary strategy of actions that affect both buildings and urban fabrics, when there are situations of insufficiency or degradation of the basic requirements of functionality, safety and habitability of buildings, and have an integrated character by articulating social, environmental and economic measures.</i>	<i>High. Key role in incorporating vulnerable sectors into the goal of climate neutrality. Climate justice</i>	<i>Implement it.</i>
74	Action Plan	Local	<i>Neighbourhood Plan</i>	<i>It is a transversal programme, aimed at Barcelona's most disadvantaged neighbourhoods, which aims to reverse inequalities through the application of new public policies and the involvement of citizens. It works in 16 neighbourhoods and has an extraordinary and intensive budget until 2024.</i>	<i>Medium high. Cross-cutting impact (highly complex farms, educational action...), but more limited.</i>	<i>Implement it</i>

A-2.2: Description and evaluation of policies

Law 16/2017 on climate change in Catalonia basically pursues five objectives. Firstly, to ensure that Catalonia reduces both greenhouse gas emissions and vulnerability to the impacts of climate change, favouring the transition towards a model that is neutral in greenhouse gas emissions and, at the same time, transforming the model of production and access to natural and energy resources. Secondly, to reinforce and expand the strategies and plans that have been developed in recent years in the field of climate change. Thirdly, to promote and guarantee the coordination of all sectoral planning instruments related to climate change and the coordination of all Catalan public administrations, as well as to encourage the participation of citizens, social agents and economic agents. Fourthly, to become a leading country in the research



and application of new technologies that contribute to mitigation, and also to reducing Catalonia's energy dependence on external energy resources, decarbonisation and denuclearisation. Finally, to make Catalonia's role visible in the world, both in cooperation projects and in participation in global forums for debate on climate change.

By means of **Decree Law 24/2021**, on accelerating the deployment of distributed and shared renewable energies:

- Priority is given to projects where the proximity of electricity production to consumption centres is taken into account.
- The participation of local actors in the production and distribution of electricity is encouraged, prioritising cooperative, community, citizen and self-production projects.
- The applicable criteria for land use are specified, with special emphasis on the planning of agricultural land use, favouring the compatibility of agricultural activity with the production of renewable energies, ensuring the conservation of biodiversity, land use planning and sustainable development of the rural environment.

It also incorporates administrative simplification measures for self-consumption installations.

The MTA's **2021-2030 Infrastructure Master Plan for Collective Public Transport** envisages almost 72 km of new rail network (Metro, FGC and tram), 7 new additional stations and more than 450,000 new users. One example would be the completion of L9 and the connection of the Trams along Diagonal. In the case of Cercanías, almost 75 km of new suburban rail network, 4 new stations and more than 175,000 new users. In Public Road Transport, the forecast is for more than 60 km of new bus lanes, 280 km of BRCat network and more than 40 km of bicycle network. The decarbonisation of transport is promoted through 287 lines with more efficient night-time charging, 257 lines with opportunity mode, and with actions that go in the line of facilitating access to PT, such as shuttle car parks.

The **Llobregat Delta Strategy** is the strategic planning instrument that the City Councils of Barcelona, El Prat de Llobregat and L'Hospitalet de Llobregat have agreed with the public operators in the area to achieve a more sustainable paradigm for the economic platform of the Llobregat delta, a new management model in which the promotion of economic activity to generate inclusive employment goes hand in hand with the reduction of the environmental grievances suffered by the delta and the reduction of all the externalities produced by industrial establishments and mobility.

The environmental sustainability objectives linked to decarbonisation are as follows: Mitigate the externalities of economic activities, optimise energy consumption and



increase the degree of energy self-sufficiency of companies; reduce energy consumption and the externalities of generated and attracted mobility; progressively arrange the spatial distribution of activities on the platform with sustainability criteria and expand the provision of green areas and open spaces in the area.

The **Metropolitan Strategy for the Besòs area** formulates a strategy for public intervention in the metropolitan environment of the Besòs River and defines a set of actions that contribute to social cohesion and to the economic and territorial dynamisation of the urban system structured by the final stretch of the river. The area is made up of the municipalities of Badalona, Montcada i Reixac, Sant Adrià de Besòs, Santa Coloma de Gramenet and the neighbourhoods of Barcelona adjacent to the river Besòs: Vallbona, Trinitat Vella, Baró de Viver and Bon Pastor. This territory has a total surface area of almost 60 km² and a population of around 450,000 inhabitants. The plan commits to the refurbishment of more than 600 buildings in the different neighbourhoods to improve energy efficiency, conservation and accessibility with various actions co-financed with Next Generation EU funds.

The **Barcelona Agenda 2030 (2020)** has a strategy based on three main lines:

1. The 2030 Agenda in the City Council, which is specified in the following measures:
 - Adapting the 2030 Agenda to the local reality of Barcelona
 - Aligning the City Council's planning with Agenda 2030
 - Monitoring the implementation of the 2030 Agenda
 - Innovating to ensure that the 2030 Agenda is achieved
 - To give specific impetus to the 2030 Agenda within the City Council.

2. The 2030 Agenda in the city, which will include the following measures:
 - Development of a communication plan for Agenda 2030
 - Elaboration of a plan for municipal involvement in the 2030 Agenda
 - Promotion of participatory processes by the citizenry
 - Creation of a round table for the promotion of the 2030 Agenda in Barcelona
 - Promotion of a certificate of compliance with the 2030 Agenda for municipal suppliers.

3. Barcelona 2030 international, which will be implemented through the following measures:
 - Creation of a working group of cities for the promotion of the evaluation of the 2030 Agenda
 - Leading the local implementation of the 2030 Agenda in multilateral organisations
 - Aligning the city's major international events with the 2030 Agenda



- Attracting international events linked to the 2030 Agenda to Barcelona
- International promotion of compliance with the Agenda in public-private partnership contracts

Barcelona's Integrated Territorial Strategy (ITS) should become a key planning instrument for the city towards 2030. It seeks to build a city of the future that is innovative, smart, competitive, green, inclusive and feminist, improving the quality of life of its citizens and fostering their sustainable development and resilience. The ITS is conceived as an articulated and participatory city response to the challenges of the future, promoting transformations that add value to the current challenges of ecological transition, digital transformation and social cohesion in Europe. In this sense, the period 2021-2027 brings a paradigm shift in sustainable urban development, given the priority needed for an accelerated contribution to climate change mitigation as well as to the Sustainable Development Goals. Cities, and in particular large European cities, must be a key driver of change to achieve these goals. Barcelona takes up these challenges and builds a strategy based on sectoral planning, coordination and collaboration between different areas and sectors, with the aim of addressing the city's challenges in a holistic and sustainable way. The ETI is structured around 3 objectives, 18 strategic axes, 60 strategic lines and 538 strategic actions to overcome the challenges that have been identified as fundamental for the city, with a view to 2030.

The **municipal waste prevention strategy, Barcelona Zero Waste**, is based on three priority elements linked to prevention: shared responsibility in the management of waste by citizens (the best waste is that which is not generated); reuse; and the improvement of selective collection, as well as its quality, and, specifically, of organic matter in a preferential manner. Along the same lines, the Barcelona Zero Waste concept is working to develop an economy that closes the cycles of everything we produce and does not generate waste. In this way, green points, exchange markets, the organic fraction and conscious and responsible consumption, as well as the promotion of public awareness of their proper use, favour the circular economy, as they facilitate the recycling and reuse of the maximum number of waste fractions. The strategy is set out in the **Zero Waste Plan 2021-2027**.

A key element in this area is the new waste collection management contract. A very important political commitment has been made to the electrification of the fleet. A lot of points were awarded in the tendering process in this respect. The fact is that the number of electric vehicles has increased from 20% to 66%. Seventy-five per cent of the cleaning vehicles are electric and 44 per cent of the collection vehicles, which are much heavier. In fact, before the implementation of the new contract there were only 3 electric collection vehicles in Catalonia, and now Barcelona will have 78.



Biodiesel will only be used for those vehicles without an operational alternative (from 39% to 7%). This means less noise, less air pollution and, logically, less CO₂ emissions.

"This is not a drill" is the slogan of the Declaration of Climate Emergency (2020), approved by Barcelona City Council on 15 January 2020. This institutional declaration is accompanied by a package of more than one hundred proposals with the aim of reducing greenhouse gas emissions by 50% in 10 years compared to 1992, which would mean, in absolute figures, a reduction of 2 million tonnes of CO₂. To achieve this goal, the city council will allocate 563 million euros in different areas such as urban model, mobility and infrastructures, energy, economic model, consumption and waste, cultural and educational model, food, water and health and wellbeing. The declaration was drawn up on the basis of the work done with the city's Climate Plan and includes more than a hundred actions that will be developed within the framework of the **Climate Emergency Action Plan 2030**.

The **Roadmap for the Economy for Sustainability in Barcelona 2030** outlines a strategy that proposes how to promote a sustainable economy in all sectors of activity in the city. The roadmap identifies six strategic sectors as drivers of the green, blue and circular economy and key to the decarbonisation of the economy: industry, tourism, construction and infrastructure, mobility and transport, energy and trade, consumption and food. The municipal commitment seeks to transform towards a more sustainable production model, identify employment opportunities, support companies and promote new business models.

Barcelona's Electric Mobility Strategy 2018-2024 aims to progressively increase the private electric vehicle fleet to 24,000 electric cars by 2024, to increase the municipal electric fleet to 80% and to have 100 electric-powered buses by 2024, when it is expected that non-electric taxis will no longer be approved. The measures to achieve these figures focus on expanding the vehicle charging infrastructure; promoting benefits for parking, the use of preferential roads or recharging, and continuing to work to offer subsidies for alternative energy vehicles and more road tax rebates. With regard to goods vehicles, the use of electric mobility will be promoted with the construction of specific charging points and financial incentives, and the mobility of conventional vehicles in the city will be limited.

Barcelona Bicycle Strategy (2015). The Barcelona Urban Mobility Plan (PMU) 2013-2018 sets out a series of measures aimed at giving greater prominence to cycling. The PMU aims to increase cycling by 67% compared to 2011. The City Council's aim is for 95% of citizens to have at least one cycle lane within 300 metres of their homes and to have 308 km of cycle lanes by 2018.

The **Barcelona 2030 Healthy and Sustainable Food Strategy** represents a commitment to transform the city's food system and make it more sustainable for the benefit of



citizens, the territory and the planet. It is an initiative agreed with the different agents in the food chain and one of the fruits of the city's becoming the world capital of sustainable food in 2021. It consists of 9 main objectives, 54 lines of work and 265 concrete and coordinated actions with the different actors in the food system. It also includes 11 goals to be achieved by 2030, such as doubling the consumption of local and organic products, reducing food wastage by 50%, changing school canteen menus with healthy eating criteria and reducing the percentage of obesity in the city. Its 9 objectives are:

- Increase the production, sale and consumption of seasonal, local, organic, sustainably fished and animal welfare food, as well as distribution in shorter, fairer and more balanced chains.
- Protect, recover and promote spaces for urban and peri-urban agriculture.
- Promote healthy and sustainable food for all people.
- Increase the resilience of the food system and ensure the right to healthy and sustainable food.
- Prevent food losses and wastage.
- Combating the climate emergency and the extinction crisis.
- Promote a cultural and educational shift towards sustainable food.
- Promote fair relations within the food chain.
- Coordinate and mobilise actors in the food system to implement concrete and measurable actions linked to existing strategies.

The **Nature Plan 2030** consists of a ten-year strategy, structured in three axes and two cross-cutting areas and a total of twenty actions and one hundred projects, with a first Action Programme 2021-2025, under which ten priority projects, also called tractor projects, will be implemented. They involve an increase of 18.6 hectares of green spaces. The 2050 vision of the Plan is that of a city with a functional and ecological green infrastructure; an equitable, accessible green space, connected to the urban fabric and the metropolitan green network, to maximise social and environmental services, especially those related to health and adaptation to climate change.

The **Urban Mobility Plan 2019-2024** foresees more than 300 specific measures for:

- Guarantee the right to mobility.
- Ensure the health and safety of people.
- Contribute to the recovery of economic and commercial activity.
- Combat the climate crisis and improve air quality.

The aim is to achieve safer, more sustainable, healthier, more equitable and more efficient/smart mobility. To this end, the aim is to reduce the use of private vehicles



(reducing their modal share from 26% to 18.5%) and to promote walking, public transport, cycling and car sharing, prioritising renewable energies in all cases.

Superilla (superblock) Barcelona is a global and comprehensive intervention strategy to regenerate and transform the city based on the following objectives: Social Justice, Fight against Climate Emergency, Habitability, Productive Urban Fabrics and Memory and Landscape. It incorporates actions for the transformation of public space, the improvement of neighbourhoods, the reactivation of economic fabrics and the promotion of sustainable mobility.

The **Barcelona Urban Regeneration Programme** aims to achieve urban development that transcends the usual considerations of integral rehabilitation (improvements in habitability, accessibility and energy efficiency) by providing specific solutions to promote inclusion, efficient use of resources, mitigation and adaptation to climate change and resilience. Five objectives are defined: Improving the quality of the urban environment; Favouring an efficient use of resources; Ensuring social cohesion and well-being; Promoting functional and social diversity; Strengthening integration and territorial balance.

The **Neighbourhood Plan** is a comprehensive and cross-cutting plan, structured in six areas, one of which, Environmental Sustainability and Climate Emergency, includes actions that specifically aim to reduce the effects of climate impact on the most vulnerable neighbourhoods and population. The main objective of the Neighbourhood Plan is to empower neighbours to organise themselves and establish objectives and actions to improve collective life in the neighbourhood, promoting social innovation practices and citizen action with the clear objective of improving and strengthening the social capital of the neighbourhoods.

The **Barcelona Right to Housing Plan 2016-2025** aims to guarantee the social function of housing and to advance in the construction of a public service in this area. This plan is structured in four strategic lines of action:

- Preventing and addressing the housing emergency
- Ensuring the proper use of housing
- Expanding the number of affordable flats
- Rehabilitate the existing park

Having a residential stock in good condition is essential to guarantee the quality of life of all the city's residents. In Barcelona, refurbishing, improving and updating the residential stock is the way to achieve this, while guaranteeing the quality and safety of the architectural heritage; initiating the energy transition, favouring efficiency, savings and the generation of renewable energies; and reversing inequalities by improving habitability and access to basic services.



The **Barcelona Tree Master Plan 2017-2037** places emphasis on rethinking the criteria and processes of intervention, with the aim of applying more sustainable and efficient management and maintenance to improve the living conditions of Barcelona's trees in order to maximise the services and functions that healthy trees provide to the city and to people's wellbeing. The 5 priority objectives of the plan are:

- To have a forest that is a true green infrastructure and that achieves the maximum endowment and connectivity with the environment (urban and natural).
- To obtain the maximum environmental, social and economic services from trees.
- To have a biodiverse, well-maintained, protected, safe, secure and identity-enhancing tree stock through the most efficient and sustainable management possible.
- To have adapted, resilient trees that can be a tool for adapting to global change.
- To achieve a good coexistence between citizens and trees and to advance in the value that society places on trees.

The plan also sets the following challenges for 2037:

- Increase tree cover in the city by 5 %, reaching 30 % of the urban area covered by trees.
- Ensure that, within the urban fabric, 40% of tree species are adapted to global change, instead of the current 30%.
- Achieve a biodiverse tree heritage where no single tree species within the urban fabric accounts for more than 15% of the total.
- To make available to the public all the information on the characteristics and services of each of the trees in the urban fabric, through interactive technologies that facilitate public knowledge and collaboration.
- To ensure that children in all primary schools in Barcelona identify and appreciate the trees in their neighbourhood.

The **Let's Change for Climate 2030 Plan** aims to promote changes in the dominant culture and help develop and spread a new culture of sustainability that will intensify climate action in the city of Barcelona. The main objectives pursued by the plan are:

- Significantly increase social awareness of the global crisis and the need for new values and lifestyles to address and reverse it.
- Increase the critical mass of actors and people in the city committed to a culture of sustainability and climate emergency.
- Promote sustainable and decarbonised lifestyles in households and a more conscious and direct relationship with nature.
- Impregnate the culture and art that is programmed in the city with ideas and content on the socio-environmental and climate crisis.



- Consolidate centres of reference in which opportunities for change and alternative spaces where social transformation in favour of sustainability can take shape are visualised.
- Promote and amplify the work of the "allied" agents of the Barcelona + Sustainable network, strengthening the capacity of educators and facilitators of cultural change.
- Consolidate education for sustainability and climate action in all the city's educational centres.
- Increase the visibility of the climate emergency on the municipal agenda (political, media, cultural, educational), ensuring coherence between sustainability and climate policies and cultural and educational policies.

The **Climate Emergency Action Plan 2030** is the main climate action planning document. This action plan is the result of combining the Climate Plan, approved in 2018, and the Climate Emergency Declaration of 15 January 2020. The strategic axes on which the Climate Emergency Action Plan is based are the following:

- **Mitigation.** Actions are promoted to encourage savings, increase energy efficiency and the refurbishment of buildings and to achieve more renewable and local energy production. A commitment to reduce GHG emissions by 50% by 2030 and 100% by 2050 compared to 1992 values is established as the main strategic objective.
- **Adaptation.** Barcelona City Council, together with the Meteorological Service of Catalonia and Barcelona Regional, has carried out several studies to find out how climate change will affect the territory of Barcelona.
- **Climate Justice.** Citizens and the most vulnerable groups are at the heart of the city's climate policies.
- **Promoting citizen action.** Promote citizen action through the Barcelona Climate Commitment and other co-creation projects.

It is also characterised by the fact that it encompasses all sectors and is structured into five areas of action and eighteen lines of action. The areas of action correspond to the main axes on which the plan aims to have a direct and cross-cutting impact:

- Health and well-being
- Energy saving and generation
- Urban and mobility model
- Economy and consumption
- Climate culture

The **Clima Plan + Networking 2022-2027** develops the climate grants programme. These subsidies seek to encourage projects that promote the fight against the



climate crisis and proposals for solutions to achieve the objectives set out in the Climate Emergency Action Plan, promoting citizen involvement and supporting collective actions, especially the most innovative and transformative initiatives. The objectives pursued by the programme are:

- Facilitate the development of transformative projects from the city's entities.
- Empower organisations in the actions they develop in the city in the face of global challenges.
- Strengthen the social fabric of environmental organisations that develop projects in the city.
- To make visible proposals for change being carried out in the city to address the climate emergency.
- Promote initiatives that involve citizens who are not mobilised around the climate emergency.

Neutrality target 2030 and emissions gap

As stated in the Commitment document, the Barcelona City Council aims to achieve the city's neutrality in Scope 1 and 2 Greenhouse Gas (GHG) emissions by 2030. The intention is to achieve an 80% reduction in these emissions compared to what would be expected in a Business as Usual (BAU) scenario in 2030 (3.87 million tonnes of CO₂ equivalent), which differs very little from those recorded in 2019 (3.82 million)⁴.

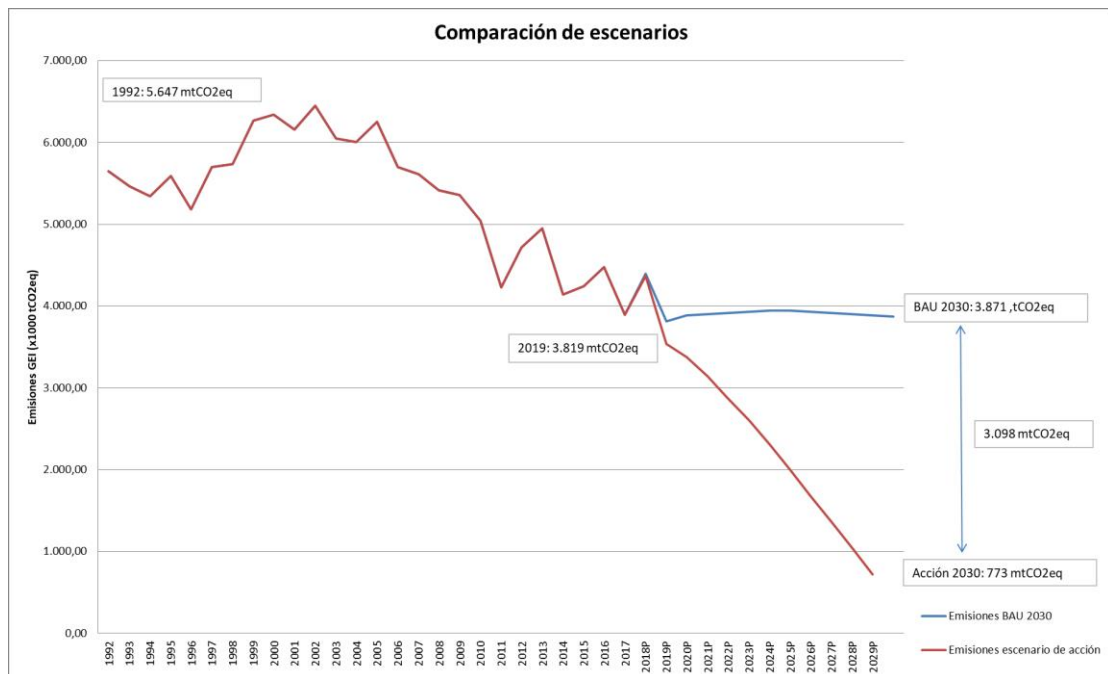
We note that **the current regulatory framework and policies serve as a basis for the decarbonisation of Barcelona**, but with them the level of decarbonisation foreseen for 2030 reaches only 60% of the BAU scenario. Therefore, despite their very recent approval, **rules, plans and policies should be reformulated and complemented in some aspects, in such a way that the level of ambition of the Mission and a credible and bankable set of instruments for decarbonisation, including both incentives and obligations for the various actors, are reflected.**

⁴ For the purposes of the Mission, emissions generated by infrastructures with a clearly supra-municipal scope, such as the Port of Barcelona and Josep Tarradellas El Prat Airport, which are subject to specific regulations and which, in terms of emissions reduction, must comply with the stipulations of European, state and autonomous community regulations, will be excluded from the calculation. With regard to emissions generated by electricity production, it is assumed that, in accordance with the commitments of the Spanish and Catalan governments, by 2030 Barcelona will have an electricity mix made up mainly of renewable energies (with a contribution from the city of Barcelona of around 1,080 MWp). In this scenario, the generation of emissions will be considerably reduced.



A-2.3: Emissions Gap									
SECTORS	Reference emissions/ baseline (percentage) BAU 2030	2030 ECCP emission reduction target		Emission reduction target MISSION (80% of BAU 2030)		Emissions Gap (to achieve 80% emissions reduction)		Residual emissions ¹	
	(absolute value)	(absolute value)	(% of BAU 2030)	(absolute value)	(% of BAU 2030)	(absolute value)	(% of BAU 2030)	(absolute value)	(% of BAU 2030)
Transport	735	440	60%	512	70%	72	22%	223	30%
Buildings and heating	772	584	76%	584	76%	0	7%	188	24%
Electricity	1796	1154	64%	1682	94%	528	0%	114	6%
Waste	340	11	3%	153	45%	142	77%	187	55%
Other	228	152	67%	167	73%	15	14%	61	27%
Total	3871	2341	60%	3098	80%	757	16%	773	20%

¹ residual emissions are those that cannot be reduced through climate action and are offset.





MODULE A-3: Systemic Barriers to Climate Neutrality by 2030

A-3.1: System and stakeholder mapping				
System	Actors involved	Network structure	Influence	Interests
Barcelona City Council and its Group entities	Barcelona City Council plus its autonomous bodies, public business entities and trading companies wholly owned (IMHAB, IMU, BCASA, BASA, BSM, BIMSA...) or majority municipal (waste management and treatment companies).	The basic municipal structure is not the network, but the cascading hierarchy (sectoral managements), in coordination with territorial (district) managements and complemented by horizontal collaboration spaces to address issues that require the involvement of more than one sector.	Determinant for Mission leadership and implementation of key policies. Relevant in exemplary role and provision of resources.	The general interest of the city of Barcelona, made up of multiple sectoral interests that need to be balanced and taken into consideration when deciding on decarbonisation policies.
Multi-group public bodies whose budget is consolidated with that of Barcelona City Council (basically consortia).	With majority municipal participation (Energy Agency, Public Health Agency) or minority participation (Zona Franca Consortium, ATM, PN Collserola, Institut Metròpoli...).	Sectoral networks with leadership, co-leadership or high influence of Barcelona City Council	High or very high in certain sectors	Each entity has its own interests, which are more aligned with the municipal interest the greater the participation of the City Council.
Private entities with municipal participation but excluded from budget consolidation	Basically foundations: BIT Habitat, IS Global, BCN FP, Eurecat, I2cat, Fòrum Ambiental, Mobilitat Sostenible i Segura,	Sectoral networks with leadership, co-leadership or high influence of Barcelona City Council	Medium / high in certain sectors	



<p>Public interest entities associated with the City Council</p>	<p>With a minority but significant municipal participation (SABA, Fira2000, Sagrera Alta Velocitat Habitatge Metròpolis, BCN...).</p>	<p>Sectoral networks with leadership, co-leadership or high influence of Barcelona City Council</p>	<p>High or very high in certain sectors</p>	
<p>European Net Zero Cities Mission</p>	<p>NetZeroCities Consortium EIT Climate KIC Consortium Spanish Mission Platform: UPM, 7 Spanish mission cities, other cities involved 112 EU mission cities and partner states</p>	<p>Complex network, made up of a multitude of highly motivated actors. Network spaces are often complementary, although there are also overlaps.</p>	<p>Highly relevant for the political impetus and operational management of the Mission, as well as for the promotion of innovation.</p>	<p>To ensure that the 112 selected cities implement the Mission within the set deadlines. Expand the number of cities involved. Projecting the Mission to other regions of the world.</p>
<p>Supra-local regulators</p>	<p>European Commission (especially DG Climate Action) Government of Spain (especially the Ministry of Ecological Transition and Demographic Challenge) Generalitat (Autonomous Government) of Catalonia (especially the Department of Climate Action, Food and Rural Agenda)</p>	<p>The formal relationship between administrations at different levels is, in principle, hierarchical in terms of enforcement and collaborative in terms of policy design and development.</p>	<p>Determinant in shaping the framework of what is possible in each policy area</p>	<p>To advance climate policies, confronting in each case potentially conflicting sectoral interests (e.g. transport, tourism, intensive agriculture...), which have their supporters in the Catalan, Spanish and European governments.</p>
<p>Service operators</p>	<p>Public transport operators</p>	<p>Each sector and sub-sector has its</p>	<p>Very relevant for decarbonisation,</p>	<p>Each operator has its own interests</p>



	<p>Operators in the construction sector (within this, in the rehabilitation sub-sector)</p> <p>Operators in the energy sector (within this, in the renewable energy sub-sector)</p> <p>Operators in the waste management sector</p>	<p>own network, set up mainly to defend shared interests vis-à-vis public administrations.</p>	<p>through corporate commitment (business model, investment), good management and innovation, of sectors that emit a large volume of emissions.</p>	<p>(financial, economic, social...) in the short, medium and long term.</p> <p>These interests may conflict with competitors, with other sub-sectors and with the administration.</p>
<p>Municipal participatory system</p>	<p>Barcelona + Sustainable Network</p> <p>Citizens' Council for Sustainability / Climate Emergency Bureau</p> <p>2030 Agenda 2030 Promotion Roundtable (within the City Council)</p> <p>Citizens' Climate Assembly</p> <p>System of sectoral and territorial participatory councils</p>	<p>It is a set of spaces for citizen participation promoted by the City Council. Ideally, they are the meeting point between the "City Council" system and the "civil society" system. Some instruments that generate order and coherence in the network are: the Citizen Participation Regulation, the City Council and the Decidim platform.</p>	<p>Relevant for developing, debating, validating and disseminating local policies leading to climate neutrality</p>	<p>Maximising participation, both in quantitative and qualitative terms</p>
<p>Metropolitan governance</p>	<p>Barcelona Metropolitan Area</p> <p>Metropolitan municipalities</p> <p>Barcelona Metropolitan Strategic Plan 2030</p>	<p>Network articulated around a few actors; highly conditioned by the influence of the city of Barcelona.</p>	<p>Quite relevant for coordinating territorial development strategies and some of the main policies involved in decarbonisation.</p>	<p>Fully incorporate the metropolitan perspective into the Mission.</p> <p>Achieve stronger metropolitan governance that is territorially adjusted to the reality of the Barcelona metropolis.</p>



<p>Innovative ecosystem</p>	<p>BIT Habitat Foundation</p> <p>Urban Innovation Centres Working Group</p> <p>EIT Urban Mobility KIC⁵</p> <p>BIC Council</p> <p>Universities and research centres</p> <p>European Network of Universities with Barcelona's leadership (ECIU and other)</p> <p>Public centres such as Institut Metròpoli i Barcelona Regional</p>	<p>There are various spaces, more or less stable/formal, for the meeting of the organisations of the innovative ecosystem. But it also functions through micro-networks generated by specific projects.</p>	<p>Relevant for promoting the creation of new knowledge and its dissemination. The aim is to develop, test and scale innovations that decarbonise production processes and service provision without losing efficiency or quality.</p>	<p>Generate innovations that are effective and financially sustainable.</p> <p>Participate in joint projects, which go beyond the capacities of each actor and share knowledge.</p>
<p>National and international sectoral and generalist networks of cities, with municipal participation.</p>	<p>C40</p> <p>Eurocities</p> <p>ICLEI</p> <p>UCLG</p> <p>Metropolis</p> <p>UCCI</p> <p>Xarxa de Pobles i Ciutats per la Sostenibilitat (Network of Towns and Cities for Sustainability)</p> <p>FEMP Agenda 2030 Network</p> <p>Cities for Cycling</p>	<p>The usual way of working is through projects involving one organisation and several cities.</p> <p>At regional and global climate meetings, these organisations often act as an advocacy network for cities and municipalities vis-à-vis states and international organisations.</p>	<p>Relevant for boosting both city-to-city collaboration and the role of cities in the global governance of the climate crisis.</p>	<p>To achieve better cities, more committed to the fight against climate change and better adapted to it.</p> <p>To achieve greater influence of cities on climate change governance at all levels (countries, regions, global).</p>

⁵ EIT Urban Mobility is an initiative of the European Institute of Innovation and Technology (EIT) aimed at improving the quality of life in urban environments with innovative mobility solutions. Co-financed with up to 400 million euros (2020-2026) by the EIT, it aims to foster collaboration between companies, universities, research centres and cities through transnational innovation and knowledge communities. Barcelona City Council led the consortium's candidacy and coordinated the constitution of the Knowledge Innovation Community (KIC). EIT Urban Mobility currently has more than 60 international partners and its headquarters in Barcelona employs around 100 people.

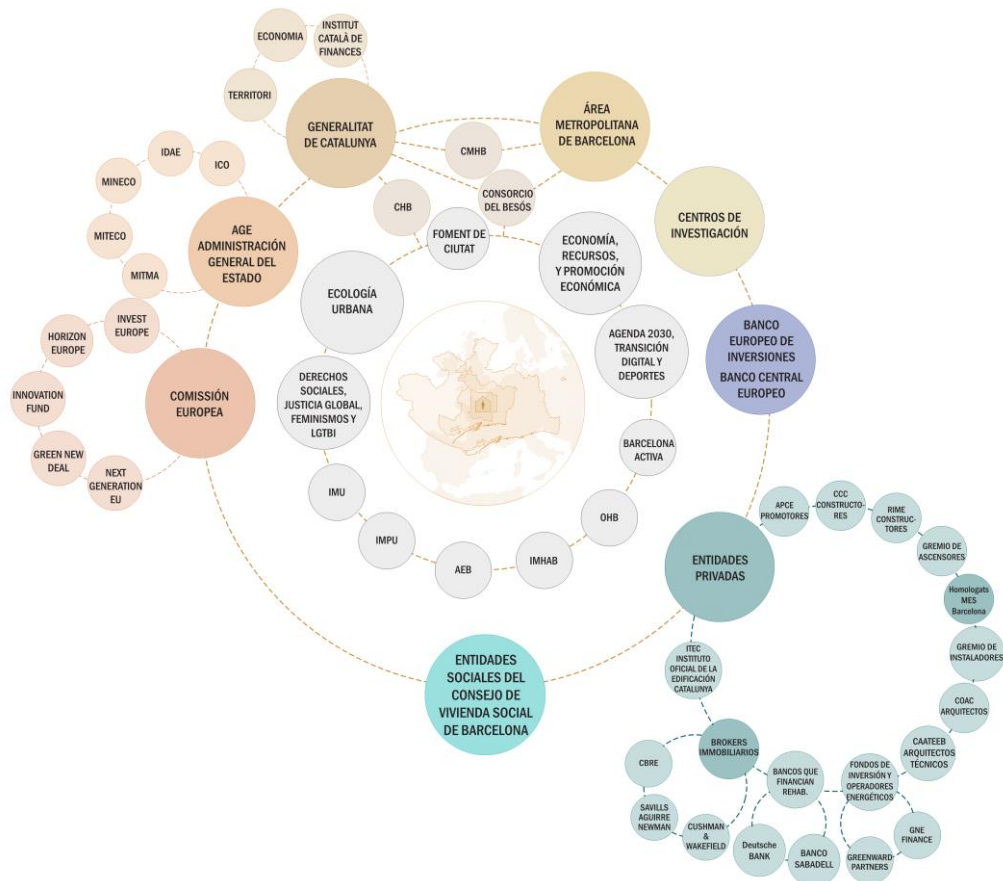


	Network			
Business sector	<i>In Barcelona there are 186,731 registered companies (1/1/2022), of which 99% have fewer than 50 employees and almost 90% are in the service sector.</i>	<i>There are several business networks, organised by size (Foment, PIMEC...) and by sector.</i>	<i>Very relevant, through various means: investment decisions, lobbying of institutions, media pressure, etc.</i>	<i>Commercial profit and growth/survival of the sector and the company. Broader interests in the case of enterprises in the co-operative sector.</i>
Non-profit organisations	<i>The most relevant for the Mission are political, trade union, environmental and neighbourhood organisations.</i>	<i>The actors are organised in complex collaborative structures (associations, federations, etc.), which differ according to sector and sub-sector.</i>	<i>They exert influence by driving collective transformation. Medium relevance, depending on the sector and size of the organisation.</i>	<i>Non-material sectoral interests. Influence the decisions of the City Council and other relevant actors.</i>
Households / Families	<i>It is estimated that there are around 750,000 households in the city.</i>	<i>Households are structured through family and/or friendship networks.</i>	<i>Very high relevance in the transmission of knowledge, practices and values, and through purchasing and investment decisions. High in the transmission of ideas through micro-networks. Determinant in elections (especially municipal elections) to validate (or not) climate-neutral policies. Low in all other political processes</i>	<i>Enjoy quality of life in the city, with good health and a good economic situation. (very diverse translation of these interests, depending on the characteristics, values and life situation of each person and family).</i>



Education system	The city has more than 250,000 students.	Organised in corporate-type networks (teachers' unions, associations of religious centres, etc.)	Very high in the transmission of knowledge, practices and values related to the climate crisis and possible solutions	To carry out its educational project and ensure its growth/survival. Variable according to the ownership of the school.
The media	Traditional (press, radio, TV) and new; local and national	Informal networks	Very high in the generation and transmission of content and opinions regarding the climate crisis and possible solutions.	Commercial profit (advertising sales), growth/survival of the sector and the company/professional, recognition.

Each sector has its own network, made up of multiple actors. The following graph illustrates as an example the network of the housing renovation sector, which is made up of actors from the various networks mentioned above.





A-3.2: Description of systemic barriers

SYSTEMIC BARRIERS AFFECTING THE MISSION AS A WHOLE

Policy and governance

- **Institutional fragmentation.** Between the local level (Barcelona City Council) and the central level (Spanish Government), there are three administrative levels: metropolitan, provincial and autonomous (in the case of Madrid there is only one). This generates inefficiency and hinders the deployment of public policies. This situation comes partly from the fact that the territorial organisation of the State is based on two overlapping and precariously integrated models, the centralist and the federalizing one. The Constitutional Court's 2010 ruling on the Statute of Autonomy of Catalonia confirmed the validity of this duality.
- **Increasing political polarisation** in democratic states around the world. Viewing political adversaries as enemies obviously hinders the adoption of broad-based agreements based on shared diagnoses of societal and global problems. Polarisation can be even more intense in the face of new problems, such as climate change, which are associated with a high level of uncertainty in both diagnoses and policy responses.
- **The complexity of the party system in Barcelona**, which is structured around two major axes of division (the traditional left-right axis, with all its derivatives, and positioning in the face of national conflict). The existence of a greater number of parties with municipal representation can attenuate polarisation, but on the contrary **increases political fragmentation**, which in turn can make it more difficult to achieve the broad and stable support needed to tackle long-term policies.
- **The hierarchical structuring of public institutions**, based on the logic of sectoral specialisation. Climate change mitigation is an objective that affects many sectors and therefore requires a cross-sectoral approach. Despite the rhetorical support they often receive, projects of a cross-cutting nature are often not accepted and face multiple operational difficulties.
- **Difficulties in establishing public-private partnerships** capable of preserving the city's general interest. The legal framework offers limited options, and taking advantage of them requires non-dogmatic political leadership and technical staff (economists, engineers, lawyers, etc.) with the capacity to develop



reasonable, effective and transparent frameworks for collaboration with the private sector.

- **The inertia and rigidity of administrative activity.** Barcelona City Council has an organisational culture in which professional excellence and proactivity in the face of change stand out. However, it is a very large institution, which moves at cruising speed, and therefore needs time to take on board and digest the changes. Assuming the goal of climate neutrality by 2030 means rethinking the very basics -rules, procedures, project design- to minimise emissions generation and to facilitate as much as possible all those actions that drive decarbonisation. Logically preserving the principles of legal certainty and economic efficiency, but adapted to the imperative of climate neutrality. This is not easy, as it implies a strong change of mentality and a recomposition of status and power within organisations. Another dimension of the problem is the regulatory obstacles to incorporating young talent and new professional profiles that will be increasingly necessary to renew the organisation and address the challenge of climate neutrality.

Economic⁶

- **Legislation that is not very favourable to the climate-neutral economy.** Thanks to the European Commission's action, in application of the New Green Deal programme, very significant progress has been made in recent years in regulating key areas for decarbonisation. However, very important reforms of the *Fit for 55* Package (such as the energy rating of buildings) have not yet been approved, and the worst thing is that national and regional governments are taking a long time to transpose them into their legal framework and policies. In the case of Spain, for example, there is a structural delay in building a tax system that incentivises low-emission economic activities.
- **The high cost of low or zero emission technologies.** For many actors, they can be prohibitively expensive.
- Related to this is **the large need for upfront investment.** Achieving the decarbonisation of the city in such a short period of time implies concentrating a large volume of public and private investment on this objective, to the detriment of other objectives which, without being as essential or as effective in the long term, need to be tackled in the short and medium term, such as access to housing, education, mobility, etc. This poses major dilemmas for

⁶ The financial barriers are set out in more detail in Annex 2 (Climate Investment Plan).



public institutions, companies and households, especially in cases where there is already a high level of debt.

- **The insufficient financing of the administrations.** The Barcelona City Council has a rather good financing system, but this is not the case for most metropolitan municipalities, nor is it the case for the Autonomous Government of Catalonia, which is responsible for a substantial part of the investments needed to achieve decarbonisation. The Next Generation funds have been a lifeline for many institutions, but they have their limits, both quantitative and temporal.
- **The logic of finite resources and the struggle for the municipal budget.** No matter how healthy an institution is, there is always a dynamic of competition for budget resources, between departments and between projects. Despite their multiple benefits decarbonisation projects, must compete with many other projects of the mandate (facilities, infrastructures, etc.) which, although less necessary, can generate positive impacts more quickly and clearly and thus swing social and political support in their favour. It is difficult for municipal areas that do not have climate neutrality as part of their mission to prioritise investments to decarbonise their operational activity.
- **The precarious competitiveness of companies.** Barcelona's economic structure is based on small and medium-sized companies - known as PIMES - which can be highly successful, but which have more limited financial and organisational muscle when it comes to undertaking the structural transformations necessary to decarbonise activity.
- **The economic difficulties of households.** In our society there is a growing inequality in the distribution of income and even more so in the distribution of accumulated wealth. [In 2020 36.3% of households had difficulty making ends meet](#). In these conditions, the ability to borrow, or even to buy on a daily basis on a "low-emissions" basis is severely limited, although it is also true that low-income households generate far fewer emissions. For upper-middle-income households that can already consider such investments, incentives are essential.
- **The limited impact of public subsidies.** The administration grants aid for households to invest in decarbonisation (bonuses, subsidies), but there are things that make access difficult, such as lack of awareness of their existence, the difficulty of the procedures and the delay in payments. Some subsidies arrive after a very long wait. All this needs to be improved and other types of incentives need to be considered to generate a quantum leap in household climate investments.



Technological

- **Failure to upgrade infrastructure** (electric, mobility, etc.) and helpdesk at the pace necessary to properly integrate new technologies and switch to low or zero emission operation.
- **Lack of low or zero-emission substitute technologies that guarantee the performance** of conventional technologies (e.g. in vehicles and large machinery). Market developments will have to be awaited.
- The **difficulty of measuring emissions at an optimal level** of disaggregation for monitoring.
- **Difficulties in standardising innovation purchase in public procurement.**

Sociocultural

- **Climate denialism.** In its harsh version, this phenomenon is part of a more general movement that questions the legitimacy of the scientific approach to reality. Symptomatic of this is the decline of scientific culture in certain sectors of society, despite increasing levels of formal education. We saw this clearly during the Covid pandemic¹⁹. Under these conditions it is very difficult to maintain a public dialogue based on data and rational argumentation.
- **Climate relativism,** which does not deny the existence of the climate emergency, but questions its urgency and prevalence in relation to other problems. In this sense, the results of the latest [Municipal Services Survey](#), conducted among 6,000 people between January and April 2023, are revealing. Only 4% of the surveyed population considered "pollution and environment" (a category that includes, among others, all the answers referring to climate) as the most serious problem of the city (and 2.5% when the question referred to the most serious personal problem). As for the main demand made of the City Council, only 1.4% referred to "reducing pollution/improving the environment" (3.3% to "increasing/improving green spaces"). This demand is strongest among young people, but the graph (blue line) shows a noticeable drop from the peak of 4% in 2019, at the height of Fridays for Future.
- The **difficulty of seeing the positive impacts of mitigation at the local level.** Even the most well-meaning people may wonder whether it is appropriate to devote large short-term efforts to local mitigation when the emissions problem is global and long-term.



- The **impossibility (more legal than technological) of measuring emissions at the individual level**, which makes it difficult to control and punish freeriders and, consequently, to build social trust around the collective project of climate neutrality.
- **The decline of social movements** potentially more willing to fight for decarbonisation, such as the environmental or neighbourhood movements. These are fundamental to push for change by incorporating a social sense to it, which looks after the general interest. Currently, many organisations are finding it difficult to maintain their social base and ensure generational renewal. It seems that civic participation in neighbourhood organisations is not recovering after the pandemic. According to the Municipal Services Survey, participation it fell from 14% to 10% between 2019 and 2023, with large generational and neighbourhood differences.

SECTORAL BARRIERS

Mobility and transport

In this sector we can distinguish two main types of barriers, 1. to the shift towards more sustainable modes of transport and 2. to the electrification of motorised transport.

In the first case we can find:

- **Barriers to the growth of active travel (walking and cycling):** These may be infrastructural and urban (lack of pavements and/or safe routes for cyclists), physical (a functional disability or poor health, phenomena associated with an ageing population) or psychosocial (fear of injury or accident, or of being shouted at, in the case of cyclists). Barcelona starts from a very good position in terms of pedestrian accessibility and cycling infrastructure, but with some room for improvement.
- **Barriers to the use of public transport:** Lack of an adequate offer to meet mobility needs, perception of insufficient quality in certain means of transport or excessive prices. In the case of Barcelona, once again, the initial situation is very satisfactory, especially in terms of mobility in the urban continuum of the Barcelona plain. However, there is still much room for improvement in the supply and quality of public transport connecting the city with the metropolitan region, especially in terms of suburban trains.
- **Barriers to the normalisation of new means of transport, such as low-emission individual means of transport** (scooters and similar), or the **shared use of**



individual means of transport (cars and motorbikes): There are cultural barriers, frequent in the incorporation of new social practices, and regulatory barriers, due to the complexity of locating new actors in a public space subject to a high level of occupation.

In the case of electric mobility we have:

- **Barriers to the acquisition and use of electric vehicles:** The clearly higher cost compared to vehicles with internal combustion engines, which makes them unaffordable; the amortisation of vehicles already purchased or the existence of contracts that prevent early renewal; the high battery recharging time, especially for vehicles that are in service 24 hours a day; the uncertainties of this new technology (lifespan of batteries, recycling of vehicles); the operational difficulties arising from the different autonomy and/or technical performance of vehicles; the difficulties for companies to respond to large orders within a reasonable timeframe, which has a negative impact on procurement processes (especially in the case of leasing); the limited availability of maintenance services nearby; the limited availability of charging infrastructures (also applicable to hydrogen vehicles).
- **Barriers to the creation of new charging infrastructures (electric and hydrogen):** The difficulty of adding new infrastructure to a public space that is highly stressed by competing uses; related to this, the long time needed to agree on locations and do the tendering to build recharging points; the multiple limitations of building car parks, both private and public, to accommodate recharging points (space, energy capacity, fire safety), the overcoming of which involves making costly investments.

Buildings and heating

- **The low financial viability of energy retrofitting,** even in the long term. The city's mild winter climate means that the investment cannot be recouped by reducing energy costs. However, the co-benefits of increased thermal comfort - both in winter and summer - and reduced noise impacts mean better health, better quality of life and a revaluation of real estate.
- **The residential building structure, based on large condominium buildings.** Such an investment requires agreement among the owners, which may be impossible or at least increases the time and complexity of the process.



- **The atomisation of real estate ownership.** In order to launch a large-scale "wave of renovation", a large number of small and medium-sized owners have to be convinced. On the other hand, the population living in rented accommodation, more than 40% and growing, cannot consider this type of action.
- **Barriers to low-carbon construction:** Limited supply of electric construction machinery (especially large machinery); insufficient infrastructure to connect machinery or batteries to construction machinery; difficulty in reusing materials.

Energy

- The **unfavourable legal framework** for renewable energy in electricity pricing.
- The **lack of an adequate legal framework** for independent renewable energy.
- The **structure of building and real estate ownership** (see above), which makes it difficult to approve investments to install renewable energy.
- The **complexity of the regulation of uses and transfers of use of the roofs of public buildings.**

Waste

- The **regulatory and fiscal context** (municipal and supra-municipal).
- The citizens' **consumption habits.**
- The citizens' **perception of re-use.**
- Companies' **design and production criteria.**
- Companies' **perception of prevention.**

Nature-based solutions

- The **lack of free surface area in the municipality**, which results in a strong competition for the use of space, both on the ground and on the roofs of buildings. It is difficult to find space to expand or densify the green infrastructure.
- The **impact of climate change on green infrastructure:** Prolonged droughts and more intense and frequent heat waves.



A-3.3: Participatory model for climate neutrality in the city

Barcelona's participatory model is based on the conviction that achieving climate neutrality will require the involvement of all people and all stakeholders, both public and private.

The **Citizens' Council for Sustainability** is the city's consultative and sectoral participation body, and represents the different groups in the Network through an elective process. The Council is organised through plenary sessions, meetings of the permanent commission and also has specific working groups. One of these is the **Climate Emergency Committee**, which aims to define specific measures to be developed to effectively address the climate emergency and is also the space where the City Council reports on the progress made and the fulfilment of the commitments made.

The Barcelona + Sustainable Network was created in 2002, within the framework of the Agenda 21, and is currently made up of almost 2,000 citizen organisations, business and commercial organisations, educational centres, universities, professional associations, trade unions and administrations. Each organisation joins the Barcelona + Sostenible network by signing the Citizen Commitment to Sustainability and contributes to the transformation of the city with its own action plans. B+S members promote sustainability measures in their organisations, share good practices and develop projects with the other members of the network. In view of the maturity acquired by this network in recent years, the opportunity arises to incorporate the sociocracy approach to governance, which aims to make the co-responsibility of the agents effective on the basis of shared decision-making, encouraging the active participation and contribution of all its members. Collaborative networked action drives transformations, generates learning, allows what works to be scaled up, inspires the rest of the citizenry and has an impact on the improvement of public policies.

The Let's Change for Climate 2030 Plan will help to realise this transformation. Based on the Theory of Change, the Plan defines for each type of stakeholder what actions and partnerships can facilitate their co-responsibility and how they can be involved in drastically reducing greenhouse gas emissions and becoming more resilient.

The following are the planned co-creation actions, designed to co-responsibilise the social and economic fabric of the city in dealing with the climate emergency, in accordance with the objectives of the Mission:



1. **Update the Citizens' Commitment to Sustainability.** In 2024, the Citizens' Commitment will be updated and the opportunity will be taken to incorporate carbon neutrality targets for 2030 in line with the Mission. Therefore, B+S Network organisations that strengthen their commitment by joining this Alliance will directly commit to reducing greenhouse gas emissions. In addition, the renewal of this commitment is intended to refocus the way of working with the member organisations, through the proposal to carry out collaborative projects (or mini-missions).
2. **Define Collaborative projects.** These are projects with a specific common quantitative objective. Each organisation, from its field of work and area of expertise, contributes to their achievement. The first of the collaborative challenges to be worked on from 2024 with the B+S Network will be Decarbonisation: reducing greenhouse gas emissions by 80% in 2030 (considering scope 1 and 2). To this end, the entities that wish to join will have to propose specific actions that contribute to achieving this common objective along one of the following lines: replacing the use of fossil fuels, generation with renewables or energy savings. For example, a restaurant can focus its activity on being more efficient in the kitchen; a courier company on replacing combustion vehicles; an educational centre on working with students on the carbon footprint and its reduction. The first session to define these network projects (Fem Xarxing) will be held on 29 September 2023.
3. **Consolidate the Climate Emergency Bureau.** It will be convened to present the city's new Mission-related objectives and propose improvements to the CCC. Also to encourage them to co-create the shared decarbonisation projects (the aforementioned collaborative projects).
4. **Create a specific decarbonisation modality in the Climate Grants.** Since 2018, the City Council has offered a line of grants for climate action projects. It started with an endowment of 200,000 euros per year and has been increasing to 1,000,000 euros per year achieved in 2023. In the next edition (2024) a specific modality will be created to financially support non-profit entities that present initiatives aimed at innovation and effective transformation for decarbonisation. These projects can have a duration of up to 24 months; current expenses and investment costs will be subsidised up to 80% of the total cost of the project for each of the concepts, with a maximum total amount of 80,000 euros.
5. **Convene an edition of participatory budgets focused on the climate emergency.** Participatory budgets are a participatory process through which Barcelona's residents can present, define, prioritise, vote and, ultimately, choose investment projects that Barcelona City Council will implement in each district. The first edition was launched on 3 February 2020, with 30 million euros available from the



municipal budget. In the next edition, planned for the current term of office (2023-2027), it is planned to focus on the theme of climate emergency, reinforcing both issues of emissions reduction and adaptation to climate change and improving urban resilience. Priority will be given to actions to improve the sustainability of mobility through traffic calming, improving accessibility and promoting mobility on foot and by bicycle; actions to improve waste prevention and management; increasing the area and quality of green spaces in the city; actions to improve the resilience of the most vulnerable neighbourhoods and populations, etc.

6. Respond to the [demands of the 1st Citizens' Climate Assembly](#) and **call for a new edition**. In 2022-2023, the first Citizens' Climate Assembly was held in Barcelona (the first Spanish city to do so), made up of 100 people selected at random and representative of the city. The issues that the Assembly worked on, at the proposal of its members, were Energy, Consumption and waste, and Mobility. As a result, the Assembly members made 34 proposals for action. It is expected that, before the end of 2023, the municipal government will give a response on their acceptance and implementation. A second edition of the Assembly, specifically dedicated to decarbonisation, is also planned for the current municipal mandate.
7. Participate in the [H2020 Localised project](#): The aim of Localised (European H2020 project) is to create effective and user-friendly digital tools, based on sophisticated analytical models, to design scenarios and itineraries for decarbonisation at city scale, consistent with the objectives set by Europe in 2030 and 2050. In the framework of the project, a participatory activity on emergency/climate policies aimed at vulnerable populations is planned for 2024.
8. Carrying out the [Climate Emergency Marathon](#). Since 2018, this awareness-raising campaign has been carried out in February each year, in which around 40 municipal buildings and facilities (sports and educational centres, office buildings, etc.) participate on a voluntary basis, carrying out measures to save water and energy and adapt to climate change. The staff and users of the buildings think together and implement actions to reduce consumption without investment, only with changes in behaviour or management. The Marathon is expected to achieve a 10% reduction in GHG emissions during the four weeks of the campaign. The economic savings generated through energy savings have been used each year to promote projects of different types.
9. Carry out a new edition of the **Load yourself with Energy programme**. This is a set of activities (aimed at citizens in general, and especially at vulnerable groups and individuals), which are offered to facilities and organised groups that wish to add them to their programme. The main objective is to transmit the concept of energy transition and to train people for action, through workshops, specialised talks and



participatory dynamics. With this training, participants learn, for example, methods to reduce their domestic energy consumption.

10. Strengthen the **Sustainable Schools Programme**. Within the framework of the B+S Network there is a specific programme for schools. Several projects related to decarbonisation will be carried out in the coming years, such as:
 - a. "We act for the climate" educational programme, an educational proposal to empower schools, providing them with a diagnostic tool to explore their carbon footprint and their degree of adaptation to the impacts of the climate emergency. It offers resources, its own spaces for exchange and specialised advice. A dozen schools are expected to participate, with an impact on 2,000 pupils.
 - b. Young people for the climate emergency" programme, which aims to bring science closer to students, based on a research process on some aspect related to the climate emergency, accompanied by a team of scientists specialised in this subject. The next edition will focus on issues related to decarbonisation (food, electronic footprint, etc.).
 - c. Other specific educational programmes related to decarbonisation: apart from the programmes described above, there are others focused on Mobility (we transform mobility), Food (eat sensibly), waste (sustainable packaging; waste prevention; school mobile green point) and green (vegetable garden and composting; we discover nature).
11. Develop **specific actions with citizens at neighbourhood level**. Barcelona has a network of environmental education facilities distributed throughout the city's 10 districts and made up of 17 centres. During 2025, a shared cycle will be organised with all the decarbonisation facilities; in other words, a common framework of priority work will be defined, with a calendar of events, provision of educational resources aimed at the general public and families, dissemination and communication of activities, etc.
12. Consolidate the **Group of Experts for the Climate Emergency**. Barcelona has this consultative body made up of 17 people from different scientific disciplines and of a peer-to-peer nature. Its aim is to advise the government, analyse policies, transfer knowledge and promote collaboration between academia and civil society. During 2024, it will debate and make proposals on the territorial implementation of renewable energies at regional level.
13. Hold **Climate Science Days**. Every two years, debates will be organised in which local scientists will present the latest climate research carried out in Barcelona.



14. Facilitate and accelerate **voluntary projects of companies, entities and administrations focused on the reduction of disposable plastics**. Within the framework of the Zero Plastic Table, a working group of the Citizens' Council for Sustainability, actions will be carried out to reduce disposable plastic products. During 2024, the number of organisations adhering to this programme will be increased, their actions will be supported, networking will be facilitated and visibility will be given to the transformative initiatives carried out. These organisations will be granted a 10% reduction in the public price of waste collection.



PART B - PATHWAYS TO CLIMATE NEUTRALITY BY 2030

MODULE B-1: Climate Neutral Scenarios and Impact Pathways

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

B-1.1: Impact pathways								
Issuing sector	Scope of action	Transformative actions with direct impact ⁷	Main transformative actions with indirect impact	Used systemic levers	Early changes (1-2 years)	Long-term changes (3-4 years)	Direct impacts in 2030 (emission reduction) (kton)	Indirect impacts (co-benefits)
Transport	<i>Reduction in the need for motorised transport</i>	6. Smart mobility programme	18. Climate-smart urban design programme 20. Climate Neutral Economic Opportunities and Adaptations Programme 21. Education, culture and participation programme	Citizen engagement and participation Culture Local development strategies Social innovation Business models Regulation	Changes in practices: - Maintaining telework as a structural change. - Reduced need for transport due to greater proximity to basic services and facilities (15-minute city). Impacts: Reduced travel	Changes in practices: - Maintaining telework as a structural change. - Reduced need for transport due to greater proximity to basic services and facilities (15-minute city). Impacts: Reduced travel	85	Reduction of road accidents Improved quality of life by saving time (for family reconciliation, training, etc.).
	<i>Modal shift (to public transport and/or non-motorised private transport)</i>	1. Walking Mobility Programme 2. Public and collective transport mobility programme 3. Bicycle and Personal Mobility Vehicle mobility programme	19. Climate justice and social inclusion programme 21. Education, culture and participation programme 24. Metropolitan and multi-level concertation programme	Citizen engagement and participation Culture Local development strategies Financial resources Regulation	Changes in practices: Expansion and improvement of public transport networks (metro, bus, tram) and cycle paths, both at city and metropolitan level. Raising awareness of the many benefits of eco-mobility. Increased use of public transport, cycling and walking; reduced use of cars and motorbikes. Impacts: Increased share	Changes in practices: Expansion and improvement of public transport networks (metro, bus, tram) and cycle paths, both at city and metropolitan level. Increased use of public transport, cycling (and other personal mobility vehicles) and walking; reduced use of cars and motorbikes.	86	Economic savings Improved health through: cleaner air, less noise, more exercise

⁷ The focus and content of the transformative actions (called programmes in this CCC) are presented in the next section (B-2).



				of eco-mobility.	Impacts: Increased share of eco-mobility.		
Shared transport	6. Smart mobility programme	20. Climate Neutral Economic Opportunities and Adaptation Programme 21. Education, culture and participation programme	Capacity and capacity building Culture Social innovation Business models Regulation Technology	Changes in practices: Growth in the use of ridesharing. Impacts: Increased use of shared transport.	Changes in practices: Social normalisation of carpooling. Impacts: Increased use of shared transport.	35	Economic savings Increased sociability
Car electrification	5. Private transport mobility programme	20. Climate Neutral Economic Opportunities and Adaptation Programme 22. Knowledge and innovation development programme	Culture Business models Financial resources Regulation Technology	Changes in practices: Households and businesses are responding massively to the rapid expansion of charging infrastructure and the offer of new, more affordable electric car models. Impacts: Increasing the share of electrification of cars.	Changes in practices: Electric cars become the norm, in parallel with standardisation of charging infrastructure, in public and private spaces; price equalisation between electric and conventional vehicles. Impacts: Increasing the share of electrification of cars.	63	Improved air quality Less noise Reduction of operational costs (energy and maintenance)
Bus electrification	2. Public and collective transport mobility programme	19. Climate justice and social inclusion programme 24. Metropolitan and multi-level concertation	Governance and politics Business models Financial resources Technology	Changes in practices: Transport operators limit new purchases to zero-emission vehicles. Impacts: Increased share of zero-emission buses	Changes in practices: New purchases limited to zero-emission vehicles. Accelerated depreciation of the most polluting	34	Improved air quality Less noise Increased passenger comfort (less



		programme		is achieved.	vehicles Impacts: Increased share of zero-emission buses is achieved.		noise and vibration) Reduction of operational costs (energy and maintenance)
Optimisation of freight transport logistics	4. Urban freight distribution programme	18. Climate-smart urban design programme 20. Climate Neutral Economic Opportunities and Adaptation Programme 22. Knowledge and innovation development programme	Capacity and development of capacities Culture Governance and politics Business models Financial resources Regulation Technology	Changes in practices: Extending the implementation of last mile distribution micro-platforms. Improved monitoring and control of indiscipline. Impacts: Increase in home and office deliveries via goods (CDUM) and in the proportion of online purchases delivered to pick-up points. Strong growth in the number of cycling vehicles operating in the city.	Changes in practices: . Generalisation of last mile distribution micro-platforms. Impacts: Increase in home and office deliveries via goods (CDUM) and in the proportion of online purchases delivered to pick-up points. Strong growth in the number of cycling vehicles operating in the city.	94	Improved air quality Reduction of operational costs (energy and maintenance) Fewer road accidents



<p>Electrification of trucks</p>	<p>4. Urban freight distribution programme 5. Private transport mobility programme</p>	<p>20. Climate Neutral Economic Opportunities and Adaptation Programme 22. Knowledge and innovation development programme 23. Carbon Neutral City Council Programme (by: service vehicles)</p>	<p>Culture Business models Financial resources Regulation Technology</p>	<p>Changes in practices: Companies respond massively to rapid expansion of charging infrastructure; offer of new, more operational and affordable electric truck models. Impacts: X% truck electrification rate achieved.</p>	<p>Changes in practices: Electric trucks become the norm - at least in the small and medium-sized sector - in parallel to standardisation of charging infrastructure, in public and private spaces; price equalisation between electric and conventional vehicles. Impacts: Y% truck electrification rate achieved.</p>	<p>44</p>	<p>Improved air quality Less noise Reduction of operational costs (energy and maintenance)</p>
<p>Other measures in the mobility sector</p>	<p>6. Smart mobility programme</p>	<p>22. Knowledge and innovation development programme</p>	<p>Culture Social innovation Business models Regulation Technology</p>	<p>Changes in practices: Increased use of devices to increase the efficiency of both public and private transport modes. Better systems and devices are developed. Impacts: Improved efficiency, measured in time and cost per km travelled.</p>	<p>Changes in practices: The use of devices to increase the efficiency of both public and private means of transport is widespread. Impacts: Improved efficiency, measured in time and cost per km travelled.</p>	<p>71</p>	<p>Improved quality of life, by saving time spent on the obligatory transport.</p>



Buildings and Heating	Building renovations	7. Energy rehabilitation programme for buildings	19. Climate justice and social inclusion programme 20. Climate Neutral Economic Opportunities and Adaptations Programme 21. Education, culture and participation programme 23. Carbon Neutral City Council Programme	Capacity and capacity building Commitment and participation Culture Strategies for Local development Governance and politics Social innovation Business models Financial resources Regulation Technology	<p>Changes in practices: Development and approval of a 2030 plan for the renovation and energy efficiency of buildings, underpinned by regulatory changes (EU, national) to enable better pro-climate regulation of this sector. Incorporation of a substantial budget line to start the implementation of the plan. Development of business and financing models for energy refurbishment which are attractive to the private sector. Improving support for energy rehabilitation, applying a climate justice approach.</p> <p>Impacts: Increase in the rate of renovation of public buildings and private buildings.</p>	<p>Changes in practices: Implementation of the 2030 plan for energy rehabilitation of buildings, maintaining the municipal commitment to investment. Attraction of increasingly substantial volumes of private capital to such projects.</p> <p>Impacts: A rehabilitation rate of over 3% per year is achieved for public buildings and Y per year for private buildings older than 40 years.</p>	109	Economic savings in air-conditioning and/or increased comfort In some cases, reduction of fuel poverty
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<p><i>New net nearly zero-energy buildings</i></p>	<p>8. Building and heating innovation programme</p>	<p>18. Climate-smart urban design programme 20. Climate Neutral Economic Opportunities and Adaptations Programme 22. Knowledge and innovation development programme</p>	<p>Local Development Strategies Governance and politics Social innovation Business models Financial resources Regulation Technology</p>	<p>Changes in practices: Generalisation of the construction of "very low or zero emission" buildings. Pilot projects to test new technologies and business models. Impacts: Substantial increase in the proportion of new near-zero energy buildings.</p>	<p>Changes in practices: Reducing the cost differential (compared to conventional building) and standardising the construction of nearly zero energy buildings. Impacts: Widespread construction of new near-zero energy buildings.</p>	<p>9</p>	<p>Economic savings in heating and cooling</p>
<p><i>Efficient lighting and appliances</i></p>	<p>9. Energy efficiency programme in the use of buildings 12. Lighting programme for public spaces and municipal buildings</p>	<p>20. Climate Neutral Economic Opportunities and Adaptations Programme 21. Education, culture and participation programme 23. Municipal modernisation programme for climate neutrality</p>	<p>Business models Financial resources Regulation Technology</p>	<p>Changes in practices: Development and adoption of a 2030 plan for energy efficiency and retrofitting of buildings, including the efficiency of machinery and devices (in households, appliances) used in buildings. Promoting the improvement and/or renovation of household appliances, while remaining consistent with Programme 14 (waste prevention and reduction). Maintaining the budget</p>	<p>Changes in practices: Implementation of the 2030 plan for the rehabilitation and energy efficiency of buildings, maintaining the spending commitment for the efficient household appliances target (subsidies). Maintaining the budget line to complete the renovation of street lighting on schedule. Impacts: Significant increase in the proportion of high</p>	<p>231</p>	<p>Economic savings Reducing energy poverty</p>



					line for the continuation of the renovation of street lighting. Impacts: Significant increase in the proportion of high efficiency appliances purchased. Higher percentage of low-emission street lighting out of the total is achieved.	efficiency appliances purchased. Higher percentage of low-emission street lighting out of the total is achieved.		
<i>Low-emission heat generation (decarbonisation of heating)</i>	8. Building and heating innovation programme	18. Climate-smart urban design programme 20. Climate Neutral Economic Opportunities and Adaptation Programme 22. Knowledge and innovation development programme	Capacity and development of capacities Commitment and participation Culture Strategies for Local development Governance and politics Business models Financial resources Regulation Technology	Changes in practices: Development and adoption of a 2030 plan for the renovation and energy efficiency of buildings, with a section dedicated to heating systems. Develop and implement measures to promote the installation of low-emission air-conditioning systems. Planning and start of the execution, through public concession, of new urban heating and cooling networks in the sectors of La Sagrera	Changes in practices: Implementation of the 2030 plan for the renovation and energy efficiency of buildings, maintaining the spending commitment for the decarbonisation target for heating and cooling. Continuation of the construction of the new urban heating and cooling networks in the La Sagrera and La Model sectors, plus the third Districlima plant in Poblenou and	235	Economic savings in heating and cooling Reducing energy poverty	



					and La Model, plus the third Districlima plant in Poblenou and the new cooling plant in Econergies. Impacts: Strong increase in the installation of low-emission heating and cooling systems. Connection of new buildings to district heating and cooling networks.	the new cooling plant in Econergies. Impacts: Accelerated replacement of air-conditioning systems with low-emission systems. Connection of an increasing number of buildings to district heating and cooling networks.		
Electricity	Building improvements in the domestic sector	9. Energy efficiency programme in the use of buildings	19. Climate justice and social inclusion programme 21. Education, culture and participation programme	Commitment and participation Culture Financial resources Regulation Technology	Changes in practices: Development and adoption of a 2030 plan for the renovation and energy efficiency of buildings. Promoting research and development of technologies to increase the efficiency of energy consumption in buildings. Awareness-raising among citizens for the incorporation of efficient practices in domestic energy consumption.	Changes in practices: Implementation of the 2030 plan for the energy efficiency and renovation of buildings, maintaining the commitment to municipal spending for the household energy efficiency target. Widespread adoption of efficiency innovations. Impacts: Efficiency improvements that significantly reduce energy consumption.	32	Economic savings Reducing energy poverty



				Impacts: Efficiency improvements that significantly reduce energy consumption.			
Tertiary sector building improvements	9. Energy efficiency programme in the use of buildings	20. Climate Neutral Economic Opportunities and Adaptation Programme 21. Education, culture and participation programme	Business models Financial resources Regulation Technology	Changes in practices: Development and adoption of a 2030 plan for the renovation and energy efficiency of buildings. Promoting research and development of technologies to increase the efficiency of energy consumption in buildings. Citizens are aware of the need to incorporate efficient practices in energy consumption in offices, shops and tourist establishments. Impacts: Efficiency improvements that significantly reduce energy consumption.	Changes in practices: Implementation of the 2030 plan for the refurbishment and energy efficiency of buildings, maintaining the commitment to municipal expenditure for the energy efficiency target for offices, shops and tourist establishments. Widespread adoption of efficiency innovations. Impacts: Efficiency improvements that significantly reduce energy consumption.	543	Economic savings
Improvements to municipal buildings	9. Energy efficiency programme in the use of buildings	23. Municipal modernisation programme for climate neutrality	Governance and politics Financial resources Technology	Changes in practices: Development and adoption of a 2030 plan for the renovation and energy efficiency of	Changes in practices: Implementation of the 2030 plan for the refurbishment and energy efficiency of	2	Economic savings



				<p>buildings. Promoting research and development of technologies to increase the efficiency of energy consumption in buildings. Citizenship awareness for the incorporation of efficient practices. Impacts: Efficiency improvements that significantly reduce energy consumption.</p>	<p>buildings, maintaining the commitment of municipal expenditure for the energy efficiency target for municipal buildings. Impacts: Efficiency improvements that significantly reduce energy consumption.</p>		
<i>Industrial activity</i>	16. Industrial decarbonisation programme	<p>20. Climate Neutral Economic Opportunities and Adaptation Programme 22. Knowledge and innovation development programme 24. Metropolitan and multilevel coordination programme</p>	<p>Governance and politics Business models Financial resources Regulation Technology</p>	<p>Changes in practices: Development of business models that encourage industrial companies to invest in the electrification of their activity. Raising awareness of the benefits of electrification, linked to on-site renewable energy generation. Impacts: Increased electrification of industrial activity.</p>	<p>Changes in practices: Massive adoption of emission reduction commitments by industrial companies. Impacts: Increased electrification of industrial activity.</p>	48	Economic savings



<p>Solar generation in the municipality of Barcelona</p>	<p>10. Renewable energy generation programme in municipal buildings and public space. 11. Renewable energy generation programme in non-municipal residential, service and industrial buildings.</p>	<p>19. Climate justice and social inclusion programme 20. Climate Neutral Economic Opportunities and Adaptation Programme 21. Education, culture and participation programme 23. Municipal modernisation programme for climate neutrality</p>	<p>Capacity and development of capacities Commitment and participation Strategies for Local development Governance and politics Social innovation Business models Financial resources Regulation Technology</p>	<p>Changes in practices: Increase photovoltaic generation both in municipal facilities and in private buildings and spaces. Develop business models that allow, through a combination of public and private capital, to multiply and accelerate the installation processes of renewable energies, prioritising the spaces with the greatest potential (building roofs and other medium or large spaces) and seeking synergies with the energy rehabilitation of buildings. Impacts: Generate a much larger amount of renewable energy in the city.</p>	<p>Changes in practices: Massive investment, from public and especially private capital, in the installation of renewable energies in Barcelona. Impacts: Generate a much larger amount of renewable energy in the city.</p>	<p>407</p>	<p>Economic savings Reducing energy poverty Resilience / robustness / independence in energy supply</p>
<p>Decarbonisation of electricity</p>	<p>24. Metropolitan and multilevel concertation programme</p>	<p>25. City-to-City Climate Cooperation Programme</p>	<p>Governance and politics</p>	<p>Changes in practices: Political and regulatory pressure to accelerate the decarbonisation of electricity utilities.</p>	<p>Changes in practice: Majority share of renewable energies in the reference electricity mix for</p>	<p>650</p>	<p>-</p>



					Impacts: Increase in the proportion of electricity consumed in Barcelona that is generated by renewable energies.	Barcelona Impacts: Increase in the proportion of electricity consumed in Barcelona that is generated by renewable energies.		
Waste	Zero waste strategy	13. Low-emission municipal waste management programme 14. Waste prevention and reduction programme	20. Climate Neutral Economic Opportunities and Adaptation Programme 21. Education, culture and participation programme 22. Knowledge and innovation development programme 23. Municipal modernisation programme for climate neutrality	Capacity and development of capacities Commitment and participation Culture Strategies for Local development Governance and politics Social innovation Business models Financial resources Regulation Technology	Changes in practices: Full development of the waste collection Implementation of the measures foreseen in the Zero Waste Plan 2021-2027 in the areas of waste prevention and reduction. Impacts: Increased efficiency in transport and waste management, increased recycling rate of municipal waste, reduction in the amount of waste generated.	Changes in practices: Implementation of the measures foreseen in the Zero Waste Plan 2021-2027 in the areas of waste prevention and reduction. Impacts: To bring waste generation below 1.20 kg/inhabitant/day; to achieve recycling levels of 60% of municipal waste; to achieve a collection of the organic fraction with a maximum of 8% by weight of non-recyclable waste.	153	Economic savings Improving the quality of urban life
Other	Industrial activity (natural gas)	16. Industrial decarbonisation programme	20. Climate Neutral Economic Opportunities and Adaptation Programme	Governance and politics Business models Financial resources Regulation	Changes in practices: Increased use of non-electric renewable energy in industrial production.	Changes in practices: Increased use of non-electric renewable energy in industrial production.	51	



		22. Knowledge and innovation development programme	Technology				
Others [1]	15. Water cycle management programme with a climate perspective 17. Urban green infrastructure programme	18. Climate-smart urban design programme 21. Education, culture and participation programme 22. Knowledge and innovation development programme 23. Municipal modernisation programme for climate neutrality	Capacity and development of capacities Commitment and participation Culture Social innovation Financial resources Technology	Changes in practices: Progressive expansion of urban green infrastructure and increasing citizen participation in its care. Moderate but steady reduction in water consumption. Increasing use of alternative water resources. Impacts: Increase in the green surface area in public spaces. Increased citizen participation in the "Mans al verd" programme. Reduction in domestic/urban water consumption. Increased use of alternative water resources.	Changes in practices: Progressive expansion of urban green infrastructure and increasing citizen participation in its care. Moderate but steady reduction in water consumption. Increasing use of alternative water resources. Impacts: Increase in the green surface area in public spaces. Increased citizen participation in the "Mans al verd" programme. Reduction of domestic/urban water consumption. Increased use of alternative water resources.	116	Improved water supply Improving air quality Improving biodiversity Reduction of the heat island effect Economic savings

¹ It includes other measures such as the compensation of emissions produced by local electricity generation in the municipality of the city of Barcelona.

MODULE B-2: portfolio of transformative actions

The Climate Emergency Action Plan (CEAP) 2030 is the reference document, but in some sectors it has been further developed through more recent plans, which incorporate new quantified targets.

B-2.1: Description of the portfolios of transformative actions ⁸			
Issuing sector	Description of the portfolio of transformative actions		
	Transformative actions (named programmes in this CCC)	Actions of the Climate Emergency Action Plan (CEAP) 2030 covered	Operational sectoral plans in place that include all or part of the planned transformative actions
Mobility and transport	<p>1. Walking Mobility Programme</p> <p>2. Public and collective transport mobility programme</p> <p>3. Bicycle and Personal Mobility Vehicle mobility programme</p> <p>4. Urban freight distribution programme</p> <p>5. Private transport mobility programme</p> <p>6. Smart mobility programme</p>	<p>10.6</p> <p>10.1, 10.8, 10.13, 10.14, 10.31, 10.32, 10.33</p> <p>10.4, 10.16</p> <p>10.12, 10.19</p> <p>10.2, 10.7, 10.10, 10.9, 10.11, 10.17, 10.20, 10.26</p> <p>10.3</p>	<p>The six programmes in this sector correspond to the six strategic lines of Barcelona's Urban Mobility Plan (PMU) 2024.</p> <p>The Carbon Neutral City Council Programme will also incorporate a section on corporate mobility (CEAP 10.18).</p>
Buildings and heating	<p>7. Energy rehabilitation programme for buildings</p>	<p>1.2, 1.7, 4.5, 4.6, 4.7</p>	<p>The Government's Climate Neutral 2030 Action Plan will include the main lines of these programmes. The Renewable Barcelona 2030 Programme, which includes many of these actions, can be used as a basis for their development. The</p>

⁸ Note: all the plans referred to in the table can be consulted and downloaded at <https://bcnroc.ajuntament.barcelona.cat/jspui>. The specific links to most documents can be found in pp. 13-14 of this document.



	<p>8. Building and heating innovation programme</p> <p>9. Energy efficiency programme in the use of buildings</p>	<p>4.5, 4.6, 4.7, 4.9</p> <p>4.1, 4.2, 4.3, 4.4, 4.8</p>	<p>actions referring to municipal buildings will be included in the Programme for a Carbon Neutral City Council.</p> <p>Ongoing projects. Operational plan pending.</p>
Electricity	<p>10. Renewable energy generation programme in municipal buildings and public space.</p> <p>11. Renewable energy generation programme in non-municipal residential, service and industrial buildings.</p> <p>12. Lighting programme for public spaces and municipal buildings</p>	<p>2.1, 2.3, 2.4, 5.1, 9.1, 9.2</p> <p>2.1, 5.2, 5.3, 10.25</p> <p>4.8</p>	<p>The Government's Climate Neutral Government Action 2030 will include the outlines of these programmes, which are to be developed into operational programmes in the coming months. Actions related to municipal buildings will be included in the Carbon Neutral City Council Programme.</p> <p>Comprehensive lighting renovation plan</p>
Waste and other	<p>13. Low-emission municipal waste management programme</p> <p>14. Waste prevention and reduction programme</p> <p>15. Water cycle management programme with climate perspective</p> <p>16. Industrial decarbonisation programme</p>	<p>4.8, 14.2, 14.6</p> <p>12.3, 13.1 a 13.8, 13.12., 14.1, 14.4, 14.5, 14.8, 15.16</p> <p>4.8</p> <p>10.24, 12.10, 12.14, 12.15, 14.7</p>	<p>Barcelona Zero Waste Plan 2021-2027</p> <p>Barcelona Zero Waste Plan 2021-2027</p> <p>Healthy and Sustainable Food Strategy 2030</p> <p>Carbon Neutral City Council Programme (under development)</p> <p>Alternative Water Resources Development Plan (PLARHAB)</p> <p>BCN New Green Deal & Roadmap to the sustainability economy in Barcelona 2030</p>
Nature-based solutions	<p>17. Urban Green Infrastructure Programme (and other nature-based solutions)</p>	<p>5.1, 6.8, 7.1, 7.6, 7.8, 7.13, 11.13, 15.2, 15.16</p>	<p>Nature 2030 Plan</p> <p>CEAP (Line of Action 11.13): Promote the protection and increase of current marine carbon scuppers in the municipalities of the Barcelona coastline (Garraf and Maresme seagrass meadows),</p>



			enhancing network collaboration.
Cross-cutting actions			
Theme	Transformative actions	Correspondence with CEAP 2030 actions	Operational sectoral plans in place that include all or part of the planned transformative actions
Town planning	18. Climate-smart urban design programme	6.1, 6.2, 6.3, 7.3, 10.5	Superilla BCN Programme Metropolitan PDU
Social protection and social inclusion	19. Climate justice and social inclusion programme	1.1, 1.3, 1.8, 1.9, 2.5, 2.6, 2.8, 17.1	The CEAP develops this area in a comprehensive manner. Barcelona resilience profile Social Inclusion and Inequality Reduction Strategy 2017-2027 Gender Justice Plan 2026
Economic promotion	20. Climate Neutral Economic Opportunities and Adaptation Programme	1.5, 12.2, 12.4, 12.6, 12.9	The Government's Climate Neutral Government Action 2030 will include the development of this programme, building on the Sustainability Economy Roadmap. Healthy and Sustainable Food Strategy 2030
Education, culture and participation	21. Education, culture and participation programme	16.1, 16.3, 16.4, 16.5, 16.6, 16.7, 16.8, 16.10, 16.11, 16.13, 16.14	Let's Change for Climate 2030 Plan
Science and technology	22. Knowledge and innovation development programme	4.6, 6.6., 11.2, 11.3, 11.8, 18.1, 18.3, 18.4, 18.6, 18.7, 18.8, 18.10, 18.16, 18.17, 18.8, 18.19, 18.20, 18.21	Barcelona Innovation Coast Barcelona Science Plan Urban Innovation MoG
Municipal commitment and	23. Carbon Neutral City Council Programme	2.8, 12.8, 16.2, 16.16, 18.2, 18.4, 18.5, 18.11,	The Programme will define how Barcelona City Council aims to become an exemplary administration in the fight against climate change,



management of the fight against climate change		18.12, 18.13, 18.15	both in terms of its actions and its governance model. The Annual Sustainable Public Procurement Plan is also an element to be considered in the development of the actions of this programme.
Metropolitan vision and multi-level government	24. Metropolitan and multilevel concertation programme	6.3, 16.13	Barcelona Metropolitan Strategic Plan 2030 State and regional plans for climate, energy and other key sectors
City-to-city cooperation	25. City-to-City Climate Cooperation Programme	17.2, 17.3, 17.4, 17.5, 18.22, 18.23	Master Plan for Global Justice Co-operation 2026, Master Plan for International Relations 2020-2023

B-2.2: Individual Action Schemes

MOBILITY TRANSPORT

Action plan	Name of the action programme	1. Walking Mobility Programme
	Type of action	This Programme focuses on the extension and improvement of public space for pedestrian use throughout the city, centred, among other things, on the <i>Protegim les escoles</i> school environment pacification project and the creation of Green Axes and Squares.
	Description of the action	Its development takes place within the framework of the <u>Urban Mobility Plan 2024 (PMU)</u> , which foresees a specific line of action for walking mobility, the <u>P.E. line of action</u> : <ul style="list-style-type: none"> • Improve the accessibility and comfort of pavements and pedestrian areas. • Increasing pedestrian safety • Expanding and improving the area of pacified zones in the city • Deploying vertical mobility infrastructures • Inclusive management of urban design • Improving school and children's mobility • Enhancing the role of pedestrians: review of regulations, by-laws and other actions Revaluing the



		<p>role of pedestrians: dissemination, promotion and communication Studying mobility in Spaces of Great Influence (EGA)</p> <p>The actions related to walking mobility of the PMU, coincide perfectly with <u>action 10.6. of the CEAP 2030</u>, described as <i>Improve accessibility and comfort of pavements, increase pedestrian areas, improve vertical mobility (escalators and lifts), increase pedestrian-friendly streets, where the highest priority is given to pedestrians.</i></p>
Reference to the impact pathway	Line of action	Mobility and transport
	Systemic lever	<ul style="list-style-type: none"> • Finance (economic resources) • Regulation
	short and medium-term changes	<p><u>Features new Green Axes and Squares in the Eixample (executed 2022-2023):</u></p> <ul style="list-style-type: none"> • The division of heights between pavement and roadway is eliminated, and a single platform is created to favour the social use of the street. • Pedestrians have priority. Cars will only be allowed to drive at 10 kilometres per hour. • The asphalt will disappear and granite and concrete slabs will be used on all axes. • Green space will be multiplied tenfold. We will go from the current streets, which dedicate 1% of the space to green, to streets with an average of 12%. • 438 new trees will be planted. The streets will have a rich subsoil. • There will be almost a thousand new items of furniture (benches, chairs, tables, playground equipment) and new lighting. • A commitment to local commerce. Loading and unloading will be allowed at specific times.
Implementation	Bodies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Urban Planning and Housing Management and Mobility, Infrastructures and Urban Services Management
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Citizen participation (<i>Superillas</i> ideas competition, DECIDIM platform) • Associations promoting pedestrian rights, neighbourhood associations and traders' associations
	Comments on	<ul style="list-style-type: none"> • The implementation of the <i>Superilla Barcelona</i>



	implementation	<p>model plans to increase the number of green axles from 60.3 km in 2022 to 91.74 km in 2030.</p> <ul style="list-style-type: none"> The development of the PMU 2024 uses a continuous monitoring and evaluation system to determine the results of the actions, possible deviations and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Not available
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO2eq	Projected expenditure promoting walking mobility from 2019 to 2024: €87,400,000 (14.4% total mobility budget). Estimate until 2030: 174,800,000 €.

Action plan	Name of action programme	2. Public and collective transport mobility programme
	Type of action	Programme aimed at improving the urban, metropolitan and regional bus network in terms of reliability, competitiveness and supply. Similarly, the extension and improvement of the metro, tram and rail transport network will also play a central role in the development of this action.
	Description of the action	<p>Firstly, it is worth highlighting the objectives set out in the Barcelona Urban Mobility Plan 2024 (PMU) in relation to public transport. <u>Line of action T.P:</u></p> <ul style="list-style-type: none"> Consolidate the Bus Network by rationalising its resources, based on demand. Improve and extend the bus lane network in the urban area and enhance traffic light priority.



		<ul style="list-style-type: none">• Improve the integration and management of the supra-municipal bus lines.• Promote infrastructures outside the city to favour supra-municipal public transport.• Consider the extension of the PT on demand service.• Continue fleet renewal with more sustainable vehicles.• Improving metro service• Improving the connection and coverage of the tramway networks• Improve the infrastructure and signalling of the rail network.• Improving the management of the occasional bus service• Studying the improvement of coach management• Integrating tourism demand into mobility management and planning• Improving taxi management and service in the city• Ensuring accessibility to public transport• Managing public transport in a gender- and age-inclusive way• Review the public transport fare system <p>It should be noted that these actions are perfectly aligned with actions 10.1, 10.4, 10.8, 10.13, 10.14, 10.16, 10.31, 10.32 and 10.33 of the CEAP 2030.</p> <p>On the other hand, the Strategic Plan of Transports Metropolitans de Barcelona, SA (TMB) 2025 is decisive for the development of the programme, as the competent administration and owner of the Bus and Metro infrastructure:</p> <p><u>Strategic Metro lines</u></p> <ul style="list-style-type: none">• Improve and increase the supply of metro services.• Renew and expand the railway rolling stock with criteria of sustainability, energy efficiency and digital transformation.• Adapt, improve and extend railway infrastructure and systems for adequate service provision, maintenance efficiency, energy efficiency and sustainability.• Promote new service, operation and maintenance models that maximise the quality and safety of the Metro service and intermodality. <p><u>Strategic lines Bus</u></p> <ul style="list-style-type: none">• Improve and increase the Bus service.• Renew and expand the bus fleet with criteria of sustainability, energy efficiency and digital transformation.• Adapt and improve infrastructures and systems for the adequate provision of the bus service, maintenance efficiency, energy efficiency and sustainability.
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		<ul style="list-style-type: none">• Promote new service, operation and maintenance models that maximise Bus service quality and intermodality. <p>On a metropolitan scale, the <u>Metropolitan Urban Mobility Plan (PMMU) 2019-2024</u> is the document that sets out the sustainable mobility strategy for people and goods in the Barcelona metropolitan area (36 municipalities with a total of 3,260,268 inhabitants). In general terms, the PMMU sets criteria and guidelines for the development of the sustainable urban mobility plans (PMUS) of the metropolitan municipalities, so that local strategies are compatible with a metropolitan-wide strategy. Thus, the Plan includes proposals that affect other administrations and, therefore, it is configured as a multi-level plan. In other words, the achievement of the challenges of metropolitan mobility requires the contribution of the agents and of all the administrations with competences.</p> <p>The PMMU basically dedicates 2 of its 6 strategic axes to public transport, with the following lines of action:</p> <p><u>AXIS A. Urban Model and Metropolitan Mobility Networks</u></p> <ul style="list-style-type: none">- A.1. Mobility in urban planning- A.2. Basic road network at the service of the metropolitan mobility system- A.3. Metropolitan connectivity for active mobility- A.4. Infrastructures to consolidate metropolitan public transport- A.5. Metropolitan system of modal interchange nodes- A.6. Infrastructures to organise freight transport <p><u>AXIS C. Inclusive, efficient and quality public transport</u></p> <ul style="list-style-type: none">- C.12. Improving bus and rail services in the metropolitan area- C.13. More sustainable and efficient public transport fleets and facilities- C.14. Public transport for everyone- C.15. Homogenisation of the image and information of mobility services- C.16. Socio-environmentally sensitive fare system- C.17. Attractive and competitive metropolitan taxi- C.18. Cycling on public transport <p>The approximate cost of the actions planned in the PMMU 2019-2024 - irrespective of the actor bearing the cost - is estimated at 10,276 million euros. Spending on infrastructure is the highest (8,922 million euros) and accounts for 86.8% of the total. The remaining measures (1,354 million euros), management, maintenance and operation, represent 13.2% of the Plan's cost. Of the 10,276 million euros that would be required to implement the PMMU measures over six</p>
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		<p>years, the AMB would have to assume 3.8% (389.19 million euros). The rest of the expenditure has to be borne mainly by the metropolitan councils, the Generalitat de Catalunya and the General State Administration. The AMB's contribution is more notable in other measures (370 million euros) than in infrastructures (19 million euros).</p> <p>Because of its major impact on mobility in the city of Barcelona, it is worth highlighting the importance of the <u>Infrastructure Master Plan (PdI) 2021-2030</u>. This is the main planning instrument for public transport infrastructure in the Barcelona Metropolitan Region (which includes 12 Catalan counties with 5.6 million inhabitants, 73.81% of the Catalan population). The PdI includes proposals for the extension and improvement of the infrastructure network, together with the more general Mobility Master Plan for the Barcelona Metropolitan Integrated Mobility System.</p> <p><u>The 9 main objectives of the POI are:</u></p> <ol style="list-style-type: none">1) Increase the modal share of collective public transport.2) Ensure greater economic and social efficiency in public investment in the metropolitan transport system.3) Maximise the integration of public transport systems.4) To contribute to improving people's health and reducing accidents.5) Achieve an inclusive transport system that incorporates gender and social equity policies.6) To reduce emissions of pollutants (NO₂ and PM₁₀), GHGs and the noise impact of the collective public transport system.7) Minimise energy consumption, energy intensity and the use of oil-based fuels.8) Minimise the impact on the territorial matrix and ecological functionality.9) Other environmental objectives. <p>In addition, the PdI takes the form of a set of investments by the regional government and the State in two phases:</p> <ul style="list-style-type: none">- Phase A corresponds to 42 actions considered priorities and planned for the period 2021-2030. The PdI foresees an investment for the period 2021-2030 of €8,403.8 million, €5,059.2 million from the Generalitat de Catalunya and the remaining €3,344.6 million from the State.- Phase B would correspond to 24 actions considered as non-priority and to be implemented beyond 2030. <p>The investment projects are grouped into 5 programmes:</p> <ol style="list-style-type: none">1) Extension of the network (AX)
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		<p>2) State network (XE) 3) Public road transport (PT) 4) Exchangers (IN) 5) Modernisation and improvement (MM)</p> <table border="1"> <thead> <tr> <th>Codi</th> <th>Actuació</th> <th>Inversió (M€, IVA ex.)</th> </tr> </thead> <tbody> <tr><td>AX01</td><td>Metro. L1 Fondo - Sant Crist - Estació de Badalona</td><td>547,2</td></tr> <tr><td>AX02</td><td>Metro. L4 La Pau - Sagrera TAV</td><td>108,2</td></tr> <tr><td>AX03-AX04</td><td>Metro. L9/L10 Zona Franca-Zona Universitària-Sagrera</td><td>988</td></tr> <tr><td>AX09</td><td>FGC. L8 Plaça Espanya – Gràcia</td><td>321,7</td></tr> <tr><td>AX10</td><td>FGC. Nou túnel del Vallès (fase 1)</td><td>187,8</td></tr> <tr><td>XT01</td><td>Articulació de xarxes tramviàries a Barcelona (Unió Diagonal)</td><td>95,9</td></tr> <tr><td>XT02</td><td>T3 Pas per Laureà Miró</td><td>24,5</td></tr> <tr><td>XT03</td><td>T3 Sant Feliu de Llobregat (fase 1, dues parades)</td><td>22,9</td></tr> <tr><td>INO1</td><td>Intercanviador de Glòries</td><td>26</td></tr> <tr><td>INO2</td><td>Ernest Lluch</td><td>15,8</td></tr> <tr><td>INO3</td><td>Nova estació intermodal de El Prat</td><td>59</td></tr> <tr><td>INO4</td><td>Intercanviadors i noves estacions a la línia R8</td><td>77</td></tr> <tr><td>INO5</td><td>Acabament de l'intercanviador de Martorell</td><td>30</td></tr> <tr><td>INO6</td><td>Aparcaments d'enllaç a la xarxa d'FGC</td><td>100</td></tr> <tr><td>TPC01</td><td>Carril bus C-31 Nord</td><td>27</td></tr> <tr><td>TPC02</td><td>Intercanviadors a l'àmbit Llobregat</td><td>10</td></tr> <tr><td>TPC03</td><td>Estació d'autobusos a l'Estació de La Sagrera</td><td>29,1</td></tr> <tr><td>TPC04</td><td>Plataforma reservada Cornellà - Castelldefels</td><td>42,1</td></tr> <tr><td>TPC05</td><td>BRCat</td><td>41,2</td></tr> <tr><td>TPC06</td><td>e-bus</td><td>411,8</td></tr> <tr><td>TPC07</td><td>Carril bus B-23</td><td>12,6</td></tr> <tr><td>TPC08</td><td>Altres carrils bus</td><td>4,7</td></tr> <tr><td>TPC09</td><td>Aparcaments d'enllaç de bus</td><td>4,4</td></tr> <tr><td>TPC10</td><td>Nova xarxa de bicicleta</td><td>13,2</td></tr> <tr><td>XE01</td><td>Nou traçat Sant Feliu de Llobregat</td><td>93,4</td></tr> <tr><td>XE02</td><td>Nou accés Aeroport</td><td>73</td></tr> <tr><td>XE03</td><td>Nou traçat l'Hospitalet de Llobregat</td><td>606,6</td></tr> <tr><td>XE04</td><td>Duplicació Montcada - Vic R3 Parets-La Garriga</td><td>85,4</td></tr> <tr><td>XE06</td><td>Nou traçat línia R2 Montcada i Reixac</td><td>418,2</td></tr> <tr><td>XE07</td><td>Increment de fiabilitat (ERTMS, GSM-R, Sants 4+4, Vic, sect. Pl. 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	Systemic lever	<ul style="list-style-type: none"> Finance (technical resources) Technology Governance and politics Local development strategy 																																																																																																																																				
	short and medium-term changes	Modal shift towards sustainable modes of transport																																																																																																																																				
Implementation	Agencies/persons responsible for implementation	<ul style="list-style-type: none"> Barcelona City Council: Urban Planning and Housing Management and Mobility, Infrastructures and Urban Services Management. Generalitat de Catalunya Barcelona Metropolitan Transport (TMB) Metropolitan Transport Authority (MTA) ADIF RENFE (Suburban, Regional and Freight railway operator) Ferrocarrils de la Generalitat (Suburban and Freight railway operator) 																																																																																																																																				
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	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • TMB, competent administration and owner of the Bus and Metro infrastructure. • MTA, competent administration and owner of the tramway infrastructure • Generalitat de Catalunya, competent administration and owner of the Metro and Railway infrastructure (FGC). Railway and Cercanías de Cataluña (RENFE), the owner of the railway and suburban railway services in Catalonia.
	Comments on implementation	<p>The development of the PMU 2024 uses a continuous monitoring and evaluation system to determine the results of the actions, possible deviations and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).</p> <p>The metropolitan PMMU also has a system of evaluation and monitoring indicators for its strategic objectives (see PMMU 2024).</p>
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO₂eq	Projected mobility expenditure on public transport from 2019 to 2024: €189,979,000 (31.2% of total mobility budget). Estimate until 2030: €380 million. Pending the addition of the costs of the Pol 2030 and other investments planned by metropolitan and regional operators that are attributable to internal transport and connection with the city of Barcelona.

Action plan	Name of the action	3. Bicycle and Personal Mobility Vehicle mobility
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	programme	programme
	Type of action	Action aimed at promoting cycling and extending and improving the cycling network and infrastructure.
	Description of the action	<p>This Programme will be developed within the framework of the <u>Urban Mobility Plan 2024</u>, which foresees a specific line of action for bicycle mobility, the <u>B.I. Line of Action</u>:</p> <ul style="list-style-type: none"> • Extending and improving the network of cycle routes • Improving the efficiency of the city's public bicycle service • Improve the supply and management of secure bicycle parking facilities. • Promote security, control and civic measures. • Encourage public transport with access to bicycles. • Cycling outreach, promotion and communication • Disseminate and periodically review existing regulations on bicycles, MPVs and cycles with more than two wheels. <p>The actions of the CEAP 2030 related to cycling mobility are listed below:</p> <ul style="list-style-type: none"> - <u>Action 10.4</u>: Consolidate cycling infrastructure and improve the quality, connectivity and safety of the existing network, prioritising the structuring axes of the network. Expand the supply of anchorages and create high-capacity parking facilities at strategic points and major public transport interchanges. - <u>Action 10.16</u>: Provide support and subsidies for cycling to work. Pilot test, assist in the purchase of bicycles for companies and evaluate the possibility of providing workers with financial compensation for the mileage incurred in cycling to work.
Reference to the impact pathway	Line of action	Mobility and transport
	Systemic lever	<ul style="list-style-type: none"> • Finance (economic resources) • Culture • Commitment and participation
	short and medium-term changes	<p><u>Modal shift towards sustainable modes of transport.</u> Total trips by bicycle and VMP over total trips (motorised and non-motorised):</p> <ul style="list-style-type: none"> - 2024 scenario: 5.0% (2.3% in 2018) <p><u>Cycle lane:</u></p> <ul style="list-style-type: none"> - 2024 Scenario: 340 km, 55.7% more than in 2018 (218 km) - Scenario 2030: 365 km
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Urban Planning and Housing Management and Mobility, Infrastructures and Urban Services



		Management
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Barcelona Metropolitan Area (AMB) • Barcelona de Serveis Municipals (B:SM), manager of the Bicing service. • Citizen participation through the Bicycle Group in the framework of the Mobility Pact
	Comments on implementation	The development of the <u>Urban Mobility Plan 2024</u> requires a continuous monitoring and evaluation system to determine the results of the actions, possible deviations and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Not available
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO2eq	Projected cycling mobility expenditure from 2019 to 2024: €125,510,000 (20.6% total mobility budget). Estimate until 2030: 251.020.000 €.

Action plan	Name of the action programme	4. Urban Freight Distribution Programme
	Type of action	The Strategy for the Urban Distribution of Goods (DUM) 2030 includes the greening of the fleet, the creation of electric-power stations and charging points, centralised collection points for online shopping and cycle-



		distribution, as well as taxing the distribution activity of large technology platforms.
	Description of the action	<p>This Programme will be developed within the framework of the <u>Urban Mobility Plan 2024</u>, which foresees a specific line of action for urban distribution of goods, the <u>D.U.M. line of action</u>:</p> <ul style="list-style-type: none"> • Assign different ways of conducting the DUM depending on the context. • Consolidating and extending the implementation of last mile distribution micro-platforms. • Promoting new alternatives • Analysing DUM management in terms of environmental parameters • Improving the information available (DUM) • Improve the monitoring and control of indiscipline. • Incorporating new technologies to improve the management of DUM • Improving road safety in the DUM <p>The actions of the CEAP 2030 related to urban freight distribution are listed below:</p> <ul style="list-style-type: none"> - <u>Action 10.12</u>: Promote dedicated freight distribution spaces to increase efficiency and reduce their impact on GHG emissions. - <u>Action 10.19</u>: Introduce green taxation measures to tax the freight distribution activity of large technology platforms.
Reference to the impact pathway	Line of action	Mobility and transport
	Systemic lever	<ul style="list-style-type: none"> • Regulation • Finance (resources €) • Technology • Business models
	short and medium-term changes	<ul style="list-style-type: none"> • Reduces local air pollution • Reduces global greenhouse gas emissions • Reduces noise pollution • Facilitates energy self-sufficiency and diversifies energy resources • Ensuring the transition to renewable energy in transport • The associated technologies are cleaner and generate new labour markets. • Shaping more resilient cities that are less vulnerable with more robust services
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u>:</p> <ul style="list-style-type: none"> • Management of Economy and Economic Promotion • Urban Planning and Housing Management • Mobility, Infrastructures and Urban Services Department • Barcelona de Serveis Municipals -BSM- (Barcelona



		Municipal Services -BSM-)
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Barcelona de Serveis Municipals -BSM- (Barcelona Municipal Services -BSM-) • Metropolitan Transport Authority (MTA) • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya
	Comments on implementation	<p><u>Objectives 2030 of the Municipal Strategy for the Urban Distribution of Goods (EDUM)</u></p> <ol style="list-style-type: none"> 1. Increase by 20% the supply of loading and unloading hours, rebalance demand and improve parking management. 2. Achieve 33% of home and office deliveries through merchandise (CDUM) and 40% of online purchases to be delivered to collection points 3. Achieve a 50% reduction in emissions associated with DUM by 2030. 4. A tenfold increase in the number of cycling vehicles operating in the city. A DUM freight service with rail modes is also desired. 5. Move towards the "zero accident vision" by 2030: zero fatalities and zero serious injuries, including in this sector. 6. Reduce indiscipline among drivers of urban goods distribution vehicles by 60%. 7. Maintain the current 4,800 hectares of industrial land in the metropolitan area. 8. Extend SPRO implementation to 75% of metropolitan municipalities. 9. Create a DUM office as a focal point for dialogue with stakeholders in this sector. 10. To make Barcelona a hub of innovative technologies and solutions for the DUM. <p>On the other hand, the development of the <u>Urban Mobility Plan 2024</u> requires a continuous monitoring and evaluation system to determine the results of the actions, possible deviations, and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).</p>



Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Not available
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	Projected mobility expenditure on Urban Freight Distribution from 2019 to 2024: €3,790,000 (0.6% total mobility budget). Estimated to 2030: €7,580,000

Action plan	Name of the action programme	5. Private transport mobility programme
	Type of action	Programme aimed at improving the management and organisation of private transport mobility in the city with a restrictive and sustainable approach. Of particular relevance are the promotion of a comprehensive strategy for car parks and regulated parking -including park & ride zones-, the actions aimed at the restrictive regulation of private motorised transport (ZBE, hierarchisation of the road network, possible urban tolls, etc.), the development of a programme to promote electric vehicles for private mobility (in all its forms (vans, cars, motorbikes, bicycles, special vehicles, etc.)), and finally, the electrification of municipal vehicles and public transport services (buses and coaches, taxis).
	Description of the action	This Programme will be developed within the framework of the <u>Urban Mobility Plan 2024</u> , which foresees a specific line of action for private transport mobility, the <u>V.P. line of action</u> : <ul style="list-style-type: none"> • Define and study the efficiency of the system with changes of direction and changes of use on public roads. • Improve information signs on the road network. • Intensive action on traffic accident hotspots in the city • Allocate different maximum road speeds according to city forecast 30 km/h • Managing traffic with environmental criteria • Reducing and controlling noise pollution in the city • Promoting more efficient, safer and cleaner vehicles • Promote sustainable vehicles at the municipal level



		<ul style="list-style-type: none">• Promote the implementation of charging points for electric vehicles.• Review and improve parking management• Improving motorbike parking management• Increasing security and control measures for motorbikes• Disseminating sustainable and safe mobility <p>The actions of the CEAP 2030 related to private mobility and aligned to the PMU are listed below:</p> <ul style="list-style-type: none">- <u>Action 10.2</u>: Study the implementation of complementary measures to reduce the environmental impact of private motorised transport, e.g. parking management, urban transformation, toxicity tolls, etc.- <u>Action 10.7</u>: Extend the parking and regulated parking strategy to the whole city. Review the criteria applied, in all areas of the city, to all motorised vehicles, including motorbikes and goods, and agree with metropolitan councils and the AMB on the application of coherent policies.- <u>Action 10.9</u>: Traffic calming in the city in general to increase road safety and promote a friendly environment with lower energy consumption and emissions. Prioritise the road network, so that the vast majority of streets have a speed limit of less than 30 km/h.- <u>Action 10.10</u>: Create park & ride areas, in collaboration with other administrations.- <u>Action 10.11</u>: Deploy the low emission zone, monitor the planned phases and implement necessary adjustments.- <u>Action 10.17</u>: Promote electric vehicles (vans, cars, motorbikes, bicycles, machinery, etc.) with the creation of new charging infrastructure, with tax rebates on purchase, charging and parking, the implementation of electric delivery and taxi services, etc.- <u>Action 10.20</u>: Diversify fuels and electric vehicles in captive vehicle fleets.- <u>Action 10.26</u>: Electrify and diversify municipal vehicle fleets (including waste). <p>Cooperation and collaboration on a metropolitan scale is paramount for the development of this programme. Therefore, the <u>Metropolitan Urban Mobility Plan 2019-2024</u> foresees:</p> <ul style="list-style-type: none">• Line of action A.2: Basic road network at the service of the metropolitan mobility system• Action Line B.7: Urban liveability and low-emission zones• Line of action B.10 Parking and road pricing model <p>The essential electrification of municipal vehicles is</p>
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		channelled through Barcelona's Electric Mobility Strategy (2018) . By 2024 it is planned to reach 80% of the municipal electric fleet and 100 buses, 800 taxis, 24,000 passenger cars and 24,000 electric motorbikes. By 2030, 100% of the municipal fleet should be electric. At metropolitan level, the TMB Strategic Plan (metropolitan scope) : 233 electric buses and 46 hydrogen buses by 2025.
Reference to the impact pathway	Line of action	Mobility and transport
	Systemic lever	<ul style="list-style-type: none"> • Finance (MOVES III Plan in Catalonia. Incentives for efficient and sustainable mobility 2021) • Governance and politics • Culture • Regulation (parking, charging points) • Technology • Business models
	short and medium-term changes	<ul style="list-style-type: none"> • Reduction of enforced mobility and reduction of private car use • Reducing accident rates and improving road safety • Reduces local air pollution • Reduces global greenhouse gas emissions • Reduces noise pollution • Facilitates energy self-sufficiency and diversifies energy resources • Ensuring the transition to renewable energy in transport • The associated technologies are cleaner and generate new labour markets. • Shaping more resilient cities that are less vulnerable with more robust services
Implementation	Agencies/persons responsible for implementation	<ul style="list-style-type: none"> • <u>Barcelona City Council</u>: <ul style="list-style-type: none"> - Urban Planning and Housing Management - Mobility, Infrastructures and Urban Services Department - Management of Economy and Economic Promotion • TMB • Barcelona de Serveis Municipals -BSM • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Barcelona Metropolitan Area (AMB) • Barcelona de Serveis Municipals -BSM (manages regulated parking (AREA), and electric vehicle charging points). • Urban planning, Metropolitan General Plan • Associations of users of motorbikes, passenger cars.



		<ul style="list-style-type: none"> • Metropolitan Taxi Institute • Generalitat de Catalunya • Spanish Government • Electric vehicle manufacturers • Charging point operators 																																
	<p>Comments on implementation</p>	<ul style="list-style-type: none"> • Barcelona's Electric Mobility Strategy has a very comprehensive scorecard for its monitoring. • The Climate Emergency Action Plan (CEAP) foresees 15% of electric vehicles circulating in Barcelona by 2030. • 20% reduction in private motorised transport mobility by 2030 (CEAP) • The Catalan Climate Change Law foresees that new registrations of electric vehicles will reach 30% of the total by 2025. <p>On the other hand, the development of the <u>Urban Mobility Plan 2024</u> requires a continuous monitoring and evaluation system to determine the results of the actions, possible deviations, and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).</p>																																
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<p>Estimated GHG emission reductions (total)</p>	<p>A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario. The PMU 2024 estimates, assuming a reduction in private vehicle trips of 21% in 2024 and 29% in 2030,</p>																																	



		that NOx emissions due to motorised traffic will be reduced from 3,486 tonnes/year in 2018 to 1,662 tonnes/year in 2024 and to 1,140 tonnes/year of NOx in 2030. Assuming the same scenario, PMO levels will decrease from 208 tonnes/year in 2018 to 171 and 159 tonnes/year in 2024 and 2030, respectively.
	Total costs and costs per unit of CO2eq	<ul style="list-style-type: none"> • Projected mobility expenditure on private transport from 2019 to 2024: €128,249,333 (21.1% of the total mobility budget). Estimated expenditure until 2030: 256,498,666 €. • TMB: Incorporation of 233 zero-emission electric buses. Investment €134.4 M 2021-2025 • Generalitat de Catalunya: The MOVES III programme, endowed with European Next Generation Funds, opened in September 2021 with an initial endowment of 65 million euros, receiving a first extension of 65 million euros in April 2022. Catalonia Grant

Action plan	Name of action programme	6. Smart Mobility Programme (Smart Mobility)
	Type of action	<i>Smart Mobility is a fundamental part of urban mobility because of the impact it has on all forms of travel. Understood in a cross-cutting manner, smart mobility allows mobility to be managed more efficiently, while at the same time offering alternative solutions and smart services to improve travel. The main aim pursued is to reduce the need for forced mobility through actions aimed at promoting teleworking or boosting car sharing (car sharing, car pooling, VAO lanes, etc.).</i>
	Description of the action	<p>This Programme will be developed within the framework of the <u>Urban Mobility Plan 2024</u>, which foresees a specific action line for smart mobility, the <u>S.M. action line</u>:</p> <ul style="list-style-type: none"> • Promoting a more sustainable network of integrated transport services • Harnessing new technologies to promote road safety • Encourage and regulate car-sharing schemes • Boosting smart mobility management • Promoting intelligent management of public transport services • Improve traffic light operation • Improving the collection and management of mobility information • Enhancing sustainable access to industrial zones and business clusters • Promote the drafting of Business Displacement Plans (EDPs).



		<p>At the metropolitan level, the <u>Metropolitan Urban Mobility Plan 2019-2024</u> foresees:</p> <ul style="list-style-type: none"> • Action line F.27: Sustainable access to work and mobility centres <p>The actions of the CEAP 2030 related to smart mobility are listed below:</p> <ul style="list-style-type: none"> - Action 10.3: Advance in the application of formulas to reduce the need for forced mobility, applying labour mobility strategies that tend to reduce the need to travel to and from work (teleconferencing, teleworking, etc.) and the creation of sustainable mobility plans.
Reference to the impact pathway	Line of action	Mobility and transport
	Systemic lever	<ul style="list-style-type: none"> • Technology • Culture • Social innovation • Regulation • Business models
	short and medium-term changes	<ul style="list-style-type: none"> • Reduction of enforced mobility and reduction of private car use • Make mobility linked to workplaces and facilities more efficient, sustainable and safe.
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Resource Management and Digital Transformation • Mobility, Infrastructures and Urban Services Department
	Scale of action and target entities	Municipal, Metropolitan, Autonomous
	Actors involved	<ul style="list-style-type: none"> • Spanish Government (Ministry of Labour) • Generalitat de Catalunya • Barcelona City Council • Employers' associations and trade unions • Platforms, private and public companies and vehicle sharing cooperatives (cars, motorbikes or bikes)
	Comments on implementation	<p><u>The Pact for a New Workplace Mobility</u> in Barcelona is a municipal initiative promoted by Barcelona City Council's Mobility Department to form a large public-private alliance with all the city's social and economic organisations and companies, as well as all the operators in the mobility ecosystem, to act together and achieve a more sustainable and efficient mandatory mobility model in Barcelona and the metropolitan area. At the same time, as a result of this pact, the Barcelona City Council's Workplace Mobility Board was set up to</p>



		<p>manage its own Mobility Plan, and the Office for Workplace Mobility was set up to provide advice to other organisations and companies in Barcelona and the metropolitan area.</p> <p>Barcelona that wish to receive support in the elaboration of their EDPs. With regard to the financing of the EDPs, this must be paid for by the companies themselves.</p> <p>On the other hand, the development of the <u>Urban Mobility Plan 2024</u> requires a continuous monitoring and evaluation system to determine the results of the actions, possible deviations, and to report on the achievement of the management objectives. The methodology of the monitoring plan consists of identifying a system of quantity and quality indicators that provide the necessary information to determine the degree of evolution and compliance of the different actions. Every year and through the Mobility Observatory, an assessment is made of the monitoring indicators and compliance with the objectives of the PMU 2024. (See pages 443 to 449 of the PMU 2024).</p>
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Contribution to reducing private motorised transport mobility by 20 % by 2030 (CEAP)
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the mobility and transport programmes as a whole, the Mission's target implies a 70% reduction in emissions (512 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	Projected spending on smart mobility from 2019 to 2024: €47,545,833 (7.8% total mobility budget). Estimated expenditure up to 2030: €95,091,666

BUILDINGS AND HEATING

Action plan	Name of the action programme	7. Energy rehabilitation programme for buildings
	Type of action	Public aid programme for building renovation which considers energy, environment and social justice factors. In parallel, this programme will focus on maximising innovation in the management of building renovation (construction models, financing, customer service, etc.).



	Description of the action	<p>The Government's Climate Neutrality Action 2030 will include and specify the main lines of this programme. However, pending its approval and specification, the <u>Barcelona Renewable 2030 Programme</u> can be taken as a basis for the description of this Mission Programme, since it includes a large part of the actions aimed at the energy refurbishment of buildings in the private and tertiary sectors. In relation to the actions referring to the refurbishment of municipal buildings, it should be noted that these will be included in the Programme for a Carbon Neutral City Council (in preparation).</p> <p>The Barcelona Renewable 2030 Programme, aligned with the State Plan for Recovery, Transformation and Resilience, represents a unique opportunity to give continuity to and strengthen policies and programmes related to energy rehabilitation and urban regeneration that are already being implemented in Barcelona and to promote new disruptive projects. In terms of energy rehabilitation, the following strategic lines of action should be highlighted:</p> <ul style="list-style-type: none">• LAE 1 - Energy rehabilitation of buildings: residential building stock, public buildings and facilities. It will develop the following programmes:<ul style="list-style-type: none">- Housing rehabilitation programme in neighbourhood communities.- Public Rental Housing Rehabilitation Programme (IMHAB).- Programme for the energy-efficient refurbishment and change of use to subsidised housing of heritage public buildings (Via Laietana Courthouse and the former La Escocesa factory).- High Complexity Farms (FAC)- Inhabits Carmel- Rehabilitation of existing residential buildings and generation of new housing in the fronts to be consolidated and industrial buildings of 22@.- Rehabilitation of the 3 Chimeneas complex for the generation of renewable energy (photovoltaic panels).• LAE 5 - Define funding mechanisms<ul style="list-style-type: none">- Channel soft public financing offered by the ICO, IDEA, ICF, EIB, etc. with the guarantee of MITMA, MITECO, Generalitat, etc. to private housing associations.- Expansion of the Barcelona Sustainable Energy Facility (a public-private investment fund already in operation for the implementation of photovoltaic energy in the city's buildings).- Creation of a second public-private investment fund for the energy refurbishment of existing buildings, as well as the creation of new affordable housing, acting primarily on the fronts to consolidate 22@.
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		<ul style="list-style-type: none"> - Explore new financing modalities beyond non-repayable subsidies such as advances or credits that anticipate a change in the financing model and public aid for rehabilitation. <p>It is also worth highlighting the actions of the <u>CEAP 2030</u> planned in this area:</p> <ul style="list-style-type: none"> - Action 1.2: Put in place the necessary mechanisms to increase the weight of public aid with an energy, environmental and social justice focus, within the public policy to promote refurbishment, in order to reach 10,000 homes/year with aid (subsidies or credits) in energy refurbishment, paying special attention to the most vulnerable households and promoting passive and traditional solutions. - Action 1.7: Create accompanying figures to provide advice on the rehabilitation actions to be carried out depending on the type of action and the characteristics of the building where action is being taken (head rehabilitators). - Action 4.5: Analyse how long it will take for new, more environmentally responsible systems to become competitive with traditional systems and what the cost-benefit balance will be in economic, social and environmental terms. - Action 4.6: Study construction systems and solutions adapted to Barcelona to promote heat protection and passive cooling of buildings, and complement existing building regulations by establishing technical prescriptions and local regulations. Incorporate criteria for the protection of buildings against climatic events (such as windstorms). - Action 4.7: Develop a building energy ordinance to ensure that new or comprehensively refurbished buildings in the city have minimum energy demand and maximum generation. <p>In addition, the Strategic Plan for Energy Improvement and Sustainability in Barcelona's educational buildings, promoted by the Barcelona Education Consortium, includes energy refurbishment, the application of energy-saving and efficiency measures - such as cross-ventilation - and the generation and consumption of renewable energy.</p>
Reference to the impact pathway	Subsector	Buildings and heating
	Systemic lever	<ul style="list-style-type: none"> • Technology • Finance (resources €) • Capacity and capacity building • Social innovation • Regulation • Business models



	short and medium-term changes	<ul style="list-style-type: none"> • Increased comfort for the inhabitants and users of the rehabilitated buildings. • Reduction of health problems caused by poor energy conditions in dwellings (fungus due to damp, colds and pneumonia in winter, heat stroke in summer, poor sleep quality due to high temperatures in summer). • Reduction of energy poverty. • Reducing the risk of fire from the use of braziers and cookers in low-income households. • Generation of direct local jobs in rehabilitation, as it is a sector that cannot be relocated.
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Urban Planning and Housing Management • Resource Management and Digital Transformation (RMDT) • Social Rights, Health and Community Management
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Public administration (all levels) • Financial institutions • Communities of neighbours and owners • Universities, research and innovation centres • Companies and operators in the construction sector
	Comments on implementation	<p><u>The Barcelona Renewable 2030 Programme</u> incorporates a total of 30 basic annual indicators to monitor, of which some may be very relevant for the follow-up of this programme, such as the indicators of the rehabilitation axis:</p> <ul style="list-style-type: none"> - 1.1 Public housing stock buildings rehabilitated /year - 1.1.1 Cost / public park building - 1.1.2 Annual public park investment - 1.2 High Complexity Farms rehabilitated /year - 1.3 Private farms rehabilitated/year - 1.4 Rehabilitated public housing stock/year - 1.5 Housing High Complexity Housing rehabilitated /year - 1.6 Private dwellings rehabilitated/year - 1.7 Accessible housing - 1.8 New social housing/year - 1.9 Persons benefiting from rehabilitation (men/women) - 1.10 Vulnerable households benefited (general, single-parent, over 65). <p>Although the <u>Renewable Barcelona 2030 Programme</u> is designed to make Barcelona a carbon neutral city by 2050, the following targets are set for 2030: (1) Reducing emissions and increasing the city's energy</p>



		<p>efficiency</p> <ul style="list-style-type: none">• Energy renovation of 20% of buildings over 40 years old by 2030.• Reduce CO2 emissions associated with DHW, heating and cooling consumption by 50% (1.9 Mtonnes of CO2).• Generate some 500,000 MWh/year with local renewable energies (500% increase in local generation).• To reduce CO2 emissions by 203,500 tonnes through local and renewable energy generation (mainly solar).• Reduce CO2 emissions by 41,000 Tn by energy rehabilitation of housing.• Reduce the energy demand of rehabilitated dwellings by 40%.• Reduce electricity consumption by 29.48%.• Reduce domestic drinking water consumption by up to 100 litres per day per inhabitant. <p>(2) Improving citizens' living conditions and reducing urban inequality</p> <p>It is currently estimated that there are 134,567 homes in the city in need of refurbishment, which represents 19.7% of the total housing stock. The Plan seeks to increase the habitability of Barcelona's homes and neighbourhoods through:</p> <ul style="list-style-type: none">• Energy refurbish some 94,000 dwellings by 2030, at a rate of approximately 1,000 buildings and 10,400 dwellings refurbished per year.• Reduction of the energy demand of the refurbished fleet by 30-40%.• Improve the living conditions of some 27,500 people per year who benefit from rehabilitation.• Improve the conditions of access to and permanence in housing, increasing the stock of subsidised rental housing (in 2019 it represents 1.6% of the total) through: rehabilitation of heritage buildings, public purchase of housing and buildings, construction of housing in maritime containers (APROP) and generation of new housing in the fronts to be consolidated and industrial buildings to be reconverted in 22@.• To better respond to the demand for subsidised housing, which currently stands at 42,941 registered units, as well as to meet the residential needs of the ageing population and reduce households in fuel poverty.• Address the structural causes of the failure to rehabilitate and maintain buildings properly: rehabilitation of 100 buildings/year through the High Complexity Dwellings programme.• Sustainable redevelopment of 180 ha in the city
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Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	<p>A specific calculation of the potential emission reduction of this programme is not yet available. For the building sector programmes as a whole, the Mission's target implies a 76% reduction in emissions (584 thousand MT) compared to the BAU 2030 scenario. The buildings sector's target is a reduction of 76%.</p> <ul style="list-style-type: none"> • Residential. A four-fold increase in the current target of the CEAP, from 20% to 80% of residential buildings older than 40 years being energy refurbished. This will mean refurbishing an average of 38,000 buildings each year, a rate 10 times faster than has been achieved so far. It also envisages the renovation of household appliances to low-emission models. • Tertiary sector (commerce and services). Doubling the CEAP forecasts, from 22% to 44% of the sector's emissions reduction, through LED lighting, equipment renewal, refurbishment to add insulation, monitoring and sensorisation, etc. As well as increased awareness of energy use, also applicable to the residential sector.
	Total costs and costs per unit of CO ₂ eq	<p>A first estimate of the cost of the planned package of measures in the buildings sector suggests the need for an additional investment of 8.155 billion euros (Cash Basis) up to 2030, of which 450 million euros will be provided by the City Council. In turn, these measures will result in operating cost savings of 4,624 million (Present Present Value) until 2050, as well as co-benefits of 251 million.</p>

Action plan	Name of the action programme	8. Building and Heating Innovation Programme
	Type of action	The programme focuses on the commitment to innovation in energy efficiency solutions in the construction and use of buildings. Special consideration is given to the consolidation and growth of urban heating and cooling networks.
	Description of the action	The actions of the CEAP 2030 foreseen in this area are: - Action 4.5: Analyse how long it will take for new,



		<p>more environmentally responsible systems to become competitive with traditional systems and what the cost-benefit balance will be in economic, social and environmental terms.</p> <ul style="list-style-type: none">- Action 4.6: Study construction systems and solutions adapted to Barcelona to promote heat protection and passive cooling of buildings, and complement existing building regulations by establishing technical prescriptions and local regulations. Incorporate criteria for the protection of buildings against climatic events (such as windstorms).- Action 4.7: Develop a building energy ordinance to ensure that new or comprehensively refurbished buildings in the city have minimum energy demand and maximum generation.- Action 4.9: Develop and consolidate the existing heating and cooling networks in the city and define and promote a new network in the Sagrera area. <p><u>The Barcelona Renewable 2030 Programme</u> is developing a line of action in innovation in this field:</p> <ul style="list-style-type: none">• LAE 4 - Promote a city innovation ecosystem for fostering the economy for sustainability with the participation of established companies, <i>startups</i> and research centres/universities.<ul style="list-style-type: none">- Instruments for intermediation in sustainability research at the Diagonal Besós UPC Campus.- Incentives for entrepreneurship and innovation.- Talent development and employment promotion.- Reuse and recycling of demolition materials. <p>The last point of the Barcelona Renewable 2030 Programme refers to the <u>reduction of Scope 3 emissions in the construction sector</u>. It is a strategy that has yet to be developed, but which will work on the life cycle of buildings and the massive incorporation in construction of materials that can function as carbon sinks, especially wood. We plan to work on innovation projects with leading scientific and technological partners, such as the Institute of Construction Technologies of Catalonia (ITEC) and the Institute of Advanced Architecture of Catalonia (IAAC). The latter has presented the Timbered Path project (Horizon), with participation of the BIT Habitat Foundation, in which Barcelona will provide a demonstration of a wooden-structured building increase.</p> <p><u>Heating and cooling networks</u> Barcelona City Council and Barcelona Sagrera Alta Velocidad will promote the development of a new centralised heating and cooling system for Sagrera</p>
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		<p>Station and its surroundings. The initial project, with a planned investment of 21 million euros, proposes the deployment of a centralised air-conditioning network with maximum energy efficiency, taking advantage of the phreatic water of the Besós River and solar energy. The new network, with an agreement with ADIF, will cover the Sagrera intermodal station, the entire Sagrera tertiary area and also the Prim urban development sector. The aim is to provide energy coverage for a total of 920,000 m² and, in the future, in the new urban fabric with neighbourhood and productive uses planned for the site of the former Mercedes-Benz factory. The new plant will reduce annual CO₂ emissions by the equivalent of taking 19,160 vehicles off the road and save 53,000 MWh/year in electricity consumption. Once the initial project has been configured, the dossier will be prepared for this heating and cooling network to be implemented, operated and maintained in a public-private partnership format.</p> <p>The urban heating and cooling networks are part of the city's commitment to energy efficiency. They are efficient systems for producing heat and cold using renewable or residual resources that represent 30% energy savings compared to conventional individual systems such as boilers or air conditioners. In addition, they represent advantages in terms of space and noise. In the case of the future network in La Sagrera, the production of heat and cold is foreseen by means of high-efficiency heat pumps using groundwater from the Besòs and solar energy. 85% of the energy needed for heating, cooling and domestic hot water can be self-generated from renewable energies and without impact on the environment.</p> <p>At the same time, Barcelona City Council is also planning a centralised heating and cooling installation in the La Model area, with a planned investment of 6.3 million euros. The project is part of the project to transform the former penitentiary centre into a large centre of facilities and green space on the left side of the Eixample. It is a centralised energy generation and distribution system to provide cooling and heating with maximum efficiency and joint operation. The project will be developed in phases and this new network will mean a saving of 560 MWh/year in electricity consumption and a reduction of 140 Tn/year in CO₂ emissions. To meet the needs, a combined geothermal and aerothermal production system has been designed. Both systems would work in parallel and the thermal energy generated by the two heat pumps would be stored in tanks located in the machine room attached to the building. These technical spaces are expected to feed the entire network and generate the energy necessary to cover all the energy demands of the La</p>
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		<p>Model area.</p> <p>The third plant of the Districlima network in Poblenou and the new high-efficiency cooling plant of Econergies will consolidate and develop the Districlima and Ecoenergies Networks with the use of renewable or residual resources. These heating and cooling networks will reduce more than 50,000 tonnes of CO2 per year, equivalent to taking approximately 87,000 vehicles off the road.</p>
Reference to the impact pathway	Subsector	Buildings and heating
	Systemic lever	<ul style="list-style-type: none"> • Technology • Business models • Local development strategies
	Short and medium-term changes	<ul style="list-style-type: none"> • Increased comfort for the inhabitants of the rehabilitated buildings. • Reduction of health problems caused by poor energy conditions in dwellings (fungus due to damp, colds and pneumonia in winter, heat stroke in summer, poor sleep quality due to high temperatures in summer). • Reduction of energy poverty. • Reducing the risk of fire from the use of braziers and cookers in low-income households. • Generation of direct local jobs in rehabilitation, as it is a sector that cannot be relocated.
Implementation	Bodies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Urban Planning and Housing Management • Area Management for Mobility, Infrastructures and Urban Services
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Public administration (all levels) • Districlima • Tera • Universities, research and innovation centres • Vocational training • Rehabilitation operators: responsible for implementing the investments. • Professional and sectoral associations related to rehabilitation: knowledge and professionalism in management and implementation.
	Comments on implementation	<p>Although the <u>Renewable Barcelona 2030 Programme</u> is designed to make Barcelona a carbon neutral city by 2050, the following targets are set within the framework of this Mission 2030 programme:</p> <p>(3) Reviving the economy and employment by focusing on a transition of the construction sector and renewable</p>



		<p>energies.</p> <ul style="list-style-type: none">• Generate more than 2.5 billion GDP by creating accessible business and business conversion opportunities for SMEs and micro-enterprises in the city.• To induce more than 20,000 quality and accessible jobs for all groups of people who will have to reorient their professional careers due to the effects of the crisis on the labour market, to reconvert the construction sector and to generate a multiplier effect in rehabilitation.• Encourage the creation of 100 innovative companies in the sector.• Generate economic activity and employment. <p>(4) Building governance between the different public and private actors in the metropolitan area. At the legal level, the objective of the Plan is to establish a closer and more dynamic framework of cooperation than the current one (the already effective Observatory of Rehabilitation of BCN OBRA) with the private entities that make up the value chain of the private rehabilitation sector, as well as a more agile system of relations with neighbourhood associations that improves the impact of public promotion of the private rehabilitation of housing and buildings. In the same way, "Barcelona Renovable" wants to advance in the line already opened by MES Barcelona for the creation of public-private investment funds dedicated primarily to the rehabilitation of existing buildings and secondarily to the generation of new affordable housing in the consolidated city. At the economic level, the Plan aims to channel the soft public financing offered by the ICO, IDEA, ICF, EIB, etc. to private residents' associations, with the guarantee of MITMA, MITECO, Generalitat, etc.</p> <p>(5) Position Barcelona as a benchmark for urban regeneration and rehabilitation and energy efficiency in the Mediterranean. Barcelona Renovable' seeks to promote Barcelona as a test bed for a new phase of renovation as a public policy, as an economic sector, as a source of employment and as an industrial activity. The combination of increased public spending in the form of non-refundable subsidies and soft financing, the development of industrial alliances between public companies (demand for industrialised building and housing renovation solutions) and private companies (suppliers of industrialised products and solutions), the union of public and private capital around investment vehicles such as the photovoltaic MES Barcelona and its subsequent evolution towards the renovation of existing</p>
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		<p>buildings and the generation of new affordable housing, as well as the expected tax reform on refurbishment, provide a privileged scenario for Barcelona to position itself at European level as a prescriber of technology and industrialised solutions for new construction and residential refurbishment adapted to the particular climatic and urban conditions of the south of the EU. Building on an already solid industrial, business, professional and administrative base and relying on the prestige of Catalan urban planning, Barcelona has the capacity to produce a major leap in GDP and employment around projects, solutions, technologies, companies and rehabilitation approaches generated in, by and for the Mediterranean basin.</p> <p>Likewise, the Barcelona Renewable 2030 Programme includes a total of 30 basic annual indicators to monitor, some of which may be very relevant for monitoring this programme, such as the indicators of the economic reactivation and transition axis:</p> <ul style="list-style-type: none"> - 3.1 Employment generated jobs men/women/year - 3.2 Induced jobs/year - 3.3 Vocational retraining male/female/year - 3.4 Reduction in unemployment sector men/women/age/year - 3.5 Collaborating companies/year - 3.6 Hiring aid to boost business innovation/year - 3.7 Research projects -innovation /year
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Earring
	Estimated GHG emission reductions (total)	A specific calculation of the potential emission reduction of this programme is not yet available. For the building sector programmes as a whole, the Mission's target implies a 76% reduction in emissions (584 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	A first estimate of the cost of the planned package of measures in the buildings sector suggests the need for an additional investment of 8.155 billion euros (Cash Basis) up to 2030, of which 450 million euros will be provided by the City Council. In turn, these measures will result in operating cost savings of 4,624 million (Present Present Value) until 2050, as well as co-benefits of 251 million.



Action plan	Name of action programme	9. Energy Efficiency in Buildings Programme
	Type of action	Programme for the development of regulations on thermal comfort standards and the use of heating/air conditioning and the promotion of the incorporation of low-emission heating and air conditioning systems, both in the residential and commercial and services sectors. Communication and dissemination actions to promote energy saving in buildings are also included in this programme.
	Description of the action	<p><u>The Barcelona Renewable 2030 Programme</u> is developing a line of action in innovation in this field:</p> <ul style="list-style-type: none"> • LAE 0 - Office of rehabilitation and regeneration. Digital platform and one-stop shop. It is foreseen that the Office, with a legal, physical and digital implementation and with delegated competences and assigned staff, will bring together and coordinate both administrative bodies and private agents involved in the processes of rehabilitation and urban regeneration of the city. The office aims to ensure the management of the Plan and the efficient and effective channelling of the planned European recovery funds, mobilising private capital through public-private partnerships, and serving as a central point of information, management and processing of the programmes. - <u>Digitalisation of processes</u>: The aim is to facilitate the procedures, reviews and processes of rehabilitation projects entirely digitally, to know at all times where "your file" is and to simplify and speed up monitoring. - <u>Digitalisation of agents</u>: The objective is to generate a virtual meeting space between agents, establishing contact between supply and demand on the network, specifically between communities of neighbours, owners, neighbours, companies that can facilitate rehabilitation, micro-enterprises, guilds, start-ups and property administrators. - <u>Digitise solutions and cases</u>: The objective is to digitise good practices, solutions and case studies and generate a repository of useful information to make better projects, solve problems more agile and overcome obstacles. - <u>Active dissemination and capturing latent demand</u>: The objective is to diversify the channels to reach the demand and actively approach it, adapting the communication strategy by combining general and specific media, targeting different neighbourhoods and situations. The aim is to ensure that the whole city is informed, to seek out and activate the objective demand. To achieve this, an active



		<p>dissemination campaign could be planned through different channels and communication strategies.</p> <ul style="list-style-type: none"> - <u>Collaboration with stakeholders</u>: Identify key informants and collaborating agents in the work with neighbourhood communities, owners, neighbours and companies that can facilitate refurbishment. Coordination with the PAEs, considering them as key informants in the detection of energy needs, especially in dwellings with vulnerable households. Professional agents in the sector (professional associations and associations of professionals) can be more actively involved in the development and use of tools and programmes through agreements or other formulas. - <u>Transparency, clarity and rationalisation</u>: Transmitting information in a clear manner and simplifying procedures to facilitate decision-making and offer greater confidence and security to homeowners' associations in the promotion of refurbishment projects. <p>It is also worth highlighting the actions of the CEAP 2030 planned in this area:</p> <ul style="list-style-type: none"> - Action 4.1: Study and establish technical prescriptions with regard to the new thermal comfort standards to be achieved locally in Barcelona, and work to achieve a change in the mentality of both developers and users of buildings. - Action 4.2: Develop a regulatory framework for the use of heating/air-conditioning in the commercial and service sector, to avoid energy waste and for social awareness, by regulating, among others, the use of outdoor cookers and the locking and automation of external doors. - Action 4.3: Generate communication and dissemination actions to promote energy savings in buildings. - Action 4.4: Energy monitoring of buildings, housing and public facilities to facilitate knowledge of consumption and the implementation of energy improvements (on a continuous basis). - Action 4.8: Ensure efficient energy management of municipal services associated with the water cycle and waste collection and management, and optimise energy management and supplies for public lighting and municipal buildings and facilities (including nursery and primary schools), to achieve 10% savings in electricity consumption in buildings.
Reference to the impact pathway	Subsector	Buildings and heating
	Systemic lever	<ul style="list-style-type: none"> • Regulation • Governance and politics



		<ul style="list-style-type: none"> • Culture
	short and medium-term changes	
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Urban Planning and Housing Management • Management of Economy and Economic Promotion • Mobility, Infrastructures and Urban Services Department
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Citizenship • The media • Tertiary sector and Business
	Comments on implementation	<p><u>The Barcelona Renewable 2030 Programme</u> incorporates a total of 30 basic annual indicators to monitor, of which some may be very relevant for the follow-up of this programme, such as the indicators of the energy efficiency improvement axis:</p> <ul style="list-style-type: none"> - 2.1 Reduction of the overall energy demand of refurbished buildings public park/year - 2.2 Reduction in overall energy demand of rehabilitated High Complexity Estates /year - 2.3 Reduction in overall energy demand of rehabilitated private properties/year - 2.4 Reduction in non-renewable primary energy consumption of rehabilitated public housing stock/year - 2.5 Reduction of non-renewable primary energy consumption High Complexity Farms rehabilitated /year - 2.6 Reduction in non-renewable primary energy consumption of rehabilitated private dwellings/year - 2.7 Reduction of households in fuel poverty detected in PAEs - 2.8 Buildings installation of photovoltaic panels /year - 2.9 Dwellings installation of photovoltaic panels/year - 2.10 Energy generated from renewable sources (by type) - 2.11 CO2 emission reduction (% , tonnes) - 2.12 Dwellings installation photovoltaic panels /year - 2.13 Energy generated from renewable sources (by type)
Impacts and costs	Renewable energy generated (if generated)	Not applicable



	applicable)	
	Energy removed/replaced, fuel volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the potential emission reduction of this programme is not yet available. For the building sector programmes as a whole, the Mission's target implies a 76% reduction in emissions (584 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	A first estimate of the cost of the planned package of measures in the buildings sector suggests the need for an additional investment of 8,155 million euros (Cash Basis) until 2030, of which 450 million euros will be provided by the municipality. In turn, these measures will result in operating cost savings of 4,624 million (Present Present Value) until 2050, as well as co-benefits of 251 million.

ELECTRICITY

Action plan	Name of the action programme	10. Renewable energy generation programme in municipal buildings and public space.
	Type of action	Programme to accelerate the implementation of photovoltaic generation in municipal buildings (kindergartens, cultural and sports facilities, etc.) and in public spaces (paving of squares, roads, etc.).
	Description of the action	<p>Although the specific actions referring to municipal buildings will be included in the Programme for a Carbon Neutral City Council (in preparation), it should be noted that the ultimate objective of this Programme is to achieve the transition to a sustainable energy model based on the consumption of 100% renewable energy by municipal buildings, maximising self-consumption.</p> <p>Barcelona Energía, the Barcelona metropolitan area's public utility company that supplies electricity to Barcelona City Council's municipal buildings and facilities, plays an essential role in achieving this goal. Its aim is to promote a new, more sustainable energy model based on efficiency, renewable energy generation and citizen participation. Barcelona Energía, managed by TERSA, sells 100% renewable energy, guaranteeing citizens a service of proximity and transparency.</p> <p>For its part, TERSA carries out the integral management</p>



		<p>of the Photovoltaic Solar Energy Installations (IESFV) of municipal buildings and facilities in the city of Barcelona and the metropolitan area.</p> <p>It is also worth highlighting the actions of the CEAP 2030 planned in this area:</p> <ul style="list-style-type: none"> - Action 2.1: Promote and prioritise the self-production of energy from renewable sources and make it accessible also to vulnerable households. - Action 2.3: Deploy the municipal energy operator to promote the production of renewable energies in the municipality and facilitate the implementation in both public and private spaces. - Action 2.4: Create a municipal energy trading company to serve all citizens. In existence since 2019 - Action 5.1: Develop ten green roofs and façades on municipal buildings to set an example and promote, through agreements with the private sector, the development of fifty productive roofs on buildings, including green, energy, cistern or reflective roofs by means of grants, subsidies, competitions and other mechanisms. Publicity actions will be carried out to publicise them. - Action 9.1: Accelerate the implementation of renewable generation in municipal buildings (bressol schools, cultural and sports facilities, etc.) and in public spaces by adding 6 MWp of photovoltaic generation to the municipal park by 2025. - Action 9.2: Evaluate the incorporation of generation in other elements of public space, such as paving of squares, roads, etc.
Reference to the impact pathway	Subsector	Electricity
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology • Capacity and capacity building
	short and medium-term changes	<ul style="list-style-type: none"> • Reducing dependence on imported fossil fuels and increasing energy sovereignty • Democratisation of energy infrastructures, by moving from a centralised production model based on large installations owned by large companies to a decentralised generation model, in which the owners can be the consumers themselves. • Generation of direct local jobs in the installation and maintenance of photovoltaic systems and other renewable sources (such as solar thermal and geothermal).
Implementation	Bodies/persons	<u>Barcelona City Council</u>



	responsible for implementation	<ul style="list-style-type: none"> • Mobility, Infrastructures and Urban Services Department • Urban Planning and Housing Management • Barcelona Energy Agency
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona Energía, metropolitan electricity operator • Barcelona Energy Agency
	Comments on implementation	
Impacts and costs	Renewable energy generated (if applicable)	To achieve near-complete decarbonisation of electricity supply will require a massive expansion of renewable energy generation capacities, both inside and outside the city. In terms of local generation, the forecast is to multiply the CEAP forecasts by 1.8 times, to reach 1,080 MWp of installed solar photovoltaic capacity in the city. Barcelona's 2030 Agenda sets the goals of achieving 6.5% or more of the energy consumed being locally produced renewable energy (1.18% in 2020) and 50% or more of the electricity consumed being of renewable origin (20.2% in 2020).
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the potential emission reduction of this programme is not yet available. For the electricity sector programmes as a whole, the Mission's target implies a 94% reduction in emissions (1.68 million tonnes) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	A first estimate of the cost of decarbonising the city's electricity supply indicates that it will require an additional investment of €697 million. In turn, such measures will, in the period 2020-2050, result in operational cost savings of €878 million.

Action plan	Name of the action programme	11. Renewable energy generation programme in non-municipal residential, service and industrial buildings.
	Type of action	Programme to promote the implementation of photovoltaic generation in residential buildings and in large non-municipal spaces and areas (industrial roofs, large tertiary and logistics facilities, including the Port), offering facilities for implementation and promoting



		economic incentives such as subsidies, tax rebates (IBI, ICIO, IAE), financing, as well as collaboration mechanisms (energy communities).
	Description of the action	<p>The Climate Neutrality 2030 Governance Action will include the main lines of this programme. This Government Action should serve as an impulse and go beyond the actions aimed at achieving the objectives set out in the CEAP 2030 in terms of renewable energy generation in non-municipal buildings, as detailed below:</p> <ul style="list-style-type: none"> - Action 2.1: Promote and prioritise the self-production of energy from renewable sources and make it accessible also to vulnerable households. - Action 5.2: Fill the city's rooftops with solar installations, offering facilities for implementation (reinterpretation of regulations and streamlining of procedures) and promoting economic incentives such as subsidies, tax rebates (IBI, ICIO, IAE) or other financing mechanisms, in order to incorporate 10 MWp of photovoltaic energy and 7 MW of solar thermal energy in private residential and tertiary buildings by 2025. - Action 5.3: Launch a process to ensure that large urban spaces (industrial roofs, large tertiary buildings and pergolas or structures in industrial and logistic environments) have up to 25 MWp of photovoltaic energy deployed by 2025. - Action 10.25: Implement renewable generation systems in the port of Barcelona (42 MWp by 2030) and at Barcelona airport, on the roofs of buildings and with pergolas in car parks (40 MWp by 2030).
Reference to the impact pathway	Subsector	Electricity
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology • Capacity and capacity building • Culture • Social innovation • Commitment and participation
	short and medium-term changes	<ul style="list-style-type: none"> • Reducing dependence on imported fossil fuels and increasing energy sovereignty • Democratisation of energy infrastructures, by moving from a centralised production model based on large installations owned by large companies to a decentralised generation model, in which the owners can be the consumers themselves. • Generation of direct local jobs in the installation and maintenance of photovoltaic systems and other renewable sources (such as solar thermal and geothermal).



Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Management of Economy and Economic Promotion • Mobility, Infrastructures and Urban Services Department • Urban Planning and Housing Management • Barcelona Energy Agency
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Public Administrations • Citizens and individuals • Energy communities • Port of Barcelona • AENA • Zona Franca Consortium, Bon Pastor industrial estate, industries and operators • Energy Research Institute of Catalonia (IREC)
	Comments on implementation	
Impacts and costs	Renewable energy generated (if applicable)	To achieve near-complete decarbonisation of electricity supply will require a massive expansion of renewable energy generation capacities, both inside and outside the city. In terms of local generation, a 1.8-fold increase of 1,080 MWp of installed solar photovoltaic capacity in the city is envisaged.
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the potential emission reduction of this programme is not yet available. For the electricity sector programmes as a whole, the Mission's target implies a 94% reduction in emissions (1.68 million tonnes) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO ₂ eq	A first estimate of the cost of decarbonising the city's electricity supply indicates that it will require an additional investment of €697 million. In turn, such measures will, in the period 2020-2050, result in operational cost savings of €878 million.

Action plan	Name of the action programme	12. Lighting programme for public spaces and municipal buildings
	Type of action	Programme for the optimisation of energy management and supplies for public lighting and municipal buildings



		<p>and facilities (including the LED renovation plan). The aim is to try to go a step further and adapt lighting to the urban reality of today's city, optimising energy consumption and improving the quality of public spaces, always taking into account the regulatory framework on energy efficiency.</p>
	<p>Description of the action</p>	<p>The <u>Comprehensive Lighting Renovation Plan 2018-2020</u> is a strategic project that aims to increase safety, energy efficiency and intelligent management, compliance with current regulations and better health and environmental quality for citizens. This plan is complemented by the improvement actions framed within the contract for the conservation and maintenance of the city's public lighting, which year after year, according to the needs detected, complements this comprehensive renovation plan.</p> <p>These improvements provide the city with more light sensation, not just more light but better light distribution due to the application of the latest lighting technologies; they also provide more uniformity of light by avoiding the sensation of light spots and thus improving the clarity of the route; they incorporate maximum energy efficiency and functional optimisation by incorporating regulation and control systems. Therefore, more light is being provided, with more control and a greater sense of safety for citizens.</p> <p>The city of Barcelona has more than 146,000 lighting points, a patchwork of unevenly distributed lighting, the result of isolated urban planning and maintenance renovations that have given rise to a disparity of criteria, models and results.</p> <p>The municipal services are working to generate a night-time image of the city that seeks a balance between functional and aesthetic order, incorporating new lighting technology, such as LED technology, but also management elements such as regulation, the possibility of remote control and, in general, new technological solutions that enable progress towards a <i>smart city</i>, both in streets, avenues and squares and in the lighting of buildings or singular elements.</p> <p>The effort to optimise the energy management of public lighting must continue to be updated and adapted to technological improvements as they occur. In this regard, it is worth noting the importance of the <u>Plan for a Carbon Neutral City Council</u>, which is currently being drawn up. This Plan will focus on energy optimisation and improved management of lighting in municipal buildings and facilities.</p>



		The CEAP 2030 refers in relation to lighting by expressing the need to ensure the efficient energy management of municipal services associated with the water cycle and waste collection and management, and to optimise the energy management and supplies of public lighting and municipal buildings and facilities (including nursery and primary schools), to achieve a 10% saving in electricity consumption in the buildings concerned. (Action 4.8).
Reference to the impact pathway	Subsector	Electricity
	Systemic lever	<ul style="list-style-type: none"> Finance (resources €) Technology
	short and medium-term changes	The Comprehensive Lighting Renovation Plan 2018-2020 has involved the renovation of lighting in 200 streets with 10,000 new LED technology luminaires (around 20% of the city's streetlights).
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> Resource Management and Digital Transformation (RMDT) Mobility, Infrastructures and Urban Services Department
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> Municipal facilities and premises Conservation and maintenance contract for the city's public lighting system
	Comments on implementation	
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	The estimated saving is 5% of the contracted power, about 3,620 megawatt hours per year, equivalent to the electricity consumption of about 1,550 families.
	Estimated GHG emission reductions (total)	Pending
	Total costs and costs per unit of CO ₂ eq	The cost of the <u>Comprehensive Lighting Renewal Plan 2018-2020</u> was 18 million euros.



WASTE AND OTHER

Action plan	Name of the action programme	13. Low-emission municipal waste management programme
	Type of action	Programme for efficient energy management of municipal waste collection and management services based on the widespread implementation of individualised collection systems and the optimisation of service routes, with the aim of minimising emissions linked to municipal waste management.
	Description of the action	<p><u>Strategic lines of the Barcelona Zero Waste Plan 2021-2027 linked to the action:</u></p> <p>Separate collection</p> <ul style="list-style-type: none"> • Situation of the organic fraction as the backbone of waste management • Promotion of systems to improve separate collection of the main inorganic fractions. • Promoting community composting • Improving separate collection in terms of quantity and quality of FORM <p>The actions related to selective waste collection of the Zero Waste Plan are aligned with the following actions of the <u>CEAP 2030</u>:</p> <ul style="list-style-type: none"> - Action 4.8: Ensure efficient energy management of municipal services associated with the water cycle and waste collection and management, and optimise energy management and supplies for public lighting and municipal buildings and premises (including nursery and primary schools), to achieve a 10 % saving in electricity consumption in the buildings concerned. - Action 14.2: Deploy individualised collection systems for household and commercial waste in 100 % of the city, increasing separate collection to 65 % to reduce the need for incineration. - Action 14.6: Optimise transport routes to reduce journeys and improve the waste collection service.
Reference to the impact pathway	Line of action	Waste (Scope 2 emissions)
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology • Culture • Commitment and participation
	short and medium-term changes	<p><u>New contract for cleaning and waste collection (2022-2030):</u></p> <ul style="list-style-type: none"> • Improvement of air quality, with less polluting vehicles and prioritisation of electric vehicles, which will mean an increase from 20% to 66% of electric



		<p>vehicles.</p> <ul style="list-style-type: none"> • More acoustic comfort thanks to the electrification of the fleet and soundproofed equipment to reduce service noise levels. • The new waste collection vehicles also incorporate new technological elements that allow better monitoring and control of the entire process. Therefore, more and better information will be available to be able to make decisions and optimise the service in each territory. • Safety improvements must also be taken into account. The fleet of vehicles incorporates a technological driving assistance system. <p>In the short term (2025), this programme should also promote the optimisation of transport routes in order to reduce the number of people travelling by road. (action 14.6 CEAP) and in the long term (2030) Ensure energy efficient management of municipal services associated with waste collection and management (action 4.8 CEAP)</p>
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Urban Planning and Housing Management and Mobility, Infrastructures and Urban Services Management • Barcelona Metropolitan Area (AMB)
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Barcelona Metropolitan Area (AMB) • Companies contracted for the waste collection, treatment and management service
	Comments on implementation	The Barcelona Zero Waste Plan 2021-2027 sets a target of raising separate collection to 67.0% of waste by 2027. This target is slightly more ambitious than the target set in the CEAP 2030 in its action 14.2 (65% by 2030).
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Pending



	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the two waste sector programmes (13 and 14) the Mission's target implies a 45% reduction in emissions (153 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO2eq	<ul style="list-style-type: none"> • The total estimated budget for the Zero Waste Plan, 2021-2027 is 6,792,900 €. • Estimated annual cost of waste collection, treatment and management (excluding street cleaning) 146,172,990 €.

Action plan	Name of the action programme	14. Waste prevention and reduction programme
	Type of action	Action aimed at achieving the objectives set out in the framework of the Barcelona Zero Waste Strategy, based on exemplary action (public events), the creation of spaces for repair and reuse, tax incentives for recycling and new regulations to implement Extended Producer Responsibility Collective Systems (EPRCS) and Deposit, Return and Refund Systems (DRS).
	Description of the action	<p><u>Strategic lines of the Barcelona Zero Waste Plan 2021-2027 linked to the action:</u></p> <p><u>Prevention, re-use and preparation for re-use</u></p> <ul style="list-style-type: none"> • Reducing food waste • Reducing the use of plastics and disposable packaging. - <ul style="list-style-type: none"> - Aligned with actions 14.4 and 14.5 of the CEAP 2030. • Promoting zero waste in specific areas. <ul style="list-style-type: none"> - Aligned with Action 14.1 of the CEAP 2030. • Boosting re-use and preparing for re-use <ul style="list-style-type: none"> - Aligned with actions 12.3 and 13.1 of the CEAP 2030. <p><u>Regulations and taxation</u></p> <ul style="list-style-type: none"> • Promoting a regulatory and fiscal framework to encourage zero waste. <ul style="list-style-type: none"> - Aligned with action 14.8 of the CEAP 2030. <p><u>Participation, governance and research</u></p> <ul style="list-style-type: none"> • Communication and education to move towards zero waste • Call for citizen action <ul style="list-style-type: none"> - Aligned with action 13.8 of the CEAP 2030. • Governance • Research and innovation. <ul style="list-style-type: none"> - Aligned with action 13.12 of the CEAP 2030, which consists of analysing the carbon footprint of different consumption and production in Barcelona.



		<u>Cleaning up public space</u> <ul style="list-style-type: none"> Preventing city littering 	
Reference to the impact pathway	Line of action	Waste (Scope 3 emissions)	
	Systemic lever	<ul style="list-style-type: none"> Finance (resources €) Social innovation Culture Commitment and participation Business models Local development strategies 	
	Comments on implementation	<u>Reference 2019</u> <ul style="list-style-type: none"> Municipal waste 1.34 kg/inhab/day Waste fraction 0.82 kg/inhab/day Reduction of food waste (compared to 2020) 5,963 t Municipal waste for PxR and reuse 0.31% Municipal waste for PxR and reuse 0.31% Municipal waste for PxR and reuse 0.31 Selective collection 38.40%. Improper use of organic fraction 16.14%. Separate collection of textiles 6.40%. Increase in citizen participation 2,927,862 participants 	<u>Target 2027</u> <ul style="list-style-type: none"> Municipal waste 1.17 kg/inhab/day Waste fraction 0.38 kg/inhab/day Reducing food waste 35% (3.876 t) Municipal waste destined for PxR and reuse 7% Municipal waste for PxR and reuse 7% Municipal waste for PxR and reuse 7% Municipal waste for PxR and reuse Selective collection 67.0% Selective collection 67.0% Selective collection 67.0% Selective collection 67.0% Selective collection 67.0% Improper use of the organic fraction 8%. Separate collection of textiles 15%. Increased citizen participation by 10% to 3,220,648 participants
Implementation	Bodies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> Management of Economy and Economic Promotion Mobility, Infrastructures and Urban Services Department Barcelona Metropolitan Area (AMB) 	
	Scale of action and target entities	Municipal, Metropolitan	
	Actors involved	<ul style="list-style-type: none"> Barcelona City Council 	



		<ul style="list-style-type: none"> • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya (regulation) • Trade, tourism and catering sectors • Trade fairs, congresses • Research Centres and Universities • Schools and educational centres • Citizen participation (DECIDIM platform)
	short and medium-term changes	<ul style="list-style-type: none"> - Reduction of natural resources and energy that would have been invested in products that have not become waste. - Reduction of virgin natural resources by recovering materials from recycling. - Reduction of waste management related emissions: transport, space occupation, treatment and incineration. - Generation of local and regional jobs related to the circular economy.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the emission reduction potential of this programme is not yet available. For the two waste sector programmes (13 and 14) the Mission's target implies a 45% reduction in emissions (153 thousand MT) compared to the BAU 2030 scenario.
	Total costs and costs per unit of CO₂eq	The total estimated budget for the Zero Waste Plan, 2021-2027 is 6,792,900 €.

Action plan	Name of the action programme	15. Water cycle management programme with a climate perspective
	Type of action	Action that consists of making maximum and sustainable use of the alternative water resources existing in Barcelona to reduce the consumption of drinking water by public services, especially municipal services, in order to meet close to 100% of the potential demand. The main municipal management instrument for developing this objective is the Barcelona Alternative Water Resources Plan 2020 (PLARHAB).
	Description of the action	The <u>Barcelona 2020 Alternative Water Resources Plan (PLARHAB)</u> aims to move towards sustainable and rational water management by focusing on saving



		<p>drinking water, optimising it and replacing it with alternative water resources. The plan identifies the existing water resources and their possible uses in accordance with their characteristics (chemical and biological), sizes up the potential demand and foresees the city infrastructures necessary for their use. The plan provides a global map of alternative resources to drinking water in Barcelona and gives visibility to the water network throughout the city. It also guarantees synergies between the different municipal and private operators involved in the city to improve supplies. Furthermore, PLARHAB is much more than a set of techniques that serve to obtain more resources or save water.</p> <p>The PLARHAB is aligned with the City of Barcelona's Climate Plan 2018-2030 and is coherent and consistent with the four fundamental principles of good water management:</p> <ul style="list-style-type: none">- Sustainability, with the maintenance of healthy ecosystems that provide safe and healthy water supplies.- Prioritisation of local resources with local management.- Efficiency, obtaining water at the best possible cost and with the best technologies that offer tangible environmental benefits.- Active stakeholder participation, with bottom-up planning to give legitimacy to the measures taken. <p>The PLARHAB is developed in six lines of action, which promote the use of:</p> <ul style="list-style-type: none">• Line 1. Groundwater: Analyse the state and operation of existing facilities, define the improvement actions necessary to provide service to users in optimum conditions and plan actions to extend the groundwater network to meet the demands for alternative water resources for urban services and public facilities in the city.• Line 2. Reclaimed water: Analyse the feasibility of using reclaimed water and promote its use for uses that can be covered by this resource.• Line 3. Grey water: Promote the use of grey water in new buildings and equipment to save drinking water.• Line 4. Roof rainwater: Promote the use of roof rainwater for irrigation of green spaces linked to buildings and other compatible uses.• Line 5. Rainwater from headwaters: Promote the use of rainwater generated at the headwaters of the Collserola torrent basins as a complementary resource.• Line 6. Rainwater in the public space through SUDS: Promote the management and treatment at source of
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		<p>rainwater in the urban area of the city through SUDS (sustainable urban drainage systems).</p> <p>The actions related to selective waste collection of the Zero Waste Plan are aligned with the following actions of the <u>CEAP 2030</u>: Action 4.8</p>
Reference to the impact pathway	Subsector	Waste and other
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology
	short and medium-term changes	<ul style="list-style-type: none"> • Water cost savings • Preventing periods of drought • Environmental benefits
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Mobility, Infrastructures and Urban Services Department • Barcelona Ciclo del Agua, S.A. (BCASA)
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council (BCASA) • Aigües de Barcelona, the public-private company responsible for the management of the integral water cycle in the metropolitan area of Barcelona. • Consumers • Construction sector • Research centres
	Comments on implementation	<p><u>Goals 2030 Pla Climate:</u></p> <ul style="list-style-type: none"> - To bring domestic drinking water consumption below 100 litres/inhabitant/day. - Bring urban water consumption below 150 litres/inhabitant/day. - Reduce the consumption of mains water by municipal services by 10 Hm3 per year: below 4.48 million m3 of water consumed in 2030. <p>The PLARHAB estimates that the current municipal consumption of drinking water that could be replaced by alternative water resources (AWR) is about 3.6 hm3/year. Taking into account the consumption currently served with groundwater, and the expected consumption of planned municipal services and facilities, the total potential demand for RHA will be 5.69 hm3/year. In the event that 100% of the potential municipal demand is covered with RHA, the sustainability index of the water consumption of the City Council would reach 73.66% (calculated according</p>



		<p>to current consumption). Thus, the weight of municipal drinking water consumption in relation to the city's total consumption would drop from 6% to around 2.4% (assuming that drinking water consumption in the rest of the city remains stable).</p> <p>The actions defined in the PLARHAB will allow an increase in groundwater consumption of 1.5 hm³/year related to current consumption. This will be translated into savings in drinking water. In this scenario, the sustainability index of municipal services would double from the current 16.36% to 35.12%.</p> <p>The CEAP 2030 refers in relation to water by expressing the need to guarantee the efficient energy management of municipal services associated with the water cycle and waste collection and management, and to optimise energy management and supplies of public lighting and municipal buildings and facilities (including nursery and primary schools), to achieve a saving of 10% of electricity consumption in the buildings involved. (Action 4.8).</p>
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	Pending
	Total costs and costs per unit of CO₂eq	<p>The PLARHAB details the budget for each line of action:</p> <ul style="list-style-type: none"> • Line 1: The estimated budget for the development of the groundwater network foreseen in the plan is €87.5 million. • Line 2: The estimated budget for the new reclaimed water system for the Prat Vermell - Can Batlló Marina is €6 million. • Line 3: The application of greywater systems is considered feasible mainly for new buildings or complete renovations because of the need to install a separate network. In the case of existing buildings, the installation is costly, whereas during the construction of the building, the added cost can be considered marginal. The investment and maintenance costs per dwelling depend on the number of dwellings in the building. As far as the amortisation is concerned, it is considered feasible in buildings of 16 dwellings or more, where the



		<p>investment is recovered in less than 10 years.</p> <ul style="list-style-type: none"> • Line 4: Estimated investment cost in a building already constructed: €1,100/m³ tank. In a newly constructed building: 780 €/m³ tank. • Line 5: The estimated total investment expenditure for the implementation of the ten proposed holding tanks amounts to €25 million. • Line 6: The estimated investment to implement the SUDS proposed in this action line of the plan depends on the type of stormwater management to be done.
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Action plan	Name of the action programme	16. Industrial decarbonisation programme
	Type of action	<p>Despite the fact that the city's industrial activity is responsible for 8.13% of the city's GHG emissions (2019), it is one of the key sectors for accompanying companies in the transformation of the city's production model as a whole towards a more sustainable and competitive one. Thus, the modernisation and decarbonisation of industries by adapting the business structure to a more sustainable model, ensuring more environmentally friendly production cycles in order to optimise resources, either by extending the life cycle of products or by converting waste into raw material for a next use, will be one of the most important focuses of action in the coming years.</p>
	Description of the action	<p>The <u>Barcelona Green Deal</u> is the urban and economic agenda to make, over the next ten years, a more competitive, sustainable and equitable city, adapted to challenges such as the ecological and digital transitions, which have been accelerated by the pandemic. In the field of green reindustrialisation, the main measures and strategic development areas are:</p> <ul style="list-style-type: none"> • The area where the Besós river and the ring road intersect will become a strategic space in the coming years to include green economy activities such as renewable energies, proximity logistics or industry 4.0, etc. • At the other end of the city, Montjuïc will become a hub for innovation, sport and technology. At the same time, an urban planning modification will seek to improve the area's relationship with the rest of the city and reinforce its true character as an urban park, taking advantage of both the transformation of the Ronda del Litoral, between the Zona Franca and the Carbonera, and the Fira area. • The spaces occupied by the Fira will also be reformulated, to introduce new uses that bring more added value to the neighbourhoods nearby; the Zona



		<p>Franca, the city's great productive land asset, and the Marina, which is the great reserve of residential land and could accommodate up to 28,000 more inhabitants.</p> <p>The development of the economic strategy envisaged in the Barcelona Green Deal is reflected in the <u>Roadmap of the economy for sustainability in Barcelona 2030</u>, which involves a commitment to facilitate the ecological transition through support for economic sectors in order to generate innovative solutions and take advantage of new business opportunities. The actions envisaged in this roadmap in the industrial sphere are as follows:</p> <ul style="list-style-type: none">• <u>01. Acquisition of warehouses in Bon Pastor and promotion of tractor projects</u>: Purchase of an industrial building in the Bon Pastor area to make the space available and attract and develop tractor projects linked to the promotion of the circular and sustainable economy and Industry 4.0, thus improving the competitiveness of small and medium-sized enterprises in the city's economic and business ecosystem.• <u>02. Circular Economy Programme for industrial companies</u>: Action that accompanies industrial companies in the Besòs Axis in the transition towards a circular economy. Thus, solutions are identified, in the field of both the production process and the business model, to improve efficiency in the use of resources and to respond to the sustainable challenges that arise. The accompaniment is carried out by experts who will help to analyse the situation of the company, as well as to define solutions and projects to implement.• <u>03. Responsible Business Programme</u>: Programme that aims to promote and facilitate the integration of social responsibility into the business strategy of participating companies, based on an action plan that incorporates this perspective in all areas of the company to promote a balance between economic, environmental and social requirements.• <u>04. Innofood Programme</u>: Programme to support the creation of innovative companies that improve any part of the food sector value chain to mitigate the effects of the climate crisis, reduce food waste and preserve biodiversity. Thus, it involves management and business plan training on food sustainability or distribution issues. There are also sectoral sessions, networking with entrepreneurial experiences and personalised support for the participating projects.• <u>05. Foodback food recovery centre</u>: Mercabarna sets up the Foodback food recovery centre, a new
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		<p>system for managing organic vegetable matter outside the marketing circuit, with the aim of providing a second life for surplus fruit and vegetables. Located in Mercabarna, it is a key facility in the new organic matter management system, where 100% of the recovered product is distributed and technological innovation projects are promoted for greater use.</p> <ul style="list-style-type: none">• 06. <u>Renovation and digitalisation of the Green Point</u>: Project to renovate and digitalise the specialised collection centre (green point) at Mercabarna to consolidate waste access control and the consolidation of the vegetable by-product management circuit. The aim is to position the new green point as a reference centre for retailers where they can deposit their waste, both organic matter and packaging, quickly and effortlessly.• 07. <u>Barcelona Zero Plastic Commitment</u>: Commitment presented by the Zero Plastic Table with the aim of reducing single-use plastic. This document sets out the actions and projects that will enable progress to be made towards a more sustainable model of society that is committed to the future.• 08. <u>Waste management in municipal markets</u>: selective waste collection, separating paper, cardboard, glass, packaging, organic waste and rejects into different containers. Thus, the aim is to apply mechanisms to select and reduce the volume of waste, reuse products and efficiently recycle the waste generated in the municipal markets of the city of Barcelona.• 09. <u>Implementation of packaging pools in wholesale markets</u>: Action for the implementation of packaging pools in wholesale markets to be able to control the circulation of reusable packaging used in commercial transactions and facilitate their reuse. The new packaging recovery system for the fruit and vegetable sector is planned for 2022, and the packaging pool for the fish sector for 2023.• 10. <u>Collection and recycling of white and grey line waste</u>: Collaboration agreement between Barcelona Activa and Andròmines, a social insertion association dedicated to transport, establishing a collection and recycling service for white and grey line waste in the city of Barcelona. This initiative enables the collection of waste electrical and electronic equipment, as well as waste derived from ICTs.• 11. <u>Agreement for the reuse of IT equipment with the eReuse Network</u>: Collaboration agreement between the Municipal Institute of Information Technology and the Pangea association, to
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		<p>establish a circuit for the exchange, refurbishment and reuse of IT equipment between 2018 and 2022. The eReuse Network is responsible, among other actions, for the reuse of equipment to be given to families in vulnerable situations and social spaces.</p> <ul style="list-style-type: none">• 12. <u>RevESStim Programme</u> Action framed within the Sustainable Textile Plan and the Pact for Circular Fashion, which aims to boost the city's sustainable textile sector by strengthening the socio-entrepreneurship of the companies and organisations that operate, as well as the entrepreneurial projects that are being initiated. It offers training and specialised advice, promoting the dynamisation of different groups of agents, detecting common needs and objectives, and fostering the network with initiatives and the exchange of experiences in the sector.• 13. <u>Barcelona Fashion Forward</u> Action framed within the Pact for Circular Fashion, whose objective is to support designers, designers and emerging fashion brands in the optimisation of processes and methods. It incorporates methodologies that take into account the sustainable sphere to improve their professionalisation, and in the areas of marketing, communication and digitalisation through training sessions, personalised accompaniment and financing services.• 14. <u>Fashion Sustainable Challenge</u> Annual themed ideas competition for students of fashion and other creative disciplines from all over the world. It is based on the development of projects adapted to the specific and changing theme of each edition, although the backbone of the competition focuses on circular and sustainable fashion. This action is part of the Pact for Circular Fashion, which is committed to transforming the textile sector in Catalonia towards a circular economy. <p>Finally, it should be noted that this detailed action plan in the industrial field must be accompanied by the development of the actions envisaged in the CEAP 2030 and designed to have a direct impact on the decarbonisation of the economy of Barcelona and its Metropolitan Area.</p> <p>In this regard, the involvement of the General State Administration and the Port of Barcelona will be required, on the one hand, to work towards a taxation system with a strong environmental focus on ships in the Port of Barcelona and the aeronautical sector (action 10.24). Likewise, and in collaboration with the Government of the Generalitat de Catalunya and the Metropolitan Government, the CEAP 2030 establishes the need to promote voluntary agreements by large</p>
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		companies to reduce greenhouse gas emissions (Action 12.10), to advise companies to facilitate the reduction of waste and emissions, both in the planning and implementation of improvements (Action 12.14), and to study options for improving environmental taxation for "low-carbon" companies (Action 12.15). Finally, voluntary agreements with the private sector to establish best practice in reducing packaging, waste, single-use plastics, etc. will also be essential (action 14.7).
Reference to the impact pathway	Subsector	Waste and other
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Business models • Local development strategies • Capacity and capacity building
	short and medium-term changes	
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Management of Economy and Economic Promotion • Barcelona Activa, SA
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya • Barcelona Free Trade Zone Consortium • Universities • BCN Vocational Training Foundation • Trade unions • Companies and Business Associations
	Comments on implementation	The Barcelona Green Deal foresees the generation of between 8,000 and 10,000 new jobs by 2030 from green industrialisation.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	A specific calculation of the potential emission reduction of this programme is not yet available. For the "other" sector programmes as a whole, where industry is the most relevant sector, the Mission's target implies a 73% reduction in emissions (167 thousand MT) compared to the BAU 2030 scenario.



	Total costs and costs per unit of CO2eq	Pending
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NATURE-BASED SOLUTIONS

Action plan	Name of the action programme	17. Urban green infrastructure programme
	Type of action	The Natura Barcelona 2030 Plan is a strategic and participatory instrument, whose vision is that of a city in the year 2050 with a functional and ecological green infrastructure, with an equitable, accessible green space, connected to the urban fabric and the metropolitan green network, to maximise social and environmental services, especially those of health and adaptation to climate change. This urban nature network is appreciated and conserved as the Earth's natural heritage, and as a benefit for people and present and future generations, who enjoy the connection to nature and are involved in the creation of green spaces and the conservation and enhancement of biodiversity.
	Description of the action	<p>The Natura Barcelona 2030 Plan foresees:</p> <ul style="list-style-type: none"> • Increase the city's green infrastructure to maximise its services, especially climate change adaptation services, and improve access to urban nature for all citizens. • Deploy and consolidate ecological management and naturalisation in nature management, in the service of the health of citizens and the conservation of biodiversity on Earth. • Conserve and promote biodiversity, protecting species and enhancing habitats and their connectivity. • To increase the knowledge, enjoyment and care of urban nature, and to facilitate and promote the involvement of citizens in its conservation and improvement. <p>The actions related to urban green infrastructure of the Natura Barcelona 2030 Plan are aligned with the following actions of the CEAP 2030:</p> <ul style="list-style-type: none"> - Action 5.1: Develop ten green roofs and green façades on municipal buildings - Action 6.8: Draw up the Green and Biodiversity Charter, with the aim of having an instrument that compiles the technical, environmental and design criteria to be taken into account when planning green spaces and urban trees, in the spirit of conserving and promoting the city's plant and animal biodiversity.



		<ul style="list-style-type: none"> - Action 7.1: Increase 40 hectares of public green space in Barcelona that provide high socio-environmental services, prioritising the areas with the greatest deficit, and approve an instrument that allows for the effective protection of private green space. - Action 7.6: Promote urban green corridors with special attention to the Ciutadella-Collserola corridor with the intervention in Pi i Margall street. - Action 7.8: Draw up a catalogue of tree species. - Action 7.13: Create ten biodiversity nodes and nature reserves as an essential part of urban green infrastructure. - Action 15.2: Support and promote urban and peri-urban agriculture, as well as the agro-ecological fabric of the city and the Llobregat agricultural park. - Action 15.16: Promote the network of urban vegetable gardens for their social function and as a tool for dissemination, and encourage peri-urban agriculture and organic livestock farming together with other supra-municipal administrations. <p>A <u>Shade Plan</u> is being developed to regulate and reduce the temperature in the hot months, reducing the heat island effect, in all those areas where it is not possible to incorporate green infrastructure.</p>
Reference to the impact pathway	Line of action	Nature-based solutions (Urban green infrastructure, urban agriculture and green roofs)
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology • Culture • Commitment and participation • Governance and politics
	short and medium-term changes	<ul style="list-style-type: none"> • Increase 160 hectares between 2015 and 2030, to meet the 2015 Climate Commitment: 1 m² more green per capita. • Increase the naturalised area by 100 hectares. • Create 10 biodiversity refuges. • Doubling the number of participants in nature activities. • 40 new projects of the "Hands to Green" programme.
Implementation	Bodies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Urban Planning and Housing Management • Mobility, Infrastructures and Urban Services Department • Resource Management and Digital Transformation
	Scale of action and	Municipal



	target entities	
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Research centres and universities • Social entities and citizenship • Schools and the education community
	Comments on implementation	The Natura Barcelona 2021-2030 Plan is structured into three axes and two cross-cutting areas and a total of twenty actions and one hundred projects, with a first plan, the 2021-2025 Action Programme, under which ten priority projects, also known as tractor projects, will be implemented.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Pending
	Total costs and costs per unit of CO₂eq	Pending

CROSS-CUTTING PROGRAMMES

Action plan	Name of the action programme	18. Climate-smart urban design programme
	Type of action	The Urban Master Plan (PDU) is a figure of urban planning of supra-municipal scope which, with a strategic vision, establishes the major objectives and the main ideas and guidelines to be developed over the next 20 years in the Barcelona metropolitan area in relation to infrastructures, green areas, urban fabric and open spaces.
	Description of the action	The Metropolitan Area of Barcelona (AMB) has begun the technical and administrative process of processing the metropolitan PDU, which must culminate with its definitive approval and publication after the phases of initial approval, the strategic environmental declaration and provisional approval. The metropolitan urban planning of the PDUM poses three major challenges: The territorial articulation of a



		<p>sustainable mobility model, which must guarantee both the external accessibility of the metropolitan area and mobility between municipalities. The ecological transition, the green infrastructure and its metabolic relations, as well as the impact of the city and its infrastructures on the climate change scenario. And finally, the habitability and competitiveness of the spaces where we live and work, access to housing and green spaces and facilities, the quality of public space, and the quality of the environments of the productive fabric.</p> <p><u>This model is specified in ten objectives</u> that guide the normative determinations of the PDUM:</p> <ul style="list-style-type: none"> - 1. Strengthen metropolitan solidarity. - 2. Strengthening the metropolitan capital. - 3. Naturalise the territory by enhancing the values of the biophysical matrix. - 4. Improve the efficiency of urban metabolism and minimise environmental impacts. - 5. Articulate the territory on the basis of a polycentric structure. - 6. Promote active and sustainable mobility by rethinking metropolitan infrastructures. - 7. Promote social cohesion through housing, public space, facilities and public transport. - 8. Rehabilitate and recycle urban fabric. - 9. Increasing urban complexity and liveability. - 10. Boost the competitiveness and sustainability of the metropolitan economy. <p>These objectives are aligned with the following actions of the <u>CEAP 2030</u>:</p> <ul style="list-style-type: none"> - Action 6.1: Influence higher planning instruments, such as the Urban Master Plan and urban planning legislation to incorporate urban planning determinations. - Action 6.2: Adapt existing urban planning regulations necessary to contribute to climate change mitigation and adaptation goals - Action 6.3: Introduce the climate emergency vector into strategic metropolitan transformations. - Action 7.3: Incorporate climate change criteria into the Special Plan for the Protection of the Natural Environment and Landscape of the Serra de Collserola Natural Park. - Action 10.5: Scale up and accelerate the Superblocks programme. Transform 15 km of streets into green axes by 2024.
Reference to the impact pathway	Line of action	Town planning
	Systemic lever	<ul style="list-style-type: none"> ● Regulation ● Finance (resources €)



	short and medium-term changes	<p><u>Features new Green Axes and Squares in the Eixample (executed 2022-2023):</u></p> <ul style="list-style-type: none"> • The division of heights between pavement and roadway is eliminated, and a single platform is created to favour the social use of the street. • Priority will be given to pedestrians. Cars will only be allowed to drive at 10 kilometres per hour. • The asphalt will disappear and granite and concrete slabs will be used on all axes. • A tenfold increase in green space. We will go from the current streets, which dedicate 1% of the space to green, to streets with an average of 12%. • 438 new trees will be planted. The streets will have a rich subsoil. • There will be almost a thousand new items of furniture (benches, chairs, tables, playground equipment) and new lighting. • A commitment to local commerce. Loading and unloading will be allowed at specific times.
Implementation	Agencies/persons responsible for implementation	<ul style="list-style-type: none"> • Barcelona City Council: Gerencia de Urbanismo y Vivienda (Urban Planning and Housing Department) • Barcelona Metropolitan Area (AMB)
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • AMB Municipalities • Citizen participation ("Superillas" ideas competition, DECIDIM platform)
	Comments on implementation	It is envisaged to increase from 60.3 km of green axes in 2022 to 91.74 km in 2030. This proposal is under consideration, along with the proposal to accelerate the recovery of inner city blocks as public spaces and green areas.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Not available
	Estimated GHG emission reductions (total)	Not available
	Total costs and costs per unit of CO₂eq	<ul style="list-style-type: none"> • The Green Axes and Squares implemented between 2022 and 2023 have cost 52.700.000 €.



Action plan	Name of the action programme	19. Climate Justice and Social Inclusion programme
	Type of action	Action aimed at guaranteeing and strengthening the concept of Climate Justice, which is comprehensively developed in the CEAP, and which implies that citizens and the most vulnerable groups are at the centre of the city's climate policies. Furthermore, both the Strategy for Social Inclusion and Reduction of Inequalities 2017-2027 and the Gender Justice Plan 2021-2025 actively contribute to reinforcing the concept of climate justice in their specific groups.
	Description of the action	<ul style="list-style-type: none"> • One of the four strategic axes of the <u>ECCP</u> is Climate Justice: <ul style="list-style-type: none"> - We work to reduce energy poverty and provide fair access to energy for all, with special attention to the most vulnerable groups, through combined policies of access to self-generation facilities, improvements in housing conditions, energy advice and in the best conditions of quality, sustainability and costs. We also work for equity, food security and to promote new lifestyles linked to new forms of consumption, such as, for example, the circular economy. • The <u>Gender Justice Plan 2021-2025</u> foresees the following objectives in its "Area 32 Ecology and Sustainability": <ul style="list-style-type: none"> - Improve knowledge on the relationship between gender and climate change, in order to know the specific impact that the climate crisis has on women in Barcelona (studies, indicators...) and to be able to define actions to respond to it. - Incorporate a gender perspective in municipal action plans and programmes to address the climate emergency and thus move towards ecofeminist city policies. - Promote parity and encourage women's and girls' leadership in climate action in the city. • The <u>Strategy for Social Inclusion and Reduction of Inequalities 2017-2027</u> foresees within its "Action Line 5: Reduce territorial social inequalities", the development of "Objective 5.4: Ensure equitable and sustainable mobility for all and combat climate change and its effects, ensuring environmental justice criteria".
Reference to the	Line of action	Climate justice and social inclusion



impact pathway	Systemic lever	<ul style="list-style-type: none"> • Governance and politics • Social innovation • Citizen engagement and participation
	short and medium-term changes	<ul style="list-style-type: none"> • <u>CEAP 2030 actions in the short term (2020):</u> 1.1. Provide aid and subsidies for the energy improvement of housing and prioritise action on housing for vulnerable families and those at risk of social exclusion (annually). 1.3. Strengthen mobility services for the most vulnerable neighbourhoods and people (public transport, specific on-demand mobility services for people with health problems, electric biking, etc.). 1.8. Design pilot projects for social superblocks, aimed at providing comprehensive care services for dependent people from local home care service teams. 2.5 Deploy the municipal energy operator to promote the production of renewable energies in the municipality and facilitate their implementation in both public and private spaces. 2.6 Improve knowledge on the relationship between fuel poverty and health through the Health Survey and specific studies that provide indicators. 17.1 Deepen knowledge of the ecological-climate debt and its effects on the most vulnerable countries and societies. Deploy the principle of planetary boundaries in the framework of future strategic plans for the city of Barcelona (2020). • <u>CEAP 2030 actions in the medium term (2025):</u> 1.9. Adapt and improve care services to help people cope with the health impacts of climate change. 2.8 Promote and prioritise the self-production of energy from renewable sources and make it accessible also to vulnerable households (on a continuous basis).
Implementation	Agencies/persons responsible for implementation	<u>Barcelona City Council</u> <ul style="list-style-type: none"> • Mobility, Infrastructures and Urban Services Department • Area Management of Social Rights, Health and Community
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Public Administrations • Energy operators • Social entities and the third sector
	Comments on implementation	
Impacts and costs	Renewable energy generated (if)	Not applicable



	applicable)	
	Energy removed/replaced, fuel volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Not applicable
	Total costs and costs per unit of CO ₂ eq	Pending

Action plan	Name of the action programme	20. Climate Neutral Economic Opportunities and Adaptation Programme
	Type of action	This cross-cutting action programme will revolve around the promotion of economic sectors linked to decarbonisation, fostering the creation of business clusters and especially promoting social and solidarity economy enterprises, on the one hand, as well as around training and promoting employment in renewable energies and the circular economy. These objectives are widely included in some of the actions envisaged in the CEAP, and therefore the necessary instruments and resources should be generated to maximise their potential.
	Description of the action	<p>The actions of the <u>CEAP 2030</u> related to the sustainability economy are:</p> <ul style="list-style-type: none"> - Action 1.5: Promote green jobs in economic sectors linked to climate change (energy rehabilitation, installation and maintenance of solar panels, sustainable food or electric mobility). Give the Labora project an environmental vision. - Action 12.2: Define a green, blue and circular economy strategy. Promote clusters of companies in the renewable energy and circular economy sector in the city, for example, in the Besòs axis. - Action 12.4: Establish training and employment programmes in the circular economy, through Barcelona Activa. - Action 12.6: Adapt Barcelona Activa to promote the green and local economy. <p>The Climate Neutral Adaptations and Economic Opportunities Programme will be closely aligned with the <u>Roadmap for the Economy for Sustainability in Barcelona 2030</u>, which is a commitment to facilitate the ecological transition through support for economic sectors in order to generate innovative solutions and</p>



		<p>take advantage of new business opportunities. The aim is to position the city as a benchmark with the creation of useful and coordinated instruments with the set of public and private agents with an impact on the entire metropolitan region.</p> <p>The proposal focuses on six key sectors to accompany companies in transforming the city's production model as a whole towards a more sustainable and competitive one:</p> <ul style="list-style-type: none"> - Industry - Tourism - Construction and infrastructure - Mobility and transport - Energy - Trade, consumption and food <p>The <u>objectives</u> of the roadmap are as follows:</p> <ul style="list-style-type: none"> • Accompanying companies in the transformation towards a more sustainable production model. • Encourage and accelerate the generation of new entrepreneurial initiatives and new innovative business models. • Facilitating the city's small economy to take advantage of new business opportunities. • Identify new employment and career development opportunities. • Tackle and lift bureaucratic, administrative and cultural barriers that represent obstacles to the drive for a transformative and more sustainable economy. • To position Barcelona as a city of international reference in the transformation of the economic and productive fabric, thus fostering the creation of jobs and facilitating the ecological transition. <p>The Healthy and Sustainable Food Strategy 2030 will also be relevant in this area.</p>
Reference to the impact pathway	Subsector	Economic promotion
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Business models • Local development strategies • Capacity and capacity building
	short and medium-term changes	
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Management of Economy and Economic Promotion • Barcelona Activa, SA
	Scale of action and target entities	Municipal, Metropolitan



	Actors involved	<ul style="list-style-type: none"> • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya • Universities • BCN Vocational Training Foundation • Trade unions • Companies and Business Associations
	Comments on implementation	<p>In order to monitor the deployment of the <u>Economy for Sustainability roadmap in Barcelona</u>, its degree of progress and its impact on the city's economic and social fabric, an initial set of indicators for monitoring the strategy is presented:</p> <p><u>International positioning of Barcelona</u></p> <ul style="list-style-type: none"> • Sustainable Cities Index • Sustainable Urban Mobility Index • <i>Clean Cities</i> Index <p><u>Economic activity and sustainability</u></p> <ul style="list-style-type: none"> • Employment in the sustainable economy: number of jobs and % of total • Companies with employees in sustainable economy: number and % of total • New entrants in the sustainable economy and % of total • Mapping of the sustainable economy in Barcelona (number of economic agents/total) • Companies with environmental quality labels/certifications • Actors that incorporate an explicit commitment to sustainability in their corporate by-laws <p><u>Efficient use of resources</u></p> <ul style="list-style-type: none"> • Energy intensity • Energy consumption per capita (MWh/inhab/yr) • % final energy consumed from renewable sources • Energy consumption by sector (commercial and services, transport, industrial, domestic, other) (Gwh/year) <p><u>Climate change and emission reductions</u></p> <ul style="list-style-type: none"> • Comparison of per capita emissions in different world cities • Registered electric or hybrid vehicles • Electric recharging points <p><u>Environmentalisation of the City Council</u></p> <ul style="list-style-type: none"> • Barcelona City Council's current expenditure on urban services and the environment linked to the green economy • Municipal investment in environmental sectors • Fiscal impact in the framework of the Economy for Sustainability • Issuance of sustainability-linked financial products
Impacts and costs	Renewable energy generated (if	Not applicable



	applicable)	
	Energy removed/replaced, volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Not applicable
	Total costs and costs per unit of CO ₂ eq	Pending

Action plan	Name of the action	21. Education, Culture, Communication and Participation Programme
	Type of action	<p>Cross-cutting action programme in the fields of education, culture and participation. At the educational level, the programme mainly consists of strengthening support to schools as spaces for climate awareness and action.</p> <p>Cultural action will focus on holding debates, exhibitions and other actions on the climate emergency in the various types of cultural facilities and events in the city. It will also be of vital importance to implement an effective communication strategy that includes information on available opportunities, assistance and support, as well as on the good practices deployed in the city in the fight against the climate emergency. Finally, the Programme will be based on promoting the participation of the people most vulnerable to the effects of climate change (e.g.: <i>Llars d'infants pel clima</i>), based on a territorial approach and the contribution of municipal resources.</p>
	Description of the action	<p>The <u>Let's Change for Climate 2030 Plan</u> marks the municipal strategy and seeks to promote changes in the dominant culture and help develop and spread a new culture of sustainability that intensifies climate action in the city of Barcelona. The main lines of action are:</p> <p><u>Education. Area 2 of the Let's Change for Climate 2030 Plan:</u></p> <ul style="list-style-type: none"> • Line 2.1 of the Let's Change for Climate 2030 Plan. Strengthen the support, impact and transformative capacity of organisations committed to climate action (educational communities, entities, activists, companies, businesses, etc.). Actions in this area: <ul style="list-style-type: none"> - Leverage school transformations (curriculum, physical environment and spaces, governance, internal functioning, etc.) to extend sustainability learning in educational communities and



		<p>neighbourhoods.</p> <ul style="list-style-type: none">- Providing the city with family play spaces that offer educational environments in nature for enjoyment, experimentation and socialisation. <p><u>Culture. Area 4 of the Let's Change for Climate 2030 Plan:</u></p> <ul style="list-style-type: none">• Line 4.1. Consolidate a cultural programme in the city (performing arts, cinema, concerts, talks, workshops, itineraries, etc.) that invites reflection on sustainability.• Line 4.2. Spread the culture of sustainability through new municipal strategies, urban transformations and changes in city management (superfills, waste, naturalisation, etc.).• Line 4.3. Involve facilities (cultural, social, sporting, etc.) and events (major festivals, concerts, races, etc.) in climate action, providing criteria and resources. <p><u>Communication. Area 6 of the Let's Change for Climate 2030 Plan</u></p> <ul style="list-style-type: none">• Line 6.1. Plan the communication and global account of the culture of sustainability, and the dissemination of programmes, projects and facilities.• Line 6.2. Test new instruments and channels to reach more audiences, and improve existing communication tools.• Line 6.3. Work on a stable basis with professionals and media and <i>influencers</i> to strengthen the dissemination of ideas on sustainability.• Line 6.4. Ensure that sustainability and climate information is accessible, attractive, up to date and complete. <p><u>Participation. Areas 3 and 4 of the Let's Change for Climate 2030 Plan</u></p> <ul style="list-style-type: none">• Line 3.1. Empower conscious people and make them feel involved in transformative action through experiences such as volunteering or citizen science.• Line 3.2. Stimulate and empower conscious youth and families to recognise, increase and scale up their climate action.• Line 3.3. Raise the profile of transformative initiatives at citizen (consumer cooperatives, energy communities, etc.), business, professional and cultural level, and support them to inspire more people and actors.• Line 3.4. Generate and promote transformative projects in neighbourhoods through cultural and environmental facilities.• Line 4.4. Ensure the involvement of specific groups (neighbourhood communities, sportsmen and women, etc.), especially those most vulnerable to
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		<p>climate change (elderly people, women, people on low incomes, etc.).</p> <ul style="list-style-type: none"> • Line 4.5. Design and implement strategies and mechanisms targeting economic sectors. <p>The actions of the <u>CEAP 2030 related to</u> this education, culture, communication and participation programme are listed below:</p> <ul style="list-style-type: none"> - Action 16.1: Widely disseminate information on available opportunities, grants and support (retrofitting, energy efficiency improvement, training, projects, etc.). - Action 16.3: Provide €1m/year for financial support to develop projects that contribute to the objectives of the Climate Emergency Action Plan and the Climate Emergency Declaration. 2025 - Action 16.4: Spread awareness of the climate emergency using existing communication channels: message in KAPs, metro channels, etcetera. - Action 16.5: Visibilise the commitments, actions and good practices of the various actors. - Action 16.6: Establish mechanisms to ensure participation of people vulnerable to climate change - Action 16.7: Strengthen programmes to support schools, entities and businesses as spaces for climate awareness and action. - Action 16.8: Publicise the Climate Emergency Declaration with a travelling exhibition touring the ten districts and several schools. - Action 16.10: Promote actions for climate emergency (energy improvement, environmental quality assurance, sustainable mobility, etc.) from cultural facilities managed by the ICUB or with municipal participation. - Action 16.11: Incorporate information and debate on climate emergency and future models in cultural programming and with the involvement of cultural facilities (libraries, museums, civic centres, youth centres, youth spaces) and dedicate international days and weeks to the climate crisis. - Action 16.13: Promote the creation of citizen co-responsibility networks and climate action groups at neighbourhood level. - Action 16.14: Strengthen the participation of the social fabric of the territory in the definition of urban, green and mobility proposals to mitigate the effects of climate change (throughout the whole process).
Reference to the impact pathway	Line of action	Education, culture and participation
	Systemic lever	<ul style="list-style-type: none"> • Culture



		<ul style="list-style-type: none"> • Capacity and capacity building • Citizen engagement and participation
	<p>short and medium-term changes</p>	<p><u>Education</u></p> <ul style="list-style-type: none"> • Consolidate education for sustainability and climate action in all the city's educational centres. <p><u>Culture</u></p> <ul style="list-style-type: none"> • Create a new line of support "Artists for Climate" to create projects on sustainability and climate in various facets of art: fashion, photography, theatre, music, film, urban art, etc. • Promote 'climate action month' in the city's cultural facilities (libraries, museums, cinemas, civic centres, schools, etc.). <p><u>Communication</u></p> <ul style="list-style-type: none"> • Create a dynamic website with a unified agenda that brings together sustainability culture actions. • Reach stable collaboration agreements with environmental and youth influencers (artists, influencers, youtubers, streamers, etc.) to spread messages and collaborate in generating change through their own networks. <p><u>Participation</u></p> <p>Transformative projects in this area:</p> <ul style="list-style-type: none"> • Create the Citizens' Climate Network that offers meeting spaces, invites participation in shared challenges and helps to consolidate changes in habits. • Develop the "At Home We Change for the Climate" project so that 50 families receive personalised training and advice each year to improve daily habits (energy consumption, water consumption, climate adaptation, sustainable and healthy food, sustainable mobility, responsible consumption, etc.), with stimulating challenges and measurement systems, and with the commitment to become involved and sponsor other households. • Providing the city with nature-family play spaces that offer nature education environments for enjoyment, experimentation and socialisation. • Make the environmental facilities in the neighbourhoods into information and dynamising points for transformational projects with accessible and attractive formats (projects such as community composting, energy communities, opportunities for volunteering, citizen science, community gardens, etc.). • Create the Citizens' Climate Assembly with a diverse and random cross-section of people to research, debate and make recommendations on complex



		<p>issues such as the climate emergency.</p> <ul style="list-style-type: none"> • Implement climate action programmes targeting vulnerable groups (youth, women, elderly, people with disabilities) and disadvantaged neighbourhoods in the city. • Dedicate each year to a thematic area (electronics, textiles, food, mobility, etc.) and create resources, best practices, training sessions, etc. aimed at companies and professionals from different economic sectors (catering, retail, accommodation, food, mobility, pharmaceuticals, etc.) to raise awareness and promote climate action.
Implementation	Agencies/persons responsible for implementation	<p><u>Education</u> Barcelona City Council:</p> <ul style="list-style-type: none"> • Management of Culture, Education and Sports • Education Consortium • Schools in the Barcelona + Sostenible network • Mobility, Infrastructures and Urban Services Department <p><u>Culture</u> Barcelona City Council:</p> <ul style="list-style-type: none"> • Area Management of Social Rights, Health and Community • Area Management of Culture, Education and Sport • Mobility, Infrastructures and Urban Services Department • Institute of Culture (ICUB) <p><u>Communication</u> Barcelona City Council:</p> <ul style="list-style-type: none"> • Management of Economy and Economic Promotion • Mobility, Infrastructures and Urban Services Department • City Hall <p><u>Participation</u> Barcelona City Council:</p> <ul style="list-style-type: none"> • Area Management of Social Rights, Health and Community • Area Management of Culture, Education and Sport
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Barcelona City Council • Citizens' Council for Sustainability (a regulated body for citizen participation in this area). • Civil Society Organisations that are members of the Taula for the climate emergency • Schools • Cultural associations



		<ul style="list-style-type: none"> • Organisations of all kinds, integrated in the Sustainable Barcelona + network
	<p>Comments on implementation</p>	<p><u>Education</u> Goals 2030:</p> <ul style="list-style-type: none"> • 100% of schools participate in sustainability programmes. • 100% of teachers trained in climate change <p>Strategy aligned with two processes of reflection and planning that have recently been carried out at Catalan and national level: the 2nd National Environmental Education Congress and the Environmental Education for Sustainability Action Plan 2021-2025.</p> <p><u>Culture</u> Key performance-related monitoring indicators for Domain 4:</p> <ul style="list-style-type: none"> • Arts events by climate: number of events, number of artists who have participated, number of people who have seen them. • Number of city cultural events and festivals that have incorporated sustainability and climate criteria, people attending these events. • Number and type of cultural facilities participating in the sustainability culture offer and people involved. <p><u>Communication</u> Key Monitoring Indicators for Domain 6:</p> <ul style="list-style-type: none"> • Number of agreements with environmental and youth <i>influencers</i> • Number of collaborations with communication professionals • Number of high-profile communication campaigns to disseminate options and ways to act that help address climate change • Impact of campaigns: number of actions and people reached • Number of educational resources available by type of audience <p><u>Participation</u> Key Monitoring Indicators for Domain 3:</p> <ul style="list-style-type: none"> • Number of people who are members of the Sustainable Citizenship + network • Number of environmental volunteers in Barcelona • Number of families participating in the programme "At Home We Change for the Climate". • Number of family recreational spaces, number of activities and number of users • Number of schools and students carrying out Service-Learning projects in the field of environment and sustainability



		<ul style="list-style-type: none"> • Working conditions of environmental educators employed by the administration (annual salary, hourly rate). • Number of subsidised sustainability-related projects, amounts, themes, people involved, territorial coverage (neighbourhood, district) • Number of points incorporated in the B+S Map, number of activities incorporating the B+S Map information • Number of transforming projects in which Barcelona's environmental facilities participate • Number of people attending the activities of environmental facilities in Barcelona • Number of people participating in sustainability culture activities, projects and events.
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Not applicable
	Total costs and costs per unit of CO ₂ eq	<ul style="list-style-type: none"> • The Plan intends to allocate existing resources from various municipal areas and districts and, in particular, from the Directorate of the Climate Change and Sustainability Office. Furthermore, in order to implement the most innovative and transformative projects of the Plan, an additional budget is required. This additional budget is • 350,000 per year for transformative projects • 1 million euros per year to promote the subsidies of the "Pla Clima + Enxarxem".

Action plan	Name of the action programme	22. Knowledge and innovation development programme
	Type of action	This Programme combines Barcelona City Council's essential commitment to innovation, especially through the Urban Innovation Programme "Barcelona Innova Lab" (mobility sector - Urban Mobility Lab -, construction sector - construction solutions adapted to Barcelona), with the Barcelona Climate Science Programme , which aims to involve academia and



		<p>citizens in the collection of data and the preparation of studies on the impacts of climate change and the measures applied, which in turn facilitate and promote innovative solutions.</p>
	<p>Description of the action</p>	<p>The Government's Measure to <i>promote urban innovation in Barcelona</i> structures and legitimises the instruments available to Barcelona City Council to accelerate and promote the change to a digital, green and inclusive future. The main objectives are:</p> <ul style="list-style-type: none"> • Objective 1: Promote a change in the innovative culture of the Administration • Objective 2: Re-engaging innovation with the city and its people • Objective 3: Structuring methodologies and articulating new instruments to boost innovation • Objective 4: To promote the city as a natural space for experimentation. This objective includes action 4.3 Creation and implementation of the Innovation Laboratory. <p>In support of the achievement of the objectives of this MoG, we find the <u>Barcelona Innovation Coast (BIC)</u>, an initiative of the Barcelona City Council that was created with the aim of promoting innovation and consolidating the city as the innovation capital of southern Europe. It is a public-private platform that brings together the city's main innovative agents. The BIC allows the creation of networks that facilitate the transfer of knowledge, synergies and the development of innovative projects in the city. More specifically, the BIC is expected to contribute to the promotion of projects for the improvement and decarbonisation of public transport and coordinates the participation of Barcelona City Council in the Enel Innovation Energy Hub, which helps start-ups in the energy sector to scale their sustainable solutions, from the reduction of greenhouse gases to the impact of electricity infrastructures on the environment or energy storage systems. The aim is that these start-ups can become part of the group of suppliers of the electricity company Enel-Endesa.</p> <p>For its part, the <u>Barcelona Science Plan 2020-2023</u> articulates science and university policy in the metropolitan area with the aim of turning the city into a European capital of research and innovation. This plan is a commitment to knowledge and innovative solutions, a strategy in favour of quality of life, ageing, mobility and the environment, among others, which is articulated in four areas: Barcelona, a city of science in Europe; research to address the challenges facing the city; scientific culture for the public and with the public; and science, art, innovation and society. The Barcelona</p>



		<p>Science Plan 2020-2023 is structured into 4 work axes, 15 objectives and more than 50 actions. Particularly important in the context of the Climate Mission are the following specific objectives and actions:</p> <ul style="list-style-type: none">• Objective 4: Establish agreements with European and international cities to define and share solutions to current urban challenges, and facilitate collaborations between key actors in the cities concerned.<ul style="list-style-type: none">- Action 4.3: Define a city-to-city collaboration project involving city councils and local and European research centres and universities to address global metropolitan debates, such as sustainable mobility and new urban and mobility models.- Action 4.10: Promote Barcelona and its metropolitan region as a centre of science and an attractive hub, especially in precision medicine, supercomputing and big data, biomedicine and the environment, and technological innovation in health through bioengineering, as well as in social sciences and humanities applied to public affairs and sustainable, healthy and fairer urban planning.• Objective 8: Promote urban projects that catalyse research and innovation activities in the city and the metropolitan region.<ul style="list-style-type: none">- Action 8.2: Develop the network of university infrastructures to connect it with other research, innovation and cultural spaces in the city through bilateral agreements with universities.- Action 8.4: Promote scientific and related initiatives to adapt the city to the elderly (mobility, care services, etc.) and for quality and active ageing.• Objective 9: Strengthen scientific educational programmes and the offer of scientific activities throughout the educational cycle, prioritising the perspective of gender, cultural diversity and territorial and income equity.<ul style="list-style-type: none">- Action 9.1: Promote STEAM and other science programmes in the city's schools, and follow up between different areas of the City Council in order to share good educational practices in research and science, including in a cross-cutting manner on urban environmental and climate justice and gender equality.• Objective 14: Promote the connection between scientific actors and the city's innovation projects and facilities.<ul style="list-style-type: none">- Action 14.1: Support the dynamisation of relations between scientific actors and LID and i.Lab.• Objective 15: To facilitate the transfer of scientific knowledge to social and economic actors, especially those with few or no resources for their own research, and who work for an environmentally sustainable and
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		<p>equitable economy.</p> <p>- Action 15.5: Participate in the cross-cutting innovation roundtable between different areas and directorates of the City Council to facilitate the transfer of research to urban solutions and to seek innovative ways of solving emerging challenges.</p> <p>This Knowledge and Innovation Development Programme corresponds to the following actions of the <u>ECCP 2030</u>: 4.6, 6.6., 11.2, 11.3, 11.8, 18.1, 18.3, 18.4, 18.6, 18.7, 18.8, 18.10, 18.16, 18.17, 18.8, 18.19, 18.20, 18.21</p>
Reference to the impact pathway	Subsector	Science and technology
	Systemic lever	<ul style="list-style-type: none"> • Technology • Social innovation • Capacity and capacity building
	short and medium-term changes	
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Mobility, Infrastructures and Urban Services Department • BIT-Habitat Foundation • Management of Economy and Economic Promotion • Culture, Education, Sports and Life Cycle Management (also Citizen Science Programme)
	Scale of action and target entities	Municipal, Metropolitan
	Actors involved	<ul style="list-style-type: none"> • Universities • Business schools • Research and knowledge transfer centres, • Business associations • Clusters • Financing agents • Public administrations • Educational establishments
	Comments on implementation	
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, volume or fuel type	Not applicable
	Estimated GHG	Not available



	emission reductions (total)	
	Total costs and costs per unit of CO2eq	<p>Budget MoG Urban Innovation 2021-2023:</p> <ul style="list-style-type: none"> • Target 1: 3.479.583,08€. • Target 2: 173,979.16 €. • Target 3: 1,427,385.50 €. • Target 4: €1,776,913.98 • Total: 6.683.882,56€. <p>The Barcelona Science 2020-2023 plan was approved with a forecast total budget of four million euros over the four years of implementation. The outbreak of the crisis due to the COVID-19 pandemic made it necessary to carry out some emergency actions that had not been foreseen and which have led to an increase in the budget, which had initially been set at 1,420,000 euros for 2020.</p>

Action plan	Name of the action programme	23. Carbon Neutral City Council Programme
	Type of action	Cross-cutting programme aimed at achieving climate neutrality of infrastructure and municipal activity by 2030. The necessary reforms and internal modernisation of the organisation must also be undertaken in order to achieve the city's decarbonisation objectives set out in the Mission.
	Description of the action	<p>This programme is expected to be presented during 2024. In order to achieve carbon neutrality of the municipal activity itself by 2030, the following areas will be addressed in depth: Buildings; Fleets (own and subcontracted) and travel; Street services (lighting, traffic lights, fountains, escalators and lifts); Works (project drafting and execution); Events (cultural and sporting); Food services, catering and vending; Other services and supplies (cleaning and waste collection, cloud services, etc.). To this end, the necessary procedures will be established for the periodic quantification of GHG emissions, which are currently not included in the emissions inventory (mainly emissions incorporated in non-energy supplies); actions to reduce emissions will be promoted through improvements in the management and contracting of works, supplies and services and also in the change of habits and collaboration with suppliers to extend these measures beyond the actions and contracting of the City Council itself.</p> <p>The <u>2023 Sustainable Public Procurement Objectives</u></p>



		<p><u>Plan</u>, proposed by the Sustainable Public Procurement Commission, consolidates and updates the existing catalogue of social, environmental and innovation measures. Of particular relevance in the environmental field is the Guide to environmental public procurement, since the introduction of environmental criteria in municipal public procurement is one of the key instruments to promote continuous improvement processes to increase efficiency in the consumption of natural and economic resources and reduce the environmental impact associated with municipal activity. Likewise, environmental public procurement should serve to promote a better supply of products and services that make a more efficient use of resources and promote eco-innovation and environmental management in companies. This Guide will be updated as the annual plans for sustainable public procurement objectives are approved.</p> <p>This Municipal Modernisation Programme for Climate Neutrality corresponds to the following actions of the <u>ECCP 2030</u>: 2.8, 12.8, 16.2, 16.16, 18.2, 18.4, 18.5, 18.11, 18.12, 18.13, 18.15.</p>
Reference to the impact pathway	Subsector	Municipal organisation and management
	Systemic lever	<ul style="list-style-type: none"> • Governance and politics • Regulation • Finance (resources €) • Technology • Local development strategies • Culture • Social innovation
	short and medium-term changes	To be defined in the MoG
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> • Resource Management and Digital Transformation • Mobility, Infrastructures and Urban Services Department • Municipal Management
	Scale of action and target entities	Municipal
	Actors involved	<ul style="list-style-type: none"> • Contracting authorities • Contracting companies • Municipal staff
	Comments on implementation	
Impacts and	Renewable energy	Pending



costs	generated (if applicable)	
	Energy removed/replaced, volume or fuel type	Pending
	Estimated GHG emission reductions (total)	Pending
	Total costs and costs per unit of CO ₂ eq	Pending

Action plan	Name of the action programme	24. Metropolitan and multilevel concertation programme
	Type of action	The CEAP (action 18.22) speaks of establishing the necessary external coordination and communication mechanisms between administrations (especially the Metropolitan Area, the Provincial Council and the Generalitat de Catalunya) and with other key city agents to create synergies and facilitate the achievement of the objectives of the Climate Plan.
	Description of the action	<u>Cooperation at metropolitan level</u> is particularly relevant, as some of the key policies for decarbonisation (public transport, waste management, water provision) are managed by the public entity Barcelona Metropolitan Area. Metropolitan Commitment 2030 is the strategic plan for the Barcelona Metropolitan Region (PEMB2030). The plan aims to promote a new model of prosperity, based on knowledge and innovation, which reduces social and territorial inequalities and positions the region as one of the leading metropolises in the fight against climate change. The definition of missions makes it possible to focus on strategic aspects and to involve a wide range of actors, as well as to promote new ways of doing things. In this case, they are a guide to promote and coordinate innovative responses at the scale of the Barcelona metropolitan region, where there is no government institution with this territorial scope. Thus, the missions define strategic and interrelated objectives. In this sense, the challenge of this mission is to mitigate the effects of climate change and ensure a healthy habitat based on a just transition in the energy model and the sustainable management of resources. one of the eight missions of the Plan refers to "environmental and climate emergency". Its objective for 2030 is to achieve a 45% reduction in greenhouse



		<p>gas (GHG) emissions in the Barcelona metropolitan region. Different actors of the quintuple helix - public administration, academia, private sector, citizens and the media - of the Barcelona metropolitan region were part of the design of the mission and will be part of its implementation. Another mission is the Sustainable and Safe Mobility Mission. Its challenge is to improve the connectivity and efficiency of everyday travel. The objective for 2030 is to achieve a 10% shift in the modal distribution of journeys in the Barcelona metropolitan region in favour of eco-mobility.</p> <p>For its part, the <u>Barcelona Provincial Administration</u> (Diputació de Barcelona) has a Climate Plan, which aims to achieve energy self-sufficiency and climate neutrality by 2030 in relation to its infrastructures and activity, with zero direct greenhouse gas emissions. This Plan can inspire the decarbonisation of the 311 municipalities of the Barcelona province and facilitate the channelling of the necessary financial resources. It also provides support for the drafting of sustainable energy and climate action plans for the municipalities that are members of the Covenant of Mayors for Climate and Energy.</p> <p><u>At the regional level</u>, and in relation to multilevel coordination, the Catalan Law 16/2017, of 1 August, on climate change, whose aim is to reduce greenhouse gas emissions and favour the transition towards an emission-neutral economy, is of vital importance (<i>it establishes a commitment to reduce GHG emissions by 40% by 2030, 65% by 2040 and 100% by 2050 with respect to 1990 values</i>). One of the five aims pursued by the Law to achieve this objective is to <i>promote and guarantee the coordination of all Catalan public administrations, and to encourage the participation of citizens, social agents and economic agents</i>. It is also worth noting, for the purposes of multi-level administrative coordination, the role played by the Advisory Council for Sustainable Development in Catalonia (CADS) as a strategic advisory body to the Government of the Generalitat of Catalonia in the field of sustainability, a task it carries out through the consultation and participation of experts and civil society.</p> <p>A relevant role in municipal cooperation is also played by the Network of cities and towns towards sustainability (currently comprising 320 local authorities) at metropolitan level and in Catalonia. The Network is a platform for cooperation and exchange where municipalities find a suitable framework to discuss concerns, needs and experiences and to promote and</p>
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		<p>carry out projects of common interest in the field of local sustainability.</p> <ul style="list-style-type: none"> - The Association of Municipalities for Mobility and Urban Transport (AMTU) is an association of Catalan municipalities comprising 146 local authorities, which works to improve mobility and public transport infrastructures throughout Catalonia. <p>Finally, and in the context of metropolitan cooperation, the <u>CEAP 2030</u> has the following two actions:</p> <ul style="list-style-type: none"> - Action 6.3: Introduce the climate emergency vector in strategic metropolitan transformations, such as the Glòries Park, Avinguda Meridiana, Sagrera Park and the waterfront. - Action 16.13: Promote the creation of citizen co-responsibility networks and climate action groups at neighbourhood level.
Reference to the impact pathway	Line of action	Metropolitan vision and multi-level government
	Systemic lever	<ul style="list-style-type: none"> • Governance and politics • Regulation • Finance (resources €) • Technology • Local development strategies
	short and medium-term changes	
Implementation	Agencies/persons responsible for implementation	<ul style="list-style-type: none"> • Barcelona City Council • Barcelona Metropolitan Area (AMB) • Generalitat de Catalunya
	Scale of action and target entities	Municipal, Metropolitan, Regional-Autonomic
	Actors involved	<ul style="list-style-type: none"> • Municipalities • Metropolitan Area of Barcelona (AMB) • Generalitat de Catalunya
	Comments on implementation	
Impacts and costs	Renewable energy generated (if applicable)	Not applicable
	Energy removed/replaced, fuel volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Not applicable



	Total costs and costs per unit of CO ₂ eq	Pending
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Action plan	Name of the action programme	25. City-to-City Climate Cooperation Programme
	Type of action	International cooperation programme with cities to promote mitigation and adaptation actions from an ecological debt and climate justice approach.
	Description of the action	<p>In the international sphere, it is worth highlighting the cooperation developed by Barcelona City Council within the framework of the <u>Master Plan for Cooperation for Global Justice 2023-2026</u>. Objective 1 "Environmental Justice" of this plan foresees:</p> <ul style="list-style-type: none"> • 1.1 Improve urban metabolism (urban environmental quality, public policy and management, public health, mobility, water and energy management). • 1.2. Contribute to increasing urban resilience and climate change adaptation. • 1.3. Reducing the ecological footprint (carbon footprint, consumption patterns, biodiversity loss, supply and waste management, large infrastructures). • 1.4. Promote the energy sovereignty of the people. • 1.5. Promote people's food sovereignty. • 1.6. Promote overall health. • 1.7. Promote the rights of nature and other species. <p>In the same vein, <u>targets 13.1 and 13.b of the Barcelona 2030 Agenda</u> refer explicitly to international cooperation on climate change policies</p> <p>In the <u>Euro-Mediterranean area</u>, cooperation between cities is particularly relevant in the context of global challenges: after the Arctic, the Mediterranean is the area of the world most impacted by climate change. Med-Cités brings together 73 local authorities from the shores of the entire Mediterranean basin and is responsible for promoting sustainable urban development in the region.</p> <p>The <u>Climate Leadership Group</u>, known as the C40, is a group of cities working together on a global scale to reduce carbon emissions in the atmosphere and adapt to climate change.</p> <p>At the <u>European level</u>, <u>Eurocities</u> brings together more than 200 cities to cooperate, among many others, in specific areas such as sustainable mobility, pollution reduction and localisation of global challenges such as</p>



		<p>climate change and energy transition.</p> <p>For its part, the <u>CitiEs Platform</u>, whose members include the 7 cities present in this Mission, is the Spanish platform that offers a comprehensive and collaborative proposal to address and overcome the challenges of sustainability in cities within the framework of the European Union Missions. It offers a series of services that seek to strengthen the capacities of cities and reinforce multi-stakeholder and multi-level collaboration.</p> <p>Internally, it should be noted that the City Council's <u>International Relations Plan</u> incorporates the action of "Supporting advocacy initiatives that reinforce Barcelona's commitment against climate change, and that seek international recognition of local governments in the ecological transition".</p> <p>It should also be noted that from 2023 Barcelona City Council will participate in the <u>Euro-med Community for Green Living areas' Institutional Dialogue</u> (EUCLID), a knowledge transfer network on urban policies and projects related to the promotion of cities as "Green living areas" (energy efficiency, renewable energy communities, sustainable urban transport, water and waste management and the development of urban agriculture, among others).</p> <p>Finally, it should be noted that the promotion of city-to-city cooperation is also reflected in several actions of the <u>CEAP 2030</u>, such as:</p> <ul style="list-style-type: none"> - Action 17.2: Generate more active social involvement in raising awareness of the effects of climate change on the most vulnerable countries and societies, and carry out education and awareness campaigns on Barcelona's ecological debt. - Action 17.3: Define a comprehensive strategy to reduce Barcelona's ecological debt, prioritising actions with the greatest impact on third parties. - Action 17.4: Generate more knowledge on the impact of the climate crisis on global inequalities, migratory movements (climate refugees) and human rights. - Action 17.5. Promote city-to-city cooperation on climate justice, both in the call for grants and in direct city-to-city cooperation.
Reference to the impact pathway	Line of action	City-to-city cooperation
	Systemic lever	<ul style="list-style-type: none"> • Finance (resources €) • Technology • Capacity and capacity building



		<ul style="list-style-type: none"> Local development strategies
	short and medium-term changes	<p>Strategic Axis 5 of the Master Plan for Global Justice Cooperation 2023-2026 includes Programme 5.2 "Climate Justice", which foresees:</p> <ul style="list-style-type: none"> Identify the new climate justice programme. Support the creation of a climate justice reference centre. Support university teaching and research initiatives in this field.
Implementation	Agencies/persons responsible for implementation	<p><u>Barcelona City Council</u></p> <ul style="list-style-type: none"> City Hall Area Management of Social Rights, Health and Community
	Scale of action and target entities	International
	Actors involved	<ul style="list-style-type: none"> Barcelona City Council Cooperation and development NGOs and social movements Barcelona Metropolitan Area (AMB) MedCities (Mediterranean coastal cities network) Cities, city networks and urban strategy micro-networks Universities, educational institutions, research centres, think tanks and others
	Comments on implementation	<p>The Master Plan for Global Justice Cooperation envisages bilateral projects with a set of priority cities. The approach that will characterise the prioritisation of the contexts in which to intervene is urban and municipalist, so that the priority is the resolution of urban problems through a regional approach. The city of Barcelona will collaborate in particular with specific cities to achieve a deeper understanding and provide more tailored solutions. Specifically, the following geographical priorities are identified:</p> <ul style="list-style-type: none"> - The Mediterranean and the Middle East. Priority cities will be Amman, Saida, Sarajevo, Tetouan, Tangiers, Tunis, towns in the West Bank and Gaza Strip, and cities that may become, at some point, a staging point for a humanitarian crisis. - Sub-Saharan Africa. The priority cities will be Maputo and Dakar. - Mexico, Central America and the Caribbean. The priority city will be Havana - South America. Priority cities will be Cali, Medellin and other cities in Colombia involved in the peace process.
Impacts and costs	Renewable energy generated (if)	Not applicable



	applicable)	
	Energy removed/replaced, fuel volume or fuel type	Not applicable
	Estimated GHG emission reductions (total)	Pending
	Total costs and costs per unit of CO ₂ eq	The Barcelona City Council has repeatedly approved the commitment to earmark 0.7% of its own resources for official development assistance (ODA) and will maintain this commitment until at least 2026. The budgetary allocation of economic resources for strategic objectives or axes, modalities or geographical priorities is established in each annual planning exercise.

B-2.3: Summary of residual emissions strategy

Barcelona's commitment to reduce its Scope 1 and 2 emissions by 80% by 2030 means that 0.77 million tonnes of CO₂ equivalent will still be generated by 2030, around 0.5 tonnes per inhabitant.

The city's strategy with regard to the expected residual emissions involves, first and foremost, **compensation through the expansion of carbon sinks**. Considering the size and population density of the city of Barcelona, this mechanism has a very limited scope in terms of CO₂ capture. However, we propose its use, for two reasons: First of all, because it generates significant co-benefits in terms of environmental quality and quality of urban life, and secondly, because of its exemplary value for other cities and territories with greater potential to use this lever.

Specifically, the actions envisaged to develop carbon sinks are:

- **Programme to boost urban green infrastructure**, developed extensively in the *Nature 2030 Plan*, and technically guided by the *Green and Biodiversity Charter* and the *catalogue of tree species*. The main goals are to increase public green space by 121 hectares and to regulate the effective protection of private green space.
- **2030 urban agriculture programme**. Barcelona has more than 500 urban gardens, which, in addition to capturing carbon, generate economic and social value.



- **Blue carbon" programme, promoting marine carbon sinks (Posidonia) on the coast of Barcelona (Garraf and Maresme).** This is the only action programme that goes well beyond the municipal area. It will be promoted in conjunction with the AMB, the Diputació de Barcelona (DIBA), the Generalitat de Catalunya and the coastal municipalities.

Barcelona's residual emissions strategy also includes effective action to reduce Scope 3 emissions (over and above what is already planned in the area of waste, with the "Waste 0" programme).

- **Programme to promote sustainable food (promotion of Km0 and organic products, promotion of the sustainable planetary diet, etc.),** which is covered by the Sustainable Food Strategy 2030 and the Roadmap for the sustainability economy in Barcelona 2030.
- **Scope 3 emissions reduction programme in the construction sector** (industrialised construction, standardisation of the use of nearby certified wood, etc.), partially included in the Renewable Barcelona 2030 Plan.

Carbon sequestration is the third leg of this strategy, but it is currently underdeveloped.

Since 2022 there has been a working commission on the subject, promoted by the BIT Habitat Foundation. Made up of more than a dozen members, academic and business experts and institutional representatives, this commission promotes joint work with industry and the academic and research communities to share knowledge and co-design instruments to ambitiously achieve the following objectives:

- Identify all local entities with knowledge and experience in CO2 capture.
- Share knowledge, projects and initiatives on CO2 capture that are being carried out in Barcelona.
- Identify possible alliances between existing projects or programmes and establish collaboration mechanisms and define those that can be instruments of innovation.



MODULE B-3: Monitoring, evaluation and learning indicators

B-3.1: Impact pathways							
Changes (short and long term)	Actions	No. of indicator	Indicator name	Target values			
				2019	2025	2027	2030
Reduction of local greenhouse gas emissions (Scope 1 and 2)		1	Greenhouse gas emissions (million metric tons CO ₂ -eq)	3,82	...	...	0,77
Programmes 1 to 6. Mobility and transport							
Reduction of emissions from transport (excluding port)	Programme 1 to 6	2	Emissions from transport (million MT CO ₂ -eq)	0,906	...	...	0,223
Reduction of emissions from private vehicle transport. Impact on improving air quality, noise reduction, health and safety.	Programme 1 and 3	3	Walking and cycling trips as a percentage of total trips (%)	36,6% (2018)	39.2% (target 2024)	40.5% (linear trend)	41.8% (linear trend)
Noise reduction. Improvement of well-being and health.	Programme 1 to 6	4	Percentage of population subjected to noise levels <65 dB(A) during the day (Ld) and <55 dB(A) at night (Ln)	<u>Day value</u> 77% (2018) <u>Night value</u> 69% (2018)	<u>Day value</u> 84% (target 2024) <u>Night value</u> 69% (target 2024)	...	<u>Day value</u> 87% <u>Night value</u> 80%
Improved air quality. Health impacts	Programme 1 to 6	5	Average concentration in µg/m ³ of NO ₂ , PM ₁₀ and PM _{2.5}	NO ₂ : 35.8 PM 10: 26.7 PM 2.5: 17.7	NO ₂ : 40,0 PM 10: 24.4 PM 2.5: 15.2	NO ₂ : 40,0 PM 10: 22.2 PM 2.5: 12.6	NO ₂ : 40,0 PM 10: 20.0 PM 2.5: 10.0



Noise reduction. Improvement of well-being and health.	Programme 5	6	Percentage of electric vehicles in the census fleet (disaggregated by car, motorbike and moped)	Car: 0.2%. Motorbike: 0.5%. Moped: 2.5%. (2018)	Car: 4% Motorbike: 8%. Moped: 8%. (target 2024)	Car: 10%. Motorbike: 20% of the total Moped: 20%.	Car: 25%. Motorbike: 50% Moped: 50%
Noise reduction. Improvement of well-being and health.	Programme 5	7	Percentage of electric vehicles in the municipal services fleet	35% (2018)	80% (target 2024)	90% (projection)	100% (projection)
Noise reduction. Improvement of well-being and health.	Programme 5	8	Percentage of electric vehicles in taxi fleet	0,2% (2018)	10% (target 2024)	25% (projection)	50% (projection)
Reduction of emissions from private and public motorised transport	Programme 2 and 5	9	Energy consumption derived from motorised transport (GWh/year)	3.471 (2018)	2,856 (target 2024)	2.548	2.241
Reduction of emissions from private vehicle transport. Impact on improving air quality, noise reduction, health and safety.	Programme 3	10	Length of cycle lanes (Km cycle lane)	218 (2018)	340 (target 2024)	352	365
Reduction of emissions from private vehicle transport. Impact on improving air quality, noise reduction, health and safety.	Programme 1 to 6	11	Modal split of total trips (internal and connecting, %)	On foot: 34.4%. Bicycle: 2,3 T. P.: 37,3% Private car: 26.0% (2018)	On foot: 35.3%. Bicycle: 3.9 % T. P.: 40,9% Private car: 19.9% (target 2024)	On foot: 36.2%. Bicycle: 5.5%. T. P.: 44,5% Private car: 13.8%	On foot: 37.1%. Bicycle: 7,1 % T. P.: 48,1% Private car: 7,7%
Programmes 7 to 9. Buildings and heating							
Reducing emissions from	Programme 7 to 9	12	Emissions from buildings (million	0,813	...	...	0,188



the buildings and heating sector			MT CO2-eq)				
Increased comfort for the inhabitants of the rehabilitated buildings.	Programme 7 to 9	13	Rehabilitated public housing stock/year	n.d	n.d	n.d	n.d
	Programme 7 to 9	14	Private dwellings rehabilitated/year	n.d	n.d	n.d	n.d
Reduction of health problems caused by poor energy conditions in dwellings (fungus due to damp, colds and pneumonia in winter, heat stroke in summer, poor sleep quality due to high temperatures in summer).	Programme 7 to 9	15	Reduction in non-renewable primary energy consumption of rehabilitated public housing stock /year	n.d	n.d	n.d	n.d
	Programme 7 to 9	16	Reduction of non-renewable primary energy consumption of refurbished private dwellings/year	n.d	n.d	n.d	n.d
	Programme 7 to 9	17	Number of buildings with A and B energy rating	3.871 (2020)	n.d	n.d	n.d
Reduction of energy poverty.	Programme 7 to 9	18	Emissions generated by municipal buildings (million MT CO2-eq)	0,0428	...	...	0,0103
Reducing the risk of fire from the use of braziers and cookers in low-income households.	Programme 7 to 9	19	Buildings over 40 years old renovated (%)	20%	...	...	80%
Generation of direct local jobs in rehabilitation, as it is a sector that cannot be relocated.							
Programmes 10 to 12. Electricity							
Reduction of	Programme	20	Emissions from	1,505	...	...	0,114



emissions generated by the generation of electricity consumed in Barcelona	e 10 to 12		electricity generation (million MT CO ₂ -eq)				
<p>Reducing dependence on imported fossil fuels and increasing energy sovereignty</p> <p>Democratisation of energy infrastructures, by moving from a centralised production model based on large installations owned by large companies to a decentralised generation model, in which the owners can be the consumers themselves.</p> <p>Generation of direct local jobs in the installation and maintenance of photovoltaic systems and other renewable sources (such as solar thermal and geothermal).</p>	Programme e 10 to 12	21	Installed capacity of solar PV in the city (GWp)	18,5	...	...	1.080
	Programme e 10	22	Installed capacity of solar photovoltaic energy in municipal facilities (GWp)	0,80 (2020)	n.d	n.d	n.d
	Programme e 10	23	Annual public investment in solar photovoltaic power generation (€)	n.d	n.d	n.d	n.d
	Programme e 11	24	Energy generated by renewable sources (MWh/year by types)	Biogas: 34,861 Hydro: 0 Solar thermal: 86.204 Photovoltaic: 18.524 Ecoenergies: 6,272	n.d	n.d	n.d
	Programme e 11	25	Proportion of electricity consumed in Barcelona that comes from renewable sources	16,7%	...	...	100%
	Programme e 11	26	Proportion of energy consumed in Barcelona that has been generated locally from renewable resources	0,95%	...	...	6.5% (target set by the Barcelona Agenda 2030)
	Programme e 12	27	Electricity consumption of municipal lighting	72,8	n.d	n.d	n.d



			[MWh].				
Programmes 13 to 16. Waste and other							
Reduction of emissions from waste management	Programme 13	28	Emissions generated by waste management (million MT CO ₂ -eq)	0,366	...	...	0,187
Improved air quality. More acoustic comfort. New technological elements that allow better monitoring and control of the entire process and its safety.	Programma 13	29	Proportion of electric vehicles dedicated to waste collection	20,0% (2022)	...	...	66,0%
Reduction of waste generation	Programme 14	30	Municipal waste kg/inhab./day	1,34	...	1,17	...
Reduction of the amount of non-recyclable waste	Programme 14	31	Fraction remainder kg/inhab/day	0,82	...	0,38	...
Reducing food waste	Programme 14	32	Food waste TM	5.963 (2020)	...	3.876	...
Increase in the proportion of waste reused	Programme 14	33	Municipal waste destined for PxR and re-use (%)	0,31%	...	7%	...
Reduction of natural resources and energy that would have been invested in products that have not become waste.	Programme 14	34	Separate collection	38,40%	...	67%	...
	Programme 14	35	Improprieties in the organic fraction	16,14 %	...	8 %	...
	Programme 14	36	Separate collection of textiles	6,40%	...	15%	...
Reduction of virgin natural	Programme 14	37	No. of participants in	2.927.862	...	3.220.648	...



resources by recovering materials from recycling. Reduction of waste management needs: transport, space occupation, treatment energy and incineration emissions. Generation of jobs related to the circular economy.			waste prevention and recycling activities				
	Programme 14	38	Population covered by individualised collection systems (Absolute number and % of total population)	10.665 (0,7%)	n.d	n.d	n.d
	Programme 14	39	Number of jobs generated in the full roll-out of the zero waste strategy	n.d	n.d	n.d	n.d
Preventing periods of drought Environmental benefits Water cost savings	Programme 15	40	Domestic water consumption measured in litres per inhabitant per day	107,3	...	...	100
	Programme 15	41	Urban water consumption measured in litres per capita per day	161,5	...	...	150
	Programme 15	42	Consumption of mains water by municipal services (Millions of m3)	5,52	...	...	4,48
	Programme 15	43	Reclaimed water use (m3)	0	n.d	n.d	n.d
	Programme 15	44	Grey water use (m3)	800	n.d	n.d	n.d
	Programme 15	45	Rainwater use on roofs (m3)	1.000	n.d	n.d	n.d
	Programa 16	46	Emissions generated by industrial activity (million MT CO2-eq)	0,289	n.d	n.d	n.d



Programme 17. Nature-based solutions							
Gradual increase in the presence of living plants in the city, taking advantage of all potentially available spaces. Creation of green spaces, recovering block interiors, landscaping temporarily vacant plots of land, greening public roads, greening roofs and party walls.	Programa 17	47	Increase in green infrastructure (cumulative)	...	66 ha (2020-2025)	88Ha (22 Ha between 2026-2027)	121 ha (33 Ha between 2026-2027)
	Programa 17	48	Total wooded area of the municipality, adding urban green and forest green (in Km2 and in m2 per inhabitant).	28.64 km2 17.5 m2 per inhabitant	...	...	29.8 Km2 18.6 m2 per inhabitant
	Programa 17	49	Tree cover (%)	n.d	n.d	n.d	n.d
	Programa 17	50	Number of biodiversity refuges	5	8	9	10
	Programa 17	51	Number of participants in nature activities	n.d	n.d	n.d	n.d
	Programa 17	52	Number of projects in the "Mans al verd" programme for the collaborative management of green spaces in Barcelona.	n.d	n.d	n.d	40
	Programa 17	53	Number of urban gardens	484	n.d	n.d	n.d
Programme 18. Urbanism							
Climate-smart urban design	Programme 18	54	Kilometres of green axes in Barcelona's urban fabric	60,3 (2022)	...	...	91,74
Programme 19. Social protection and social inclusion							
Climate justice and social inclusion	Programme 19	55	Proportion of people in households unable to keep	10,9%	...	...	3%



Reducing energy poverty and guaranteeing fair access to energy for all, with special attention to the most vulnerable groups, through combined policies of access to self-generation facilities, improvements in housing conditions, energy advice and in the best conditions of quality, sustainability and costs.			their dwelling at an adequate temperature				
	Programme 19	56	Number of accessible housing units	n.d	n.d	n.d	n.d
	Programme 19	57	Number of new social housing units/year	n.d	n.d	n.d	n.d
	Programme 19	58	Persons benefiting from housing rehabilitation (men/ women/ men/ women) women)	n.d	n.d	n.d	n.d
	Programme 19	59	Vulnerable households benefiting from housing rehabilitation (general, single-parent, over 65).	n.d	n.d	n.d	n.d
	Programme 19	60	Proportion of the population with a climatic refuge space within 10 minutes walking distance from their home	87,5% (2021)	94,0%	97,0%	100%
Programme 20. Economic Promotion (Climate Neutral Economic Adaptations and Opportunities)							
Economic opportunities of climate neutrality	Programme 20	61	GDP generated by the social and solidarity economy (%).	n.d	n.d	n.d	n.d
	Programme 20	62	Public procurement incorporating social and environmental criteria (%).	n.d	n.d	n.d	n.d
	Programme 20	63	Net financing (%)	n.d	n.d	n.d	n.d
Improving	Programme	64	Sustainable Cities	49 (2022)	n.d	n.d	n.d



Barcelona's international positioning	e 20		Index (ranking)				
	Programme 20	65	Sustainable Urban Mobility Index (rank in the ranking)	n.d	n.d	n.d	n.d
	Programme 20	66	Clean Cities Index (ranking position)	10 (2022)	n.d	n.d	n.d
Impact on economic activity and sustainability	Programme 20	67	Employment in sustainable economy (number of jobs and % of total)	n.d	n.d	n.d	n.d
	Programme 20	68	Enterprises with employees in sustainable economy (number and % of total)	n.d	n.d	n.d	n.d
	Programme 20	69	Companies with environmental quality labels/certifications	n.d	n.d	n.d	n.d
Programme 21. Education, culture and participation							
Education: Proportion of educational centres adhering to the Sustainable Schools + network	Programme 21	70	Schools participating in sustainability programmes (% of total)	52,1%	...	...	100%
Education:	Programme 21	71	Teachers trained in climate change (% of total)	n.d	n.d	n.d	n.d
Culture:	Programme 21	72	Arts events for the climate: number of events, number of artists who have participated, number of	n.d	n.d	n.d	n.d



			attendees				
Culture:	Programme 21	73	City cultural events and festivals that have incorporated sustainability and climate criteria, number of attendees	n.d	n.d	n.d	n.d
Communication area:	Programme 21	74	Number of broad-based communication campaigns to disseminate options and courses of action to help tackle climate change	n.d	n.d	n.d	n.d
Participation:	Programme 21	75	Number of subsidised sustainability-related projects, amounts, themes, people involved, territorial coverage (neighbourhood, district)	n.d	n.d	n.d	n.d
Participation:	Programme 21	76	Number of people members of the Sustainable Citizenship + network	n.d	n.d	n.d	n.d
Programme 22. Science and technology							
Development of knowledge and innovation to promote a change in the innovative culture of the Administration .	Programme 22	77	Number of participations in research and knowledge enhancement projects on climate change	n.d	n.d	n.d	n.d
Programme 23. Municipal organisation and management							
Municipal	Programme	78	Proportion of	0,7%	n.d	n.d	n.d



modernisation to achieve climate neutrality	e 23		people trained on climate change (out of total municipal staff)				
Programme 24. Metropolitan vision and multilevel government							
Reduction of local metropolitan greenhouse gas emissions (Scope 1 and 2)	Programme 24	79	Greenhouse gas emissions (million metric tons CO ₂ -eq)	13,052	n.d	n.d	10,771
Programme 25. City-to-city climate cooperation							
Promoting climate-smart international development cooperation Consolidate the contribution of 0.7% of Barcelona City Council's own resources to international development cooperation projects.	Programme 25	80	Number of networks and other cooperation initiatives (decentralised or multilevel) in which Barcelona participates	14	n.d	n.d	n.d
	Programme 25	81	Number of technical exchange actions facilitated at international level	92	n.d	n.d	n.d
	Programme 25	82	Resources of the City's Global Justice Cooperation Programme for international cooperation as a percentage of total own revenue (%)	0,63	0,70	0,70	0,70

B-3.2: Indicator metadata

The table with the metadata for each indicator has yet to be developed. For the time being, the metadata for most of the proposed indicators can be consulted in the application <https://sdqdata.barcelona.cat/es/>.



PART C - ACHIEVING CLIMATE NEUTRALITY BY 2030

MODULE C-1: Organisational and governance innovation interventions

C.1.1: Organisational and Governance Interventions					
Number and name of the action programme	Description	Entity/body responsible	Actors involved	Impact	Cobenefits
<i>Mission Transition Team, as part of the Climate Emergency Driving Core</i>	<i>Body in charge of leading and promoting the Mission</i>	<i>Technical Programming Office, Climate Change and Sustainability Office and Energy Agency</i>	<i>Climate Change and Sustainability Office; Energy Agency; Technical Programming Office; Barcelona Public Health Agency; Social Rights Department; Department of Resilience, Mobility and Housing.</i>	<i>Promotion and monitoring of the Mission's actions; identification of barriers and opportunities</i>	<i>Effective dissemination of the Mission to all parts of the municipal organisation.</i>
<i>Political and management steering committee</i>	<i>Strategic decision-making body</i>	<i>1st Deputy Mayor Commissioner for Strategic Projects and Agenda 2030 City Manager</i>	<i>Mayor and municipal government Municipal managers' bureau</i>	<i>Approval of the decisions necessary for the conduct of the mission. Provision of the necessary resources Accountability from the technical level</i>	<i>Political-technical alignment</i>
<i>Municipal Plenary Commission on Mission</i>	<i>Body in charge of channelling political debate and consensus building</i>	<i>1st Deputy Mayor Commissioner for Strategic Projects and Agenda 2030</i>	<i>Representatives of the municipal groups</i>	<i>Formulation and discussion of the various points of view. Clarification of</i>	<i>Dissemination of the Mission and all that it entails among the different</i>



				positions and possible consensus building.	ideological sectors of the city.
Citizens' Council for Sustainability	It is a consultative and sectoral participatory body that acts in areas related to sustainability. Its members represent the Barcelona + Sustainable Network and have been selected through an elective process. It has a Permanent Commission and several Working Groups that are constituted to deepen and establish lines of action on priorities, such as the Climate Emergency Table.	Chaired by the Mayor or his delegate. Technical Secretariat: Climate Change and Sustainability Office	Formed by 58 organisations that represent the B+S Network; it includes educational centres, entities, companies, other administrations, foundations, entities, etc.	Promotion and participatory development of the Mission's transformative actions	Networking Co-responsibility Co-creation
Climate emergency bureau	Council Working Group,	Chaired by the Mayor or his delegate.	Made up of 300 people representing 200 organisations	Definition of concrete measures to be developed to effectively address the climate emergency	Co-creation Accountability (transparency)
The Barcelona	Formed by	Head of the	It is currently made	Implementation	Networking



+ Sustainable Network	organisations that voluntarily assume the principles and objectives of the Citizens' Commitment to Sustainability (currently under renewal), commit themselves to carry out actions to contribute to the shared objectives and make them public.	Climate Change and Sustainability Office, which manages the technical secretariat of the Trade Union Network and administrations.	up of almost 2,000 citizens' organisations, business and trade organisations, educational centres, universities and professional associations,	of sustainability measures in their organisations and in collaboration with others.	Co-creation Partnerships with key actors in the city
Expert group on the climate emergency	An advisory body made up of 17 people from different scientific disciplines and of a joint nature.	Directorate of the Climate Change and Sustainability Office	Experts on the climate emergency	Government advice, policy analysis and knowledge transfer and partnerships between academia and civil society	Informed decision-making Transparency
Management Model of Management by Values	Focus on five values, including co-creation	City Manager	All municipal administrations	Dissemination and promotion of good practices. Change in organisational culture	
Decidim.org	Digital platform for citizen participation to build an open, transparent and collaborative city.	Directorate for Democratic Innovation, Barcelona City Council	Municipal Institute of Informatics Communications Directorate of the City Council	Between 2019 and 2022, more than 100,000 people have participated in the 64 open participatory processes.	



<p>(Municipal) network of innovation agents</p>	<p>It is a network created to ensure that innovation is a key element in the functioning of Barcelona City Council. It is made up of agents who are responsible for promoting innovation vertically within the organisation and coordinating horizontally with the rest of the agents.</p>	<p>Municipal Management and BIT Habitat Foundation</p>	<p>All municipal administrations</p>	<ul style="list-style-type: none"> - Promote innovation within each area, with shared diagnosis, clear instruments and acquired competences. - Structuring innovation. - Collaborate internally by sharing knowledge and experience on innovation. - Develop cross-cutting projects. 	
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Recent studies, such as the white paper for the reform of the Barcelona Charter and the proposal for "[Social and Smart Governance](#)" (Ramió i Salvador, 2019) will be used to formulate a governance model for climate policies that is up to the challenge posed by the Mission.

MODULE C-2: Social and other innovation actions

C.2.1: Social and other innovation interventions					
Number and name of the action programme	Description	Entity/body responsible	Actors involved	Impact	Co-benefits
<p>Government measure "Boosting urban innovation in Barcelona".</p>	<p>It formalises and structures the strategy for boosting innovation in the city so that it becomes a lever for transformation and acceleration at the service of improving people's</p>	<p>BIT Habitat Foundation</p>	<ul style="list-style-type: none"> - Commissioner for Digital Innovation, e-Government and Good Governance - Department of Economy, Resources and Economic 	<p>The Measure drives organisational and operational transformation, taking into account synergies between business, social, digital, democratic and urban services innovation, in a way</p>	<ul style="list-style-type: none"> - Support for the creation of public-private partnerships - Involvement of the innovation ecosystem in the City Council's decision-making through the



	<p>quality of life, combating climate emergency and fostering urban resilience. The measure organises the instruments available to Barcelona City Council to accelerate this change, innovate services, processes and governance, and accelerate innovation in the city and with the city.</p>		<p>Promotion (Barcelona Activa)</p> <ul style="list-style-type: none"> - Town Planning Area - Area of Democratic Innovation - Innovation and Digital Transition Area - Social Innovation Area - Mobility Area - Fira de Barcelona - Administrative Contracting Coordination Services Directorate 	<p>that accelerates projects to achieve the green and digital transition. It includes plans and projects focused on emissions reduction, urban resilience and the fight against climate change.</p>	<p>Urban Innovation Platform</p>
<p>Measure of Social Innovation Government 2021 / 2023</p>	<p>The measure aims to boost the effort in social innovation, which is especially necessary after the pandemic of AIDS-19. The municipal strategy on social innovation pursues two main objectives: to improve responses to social problems and to facilitate citizens' access to municipal social services by incorporating digital tools and artificial intelligence. The innovative projects are divided into three strategic blocks: Basic rights and citizen empowerment 2. New social</p>	<p>Area of Social Rights, Health, Cooperation and Community of Barcelona City Council</p>	<p>Providers and users of social services</p>	<p>The digitalisation and improvement of social services allows citizens to get involved with the administration to promote projects such as the Energy Advice Points or the construction of sustainable cooperative housing.</p>	<p>The Measure promotes citizen participation, equity and digital transformation.</p>



	<p>model of the city: "Let's take care of each other as a community".</p> <p>3. Digital transformation.</p>				
<p>Barcelona Urban Innovation Platform (PIU)</p>	<p>Space for dialogue, reflection and consensus that brings together the players in the innovative ecosystem of the city, made up of citizens, universities and research centres, and the business fabric. About 100 people from different backgrounds participate in the Platform, and disciplines, which have the function of encouraging, accompanying, accelerating, communicating, measuring and assessing innovation in the city, facilitating experimentation and by working to reduce the barriers that hinder it.</p>	<p>BIT Habitat Foundation</p>	<p>- EIT Urban Mobility - Red Innpulso, of the Ministry of Science and Innovation - ICC (Intelligent Cities Challenge) of the European Commission</p>	<p>The network facilitates the ideation and promotion of projects related to urban sustainability through advanced technologies, in various fields such as mobility or digital urban policies.</p>	<p>The network facilitates the exchange of knowledge on education, business creation, innovative industry and innovative local policies.</p>
<p>Barcelona Innovation Coast</p>	<p>An initiative that seeks to diversify the city's economy and generate quality employment, promoting innovative projects in mobility, health, energy, technology and digitalisation. It includes a public-</p>	<p>Economic Management</p>	<p>Entities of the city's innovative ecosystem Business sector</p>	<p>The BIC promotes projects to improve and decarbonise public transport and coordinates Barcelona City Council's participation in the Enel Innovation Energy Hub, which helps start-ups in the energy sector to</p>	<p>- Support for the creation of public-private partnerships - Launch of challenges related to urban mobility, such as reducing motorbike accidents, one of the main</p>



	<p>private platform that brings together the city's main innovative agents: universities and business schools, research and knowledge transfer centres, business associations, clusters, financial agents and public administrations. It also includes a team focused on promoting and coordinating innovative projects such as Barcelona Innova Lab Mobility.</p>			<p>scale their sustainable solutions, from the reduction of greenhouse gases to the impact of electricity infrastructures on the environment or energy storage systems. The aim is for these start-ups to become part of the group of suppliers of the Enel-Endesa electricity company.</p>	<p>concerns of drivers and road safety organisations in Barcelona.</p>
<p>Innovation challenges (innovation procurement)</p>	<p>The challenges aim to focus on solving complex and specific problems and needs that require innovative solutions. Solving a challenge starts with an open consultation with the innovation ecosystem. It facilitates creativity as it avoids the prescription or specific request for solutions. BIT Habitat promotes, designs and adapts the format of urban challenges to the requirements of the municipal area that opts for this methodology to test pilots and find solutions to a specific need that requires an appeal to the innovative</p>	<p>BIT Habitat Foundation / BSM / Commissioner for Strategic Projects and Agenda 2030</p>	<ul style="list-style-type: none"> • Barcelona Municipal Services (BSM) • Barcelona Mobile World Congress Foundation • Barcelona Fair 	<p>Some of the challenges are related to decarbonisation, such as the "Pavements Generating (renewable energy) Challenge", or the electromobility challenges posed by BSM; others are related to energy transition and climate change in a broad sense, such as the DataCity Challenge to reduce energy poverty or the Challenge for innovation in the energy renovation of residential buildings.</p>	<p>- Support for the creation of public-private partnerships</p>



	ecosystem.				
Barcelona Innova Lab Mobility	<i>Urban laboratory that promotes innovative sustainable mobility projects and drives the testing of the solutions developed as pilots in real spaces in the city.</i>	<i>Fira de Barcelona / BIT Habitat Foundation / Commissioner for Strategic Projects and Agenda 2030</i>	<i>- DGT (General Directorate of Traffic of the Spanish Government) - EIT Urban Mobility</i>	<i>The Lab includes projects such as the transformation of the H12 bus line into BRT, fully electric and optimised.</i>	<i>It facilitates the collection of ideas and proposals from the private sector. The first challenge, how to reduce motorbike accidents, has received more than 40 proposals and two companies have been selected to start developing innovative solutions and testing them with real drivers.</i>
"The Proactive City" Call for proposals for urban innovation projects	<i>"The Proactive City provides financial and technical support for the implementation of projects and initiatives that respond to the challenges facing the city. The selected projects must generate changes in the urban environment and ensure a quantifiable social return, as well as achieving positive and measurable impacts on the city of Barcelona and on people's quality of life. Through an annual call, the local ecosystem is invited to actively participate in the generation of proposals and</i>	<i>BIT Habitat Foundation</i>	<i>Individuals and groups with the desire and capacity to generate excellent urban innovation projects.</i>	<i>Many of the winning projects respond to challenges of urban sustainability, climate emergency, offering circular economy solutions, affordable and sustainable housing, consumer methodologies.</i>	<i>It encourages the participation of micro-enterprises, cooperatives, research centres, universities, foundations, associations, consortiums and companies to respond to urban challenges through innovative solutions.</i>



	<i>solutions to the challenges posed, and to promote urban innovation in an open, plural and multidisciplinary way.</i>				
Competitive Call for Climate Grants	<i>Barcelona City Council provides financial support and technical accompaniment for the implementation of climate projects through climate grants and the Climate Change and Sustainability Office. Between 2021 and 2023, grants have been awarded to more than 25 initiatives.</i>	<i>Climate Change and Sustainability Office</i>	<i>Social, educational and research organisations</i>	<i>Climate Project Grants contribute to achieving the objectives of the Climate Emergency Action Plan by funding citizen-led projects to prevent and mitigate the effects of climate change.</i>	<i>It encourages the participation of students, the educational community and various institutions, while monitoring changes in health and well-being.</i>
Urban Innovation Action "Escoles refugi" (climatic)	<i>Project to convert eleven schools that are currently vulnerable to heat into climatic refuges open to all citizens by implementing traditional solutions against heat in the buildings and transforming the courtyards by introducing vegetation, insulation, shaded areas and water points. It is part of the Barcelona Climate Plan, which includes 242 actions to mitigate the effects of climate change.</i>	<i>(in organisational transition)</i>	<i>Urban Innovation Action (UIA), a European Commission programme</i>	<i>The project is part of the sustainable urban transformation, as it has allowed the recovery of some 1,000 square metres of natural soil with vegetation in the school playgrounds, replacing the concrete floor, thousands of square metres of shade have been created, a total of 74 trees have been planted, equivalent to those that exist in two entire blocks of the Eixample, and 26 new water points have been installed.</i>	<i>It encourages the participation of students, the educational community and various institutions, while monitoring changes in health and well-being.</i>
Green roof competition	<i>A three-yearly competition to award cash prizes</i>	<i>Municipal Institute of Urban</i>	<i>Housing developers, service sector</i>	<i>There have been two calls for proposals, 2017 and</i>	<i>As well as helping to make Barcelona a</i>



	<p>to the best green roof projects to facilitate their realisation. The ten winning projects receive a grant of 75% of the cost, with a limit of 100,000 euros per roof. The ten runners-up receive a grant of 1,500 euros for technical costs.</p>	<p>Landscape</p>	<p>entrepreneurs, residents' associations, homeowners, property owners, etc.</p>	<p>2020, in each of which 10 roofs have been awarded. Together, 7,600 m2 of green areas have been created on building roofs.</p>	<p>resilient city in the face of the climate crisis, green roofs provide a collective and social benefit for residents, who gain living and leisure spaces in their buildings and develop an activity that fosters social cohesion.</p>
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MODULE C-3: Equity portfolio financing (*Economic Case*)

[The Material Economics model](#) has been used to calculate the direct and indirect costs and benefits that form the basis of the City Climate Agreement.

The following table and those in Annex 2 (Modules B-1, B-2 and B-3) **estimate the costs (figures in brackets) and benefits attributable to the different policy areas, considering also the expected emission reductions in each of them.** It is important to bear in mind that **the model works with additional costs derived from the effort to decarbonise the different areas of activity.** In other words, when estimating the cost of acquiring an electric vehicle, it does not compute the full cost, but only the differential cost with respect to the acquisition of a vehicle with a combustion engine. From a theoretical perspective this seems straightforward, but is very difficult to apply in current planning practices.

For this and other reasons, related to the ingrained planning culture in the Barcelona City Council and the strongly participatory approach followed in the planning of climate policies, the fit between the logic of the cost calculation model and the contents of the CEAP 2030 has not been easy. However, both parts have worked with the will to reach an optimal fit. The results have been refined in successive iterations until almost all of the planned actions have been incorporated and quantified. We trust that in the coming weeks or months **the availability of better data and the evolution of the model itself will provide us with complete and accurate results. These will be incorporated in the first evaluation&revision of the CCC.**

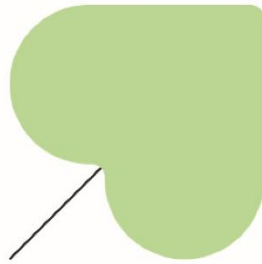
Scope	Assumptions 2030		Start and end date	Issuing sector	Impact			Total estimated cost (MEUR - NPV 2020-2030)
					GHG reduction (kt CO2e)	Operational cost savings (MEUR - NPV 2020-2050)	co-benefits (MEUR - NPV 2020-2050)	
<i>Reduction in the need for transport</i>	15%	reduction	2020-2030	Transport	85	1.081	295	-
<i>Modal shift: shift to public and non-motorised transport</i>	25%	reduction in private vehicle passenger-km	2020-2030	Transport	86	403	891	(165)



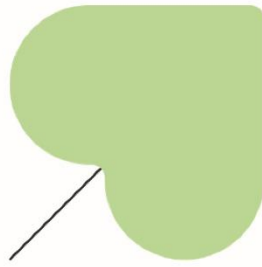
<i>Shared transport</i>	11%	due to increased transport efficiency	2020-2030	Transport	35	459	138	-
<i>Car electrification</i>	32%	of the electrified fleet by 2040	2020-2040	Transport	63	55	42	(118)
<i>Bus electrification</i>	60%	of the electrified fleet	2020-2030	Transport	34	32	23	(77)
<i>Optimisation of freight transport logistics</i>	10%	reduction of travel distance through route optimisation	2020-2030	Transport	94	401	156	-
<i>Electrification of trucks</i>	90%	Trucks <3.5 t to 2040	2020-2030	Transport	44	52	34	(230)
	40%	Trucks >3.5 t to 2040	2020-2031	Transport				
<i>Other measures in the mobility sector</i>			2020-2031	Transport	71			
<i>Building renovations</i>	6,0%	of all existing buildings / year	2020-2030	Buildings and heating	109	1.229	95	(4.964)
<i>New near-zero energy buildings</i>	20%	percentage of new buildings constructed according to the highest energy efficiency standards	2020-2030	Buildings and heating	9	111	9	(137)
<i>Efficient lighting and appliances</i>	100%	of luminaires retrofitted between 2020 and 2030 (40% efficiency improvements)	2020-2030	Buildings and heating	231	3.016	27	(1.471)



<i>Low-emission heat generation (decarbonisation of heating)</i>	35%	Percentage of electric local heating	2020-2030	Buildings and heating	235	268	119	(355)
<i>Building renovations [1].</i>	6,0%	of all existing buildings / year	2020-2030	Electricity	577			
<i>Industrial activity [3].</i>				Electricity	48			(38)
<i>Low-emission electricity generation</i>	85%	Part of the current electricity production from fossil sources is replaced by renewable energies.	2020-2030	Electricity	1057	878	-	(568)
<i>Waste (collection and management)</i>			2020-2030	Waste	11	1	2	(5)
<i>Waste (prevention, reduction)</i>			2020-2030	Waste	142			
<i>Industrial activity</i>			2020-2030	Other	51			(41)
<i>Other</i>			2020-2030	Other	116			
Total					3097	7.987	1.831	(8.170)



ANNEX 2:
*Climate Neutrality
Investment Plan*



ANNEX 3:
*Individual Signatory
Commitments*

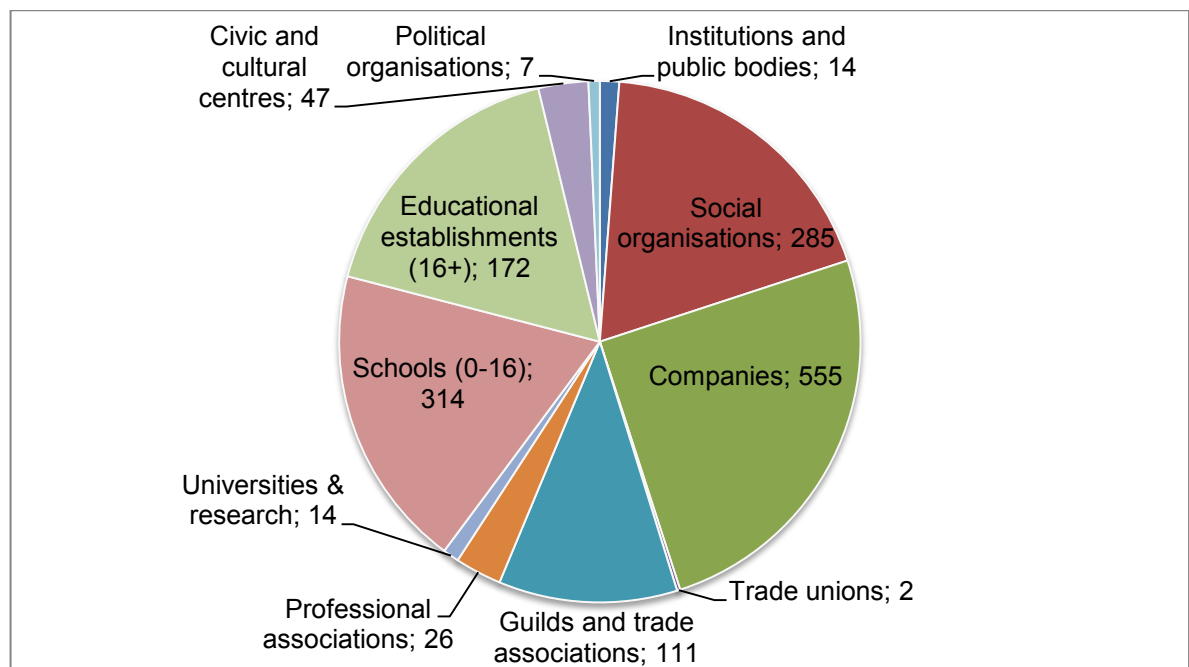


Annex 3: Membership of organisations

We have the [endorsement and support of the Spanish Government](#), addressed to all Spanish cities that are part of the Mission.

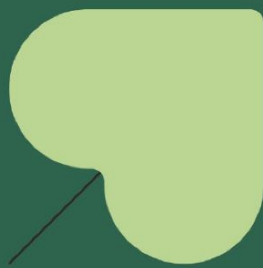
The coincidence of the elaboration of the CCC with the process of the municipal elections and the renewal of the members and leadership of the Citizens' Council for Sustainability has made it necessary to delay the collection of support until the autumn months of 2023. Rather than including just a few scattered endorsements we have opted to wait for a **systematic collection of endorsements and commitments to the Mission** [using this model](#) will take place during the autumn of 2023.

Support will be requested directly from the 1,538 organisations (NGOs, business and trade union agents, schools, etc.), plus 3,500 traders and professionals, that make up the **Barcelona + Sustainable Network**, within the framework of the renewal of the Commitment to Sustainable Barcelona.



Members of the Barcelona + Sustainable Network

The search for support will be extended to new actors, such as emerging companies, international organisations with a presence in the city, etc. The **support of metropolitan and Catalan political institutions** will also be formalised. The endorsements obtained, all with concrete commitments from each organisation, will complete Annex 3 of the CCC.



Barcelona

Supporting statement of National Government for the climate neutrality of Spanish Mission Cities

I hereby place on record the Spanish Government's commitment to support the climate city contracts presented by the cities, which were selected by the European Commission on 28 April 2022 to participate in the European Cities Mission: Madrid, Barcelona, Sevilla, Valencia, Zaragoza, Valladolid and Vitoria-Gasteiz.

This support contributes to the ecological and energy transformation of cities and to a greater climate and social resilience, which is materialised in the Spanish State's framework of competences, among others, in the following aspects:

1. **The impulse of a regulatory framework aligned with the systemic innovation and public-private collaboration** required by the European Mission of Cities. In this context, it highlights:
 - + The Spanish Urban Agenda, approved in February 2019, which highlights the need to achieve sustainability in urban development policies. It is constituted as a working method and a process for all the actors involved in cities that aspire to an equitable, fair and sustainable development from the different fields of action. This strategy is developed around 30 specific objectives and 291 action lines, which includes all villages and cities regardless of size and population, and it addresses economic, social and environmental sustainability.
 - + Law 7/2021, of 20 May, on climate change and energy transition. This institutional framework guarantees, through its various measures, the coordination of sectoral policies, ensures coherence between them and synergies to achieve the objective of climate neutrality, and increases our capacity to adapt to the adverse effects of climate change.



The work commitment on the regulatory developments of the Law is clear. Due to the implications for the European Mission Cities, the following stand out: (i) in the energy field, work is being done to establish a framework to deploy energy efficiency in industries and buildings, and renewable energies as vectors towards decarbonisation, (ii) in terms of emission-free mobility, the mandate for cities to adopt sustainable urban mobility plans with mitigation measures, such as low-emission zones, is included, iii) in the area of green procurement, we are working to establish measures to integrate the fight against climate change in public procurement procedures, such as the inclusion of emission reduction and carbon footprint criteria specifically aimed at the fight against climate change as specific technical requirements in procurement specifications.

2. **The launch of the Multi-stakeholder Collaboration Platform for the Climate Neutrality of Spanish Cities (citiES 2030)**, a tool created *ad hoc* and already in operation to facilitate the implementation of the Cities Mission.

With the implementation of this platform, the Government of Spain not only fulfils one of the initial activities of the Mission, but also becomes a reference for the other countries and cities in the programme.

This platform is a multi-stakeholder innovation and collaboration infrastructure to support and accelerate the transformation of Spanish cities towards climate neutrality.

The platform's main beneficiaries are city councils of Spanish cities with more than 50,000 inhabitants or provincial capitals that want to achieve full or partial climate neutrality by 2030, as well as cities with more than 20,000 inhabitants that want to initiate this process.

The platform offers cities a range of services, including:

- + Training, learning and skills enhancement



- + The support for the development of local systemic innovation platforms for the design of transformative project portfolios;
- + The assistance in drafting and monitoring climate city contracts and the design of roadmaps in a multi-stakeholder environment;
- + The connection with related processes in other European cities; the incubation of multi-city projects; the citizen participation and activation;
- + The assistance to cities to structure transformation financing schemes, involving financial actors;
- + The strategic communication.

The Platform's governance is multi-stakeholder and multi-level, with the aim of facilitating, ordering and guaranteeing directionality and stability in these collaborations. In this way, it relies on the participation of the actors of the quintuple helix:

- + The public sector (administrations and public agencies).
- + The private sector (companies, financial sector, urban infrastructure sector and professional associations).
- + The academia (universities and research centres).
- + The civil society (NGOs and neighbourhood associations).
- + The media.



3. **The support to mobilisation of green investments.** A good example is the deployment of the Recovery, Transformation and Resilience Plan through the mobilisation of an unprecedented volume of investment that prioritises not only mitigating the effects of the crisis, but also the transformation of our country towards a sustainable and inclusive economy.

The Recovery Plan recognises the fundamental role of cities in economic and social transformation, due to their capacity to generate short-term activity with a pull effect on industry and key sectors, and their importance in terms of the climate emergency. Thus, it includes initiatives aimed at essential aspects for the climate neutrality of cities, such as:

- + The improvement of sustainable mobility, with the promotion of electric and fuel cell vehicles and the extension of recharging infrastructures, through the different MOVES programmes.
- + The promotion of the renovation of urban residential environments, housing, buildings and neighbourhoods, with the priority objective of decreasing energy consumption and promoting decarbonisation in the household stock.
- + The development of energy communities that promote social innovation and citizen participation in renewables, energy efficiency and electric mobility, thereby contributing to fair and inclusive decarbonisation in urban areas.
- + The promotion of self-consumption for the energy use of urban roofs and decks, storage behind the meter and renewable HVAC in homes.
- + The development of transformative strategies and initiatives for urban renaturalisation, helping to increase green infrastructure and biodiversity in Spanish cities and favouring Nature-Based Solutions to respond to their socio-environmental challenges.
- + The support for the implementation of waste regulation, in collaboration with the autonomous communities and cities, with investments in



digitalisation for environmental management, through the Recovery Plan.

- + The deployment of calls for grants to municipalities and local entities for the implementation of low-emission zones in cities and the sustainable and digital transformation of urban transport.

4. The monitoring of the progress of the seven cities through the information processed in the citiES 2030 Platform, with the aim of integrating the urban transformation roadmap into the country's decarbonisation process.

As part of the iterative process of the European Cities Mission, the Spanish Government will participate in the monitoring and updating of the commitments made in the climate neutrality agreements of the cities of Barcelona, Madrid, Sevilla, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza, supporting the recognition and dissemination of the progress achieved.

Signed by Teresa Ribera Rodríguez, Third Vice-President of the Government of Spain and Minister for Ecological Transition and Demographic Challenge