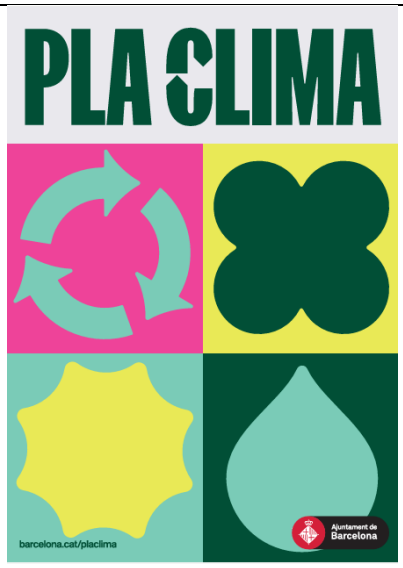
BARCELONA

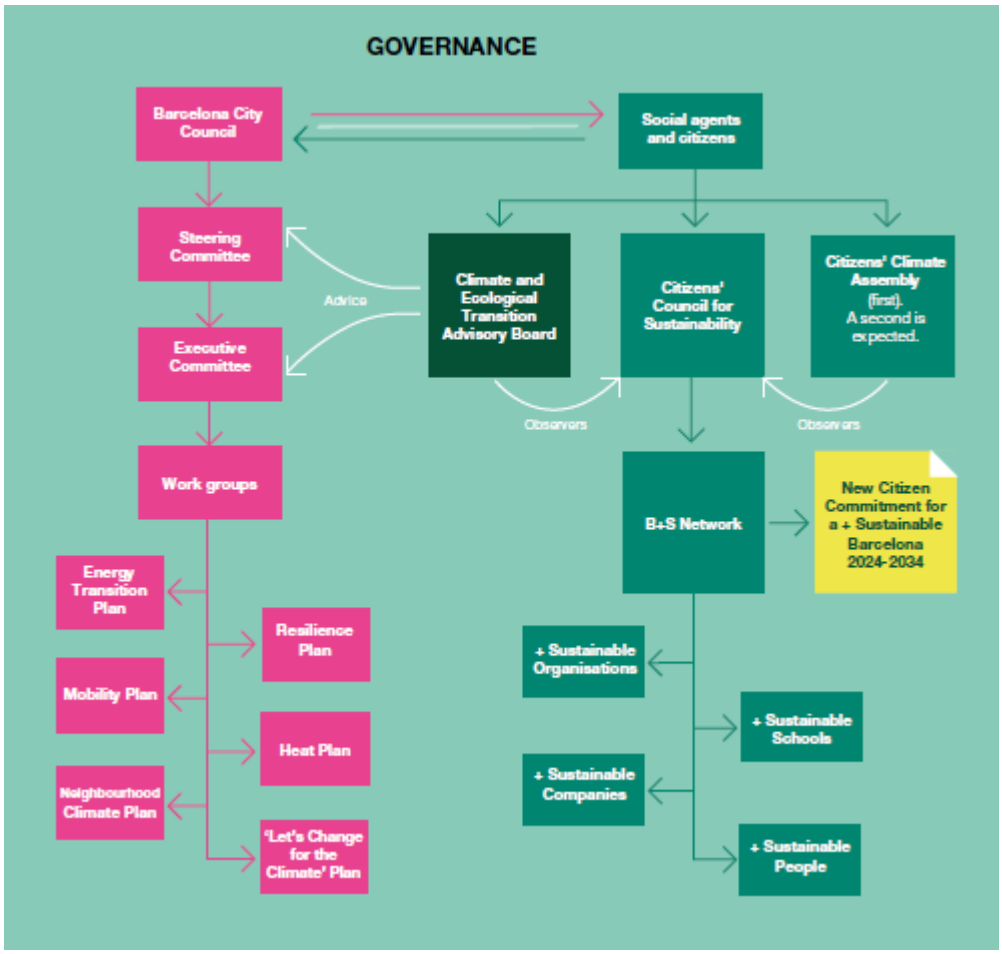
Climate City Contract 1st iteration

1. Main aspects identified by the city

1.A – What has changed?
Barcelona has a long and rich history in environmental sustainability policies. Since 2015 the city had already fully embraced the need to act towards decarbonization to curb global warming.    Being part of the European Mission “100 Smart and Carbon Neutral Cities by 2030” (hereinafter, the Mission) has provided both an incentive and additional pressure to increase the level of commitment (political, organizational, and budgetary) to climate action. It has also increased opportunities for cooperation with other European cities, and more specifically with the biggest Spanish cities, through the citiES network. From the outset, Barcelona has participated in these networks and their initiatives, such as the URBANEW project (in the Pilot Cities call) and its successor, URBANEW EMC3 (in the Enabling City Transformation call, for which the unsuccessful EMPOWER4BCN project was also submitted). This has involved participation in numerous meetings and gatherings, both virtual and face-to-face, including the annual NetZeroCities meetings (3 participations), the NetZeroCities winter and summer schools (1 participation each), and the summer school organized by citiES in Santander (3 participations). Barcelona is also one of the cities involved in the SUN4Ukraine project, partnered with the Ukrainian city of Mykolaiv, with which it is organizing various exchange activities. The commitments made in the Barcelona Climate City Contract (CCC), presented in September 2023 and validated in March 2024, generated the need to update and further define the specific objectives and projects of its climate action. This was achieved through a Governance Measure called Climate Plan, which was approved and presented by the city government in November 2024. Closely aligned with the evolution of NetZeroCities and citiES, this plan employs a highly integrated approach to climate action, encompassing mitigation, adaptation, and climate justice under the same conceptual and organizational framework.



Based on the City Climate Contract, the new Climate Plan introduces a participatory governance model that involves political leadership, interdepartmental coordination, and citizen participation through the Barcelona Más Sostenible network and collaborative challenges.



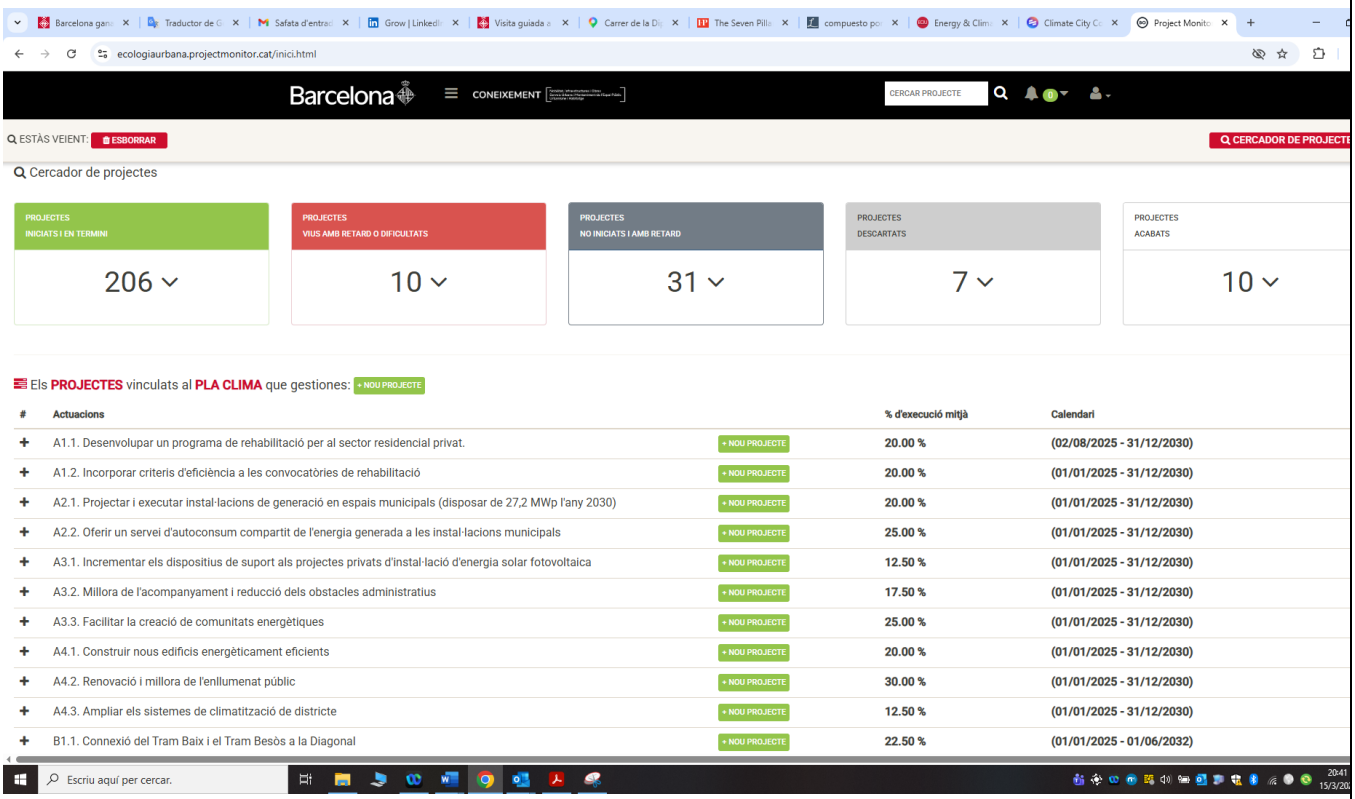
The plan is structured around six strategic areas, also called plans: Two for climate mitigation: Energy Transition (which includes Buildings) and Mobility; two for climate adaptation: Resilience (focused on water-related risks, but also including green infrastructure) and Heat; and two cross-cutting areas: Let's Change for the Climate (encompassing science, education, and culture programs, and changes in consumption patterns in general) and Neighbourhoods' Climate Plan, to ensure that climate transition

actions reach every corner of the city. Each of these six (sub)plans has a specific working group responsible for ensuring the implementation of its actions.

The team that initiated the involvement of the Barcelona City Council in the Mission was the Office of the Commissioner for the 2030 Agenda. Since November 2023 this team has been progressively integrated into the Office of Climate Change and Sustainability. This office, along with the Barcelona Energy Agency, constitutes now the driving force of the Plan. It is responsible for many of its projects and assumes the cross-cutting functions of reporting, evaluation, and communication. Above this core there is an executive committee, led by the area manager and composed of representatives from all municipal departments. Twice a year the committee is presided by top political officials.

The Climate Plan is one of four strategies that define and structure the municipal government's priorities; the other three are the ‘Endreça’ (Order and quality of the public space), ‘Living’ (Housing), and the (holistic) Neighbourhoods’ Plan. This facilitates cross-sectoral participation and can protect climate policies from volatility and public opinion pressures.

The updated Climate Plan has a 2030 horizon, as do most of its projects. The projects are monitored using a specific application called Project Monitor. Nearly one hundred municipal technicians are involved in project management. As of March 10, 2026, the Climate Plan includes a total of 269 projects, of which 206 are underway and ahead of schedule, 10 are underway but delayed or experiencing difficulties, 31 are not yet underway and are behind schedule, 7 have been abandoned, and 10 have been completed.



The actions have been budgeted at approximately €1.85 billion for the 2024-2030 period.

Plans and lines of action	TOTAL
A. Energy Transition Plan	268,575,000 €
B. Mobility Plan	1,095,843,380 €
C. Neighbourhood Climate Plan	98,440,000 €
D. Resilience Plan	234,591,000 €
E. Heat Plan	111,670,000 €
F. 'Let's Change for the Climate' Plan	40,400,000 €
Total general	**1,849,519,380 €**

The 2024-2025 balance sheet is quite satisfactory in terms of the execution of the planned expenditure.

Plan	Planned 2024–2025	Implemented 2024–2025	% Implemented vs Planned 2024–2025	% Implemented vs Planned 2024–2030
A. Energy Transition	86.660.000 €	104.771.304 €	120,90%	38,84%
B. Mobility	309.762.769 €	237.952.043 €	76,82%	21,71%
C. Neighbourhoods& Climate	23.607.857 €	26.457.428 €	112,07%	26,88%
D. Resilience	83.021.000 €	78.288.228 €	94,30%	33,37%
E. Heat	42.382.857 €	41.479.342 €	97,87%	37,14%
F. Change for the Climate	7.900.000 €	6.711.464 €	84,96%	16,61%
Total	**553.334.483 €**	**495.659.809 €**	**89,58%**	**26,78%**

In parallel with, or shortly after the approval of the Climate Plan, other public policy instruments related to decarbonization have been developed:

- A government measure for solar energy generation (2024-2030) has been approved to advance and meet the objectives in this area (to quintuple the installed municipal capacity and contribute to the growth of solar energy in private properties).
- The Neighborhoods' Plan (2025-2028) supports the rehabilitation of vulnerable buildings and the establishment of energy communities.
- The new Housing Plan (Pla Viure) reinforces the municipal commitment to energy-efficient renovations.
- A new Urban Mobility Plan 2025-2030 has been developed, which emphasizes the prioritization of ecomobility and electric mobility, but it has not been approved due to a lack of political support in the city council.
- A circular economy strategy is beginning to be designed.

1.B – Which are the most important lessons learnt?

In general terms, the main lesson learnt is that climate action, and more specifically the decarbonization of the city, is possible and generates positive results almost immediately. But we have also learned that it is a costly undertaking -with results that routinely arrive later than expected- as it involves transforming some of the city's main structures and systems. A paradigmatic example of this phenomenon is the electrification of buses: it is not enough to have the resources to buy these expensive vehicles; it is also necessary to build the charging infrastructure, assure the necessary electric power in each location, remodel the depots, train the mechanics, etc. To tackle climate action, determination and persistence are as essential to success as scientific reasoning and technical knowledge.

We have also learnt that incorporating climate objectives into the economic development strategy is neither obvious nor easy, particularly when the industrial sector has a small presence in the city. A 90% service economy, although starting from lower emission levels, faces greater difficulties in further reducing them, as service activities have a more limited room for decoupling. In this context, climate policies, often framed within the concept of sustainability, can easily be subject to manipulation or deliberate confusion, especially when discourses are not supported or challenged with solid and truthful indicators. It is necessary to maintain an open and hopeful attitude without succumbing to illusion and (self-)deception.

We have finally learned that the Mission is, above all, a research and development program carried out cooperatively by the cities, with the support of a wide range of non-public actors. Ultimately, the mission is designed to discover and learn new, more efficient and/or effective ways of addressing climate problems; it is also designed to motivate action by fostering networks and collective projects, but not to finance action. We have had to accept that the European Commission will not provide additional funding to help the mission cities finance their climate investments.

This structural limitation, although inherent in the call for proposals, has not prevented disappointment among some key local stakeholders and has undermined the mission's legitimacy, as other platforms, such as ICLEI, Eurocities or C40, already fulfil a similar role. It had been expected a clearer added value from the Mission.

In this context, perhaps to compensate, we have received an overabundance of speeches and training proposals on alternative financing mechanisms, which were welcomed with enthusiasm, but which, in the long run, have proven to be very difficult to integrate within the Spanish-EU regulatory framework (and outside the logic of Anglo-Saxon capitalism in general).

Nevertheless, there is a positive counterpoint. Thanks to the CESF support mechanism, launched by NetZeroCities, a consulting firm has been hired to conduct a study on the potential of regulation and taxation to accelerate the climate transition in Barcelona. The results, received in January 2026, are promising and have already led to a much more intense involvement of the City Council's finance department in the climate policies.

1.C – What is working well?

The integration and normalization of the ‘climate’ issue in the City Council's political and organizational agenda. Climate action is identified as one of the essential elements for guaranteeing the ‘right to remain in the city’, which is the current city government's political mantra. Being able to remain in the city implies having access to housing, to economic opportunities, and to an environment that fosters well-being, which includes, among other things, a healthy environment, defined by a stable and bearable climate for human beings.

Awareness and acceptance of the Climate Plan are increasing throughout the municipal organization, beyond the departments and individuals directly involved. This is promoted through internal

communication platforms and though events such as the first Climate Plan Conference (held on March 13, 2026), which was internal but had a broad reach across departments. This strengthens the connection with the most involved sectors, reaches new sectors, and sometimes even activates the most reluctant ones. The *climate perspective* is gradually permeating all projects. It is a holistic approach that has come to stay.

There is a commitment to medium-term investments, supported by sectoral plans with a climate vision and a 2030 timeframe (such as the Solar Energy Plan, the Housing Plan, the Urban Mobility Plan, the Zero Waste Strategy, the Natura 2000 Plan, the Comprehensive Sanitation Master Plan, the Alternative Water Resources Plan, etc.). This is linked to the maintenance of robust budget appropriations.

There are climate projects promoted by various departments of the City Council, solo or with the support of the Climate Change and Sustainability Office, and the vast majority of municipal sectors have the interest and willingness to incorporate climate into their work plans, although they do not always have all the necessary resources to do so.

Barcelona's urban development model is reasonably focused on decarbonization, with long-term structural measures that also have a positive impact on adaptation. This facilitates the inclusion of ambitious climate objectives in the city's strategy. Thus, major urban developments (Meridiana, Sagrera, Diagonal, etc.) follow a 'low emissions approach' and are on their way to becoming drivers of the climate transition. However, these transformations are working with a 2035 timeframe, so their full potential will not be realized until then.

At the sectoral level of decarbonization, the following also stand out as positive developments:

- The commitment to solar energy in municipal buildings. There are already 268 buildings with these installations, in addition to numerous public spaces endowed with productive pergolas. Between 2023 and 2025, installed capacity doubled, and it is expected to almost double again by 2027. The facilities involved are of all types, but we highlight the commitment of the 43 municipal markets to using their rooftops for energy production and compensating those markets that have not yet been able to do so by distributing some of the generated energy.
- In this area, the Clima Escola (Climate School) programme stands out. It involves providing the existing 170 public primary schools with state-of-the-art, efficient air-conditioning technology, adding photovoltaic generation to power the devices and to generate surplus energy. This project combines mitigation, adaptation, and climate justice, as it prioritises public schools and is financed through revenue from the tourist tax. In two years, work has been carried out in 52 schools, and the project is expected to be completed in 2029.
- The existence of a local public energy company (Barcelona Energía) allows for more agile and beneficial management of renewable energy by the City Council. Significant savings are already being generated on energy bills.
- The implementation of a municipal service to share renewable energy generated in municipal facilities, which opens top households the access to energy at below-market costs through registration and subsequent lottery. Even lower prices are also planned for vulnerable families.
- The development and implementation of district heating and cooling networks. Currently, two networks are operational and expanding (Districlima in Sant Martí and Ecoenergías in Marina del Prat Vermell), and two more are planned, on the grounds of the former Model prison and in the huge new development in La Sagrera area.
- The consolidation of an agenda for the energy-efficient renovation of buildings, still relatively modest in its results, but already equipped with powerful tools, which can be improved with the results of initiatives such as the 'Renovation as a Service' project, to be funded by Bloomberg Philanthropies as part of the "Mayor's Challenge" award.

- The growing social acceptance of low-carbon mobility. Citizens now perceive cycling and electrification as part of the climate agenda.
- The rapid electrification of the municipal service vehicle fleets. In some sectors, such as cleaning and waste collection, the city has played a pioneering and transformative role in the market. When the tender was launched, suppliers did not have these types of vehicles, and the large-scale, long-term municipal order has promoted their construction and improvement. The City Council already has 109 electric heavy trucks on duty, including part of the firefighters' fleet.
- The pioneering use of Energy Saving Certificates (issued by the Spanish Government) by the Barcelona Metropolitan Transport public enterprise, which will allow it to co-finance a significant portion of its investments in bus electrification and improving the efficiency of the metro network.
- The slow but steady growth of the municipal solid waste recycling rate, which has reached 42%, in parallel with a very slight reduction in the waste generation rate. This has also been aided by the positive reception of 'green points' for the local collection of special waste and the promotion of the 4 Rs of prevention.

Also noteworthy is the consolidation of the other pillars of climate action:

- The development of a climate adaptation and resilience strategy, with a special focus on the problem of heat, which prioritizes nature-based solutions and avoids maladaptation as much as possible.
- The continued commitment to climate justice, placing social participation in the climate transition and the protection of the health and well-being of the most vulnerable citizens at its core.

Finally, we highlight the things that are working well regarding the participation of stakeholders and the citizens:

- The consolidation and growth of the Barcelona + Sustainable network (more than 1,800 entities), through which collaborative climate challenges are being addressed. The first of these challenges is decarbonization, for which 125 active memberships have already been secured from entities (including associations, schools, businesses, and other companies).
- A new contract has been awarded to a specialized company to relaunch the collaborative challenges project, with the aim of increasing and diversifying the involvement of local stakeholders, prioritizing those with the greatest potential to influence solutions.
- Although limited in scope, the actions carried out by non-profit organizations are remarkable and exemplary. To further support and scale these actions, a second call for 'climate grants' will be launched in 2026, with a total of one million euros to fund projects.
- Also important is the consolidation of the annual Agenda 2030 and Climate conferences, which bring together stakeholders from the five-helix ecosystem. These conferences include the presentation of the Agenda 2030 Barcelona + Sustainable Awards, now in their fourth edition.

1.D - What isn't working well?

While climate is included as a priority issue on the municipal government's agenda, this hasn't led to a profound rethinking of the City Council's spending model and priorities. Massive funding continues for the construction of new municipal facilities, the renovation of public spaces, etc. Things which shouldn't be as urgent as addressing a climate emergency. But each sector has its own needs and demands, which are very difficult to ignore by the City Government.

The problem of housing accessibility, which has exploded in the last two years, raises even more pressing and urgent needs than climate change. As investment is being focused much more on housing, we attempt to link housing ‘accessibility" and "sustainability’ in theory and practice.

In this context, the lack of resources emerges as the main obstacle to accelerating the climate transition. And the private actors are not investing at the required level, partly because there is a lack of awareness (ie about the need to maintain the buildings), and a big resistance to change.

On the other hand, insufficient progress has been made in addressing the shortcomings identified in the City Climate Contract. Although the Port of Barcelona has a decarbonization strategy and works in collaboration with the City Council, this point has not yet been included in the CCC. Likewise, the strategy for offsetting residual emissions has still not been developed.

Regarding the involvement/participation of local stakeholders, the project to create a scientific advisory council, which was once proposed as an essential element of the plan's governance, has been abandoned for the time being. However, the idea of involving the city's remarkable scientific sector, has not been abandoned. In fact, with support from the NetZeroCities CESF, a study has been carried out on the climate research conducted in Barcelona (compilation of groups and projects) and/or about Barcelona (compilation of articles). This work should form the basis for creating spaces and connections that allow us to harness the full potential of science for improving climate action, both in Barcelona and beyond.

There is also some difficulty in establishing collaborative relationships with major economic players. New approaches will be explored to improve this.

At the sectoral level:

- Unlike other European countries, in Spain, cities have very limited powers in energy matters, and there are even difficulties in accessing energy data. This hinders and slows down the development of local energy transition projects.
- This is also compounded by a public administration model that is overly focused on guarantees, cumbersome, inflexible, and ultimately unhelpful of structural changes.
- The exasperating slowness of public transport improvement works. This is the most important area from a climate perspective, but also the most complicated. Furthermore, the strong rainfall last winter revealed the fragility of the RENFE rail network and led to a situation of collapse. If metropolitan don’t work well, progress in decarbonizing mobility is quickly lost.
- Given the constant increase in the number of public transport users, it is essential to have well-equipped, high-quality infrastructure. In this respect, Barcelona suffers from a huge shortage of transport interchanges. Four large bus-metro-train interchanges are being planned, one for each entry/exit corridor to the city, but their implementation is expected to be costly and slow.
- The still too slow start of private electric mobility. Barcelona has put into service the most extensive public network of charging points in Spain and one of the best in Europe. There are already more than 1,000 charging points, but their usage level is still too low.
- The slowdown in the implementation of improved waste collection and recycling systems, motivated by resistance from some neighbourhoods and the fear of the political cost this could entail.

1.E - What are the main improvements that should be made?

Achieving greater political commitment to climate mitigation, to make it a top priority. This would mean placing mitigation actions at the highest levels of budgetary priority and evaluating all municipal projects

based on their impact on emissions generation/reduction. This applies to both the City Council and higher levels of government.

We need to focus our efforts and implement better strategies to unlock some key aspects of decarbonization that are currently stalled, such as the involvement of households and businesses in the energy transition (renewables and building renovations) and in electric mobility. Resources will be needed, but above all, innovative approaches, both hard and soft regulation, to achieve changes in the behaviour of stakeholders.

1.F - What support is needed to implement these improvements? (from both NZC and citiES 2030, as well as other potential sources)

Everything included in the 2024 Valencia Development Declaration for the Cities Mission: Upscaling the EU Cities Mission – European cities and platforms joining hands would be needed: more political, regulatory, and financial support.

From the platforms, we would primarily need a presence, and a presence in the spaces where decisions are made, to secure this support.

Then there is support that is relatively modest but can incentivize much more significant changes, such as the calls for projects launched by NetZeroCities, or the consultancy work sponsored by citiES and financed by the European Investment Bank, on how to accelerate the implementation of electric mobility in five major Spanish cities, including Barcelona.

1.G - What are the main priorities identified?

By sector, the main priorities identified in the short and medium term are:

Electricity and buildings.

- Increased energy renovation of homes. This entails securing post-NEXT-GEN financing.
- Commitment to municipal energy generation (rooftops and public spaces): increasing from 4.9 MWp in 2023 to 19.2 MWp in 2027 (11.2 MWp was reached in 2025). Self-consumption of renewable energy should become a daily practice
- Achieving efficient comfort in municipal buildings
- Ensuring the proper handover and operation of heating, cooling, and energy systems in the new very low-emission buildings through commissioning
- Consolidation of heating and cooling networks: efficient climate control

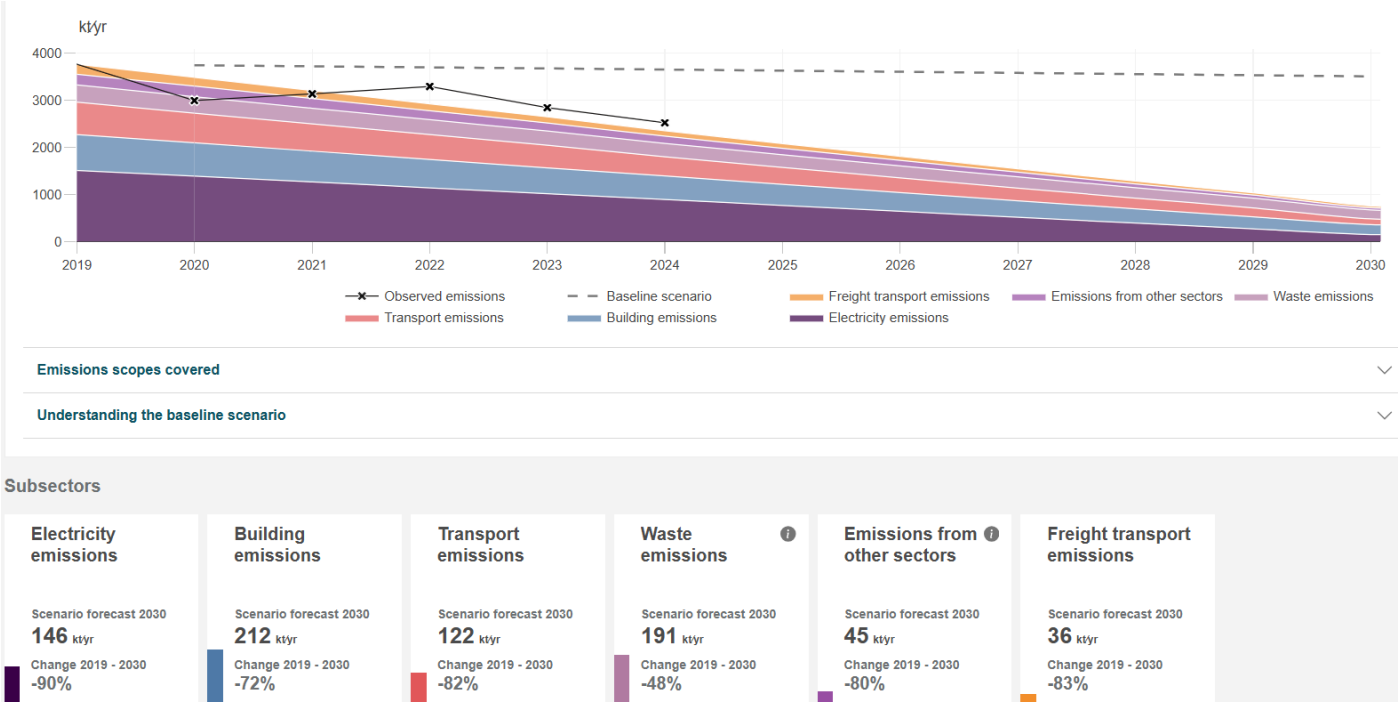
Mobility

- Expanding and improving the network of bike lanes
- Implementing the Municipal Commuter Mobility Plan
- Managing the newly launched subsidies for motorcycle electrification
- Connecting the tram networks. - Implement the Urban Freight Distribution agenda (pilot projects underway)
- Electrify municipal fleets and the private vehicle fleet

2. Monitoring the Implementation of the Climate Action Plan (CAP)

The Barcelona City Council has a well-established track record in monitoring and evaluation mechanisms. The main climate action indicators have been reported for several years through annual reports and the set of indicators for Barcelona's 2030 Agenda. Through citiES, we have been able to contribute our expertise to the development of social and health indicators associated with the mission's co-benefits.

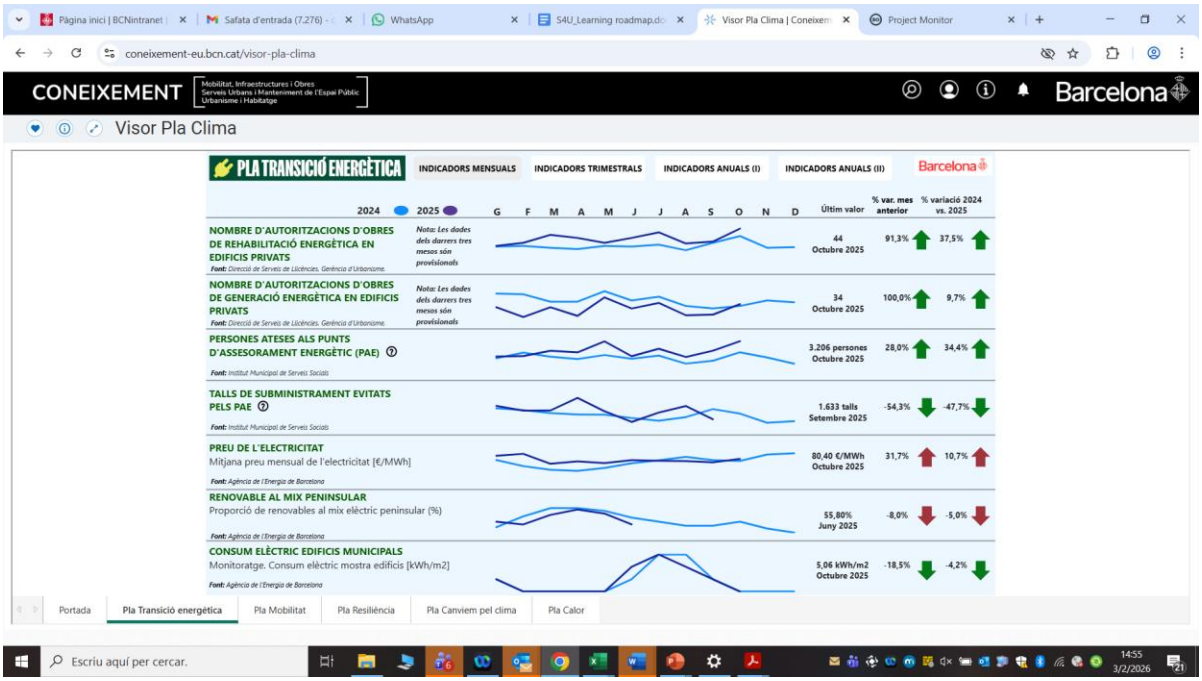
Thanks to the Mission, and again specifically to the citiES network, we have gained access to a new tool, NetZeroPlanner, which allows us to calculate and report the city's progress toward its climate neutrality commitments very effectively. NetZeroPlanner is based on the economic model we used to prepare much of the documentation required for the CCC.



We highlight the following Key Performance Indicators:

- 259 projects integrated across municipal departments under a unified governance framework.
- €496 million spent on climate policies between 2024 and 2025 (excluding structural labor costs: Chapter 1).
- Activation of a multi-sectoral governance ecosystem that includes more than 1,800 organizations, a formal Stakeholder Council, and a Climate Assembly.
- 23.1% reduction in greenhouse gas emissions since 2019.
- Reduction of per capita emissions to 1.8 tCO2-eq in 2023.
- The city has achieved its best air quality levels since records began, meeting EU standards for three consecutive years.

The whole Climate Plan is monitored using a set of 78 indicators, which are reported through a specific display. (See full extraction of results at the end of this document).



ENERGY TRANSITION

1. Number of authorizations for energy rehabilitation works in private buildings
2. Number of authorizations for energy generation works in private buildings
3. Number of people served at Energy Advice Points
4. Supply interruptions avoided by the intervention of the Energy Advice Points
5. Electricity price
6. Proportion of renewables in the peninsular electricity mix
7. Electricity consumption of municipal buildings
8. Number of buildings connected to district heating networks
9. Installed city PV capacity
10. Cumulative installed municipal photovoltaic capacity
11. Total energy consumption by sector
12. Origin of final energy consumption
13. City GHG emissions by sector
14. Origin of GHG emissions
15. Proportion of households in energy poverty
16. Number of building permits authorized for energy rehabilitation or generation
17. % of the population that has adequate air conditioning, heating, or thermal insulation of doors and windows in the home
18. Type of heating
19. Proportion of energy consumed in Barcelona generated locally with renewable resources

MOBILITY

1. Number of fast and slow charging points in the public electromobility network
2. Public opinion on purchasing electric vehicles
3. Number of SPRO tickets (for last mile delivery) and percentage with Zero or ECO environmental labels
4. Population exposed to average day-night-night noise levels (Lden) ≥ 55 dB

5. Zero-emission vehicles as a percentage of total vehicles on the road
6. Electric vehicles (BEV+PHEV) as a percentage of total vehicles registered in Barcelona
7. Electric vehicles (BEV+PHEV) as a percentage of total vehicles registered in Catalonia
8. Number of publicly promoted fast-charging electric vehicle charging points
9. Users registered with the Endolla Barcelona charging service
10. Active users as a percentage of total Endolla registered users
11. Number of Bicing (public hiring bikes service) trips taken
12. Number of validations on metro and bus
13. Number of validations on public transport
14. Air quality (Average NO2 emissions level_Traffic)
15. Air quality (Average NO2 emissions level_Urban background)
16. Air quality (Average PM10 emissions level_Traffic)
17. Air quality (Average PM10 emissions level_Urban background)
18. Average concentration of PM2.5
19. Number of weekday commutes
20. Modal split of commutes

RESILIENCE

1. Domestic water consumption
2. Total urban water consumption
3. Municipal services sustainability indicator (groundwater/drinking water consumption ratio)
4. Kilometers of rehabilitated sewer network
5. Total available sand area
6. Green space maintained
7. Number of street trees planted
8. Available surface area of Sustainable Urban Drainage Systems
9. Number of biodiversity refuges created
10. Total green space area (km2) and green space per inhabitant (m2)
11. Completed interventions for the improvement of interior spaces within city blocks (PEPIs) and green space area gained
12. Activation of action plans due to climate phenomena: Drainage insufficiency and poor sea state / Drought / Heavy rains / Torrential rains / Wind / Snow and ice
13. Number of forest fires
14. Area burned by forest fires

HEAT

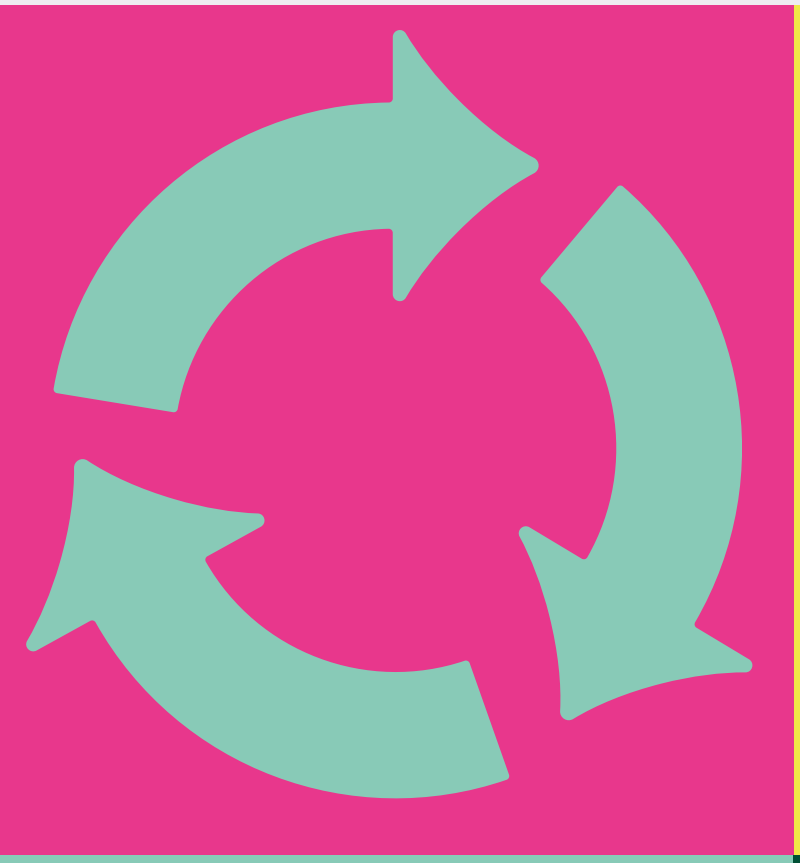
1. Heat intensity (Day and Night)
2. Number and duration of heat waves
3. Population covered by a climate refuge located within a 10-minute and 5-minute walk
4. Deviation of average minimum temperature from the historical average
5. Deviation of average maximum temperature from the historical average
6. Number of shade structures installed
7. Number of shade structures installed with energy generation

8. Thermal comfort improvement interventions carried out in buildings housing vulnerable people
9. Number of public water play areas
10. Interventions in schools for climate change adaptation (Buildings)
11. Interventions in schools for climate change adaptation (Playgrounds)

LET'S CHANGE FOR THE CLIMATE

1. Number of services offered to promote a culture of sustainability
2. Number of people using sustainability culture services
3. Number of participants joining the collaborative decarbonization challenge
4. Number of participants joining the collaborative water saving challenge
5. Number of communication actions. Website visits
6. Number of communication actions. Social media posts
7. Number of communication actions. Social Media Impressions
8. Municipal solid waste collected
9. Percentage of municipal solid waste collected that is recycled
10. Waste avoided through selective collection (kg)
11. Emissions avoided through selective collection (kg CO2eq)
12. % of population with individual waste collection services
13. Activities carried out and users participating in sustainability culture services
14. Ordinal position of ‘Climate change and environmental quality’ as the most serious personal problem and as the most serious city problem (in the annual Municipal Services Survey, 6,000 interviews)

PLA CLIMA



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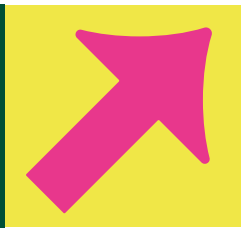
Ajuntament de Barcelona

PLA CLIMA
Part 1

Where are we coming from? What have we achieved so far?

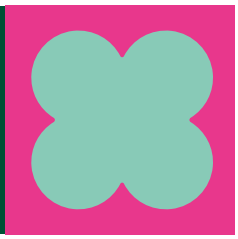


PLA CLIMA
Part 2

Goals: mitigation and adaptation

PLA CLIMA
Part 3

How will we do it?



PLA CLIMA

Part 4

Who will we do it with?

Introduction

Climate change is an unquestionable fact, and we are already feeling its effects in the form of droughts and heat waves, which are directly affecting our health and eroding our beaches.

Cities play a key role in the fight against climate change and finding effective solutions to ensure that the places we live and spend time in are inclusive, safe, resilient and sustainable. We have huge potential and determination to change.

Barcelona has proven its commitment to combating climate change with its groundbreaking policies, such as the Citizen Commitment for a More Sustainable Barcelona, the Climate Emergency Declaration and the adaptation of the 2030 Agenda. Climate change is part of the city's and the municipal services' political agenda.

Barcelona has been part of the European Commission's "100 Climate Neutral and Smart Cities by 2030" mission since 2002. In this context, the City Climate Contract, which sets out a roadmap to climate neutrality and to speed up the energy transition, was approved in September 2023. An initiative that was awarded the European Mission Seal of Excellence this year.

More recently, we launched the School Climate Plan, which aims to ensure thermal comfort in every school in the city. We have also approved a new government measure to triple photovoltaic power in municipal facilities and introduced the Local and Interior Spaces Programme to repurpose forgotten spaces for use in *climate urban planning*, a new approach to public spaces intended to increase the amount of greenery in the city.

This **Government Measure for the Climate Plan** goes one step further by placing climate policies at the heart of municipal action, thereby further increasing our commitment. And we are doing this, as always, with determination and using solutions based on scientific knowledge and social and technological innovation. These solutions are a set of concrete, rigorous and effective policies and lines of action that address both the causes and consequences (mitigation and adaptation policies, respectively) of climate change.

We take on this challenge with ambition and a will to lead, but it is an effort that must also be shared, because climate change affects everyone. Barcelona seeks to do this by forging new partnerships and alliances across all sectors of society, combating issues such as climate change denial, which is fuelled by fake news, with determination; by striving to achieve a socially fair ecological transition that is beneficial to everyone and leaves no one behind; and by seizing new economic opportunities in terms of employment, competitiveness and innovation to ensure that sustainability can go hand in hand with progress. All this must be done with a metropolitan approach, because the challenge we are dealing with requires us to work on an entirely new scale.

We are at a key turning point in this fight. This **Government Measure for the Climate Plan** is part of our ongoing work to improve our well-being and that of generations to come, making our city healthier and more liveable and sustainable. Together, we can do it!

Jaume Collboni Cuadrado
Mayor of Barcelona

PLA CLIMA
Part 1

Where are we coming from? What have we achieved so far?

Accelerating a paradigm shift

The Government Measure for the Climate Plan seeks to define all the City Council's climate policies in a cross-cutting manner, creating a r**oadmap to make Barcelona a climate-neutral city that is well adapted to climate change by 2030**.

This government measure thus encompasses both all current policies and those planned for the coming years in relation to issues such as energy, water, air quality, mobility, renovation and heat management.

Two concepts underlie the structure and implementation of all these policies: **adaptation and mitigation. Far from being mutually exclusive, these two concepts are intertwined and complement each other**.

We must therefore ensure that the roadmap provided by this government measure is embraced by both the general public and the city's economic and social stakeholders.

Barcelona is not starting from scratch. Over the past 25 years, it has gradually made increasingly ambitious climate commitments, the most recent of which is the City Climate Contract. Today, we are renewing and stepping up this commitment, with a 2030 horizon.

All the stakeholders involved must work together to achieve these goals. Their collaboration must be based on shared responsibility so that they all feel that they are part of the solution.

This is because cities can – and must – provide solutions: solutions for a fair green transition that benefits everyone without leaving anyone behind, and solutions to create new economic opportunities in terms of employment, competitiveness and innovation.

If it cannot be fair, the energy and ecological transition will fail, and Barcelona is committed to ensuring this does not happen.

The climate challenge is a huge one with many possible solutions. In order for Barcelona to achieve climate neutrality, it must use a combination of all these measures. We have a long history behind us and, with its bold, ambitious and widely supported climate policies, our city has always been a pioneer.

This government measure places climate matters at the heart of Barcelona's municipal policy and accelerates the way to climate neutrality.

Twenty-five years of increasingly ambitious commitments. We have achieved a lot, but now is not the time to stop!

Over the past 25 years, Barcelona has made increasingly ambitious commitments to tackle climate change, always in line with European and international goals.

Since its first solar thermal byelaw in 1999, Barcelona has approved a whole host of municipal plans to tailor municipal action to new climate goals and challenges.

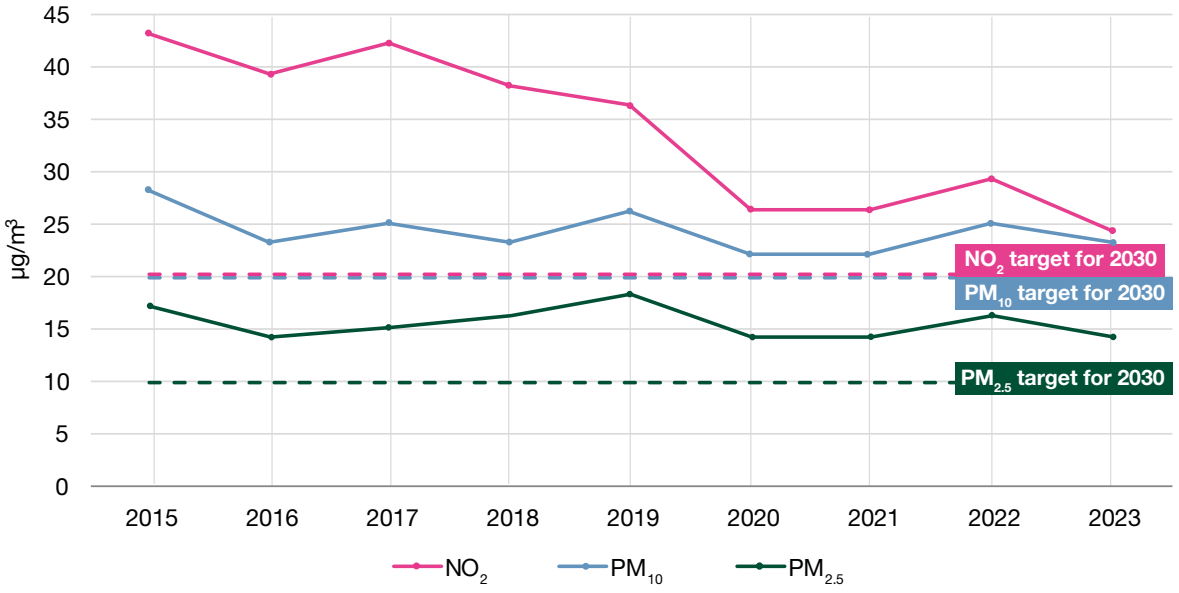
For instance, the Energy, Climate Change and Air Quality Plan 2011-2020 was approved in 2011; the Climate Plan 2018-2030 was approved in 2018; and the Climate Emergency Action Plan was drawn up in 2021.

This government measure, which brings previous plans up to date in accordance with current climate targets, draws from the City Climate Contract submitted by the City Council to the European Commission as a member of the “100 Climate Neutral and Smart Cities by 2030” European mission, as well as from the Climate Emergency Action Plan 2030 and the Citizen Commitment for a More Sustainable Barcelona 2024-2034.

Barcelona has consistently demonstrated its commitment to the planet and future generations. Both the city and its residents have committed to be a part of this and have acted accordingly, with positive results.

A quarter of a century later, Barcelona enjoys the cleanest air since air quality measurements began. **In 2023, the city fell under the maximum air pollution thresholds set by current European regulations for the first time, a trend that has continued into 2024**.

Figure 1.
Average concentration of NO_2, PM_{10} and $PM_{2.5}$
Source: Barcelona City Council



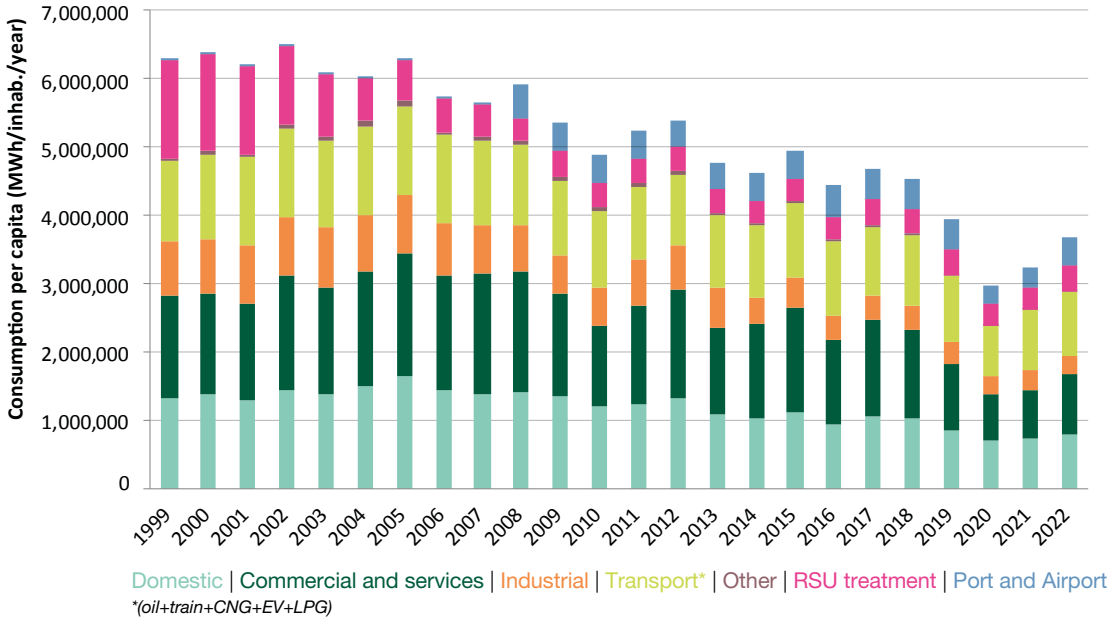
The Low Emission Zone has been key in the aim of improving air quality and speeding up the upgrade of the city's vehicles. In 2023, the number of vehicles with an ECO label in the Low Emission Zone exceeded the number with the B label for the first time.

However, far from resting on its laurels, Barcelona must continue to lead boldly and ambitiously in the advancement of these policies to meet new European goals and aim to achieve the pollution thresholds recommended by the World Health Organization (WHO).

In 2023, the city's greenhouse gas (GHG) emissions figure, taking into account Spain's electricity mix, was 3,179,805 tonnes of CO_2 equivalent (tCO_2-eq), which is 1.92 tCO_2-eq per inhabitant, down 19.4% since 2019.

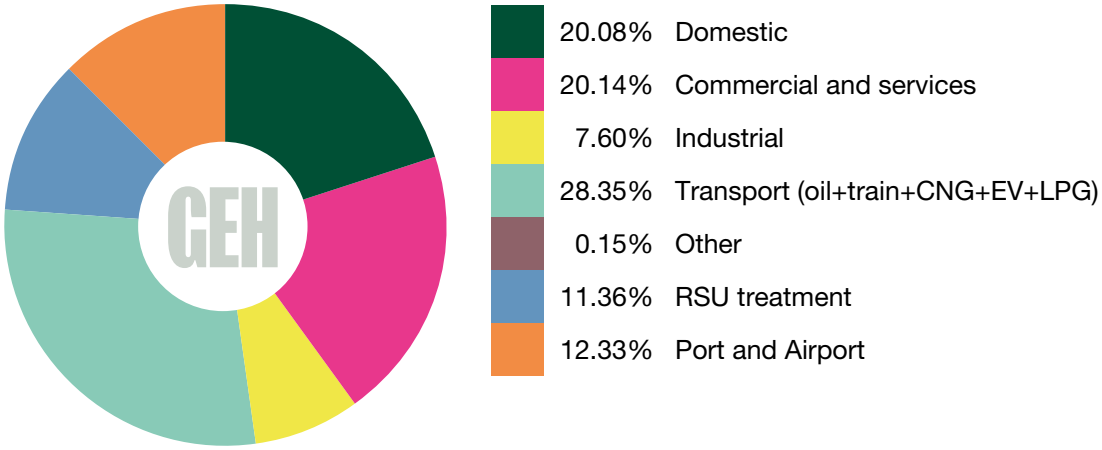
The overall reduction in emissions is largely due to the improvement in Spain's electricity emission factor, which went down from 173 gCO_2-eq/kWh to 111 gCO_2-eq/kWh between 2019 and 2023. **This significant drop seen in recent years is due to an increase in the generation of renewable energ**y. Furthermore, according to provisional data, electricity and natural gas consumption were lower in 2023 than in both 2019 and 2022, further contributing to this reduction in GHG emissions.

Figure 2.
GHG emissions in Barcelona (2000-2023)
Source: Barcelona Energy Agency



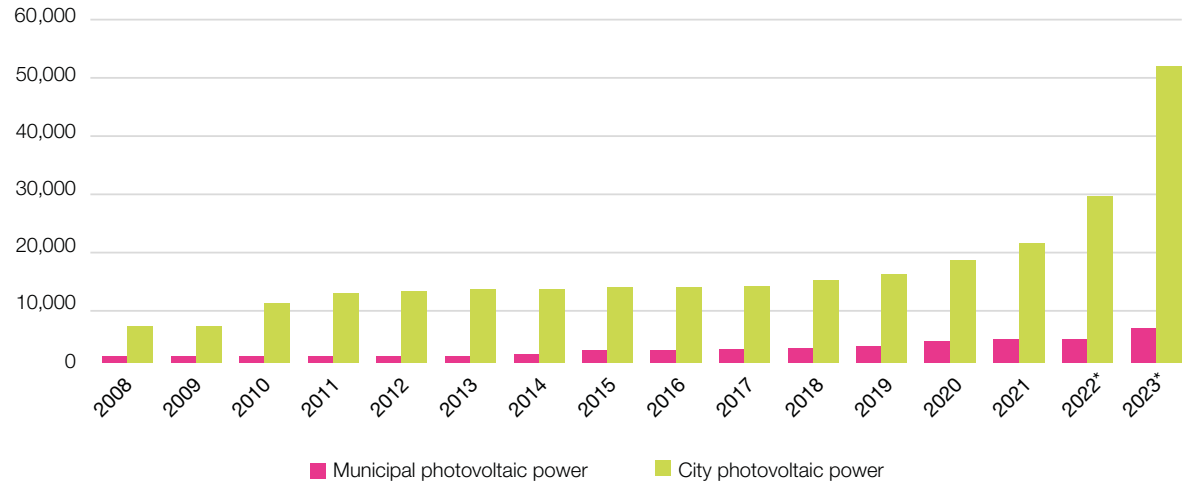
There is a significant split by sector:

Figure 3.
Distribution of GHG emissions by sector (2022)
Source: Barcelona Energy Agency



Regarding **renewable energies, the city as a whole has seen a significant upward trend since 2019, following the approval of Royal Decree 244/2019**. At municipal level, this upturn is less pronounced and has less impact. This is due to the municipal authorities' long-standing commitment to gradually increase energy production.

Figure 4.
Annual evolution of photovoltaic power at city and municipal levels
Source: Barcelona Energy Agency



All this shows that climate policies work and the public responds well to them. Now is the time to go faster, working hand in hand with all the stakeholders involved (the City Council, the public, organisations, companies, etc.) to adapt to climate change, fight its effects in the city and reduce emissions to achieve climate neutrality by 2030.

Boosting and accelerating climate policies

Many actions and plans that bear testament to the will to accelerate the city's decarbonisation and improve its adaptation to climate change were promoted in Barcelona in the first half of 2024.

Collaborative and effective response to drought

Drought has a direct impact on people's daily lives and affects the functioning of all sectors of economic activity. This latest severe drought has shown once again that ensuring the supply of water for everyone must be a priority in urban management and political decision-making. Together with operators and other public administrations, the City Council has established the Drought Emergency Working Group to prepare the city and its people for this situation. Thanks to the public's immediate response, a responsible water consumption below the limits set for the emergency drought scenario has been achieved.

A total of €26.6 million has been invested to expand the groundwater network and renew the city's public gardens' irrigation system to increase the amount of water available for street cleaning and irrigation by 20%. We have also taken the first steps to introduce the greywater byelaw.

Decarbonisation and comfort at schools

As regards thermal comfort, we have launched the Barcelona School Climate Plan, which aims to air-condition 170 schools in the city using renewable energy with funds obtained through taxes on tourism, which enhances the social return of this activity. Playgrounds in 50 municipal nurseries have been upgraded to provide greater thermal comfort, and all nurseries now have heating and air conditioning. Furthermore, the thermal comfort of school playgrounds has been improved so they can be used as climate shelters.

Boosting energy self-sufficiency in municipal buildings and facilities

A new government measure has been introduced to triple the generation potential of photovoltaic solar panels in municipal buildings by 2027. By 2030, all municipal markets, the city's entire library network, all schools and the various district headquarters will be energy self-sufficient.

Commitment to healthier and cleaner mobility

The Low Emission Zone has encouraged the public to upgrade their vehicles, helping provide cleaner air for the city and reduce greenhouse gas (GHG) emissions. Public

transport incentives have been maintained for 2024, the cycle lane network has been expanded by 23.2 km, and the work to link the tramway along Avinguda Diagonal with the new section between Glòries and Verdaguer has made progress.

Endolla Barcelona, a company managed by Barcelona de Serveis Municipals (BSM), has been launched to ensure that the necessary infrastructure to support electric mobility is in place. With over 1,000 charging points all over the city, it is already the largest public electromobility network in Spain and southern Europe, and it is powered entirely by renewable energy.

Over the next five years, BSM plans to invest at least €15 million to keep growing and supporting the public's needs. In line with this goal, it has already started working on installing 2,000 new charging stations in Aparcaments BSM car parks from next year. This means the city will be prepared to reach 3,000 stations as demand grows.

At the same time, the Catalan government has been asked to invest €3 billion in the metro network expansion over this decade, while 1,000 EV charging points have already been installed, and there are plans to reach 2,000 by 2025. This will greatly encourage people to move over to electric vehicles, thus contributing to the decarbonisation of mobility.

A big step forward for citizen participation

The Barcelona Citizen Climate Assembly was a deliberative process in which 100 randomly chosen people aged 16 to 75 were able to discuss the climate emergency and submit informed recommendations to Barcelona City Council.

A new ten-year commitment that starts with two key challenges

The new Citizen Commitment for a More Sustainable Barcelona 2024-2034, which is aligned with the Sustainable Development Goals of the United Nations 2030 Agenda, reflects the More Sustainable Barcelona network's will and dream of tackling the climate emergency locally but without losing sight of our global impact. A new way of working with the More Sustainable Barcelona network based on collaborative city challenges, which in the period 2024-2026 will focus on decarbonisation and water saving, is being introduced.

Urban planning with a climate perspective

Despite its complexity and population density, Barcelona has many local and interior spaces with great potential that are currently disused or being wasted or that have been forgotten about. In all, they could provide an extra 86 hectares of greenery. When it is implemented, the new Local and Interior Spaces Plan (PEPI), which was first introduced in July 2024, will create new public spaces for relaxation adapted to climate change through climate urban planning. This will result in greener and more permeable, shaded and comfortable spaces. The Plan provides for actions across the city's ten districts, split into three specific action programmes:

- Programme for increasing and improving spaces.
- Partition wall and roof programme.
- Shade programme.

The sectoral plans and programmes linked to this government measure, whose implementation will be expedited by it, are shown below.

Sectoral plans and programmes linked to the government measure	MITIGATION	ADAPTATION AND RESILIENCE	CLIMATE JUSTICE	PROMOTION OF CITIZEN ACTION
CLIMATE EMERGENCY ACTION PLAN 2030	●	●	●	●
CITIZEN COMMITMENT TO SUSTAINABILITY 2024-2034	●	●	●	●
THE 2030 AGENDA IN BARCELONA	●	●	●	●
BARCELONA CITY CLIMATE CONTRACT 2030	●		●	●
NATURE PLAN 2021-2030		●	●	●
MASTER PLAN FOR BARCELONA'S TREES 2017-2037		●		●
"LET'S CHANGE FOR THE CLIMATE" PLAN	●	●	●	●
ALTERNATIVE WATER RESOURCES PLAN (PLARHAB) 2020		●	●	
MASTER PLAN FOR THE BARCELONA SEWERAGE AND DRAINAGE SYSTEM (PDISBA) 2020		●		
URBAN MOBILITY PLAN 2024	●			●
ZERO WASTE PLAN 2021-2027	●			●
COASTAL PLAN		●		●
PLA ENDREÇA	●	●		●
BARCELONA URBAN REGENERATION PROGRAMME 2022	●	●	●	●
LOCAL AND INTERIOR SPACES PROGRAMME (PEPI)		●	●	●
STRATEGIC NOISE MAP	●			
BARCELONA HEALTHY AND SUSTAINABLE FOOD STRATEGY 2030	●		●	●
BARCELONA SUSTAINABILITY ECONOMY ROADMAP 2030		●	●	
BARCELONA HEALTH PLAN 2021-2025		●	●	
GENDER JUSTICE PLAN 2021-2025			●	
GOVERNMENT MEASURE FOR URBAN PLANNING WITH A GENDER PERSPECTIVE			●	
RIGHT TO HOUSING PLAN 2016-2025	●	●	●	●
NEIGHBOURHOOD PLAN	●	●	●	●
STRATEGIC PLAN FOR SCIENCE AND INNOVATION 2024-2027	●	●		●
"PLAY IN PUBLIC SPACES" PLAN 2030			●	●
SCHOOL CLIMATE PLAN	●	●	●	
URBAN GOODS DISTRIBUTION STRATEGY 2030	●			
GOVERNMENT MEASURE TO FOSTER URBAN INNOVATION	●	●	●	●

Why now?

Because it is getting hotter and hotter, with less water and more extreme weather

The experts in the Intergovernmental Panel on Climate Change (IPCC) are demanding changes to drastically reduce greenhouse gas emissions in order to comply with the Paris Agreement (an increase of no more than 1.5 degrees in the world's average temperature at the end of the century compared to the pre-industrial period).

According to data from the European programme Copernicus, this figure has already risen by 1.63 degrees in the last calendar year, and we will reach a 3-degree rise by the end of the century if no action is taken.

The **higher temperatures** can be clearly felt in Barcelona. Temperatures have already risen by 18 degrees since pre-industrial times. In 2022, the warmest year since records began, there was a positive anomaly of 3.7 degrees, with a very high number of torrid and tropical nights. The summer of 2023, although not as warm as its 2022 counterpart, was also a record-breaking one, a trend that continued in 2024, when a temperature of 40 degrees was recorded in July by the Fabra Observatory.

Figure 5.
Anomalies in annual average temperature (Barcelona, 1783-2023)
Source: Catalan Meteorological Service

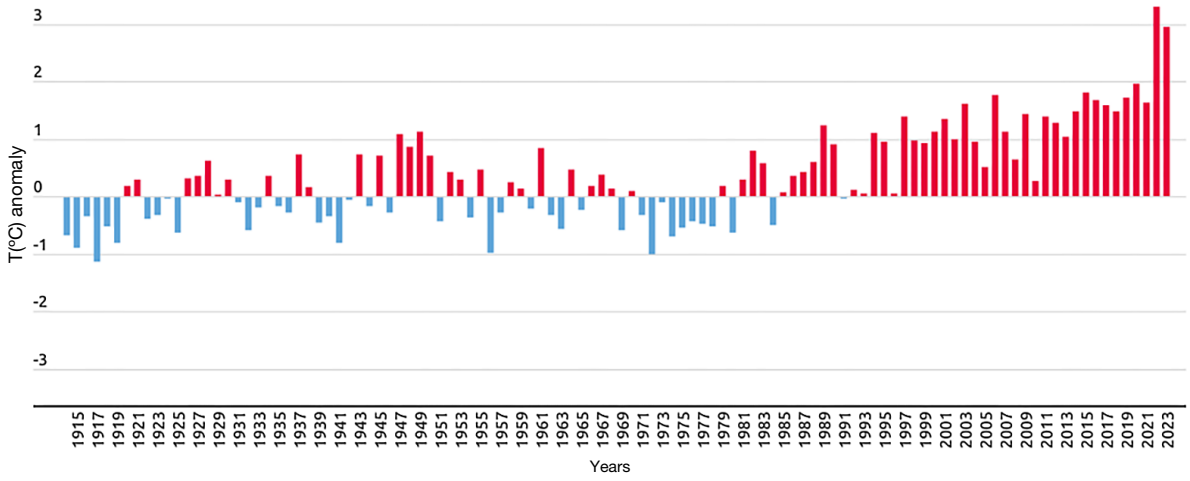
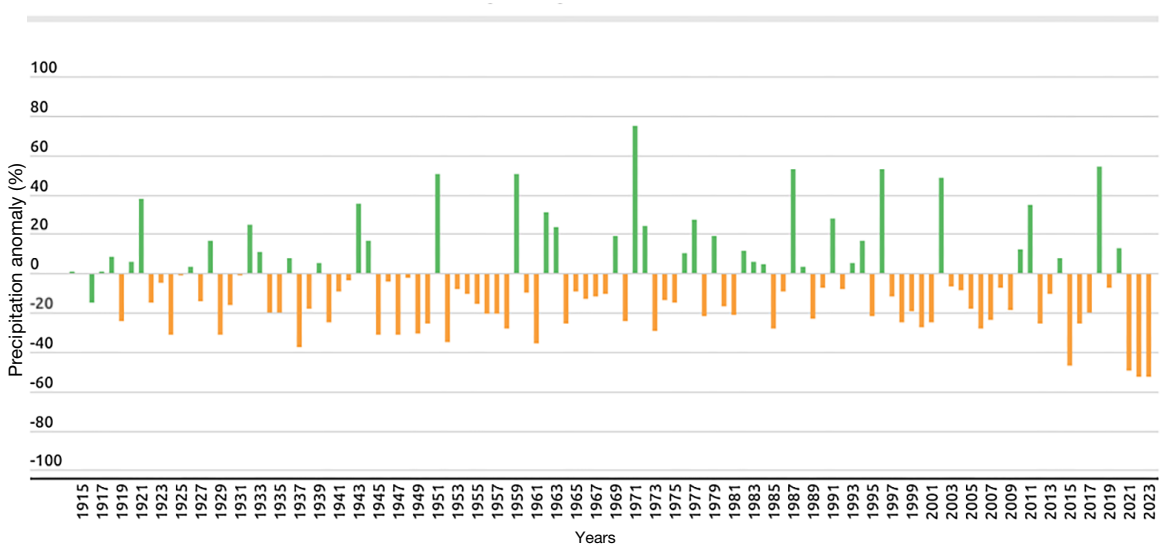


Table 1. Evolution of heat waves, hot and torrid days and tropical and torrid nights from 1982-2016 to the years 2022 and 2023 (last columns); and comparison with the pledged and passive scenarios for the end of the century.
The figures from 2023 are the average temperatures recorded in Barcelona's weather stations, not including the Fabra Observatory.
Source: Original, using information from the Catalan Meteorological Service.

Indicator	Initial data based on the average for 1982-2015	End-of-century pledged scenario projections	End-of-century passive scenario projections	Data for 2020	Data for 2021	Data for 2022	Data for 2023
Heat waves per year *((maximum temperature exceeds the 98th percentile of the three hottest months of the year). For 2020 this threshold was 33.6ºC*	**1** every 4 years	**2** (x8)	**4-5** (x16)	**0**	**0**	**2** (x8)	**1**
Hot day (>30ºC)/year	**22** por año	**50** (x2)	**80** (x4)	**37** (x1,6)	**26** (x1,2)	**64** (x3)	**42** (x2)
Torrid day (>35ºC)/year	**1** every two years	**2.5** (x5)	**8.5** (x17)	**0**	**0**	**2** (x4)	**4** (x8)
Tropical night (>20ºC)/year	**38** per year	**83** (x2)	**112** (x3)	**74** (x2)	**88** (x2.3)	**105** (x2.8)	**82** (x2.2)
Torrid night (>25ºC)/year	**0** per year	**2.5** (x2)	**6** (x6)	**7** (x7)	**1**	**14** (x4)	**13** (x13)
Red-hot nights (>30ºC)/year	nd	nd	nd	nd	nd	**0**	**0**

The rainfall recorded in 2023 was 45% below the 1914-2022 average (590 mm). It can therefore be considered the driest year on record. Despite a slight improvement in the 2024 data, the trend points to an increase in water stress in the next few years.

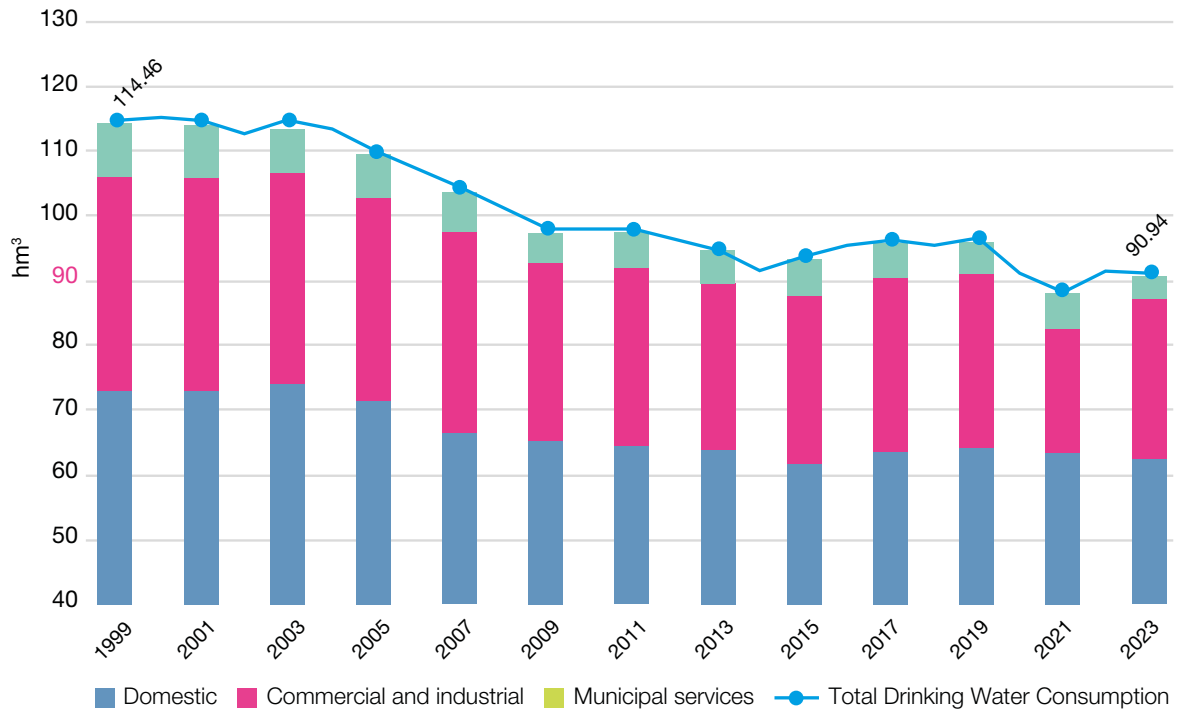
Figure 6. Anomalies in annual aggregate precipitation (Barcelona, 1788-2023)
Source: Catalan Meteorological Service



In the last 25 years, Barcelona has experienced two significant droughts: one between 2007 and 2008, and one starting in 2021, which is still ongoing. The impact of climate change on the Mediterranean climate is already leading to longer and more severe droughts, forcing us to find alternative water resources, such as greywater and groundwater, and requiring city residents to save water.

Barcelona's citizens have once again shown remarkable responsibility and awareness. Thanks to this, water consumption levels have remained well below thresholds allowed at each stage of the drought.

Figure 7. Evolution of drinking water consumption by sector
Source: Barcelona City Council



Our beaches are gradually losing sediment due to the action of waves and currents. Coastal protection structures such as groynes and submerged dikes are being used to try to mitigate this damage. In 2023, widths of less than 25 metres were recorded every month for the Nova Mar Bella and Llevant beaches.

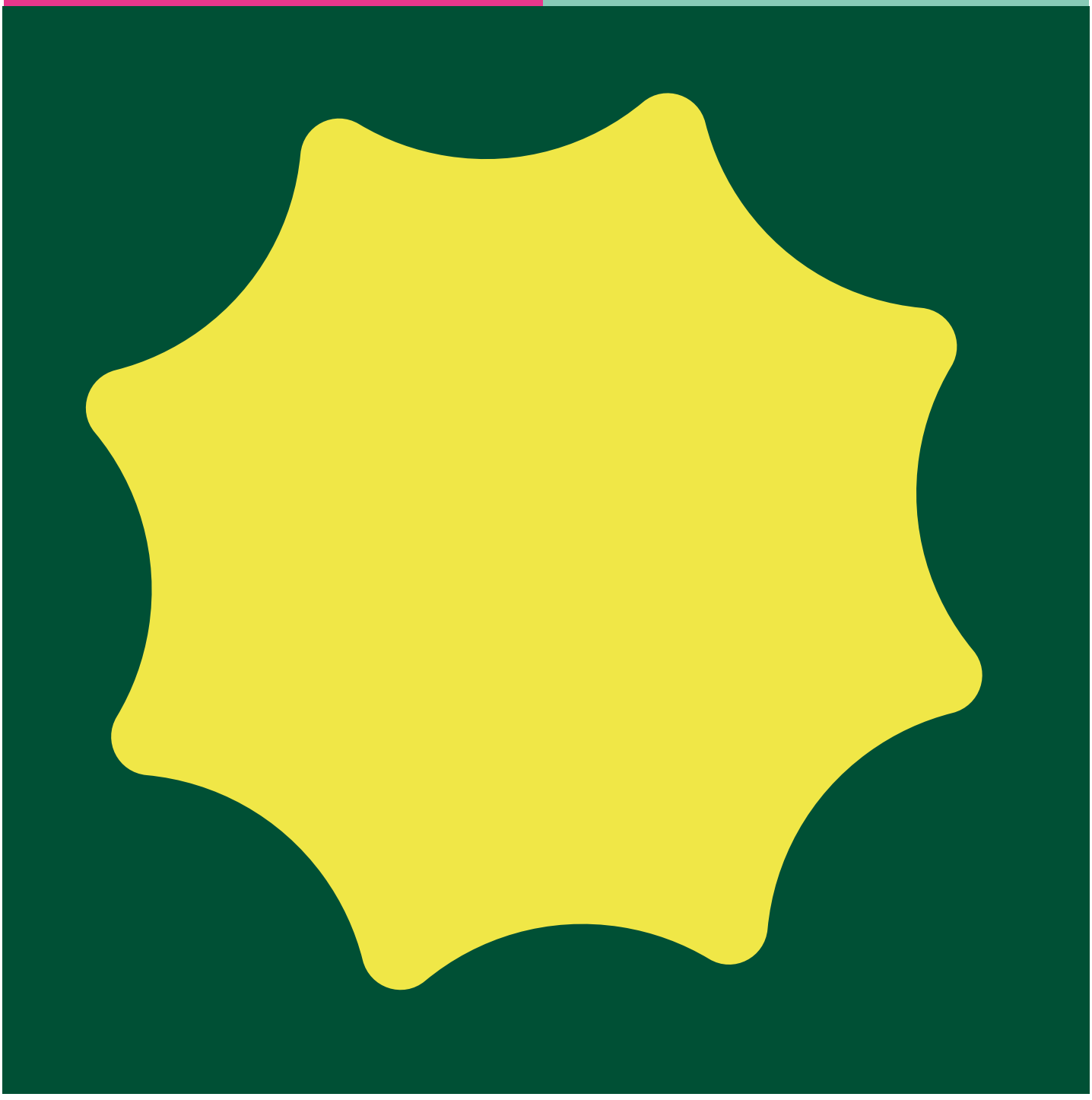
For climate justice

We are starting from a situation of unequal responsibilities, impact and ability to adapt to climate change, influenced by a variety of potentially cumulative inequality factors relating to age, gender and social class, among others. Climate justice demands that the countries, societal groups and stakeholders with the highest responsibility for the climate crisis work harder to combat it, without resorting to exporting emissions. In any case, it is essential that we collaborate and provide tools and resources to the countries – and the individuals within them – that are most seriously affected by climate change and have the fewest resources to adapt to it.

The climate crisis exacerbates inequalities, including at city level. Special focus must be placed on those people who, due to their socio-economic status or situation, or by reason of their health, sex or age, are more directly affected by the consequences of climate change. Addressing this emergency requires us to transform the urban economy towards a model that has a lower environmental impact, is based on a fairer distribution of burdens and leaves no one behind.

PLA CLIMA
Part 2

Goals: mitigation and adaptation



Our guiding principles of action

In its role as a roadmap for the city's climate policies, the Climate Plan is based on two concepts: **mitigation and adaptation**. Far from being mutually exclusive, **these concepts complement each other**. For example, the Local and Interior Spaces Programme includes 357 actions to increase the number of green spaces in Barcelona, with more greenery and shade throughout the city.

This is a good example of adaptation by a city that has already seen a rise in average temperatures by increasing its greenery and shaded areas. In addition, these measures for a hotter climate reduce the demand for energy, because increasing the amount of greenery and shade helps combat the heat island effect.

You cannot talk about climate in 2024 without talking about health. **Climate policies cannot be designed without taking the health factor – i.e. people's well-being – into account**. In addition, access to material and social resources influences exposure and adaptability to the effects of climate change, and there are inequalities in such access due to gender, class and origin, which affect health and exacerbate social differences. Therefore, by adapting and mitigating the effects of climate change, the city is also protecting and looking after the health of its citizens, particularly children and the elderly.

We are talking about reducing heat vulnerability by providing shaded areas, cool areas for relaxation or climate shelters, all of which protect and enhance the physical and mental health of the people of Barcelona.

The ecological transition must be based on a social approach. This government measure is also based on the guiding principle of ensuring that climate policies are fair and leave no one behind.

This transformation must involve the entire population in a cross-cutting, empowering and responsible manner, and always taking existing inequalities into account. Energy poverty must be eliminated, ensuring access to innovative and clean options such as electric mobility and renewable energy self-consumption in every home, including low-income households. We must focus on the most vulnerable neighbourhoods and emphasise the most democratic measures, such as those focusing on more urban greenery, as this benefits everyone. A balance between current needs and those of future generations must also be achieved, ensuring that the transition towards more sustainable forms of production and consumption does not lead to a poorer quality of life.

Finally, **this Climate Plan must reach all 10 districts and 73 neighbourhoods in the city**, i.e. all its residents, regardless of where they live and taking into account the differences between areas. This is because, if the city's districts and neighbourhoods are not the

same, their mitigation and adaptation policies should not be the same either. In mountain neighbourhoods, efforts must focus on preventing the growing risk of wildfires, whereas the priority in seaside neighbourhoods will be to protect the coastline from rising sea levels.

However, a few goals, such as reducing heat vulnerability, increasing greenery and its related social and environmental services, such as children's play areas, and ensuring there are adequate water resources, are common to all areas.

In short, **the Climate Plan is based on the guiding principles of mitigation and adaptation and on a set of climate policies that are closely linked to the protection of health and to social and geographic justice**.

The European mission to decarbonise cities

The “100 Climate Neutral and Smart Cities by 2030” mission was created by the European Commission as part of the Horizon research and innovation programme to support the European Green Deal strategy. Its aim is to assist cities in overcoming the structural, institutional and cultural barriers that hinder their progress towards climate neutrality. In this process, mission cities are also ideal settings for developing and trialling new ideas that can later be used to help other European cities with their own climate transition.

The call for applications to be one of the EU’s hundred mission cities, plus around twelve others from associated countries, opened in January 2022, and the decisions were issued in spring of the same year. Barcelona was one of the chosen cities.

To become mission cities, successful candidates had to formally create and develop their path to climate neutrality through the City Climate Contract (CCC) and submit it to the European Commission for assessment. **In the case of Barcelona, the CCC received internal approval in September 2023 and the European Commission’s final stamp of approval in March 2024**.

Having the EU Mission Label makes a city’s climate transition project more credible to public authorities and private companies both when trying to find project partners and when it comes to obtaining funding. In the field of innovation, there are opportunities in programmes such as Connecting Europe Facility, LIFE, Digital Europe, Innovative Actions under the European Urban Initiative, and the European Innovation Council’s Strategic Innovation Procurement Programme, among others.

The **NetZeroCities consortium**, coordinated by EIT Climate-KIC, brings together 34 European organisations, including city networks, research centres, companies and universities. It provides mission cities with a set of resources (website, tailored training, thematic guides, advisory services and subsidies) to generate, share and apply knowledge on every aspect of the climate transition.

One of its main resources is the Cities Mission Capital Hub, which is made up of various financial partners and provides mission cities with specific financial support lines to draw up investment plans, for technical assistance, to support projects and provide financial structuring, and for the provision of capital. Specific solutions are sought for each sector, combining projects in order to gain in scale and find partners willing to invest in the climate transition under favourable conditions for the city.

Figure 8. Map of the "100 cities" mission
Source: European Union image

Engaging in specific collaboration with Spain's other six mission cities is also important when it comes to making progress. To help with this, the citiES2030 platform provides specific support for training, advice and knowledge exchange based on the premise that its member cities face very similar challenges and obstacles. Their joint participation in URBANEW, a multi-stakeholder project with systemic and innovative urban regeneration solutions, can help drive a systemic transformation towards the decarbonisation of the building sector.

Finally, cities taking part in this mission have access to a platform for large cities that is able to influence and lobby the Spanish Government to ensure that legislation, particularly laws transposing European environmental and energy directives, is passed diligently and properly. It also seeks to ensure that the mission cities' commitment is adequately taken into account by the European funds available for the transition, such as the future Social Climate Fund.

Mitigation goals

Taking part in the “100 Climate Neutral and Smart Cities in 2030” mission **entails undertaking to eliminate net scope 1 and 2 GHG emissions compared to what they would be in a “business as usual” scenario** without climate policies. Scope 1 emissions are the emissions of sectors that are key to the functioning of the city: transport, buildings and the built environment, waste management and industry. Scope 2 emissions are basically those generated outside the city to produce the electricity that is ultimately consumed in the city, powering devices (transport and communications, household appliances, etc.), heating and air-conditioning buildings or generating light, among other uses.

Figure 9.
Emission reduction targets in Barcelona
Source: Barcelona City Council

The Spanish mission cities and a significant number of the European ones have based the quantitative foundation of their City Climate Contracts on a model built under a wide-ranging research project to provide cities with a common and transparent framework for the analysis of goals and outcomes.

Based on a trend scenario as its starting point, **Barcelona's climate commitment as set out in the City Climate Contract aims to bring about an 80% reduction in scope 1 and 2 emissions, bringing the figure down from 2.84 million tonnes of CO_2 equivalent to 708,000 tonnes**[1].

The reduction target for each sector is shown in the following table.

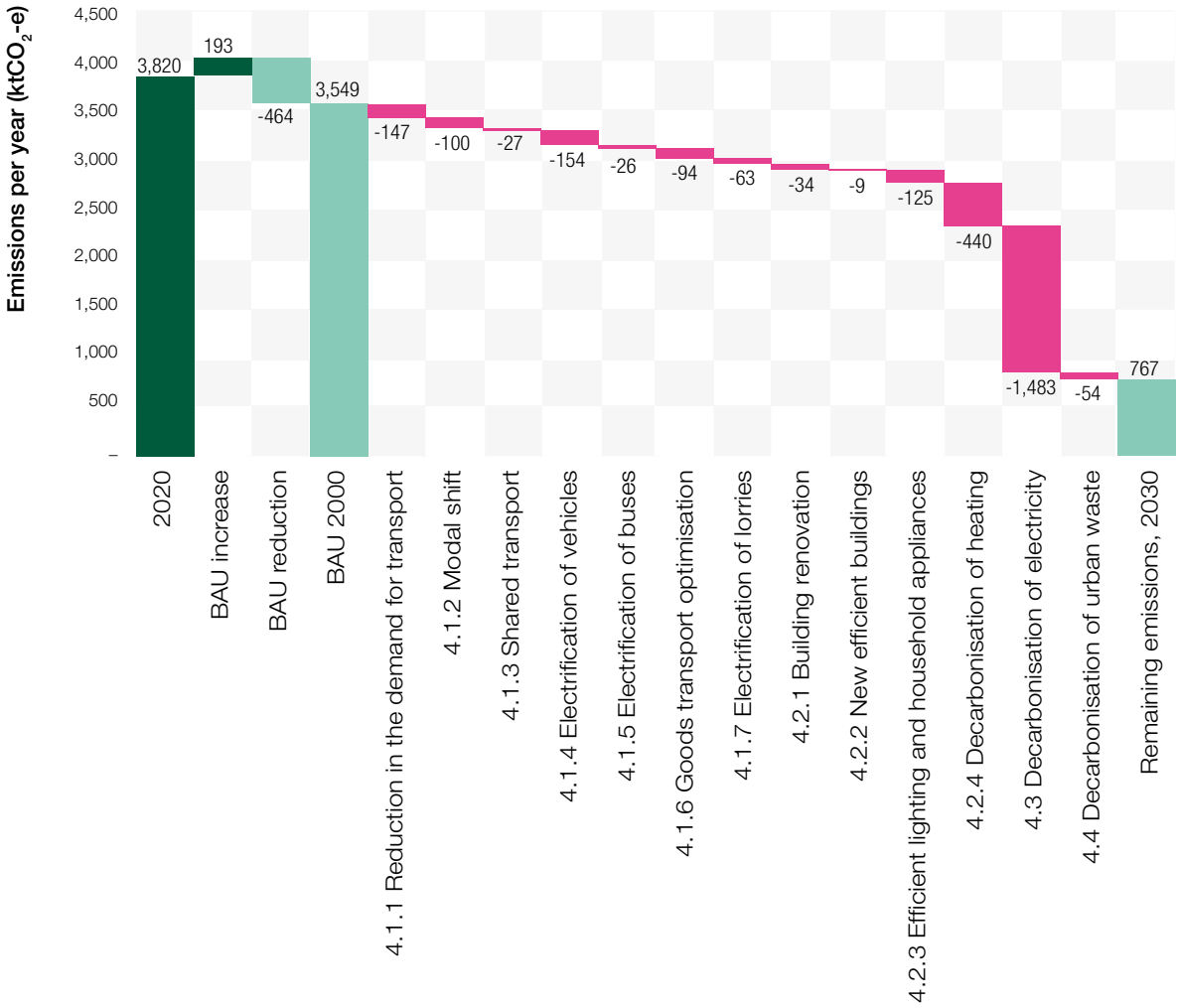
Table 2. Reduction targets under the City Climate Contract and the government measure compared to the "business as usual" (BAU) scenario and residual emissions to be offset by sector
Source: Original

Sectors	2030 BAU scenario	Reduction target		Residual emissions to be offset	
	Thousands of MT	Thousands of MT	% of BAU 2030	Thousands of MT	% of BAU 2030
Transport	762	612	80%	150	20%
Buildings and heating	799	628	79%	170	21%
Electricity	1.648	1.483	90%	165	10%
Waste management	266	58	22%	208	78%
Other (industry)	73	59	80%	15	20%
Total	**3,549**	**2,840**	**80%**	**708**	**20%**

[1] For the purposes of the mission, emissions from industries that are subject to the emission trading scheme, as well as supra-municipal infrastructures (specifically the Port of Barcelona and Josep Tarradellas Barcelona-El Prat International Airport), have been excluded from the calculation. However, within the framework of the mission, the commitment to foster the electrification of these sectors and reduce their emissions still stands.

Below is a graphic representation of this target showing the significance of decarbonisation in each sector. The decarbonisation of electricity is particularly interesting in this regard. The model assumes an **increasingly electrified economy** (vehicles, heating, etc.) and, if sufficient electricity can be generated without GHG emissions, there is a quick and viable route to climate neutrality.

Graph 6.
Potential emissions in Barcelona by 2030, broken down by sector.
Source: Barcelona Regional, based on Economic Case Barcelona (ACCB)



This **will be supplemented by a residual emission offsetting strategy involving**, on the one hand, increasing the city's green infrastructure (Nature Plan 2030) and, on the other, significantly reducing scope 3 emissions linked to construction and consumer products. The 2030 Healthy and Sustainable Food Strategy, the Zero Waste Plan and the municipal protocols for the construction and renovation of buildings all work in accordance with this.

Estimation of costs and benefits

The model used to calculate the decarbonisation pathway can also be used to estimate the costs involved in its achievement, calculated based on the sum of the additional investments (in vehicles, insulation, solar panels, LED lights and so on) that will be needed to operate with zero or very low emissions.

In terms of benefits, the model includes both direct savings (in energy, equipment maintenance, etc.) and what is known as *co-benefits*, which stem from the improvements linked to low-carbon technologies and social practices in relation, among other matters, to air quality, road safety, comfort and noise reduction.

According to the model, the total cost of the additional investments needed to carry out the mitigation actions for 2020-2030 will be €6.963 billion. The model also estimates the investments that would have to be made by various sectors and groups: households, companies and public administrations. Of the nearly €7 billion of additional investment until 2030:

- almost half will be from households,
- 25% from companies,
- 20% from transport and energy companies, and
- only 5% from the City Council itself, mainly to electrify its vehicles, reduce fossil energy consumption in its buildings and install renewable energy systems.

From a financial point of view, for 2020-2050 it is estimated that the investment (€5.853 billion, net present value in 2050) will result in **€7.728 billion in operational cost savings, plus 2.371 billion in co-benefits, mainly due to improved public health, leading to an aggregate financial benefit of over €4.247 billion by 2050**.

Adaptation and climate justice goals

Barcelona is facing growing climate risks, such as heat waves, droughts, flooding and rising sea levels. Efforts to adapt to climate change must make it possible to identify these vulnerabilities and design strategies to mitigate their impacts, particularly on the people and communities most directly affected by its effects.

Climate justice must ensure that climate solutions do not exacerbate current inequalities and everyone has fair access to resources and benefits.

Tackling the issue of climate justice and adaptation is thus crucial when it comes to safeguarding the population, fostering social and economic equity and building a city that is more resilient and sustainable in the face of the challenges posed by climate change.

We therefore propose the following climate justice and adaptation goals for 2030, as already set out in the sectoral plans:

Goals

Reducing heat vulnerability

- Expand the climate shelter network to ensure that all residents are within a five-minute walk of a shelter.
- Improve the thermal comfort of 170 schools and six municipal care homes for the elderly and/or people with disabilities.
- Provide shade for at least 9 hectares using either seasonal shading or fixed productive structures.
- Provide a water play area in every district.

Reducing the risk of flooding due to poor drainage

- Install 7 hectares of sustainable urban drainage systems (SUDS).

Guaranteeing adequate water resources

- Bring domestic drinking water consumption down to no more than 90 litres per person per day.
- Increase the use of underground water by 2.7 hm3.
- Replace 100,000 m3/ year of drinking water with alternative water resources for municipal uses.

Increasing greenery-related social and environmental services

- Expand the surface area covered by greenery by 160 hectares (compared to 2015) and provide an additional 1 m^2 of greenery per person.
- Create ten biodiversity shelters.
- Increase the naturalised surface area by 100 hectares.
- Increase tree cover by 5% (2037).
- Increase adapted tree species from 30% to 40%.
- Depave 3 hectares and reclaim organic soil.

Protecting the coastline

- Maintain a minimum beach width of 25 metres to ensure the most effective coastal protection and services.

Climate culture

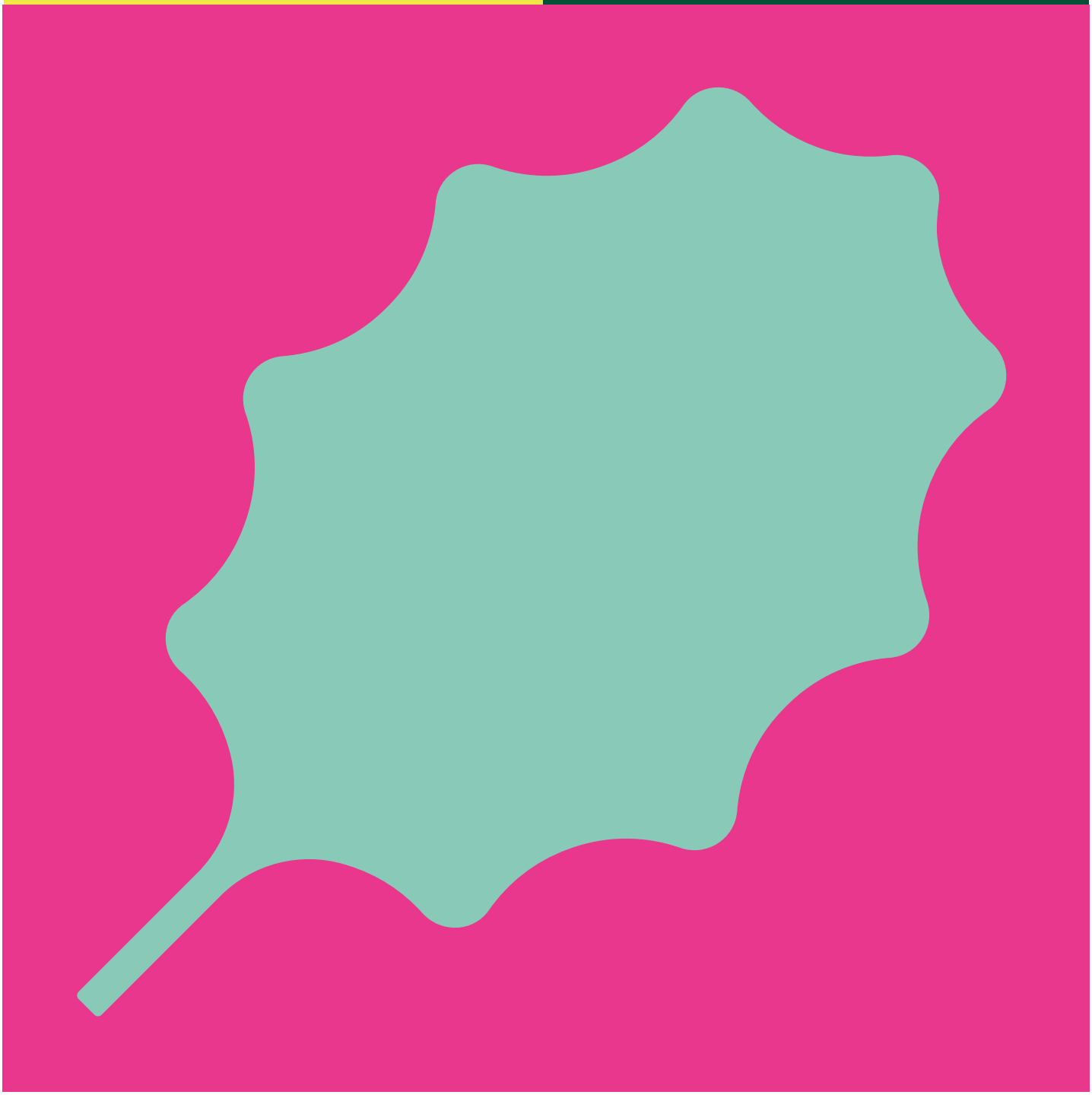
- Ensure that 75% of city residents embrace new values and take up new habits to tackle the climate emergency.

Climate justice

- Reduce to 0 the number of people in a situation of energy poverty.

PLA CLIMA
Part 3

How will we do it?



New measures to meet mitigation and adaptation goals and accelerate climate action have been identified, giving priority to the most effective actions in the sectoral plans and defining the levers of change needed to overcome the hurdles entailed in the huge and complex challenge of climate change. All these actions have been sorted into programme packages for easier governance.

Lines of action to decarbonise Barcelona

Achieving the decarbonisation goals set will require a true systemic change capable of combining disruptive innovation in each sector with a significant structural reduction in energy demand and consumption. **The goal of reducing emissions focuses on four key sectors identified as key to the city's functioning and decarbonisation: energy, mobility, renovation of buildings, and waste. A specific line of action on how to reduce emissions within the City Council itself is also included**.

Structural change to the generation and consumption of energy

Decarbonisation requires a structural change in energy consumption and production, which can provide an opportunity to lower costs in the medium term, save on current expenditure and improve economic competitiveness. This entails replacing fossil fuels with renewable energy in the electricity mix and electrifying all economic activities as much as possible. A compact and densely populated city such as Barcelona would struggle to produce enough energy to meet all its needs, but it must make a firm commitment to maximising local energy production through renewable resources while minimising its energy consumption. However, Barcelona has a few factors in its favour:

- The ability to boost the installation of renewable energy systems in the city (mainly for the production of solar energy) and continue to speed up their implementation in municipal facilities and public spaces.
- The ability to form metropolitan and broader partnerships to speed up the implementation of renewable energies all over Catalonia.
- Although local government does not have the necessary authority in major areas of energy regulation, such as the planning, execution and operation of infrastructures, it can influence key areas of energy management.

The recent introduction of a **new government measure to increase fivefold the electric power generated by photovoltaic solar panels in municipal buildings by 2030 is worth noting**.

Low-emission mobility model

Mobility is the main sector in which the City Council and the metropolitan authorities can directly influence decarbonisation. Broadly speaking, the approach is quite straightforward. **People must be encouraged to use public transport and travel by bicycle and on foot to replace a significant portion of journeys currently made by private transport**.

The decarbonisation of mobility provides a chance to significantly improve quality of life in the city. **Reducing emissions is linked to the 15-minute city model** in which reaching services requires less travel, giving people more time to live their lives. Furthermore, reducing private transport and electrifying vehicles will lead to **noticeably better air quality, less noise pollution and far fewer road accidents**. In short, **the decarbonisation of mobility in Barcelona will clearly improve health conditions for residents**. However, the following opportunities must be considered in order to achieve it:

- **Improving transport links in the metropolitan area** to reduce the carbon footprint of this type of travel.
- **New centres in a compact city.** Barcelona has long been working on adapting public spaces and mobility to help people travel safely within the city for their daily activities while providing healthy and sustainable means of transport. The quality of ecomobility services and infrastructure is crucial in this regard. However, reducing people's daily travel requirements also entails creating new city centres and an even stronger commitment to the local provision of municipal services.
- **Electrifying mobility.** One of the measures to be put in place in addition to decreasing private vehicle use to reduce the carbon footprint is electric vehicles. However, the widespread electrification of mobility requires, on the one hand, that we lead by example (as the City Council is already doing with its BCASA and waste collection vehicles), support innovation, introduce incentives (to encourage the purchase of electric vehicles) and put the necessary charging infrastructure in place.
- **Improving freight logistics and last-mile distribution.**

Renovated and efficient building stock

The goal of decarbonising the city requires a general effort in relation to construction and the entire life cycle of buildings. However, it also brings significant co-benefits. In this area, decarbonisation focuses on:

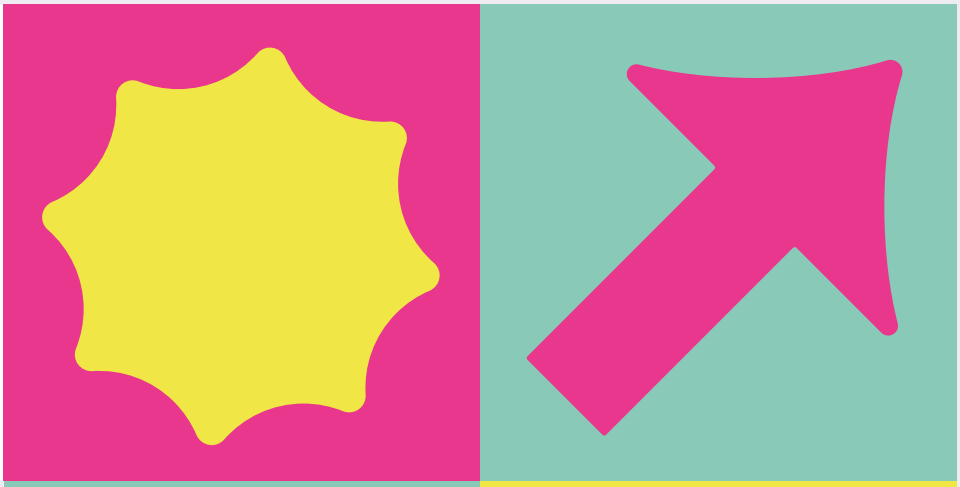
- Improving the thermal comfort of homes and making them healthier to live in, as well as improving overall air quality.
- Reducing energy consumption (by improving the envelope and efficiency of buildings), which also leads to financial savings, with the City Council prioritising climate justice and the fight against energy poverty.
- Creating skilled jobs in relation to home renovation and the installation of new facilities.

A dense, compact and fully developed city such as Barcelona cannot be decarbonised without renovating its building stock. We must ensure that new buildings are energy-efficient and have near-zero consumption, while renovating existing buildings, most of which have very low energy ratings. This involves finding new low-carbon, circular and local construction solutions, as well as improving renovation processes and getting the various stakeholders involved.

At the same time, decarbonisation also entails replacing all heating and air conditioning systems running on gas with new-generation models that run on electricity from renewable sources, as well as replacing all lighting and household appliances with more efficient models.

DESCARBONITZAR BARCELONA

CO_2



Structural change to the generation and consumption of energy

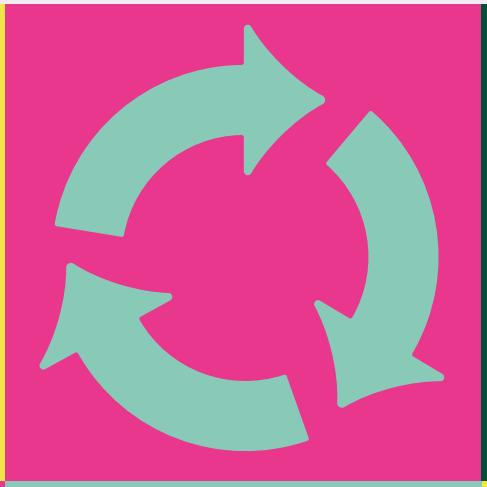
- → Accelerating the generation of photovoltaic energy in the city
- → Increasing the City Council's relative weight in the sector
- → Increasing financial support and incentives.
- → Improving support and reducing administrative hurdles.
- → Supporting the creation of energy communities.
- → Modernising Barcelona's industrial estates for climate purposes.

Low-emission mobility model

- → New urban and metropolitan centres.
- → Increasing public transport quality and capacity
- → Increasing the number of traffic-calmed streets and cycle lanes.
- → Redesigning large urban corridors.
- → Putting low-emission zones in place.
- → Pro-electric vehicle regulations
- → Accelerating the electrification of vehicle fleets.
- → Pro-electric lorry regulations.
- → E-commerce regulation and taxation.
- → Putting in place a network of logistics collection points

Renovated and efficient building stock

- → Energy renovation of buildings with a low energy rating.
- → New energy-efficient buildings.
- → Changing to efficient lighting systems and domestic appliances.
- → Decarbonisation of heating and air conditioning and domestic hot water (DHW) systems.
- → Accelerating the renovation and heating and air conditioning of municipal facilities.



Zero waste, zero emissions

- → Raising awareness of the impact of people's consumption choices.
- → Understanding the impact of a product or service over its life cycle.
- → Selective waste collection and generation of consensus.

Carbon-neutral municipal action

- → Electrifying vehicle fleets.
- → Electrifying heating and air conditioning and machinery.
- → Increasing the number of green roofs.
- → Reducing scope 3 emissions.
- → Restricting institutional collaboration with particularly fossil fuel-tied sectors.

Zero waste, zero emissions

There is a close link between urban waste management and treatment and the way products are treated during their useful lifespan. This requires an understanding of GHG emission guidelines at the various stages of the value chain and a recognition of the profound sectoral and geographic connections arising from our economic model. All this leads us to accept that the economy is intrinsically linked to nature and that ignoring or harming it in any way goes against the system itself.

Our consumption habits have a direct impact on climate change. Despite their indirect nature, these emissions have a significant effect on total emissions. Raising awareness of the impact of our consumption choices is key to reducing emissions. This includes, among other items, goods (such as materials, products, food and capital assets), services (such as waste treatment, water consumption, cleaning and consulting) and transport (such as distribution services and non-regular transport of customers and visitors and business travel).

As a result of all this, preventive action (reducing waste generation) and action to increase selective waste collection (such as putting in place customised systems that take potential gender impacts into account) and improve waste treatment are needed.

Carbon-neutral municipal action

The City Council will use the tools available to it to advance the decarbonisation of the city. At the same time, **it will speed up the decarbonisation of municipal activities to lead by example and drive the process**.

To do this, it will develop the **Carbon-Neutral City Council Programme (PANC)**, which it will use to coordinate, implement and advance the City Council's strategy towards climate neutrality by 2030. The programme encompasses all related projects that help achieve this goal. In order to accomplish this, it sets specific targets for the reduction of energy consumption and increase in energy self-sufficiency, to be achieved by lowering demand, renovating buildings, managing teams efficiently, streamlining travel, increasing the generation of renewable energy and even reducing the amount of office space and encouraging remote work.

Lines of action to adapt Barcelona

Barcelona city is already clearly suffering from the consequences of climate change. These effects, which are the result of rising temperatures, reduced rainfall and more droughts and flooding, will get worse over the coming years. The extent to which this is the case will depend on the world's greenhouse gas mitigation measures over the next few years.

Climate change has many consequences. Not only does it entail changes in climate associated with ecosystem and biodiversity losses, productivity supply chain losses and financial losses, it can also compromise people's health and well-being. Furthermore, these effects differ based on various inequality factors, such as age, gender, socio-economic status or geographic location.

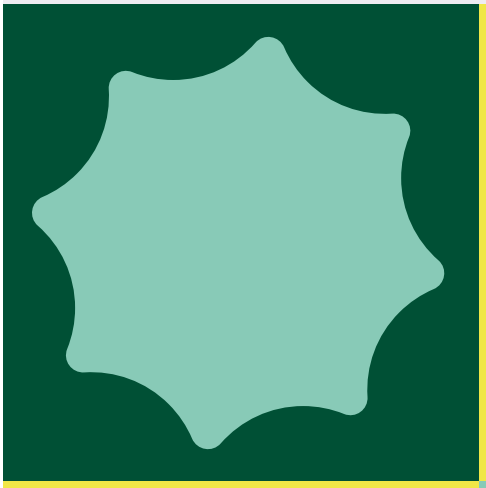
The main mitigation and adaptation tasks complement each other and pursue the same fundamental goals focused on paving the way for better living conditions.

This government measure highlights some of the areas in which the City Council would like to improve its capabilities. These are specifically **reducing heat vulnerability, preparing for the growing risk of wildfires, ensuring there are adequate water resources, reducing the risk of flooding due to poor drainage, preparing the coastline for rising sea levels, and increasing greenery-related social and environmental services**.

The City Council is also working on improving its own understanding and ability to predict these impacts in order to provide the best possible solutions. To do this, i**t will carry out a foresight study to define various risk scenarios (in relation to heat, flooding potential, droughts, fires, etc.)** for both individual people and neighbourhoods on the one hand and in relation to large infrastructures on the other, and suggest solutions.

The primary focus of these actions will always be people's health and well-being. However, in view of the ever-faster changes taking place and the growing body of evidence, it is becoming increasingly clear that, from an economic point of view, we must also invest in adaptation. It is far better to devote resources to preparing than to react when it is too late. This presents another compelling reason to anticipate the changes that are taking place, understand how they will affect people (unequally) and carry out the necessary public policies to address them.

ADAPTAR BARCELONA



Reducing heat vulnerability

→ Expanding the network of climate shelters.

→ Adapting schools and care homes to the heat.

→ Acting on the city's paving and rooftops to make the soil more permeable and reflective.

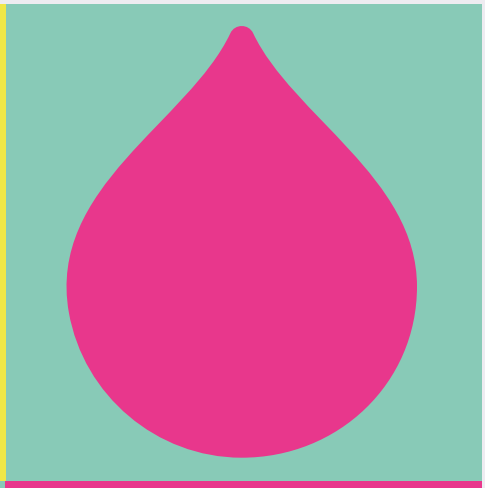
→ Creating a network of monitoring stations in the city's various neighbourhoods.

Prevention measures against the growing risk of wildfires

→ Model framework for coordination and operational action in the event of a wildfire.

→ Providing the necessary infrastructure to reduce the number of fires.

→ Compartmentalise the area to prevent large wildfires.



Guaranteeing adequate water resources

→ Guaranteed access to drinking water for those who are most vulnerable to drought-related restrictions.

→ Map of potentially vulnerable homes in Barcelona.

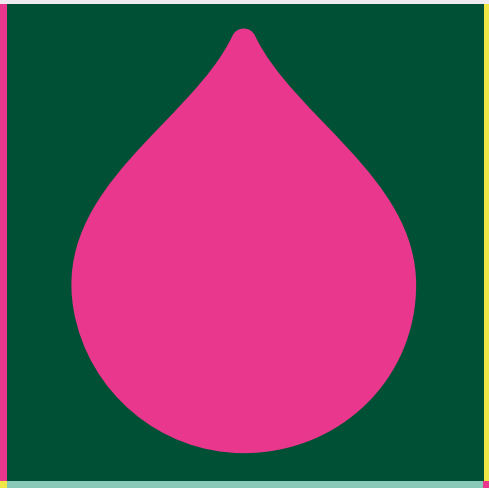
→ Financial support.

→ Improving the water catchment and purification system and infrastructure.

→ Repurposing alternative resources for compatible uses.

Reducing the risk of flooding due to poor drainage

- → Adapting the city's sewers to make the soil more permeable.
- → Increasing current efforts to reduce the risk of flooding.
- → Permeabilising large green spaces and open spaces in the city.
- → Upgrading tarmac to permeable paving in some places.
- → Installing aligned tree pits.
- → Minimising the bad odours resulting from hotter weather.



Protecting the coastline against rising sea levels

- → Reinforcing the wall on Passeig de la Nova Mar Bella and Passeig del Llevant.
- → Adding sand to some of the city's beaches (by the Spanish Ministry).
- → Carrying out a study on the protection of Barcelona's beaches.

Increasing greenery-related social and environmental services

- → Increasing the coverage of green areas for those parts of the city that suffer from shortfalls in social and environmental services.
- → Installing fixed photovoltaic pergolas for thermal comfort.
- → Increasing the number of children's play areas with seasonal awnings.
- → Making the city's green cover compatible with the water restrictions in place.

Reducing heat vulnerability

Sustained extreme heat has a direct impact on people's health and is responsible for higher mortality and morbidity rates, particularly among the most vulnerable populations, such as the elderly (and, within this group, particularly women, who are less able to regulate their body temperature due to both ageing and fewer social and financial resources to protect themselves), infants, people suffering from chronic illnesses and those living in poorer social conditions. The increase in heat also affects the quality and use of public spaces in the city and leads to a higher demand for domestic air conditioning to achieve adequate living conditions.

It is also worth noting that the urban aspects of our city make it more vulnerable to heat. **The large amount of tarmac and the many buildings, made with materials that absorb the high temperatures during the day and release heat into the air at night, as well as the city's own atmospheric conditions, help exacerbate an existing problem in urban areas due to the higher temperatures resulting from climate change.**

To address all this, **the government measure includes a number of actions to improve thermal comfort in public spaces, facilities and buildings, with a particular focus on protecting the most vulnerable people in society**.

Prevention measures against the growing risk of wildfires

Rising temperatures and reduced precipitation due to climate change lead to **higher water stress and more combustible vegetation. This results in a moderate increase in the risk of fires in Barcelona**, with the highest risk (both now and in the future) on the Collserola side of the city, specifically the neighbourhoods of Vallvidrera, El Tibidabo i les Planes , Horta, Canyelles and Torre Baró.

Thanks to significant firefighting and fire prevention efforts, these fires now usually lead to less burnt surface area than before. However, the higher temperatures and water stress mentioned above appear to lead to a higher likelihood of fire in the future. In view of this, in addition to assessing the potential risks and cascade effects on critical infrastructure, preventive action must be taken.

Guaranteeing adequate water resources

Drinking water in Barcelona and its area of influence is supplied through a high-level regional network that uses mainly surface water resources regulated by the Ter-Llobregat system. **Climate change will affect the availability of drinking water in the metropolitan area, and therefore in Barcelona**. In addition, droughts are a recurring issue here. A number of towns and cities in Catalonia, including Barcelona, have suffered water supply problems due to droughts over time, making usage restrictions and supply cuts necessary to ensure the availability of drinking water.

According to the study "The Effects of Climate Change on the Water Cycle in the Metropolitan Area of Barcelona," drawn up in 2015 by the Metropolitan Observatory of Climate Change (METROBS), this is the outlook for the water cycle in the Barcelona Metropolitan Area for 2050:

- A 4% increase in demand for drinking water (due to a slight increase in the population and industrial activity).
- A 12% reduction in surface resources in the Ter and Llobregat basins.
- A 9% reduction in groundwater resources in the Llobregat basin, the Besòs and local aquifers.

This government measure sets out a number of actions to guarantee the supply of water by reducing consumption of drinking water, tailoring the quality of water resources to their intended use and increasing the availability of alternative water sources.

Reducing the risk of flooding due to poor drainage

Climate change is leading to more frequent and more severe extreme weather events. Both more frequent droughts (and less average annual rainfall) and more intense episodes of rain are expected as a result. In particular, the RESCCUE (RESilience to cope with Climate Change in Urban ArEas) project predicts a 17% increase in rain intensity for a ten-year recurrence interval, with up to 197 mm/h. The flood risks under Barcelona's current rainfall pattern, without taking the climate change scenarios into account, indicate that drainage system saturation would expose 24% of the city to a high risk for pedestrians and road traffic. If you add climate change scenarios into the mix, this increases by 4% to 28%.

It is therefore crucial to improve the city's drainage capacity using either nature-based solutions (such as sustainable urban drainage systems) or grey solutions (such as upgrading the sewer network or improving the capacity of rainwater collection tanks). Improving the city's drainage and wastewater treatment has the added benefit of discharging less polluted water into the sea.

Protecting the coastline against storm surges and rising sea levels

Climate projections suggest a rise in average sea levels, although with significant regional variation.

The increase in coastal flooding is due to a combination of global and local factors. Global factors include the rise in average sea levels, and local ones encompass ad hoc increases caused by astronomical and meteorological tides and swells. Factors in this second category vary between beaches, as they depend on their orientation, sand grain size and other characteristics.

These changes will undoubtedly affect the layout of the city's beaches and coastline. This will happen through two mechanisms: firstly, directly through flooding, which is directly linked to rising sea levels; and secondly, through changes in wave patterns and the higher sea levels themselves, which can change beach morphology and affect erosion and accretion processes, orientation and coastal infrastructure (such as sanitation, protection or port infrastructure). The coastline and infrastructure will also be affected.

Given how important beaches are to Barcelona's economy and even its identity, this area will be given high priority in the foresight study to be carried out to estimate the effects of various climate scenarios.

Increasing greenery-related social and environmental services

Urban green areas improve air quality, regulate temperature and water flows, reduce noise, conserve and enhance biodiversity, add value to the urban landscape and help give people a more pleasant and accessible view of nature. All these factors have a direct impact on citizens' health and well-being. For this reason, **the functions and benefits of urban greenery make it one of the main strategies for adapting cities to climate change**.

In the last few years, the city has continued to focus on creating new urban green spaces (especially new parks and internal courtyards) and **improving the city's existing parks to provide more and higher-quality urban greenery**. Greenery can also be found in many other places (such as streets, rooftop terraces, allotments and plots of land), and a whole host of policies, such as plans, government measures and other initiatives (e.g. the Greenery and Biodiversity Charter, the Strategy for Urban Agriculture, Living Roof Terraces and Green Roofs, the Master Plan for Barcelona's Trees and the "Mans al verd" programme) have been promoted. Together, they demonstrate the consistency of municipal policy in its aim to increase, improve and preserve greenery and the services it provides.

Together with the loss of habitats, overexploitation, pollution and invasive non-native species, climate change is considered one of the five main drivers of the **biodiversity loss in the world**. One of the Nature Plan's goals is to conserve and promote biodiversity, protecting species and improving their habitats and connectivity.

Through its Nature Plan 2030, Barcelona City Council is also reinforcing its commitment to improving the city's green infrastructure as a way to adapt to climate change.

The necessary levers of change

Fighting climate change has always been a very complex challenge, as many interrelated factors and stakeholders with different needs come into play and a holistic and systemic approach is needed. All this stands in the way of finding the best solutions and, more importantly, of prioritising them.

Efforts to carry out **climate measures in cities can be hindered by cultural, social, political, economic and organisational barriers**. In particular:

- **Inadequate financial resources.** We must think outside the box to find new ideas in relation to green taxation, financial support, business models and fostering fair green employment.
- **Unequal vulnerability to climate change and unequal responsibility for its occurrence.** We must ensure that climate policies reverse these inequalities and that solutions are more equitable and focus on people's health and well-being.
- **Poor technical expertise and a shortage of innovative solutions.** Partnerships with universities, research centres and other stakeholders must be established to find solutions based on both social and technological scientific knowledge.
- **Disaffection and inadequate information among the public.** We must engage with people from a different "place", with a transformative and motivating narrative. In order for these policies to be fair and effective, we must regain people's trust in public policies and in the need for citizen cooperation. It is becoming increasingly important to spread a culture of sustainability through accurate information, training and education, awareness-raising, participation and better communication.
- **Lack of coordinated action.** Involving all stakeholders in this collective effort requires effective coordination and good governance, ensuring that public policies are as consistent as possible so that all stakeholders work together towards the common goal of fighting climate change.

In order to overcome all these obstacles standing in the way of beating climate change, we must significantly change our approach. **To do this, our actions must be based on the following cross-cutting levers of change**.

SHIFT LEVERS

OBSTACLES		
	Inadequate financial resources	Inequality in vulnerability and responsibility in the face of climate change
Poor technical expertise and a shortage of innovative solutions	Disaffection and inadequate information among the public	Lack of coordinated action

Climate policies must prioritise people's health and well-being

Climate change is unequal, both in its causes and in its consequences. These inequalities can be measured in many ways and overlap with pre-existing social inequalities. Health-related and economic vulnerabilities both reinforce each other and are exacerbated by various inequality factors (such as gender, age or origin).

This is no longer about incorporating social justice criteria into climate policies: it is about creating climate policies that help achieve social justice and combat inequality.

According to the WHO, **climate change is the biggest threat to global health in the 21st century**. Health is – and will continue to be – affected by climate changes in the form of direct impacts resulting from exposure to extreme weather events, such as extreme temperatures, drought, severe storms and rising sea levels. The social and environmental consequences of climate change (such as vectors, the availability and quality of food and water, air quality, living and working conditions, and migrations) are responsible for countless indirect effects on health, including malnutrition (in the form of undernourishment), more communicable and non-communicable diseases, worse mental health and quality of life, and a higher premature mortality rate. Furthermore, health systems are affected by climate change too, in their case by consequences such as extreme weather events and disruption to the energy supply chain (e.g. during peak demand periods in the summer).

As people's health is inextricably linked to that of other species, the environment and the conservation of the natural heritage, we will strive to include planetary health in municipal policies.

The climate transition as an opportunity for transformation and economic improvement

Faced with the climate change scenario and the global commitments made, **continuing to support energy-intensive and high-emission sectors and energy sources that we know should be reduced would be a misguided investment strategy**. Instead, we must prioritise investing in sectors of the future, which are at least as productive, such as sustainable mobility, electrification, renewable energy or climate change adaptation, all of which not only improve our well-being both now and in the future but also make us more competitive from an economic point of view. Economic progress and sustainability are not mutually exclusive: **a sustainable economy is the best guarantee of progress**. In other words, the most competitive economy will be the one that makes the greatest progress in the energy transition and the goal of climate neutrality.

Climate policies certainly present **an opportunity for Barcelona's economy**. This is firstly because, as discussed above, the shift towards less carbon-intensive systems leads to **immediate savings in current expenditure** for households, companies and public authorities (such as fuel for vehicles or heating systems) and co-benefits (such as cleaner air or less noise), which have a very positive impact on quality of life and people's physical and mental health. In addition to significantly lower healthcare requirements (such as less cardiovascular and respiratory disease and fewer cancer diagnoses), this is also a key factor in a society's **economic productivity**.

And secondly because renewable energy and the electrification of the economy make **Barcelona's economy more competitive and resilient**, especially from a metropolitan perspective. This is a **historic opportunity to become energy self-sufficient**, which would lead to a substantial and structural cost reduction for companies, particularly those operating in industry. To achieve this, we must make good use of all innovations in the energy sector – in the areas of energy generation, management and storage – and improve and modernise the electricity grid.

More generally, the innovation work required of every sector to achieve the climate transition can lead to a **diversified economy and trigger the modernisation of its key sectors** in a way that makes it possible to retain and even increase the amount of industrial production, so coveted for its ability to drive the general economy and **provide quality, stable and well-paid jobs**. Renewable energies, the energy renovation of buildings, the decarbonisation of industry and mobility, supply chains, digitalisation and the circular management of materials are a few of the sectors that are expected to bring exponential growth in the next few years. The city's commitment to decarbonisation provides a **clear and reliable framework for productive investments with guaranteed medium- and long-term returns**.

To take advantage of this wave of economic opportunities resulting from the energy and climate transitions, we must focus on **skills acquisition and retraining and encouraging entrepreneurship** in all these sectors, introducing new practices and technologies. Barcelona and its surrounding area have a sound business, professional and administrative foundation which, with support from the research and innovation ecosystem, can position the city as a leader in the new green economy.

Finally, it should be noted that, although this change will bring with it many opportunities, **some sectors, particularly those that are most reliant on the carbon economy, will lose significance in the transition, with the resulting loss of jobs**. This must be taken into account, and suitable measures in terms of transition, compensation and professional retraining will have to be put in place.

Spreading knowledge and driving transformative urban innovation

Barcelona boasts a powerful innovation ecosystem that has proven its ability to deliver quality, innovative, efficient, financially viable, easy-to-replicate and scalable solutions to the city.

The City Council must stand firm in its commitment to **strengthening ties with the knowledge and innovation ecosystems**. Its main tool when it comes to boosting urban innovation is the BIT Habitat Foundation, which it will continue to use as a lever of change. A prime example of this experiment-based approach is the **urban challenges** programme, which seeks to foster the creation of solutions to issues identified by municipal areas for which there is currently no answer in the market. Under the programme, the best proposals can receive co-funding for testing in real-life environments to establish their effectiveness and the extent to which they generate value for the public, with a view to subsequently scaling them up. At the same time, the programme of **subsidies for urban innovation projects** co-funds actions carried out in the innovation ecosystem to address some of the city's major challenges, such as decarbonisation and climate adaptation.

Other examples of **innovation tools** include public-private innovation laboratories, such as the Barcelona Innova LAB Mobility, which encourages the creation of solutions to real needs identified at city level and encourages private sector players to get actively involved.

There are also plans to establish an urban sandbox to help test innovative climate solutions in a controlled testing environment, supporting the city's role as a natural testing ground. Furthermore, the implementation of the city digital twin project will enable the massive aggregation of data in order to carry out analyses, simulations and forecasts and plan actions to achieve climate goals.

The Barcelona Citizen Science Office's initiatives, particularly the projects that act as driving forces, such as the study of the uneven impact of the heat island effect, can also be an asset for the European mission.

In summary, data and scientific knowledge will have to be used to create high-quality climate policies, starting with knowledge of what is already available, through the **Barcelona Dades** and **BCN.ROC** websites; and the lines of **research** and **applied studies** that may be considered necessary will have to be promoted.

Improving education, culture and participation as key ways to get the public involved

Change is more transformative and long-lasting if it is co-created with the involvement and support of a broad majority. Skills acquisition and empowerment and encouraging active involvement are thus essential to address the challenges arising from the climate emergency.

Individual citizens must be called to action on a daily basis, because everyday choices have significant economic, social and environmental consequences. Consumption drives the market, and consumers are at the end of the production chain.

However, we must not forget that, at this moment, collective responses are at least as necessary, if not more. If we cannot agree with each other, if we do not listen to everyone's point of view and take it into account, if we are scared of engaging with local communities and pushing for solutions that benefit everyone, we are unlikely to succeed in reducing the current rate of emissions. In summary, **we need to build a new sustainability culture and pave the way so that every person and every organisation can help fight the climate emergency from their own area of action**.

Strengthening the governance model needed to embrace the other levers of change

Tackling the climate emergency requires everyone in society to get involved. It affects all sectors of the economy and requires action from all public authorities. It therefore requires a global approach and cross-departmental coordination.

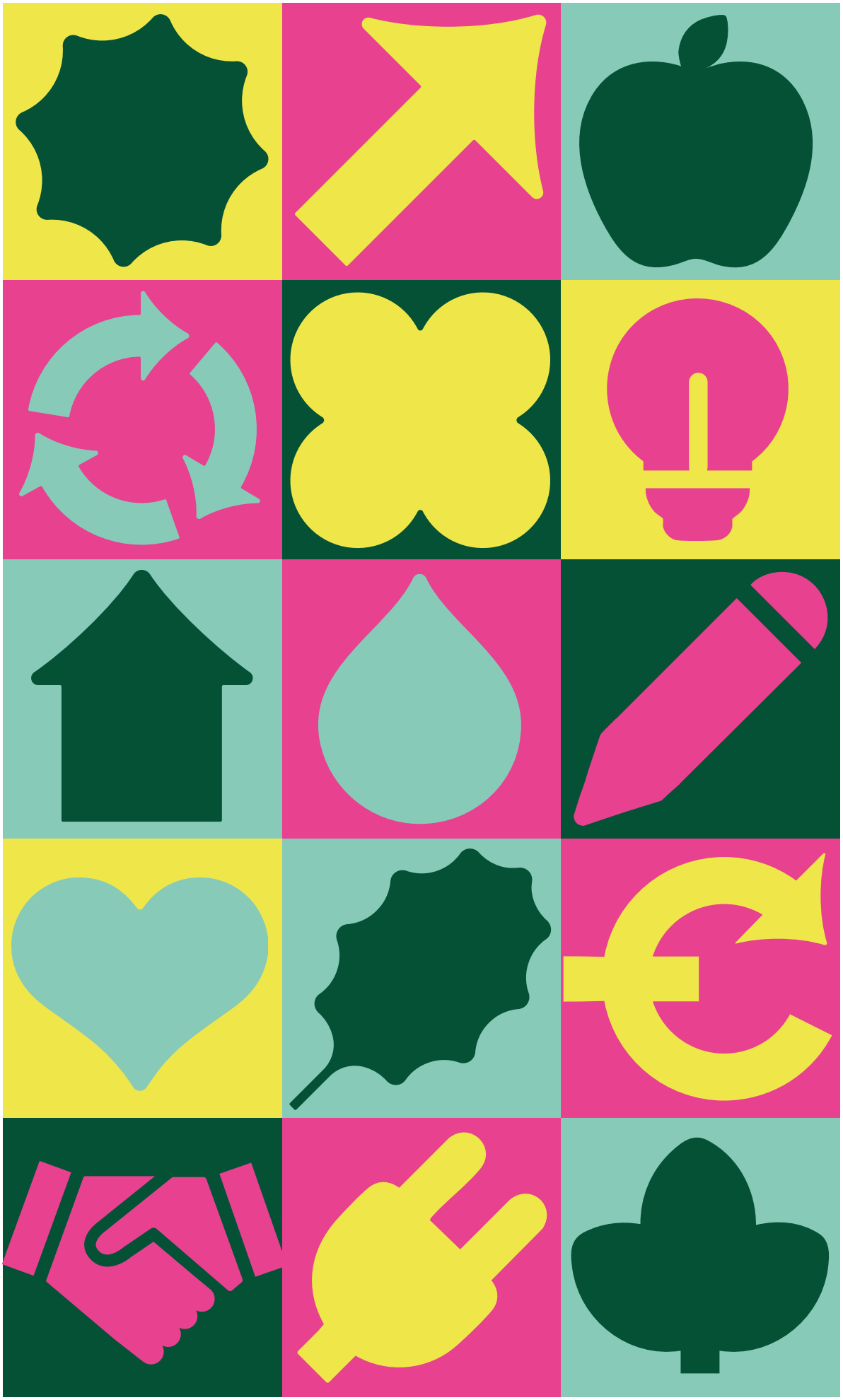
Structural changes are required to help us prioritise, streamline procedures and automate processes. Time is of the essence: we cannot afford to waste it, and this requires a significant amount of coordination. Details of the governance model can be found in part 4 of this government measure.

The economic and financial framework: climate neutrality and resilience will not be neutral for the economy

Decarbonisation and climate change adaptation have a significant economic cost, and their implementation will require the mobilisation of a substantial amount of public resources in the space of a few years. And we must start immediately. We must not delay in acting because, according to all estimates, **the costs of climate inaction will be much higher than those of taking decisive action**. Worsening climate conditions are linked to a widespread deterioration of the pillars of the economy, with critical impacts such as water shortages, unstable basic infrastructure or temperatures hindering work in certain sectors.

It should be noted that **funding is not an insurmountable barrier**. In fact, it is **not even the main barrier to the implementation of these policies**. As stated by John Maynard Keynes in relation to British society, "anything we can do, we can afford". The truth of this statement was proven throughout Europe in 2020-2021, when the temporary shutdown of entire economic sectors, as well as the healthcare costs of the pandemic and vaccinations, were successfully funded.

The current challenge is to find the path to climate neutrality and resilience as quickly as possible, i.e. to decide which players, which incentives and which means will be used to make it possible. A transformation of this magnitude requires properly substantiated economic **planning** in which all stakeholders are involved.



Actions by area

The measures included in the Climate Plan to address the climate emergency and meet the established goals, grouped into specific programmes, are set out below. They include both mitigation and adaptation measures, always taking climate justice criteria into account.

These programmes are linked to the decarbonisation and adaptation lines of action as explained below.

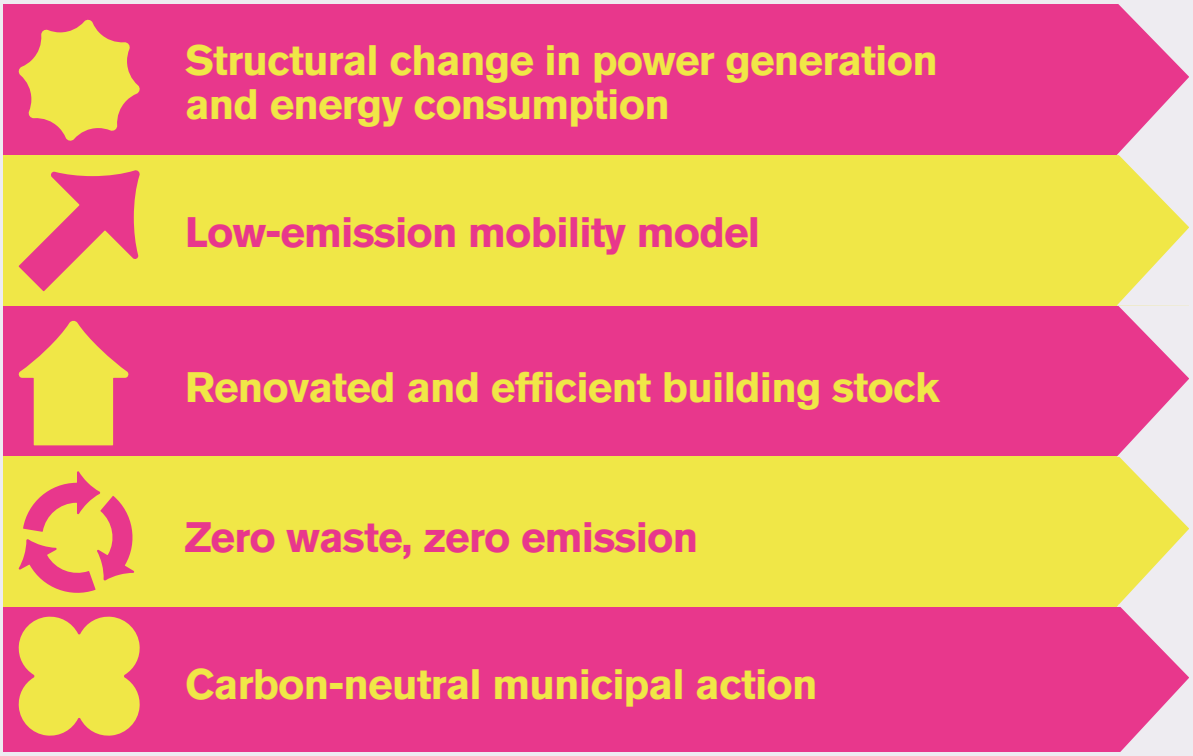
The following expenditure is expected to be required in the implementation of this government measure:

Table 3.
Climate Plan expenditure
Font: Barcelona City Council

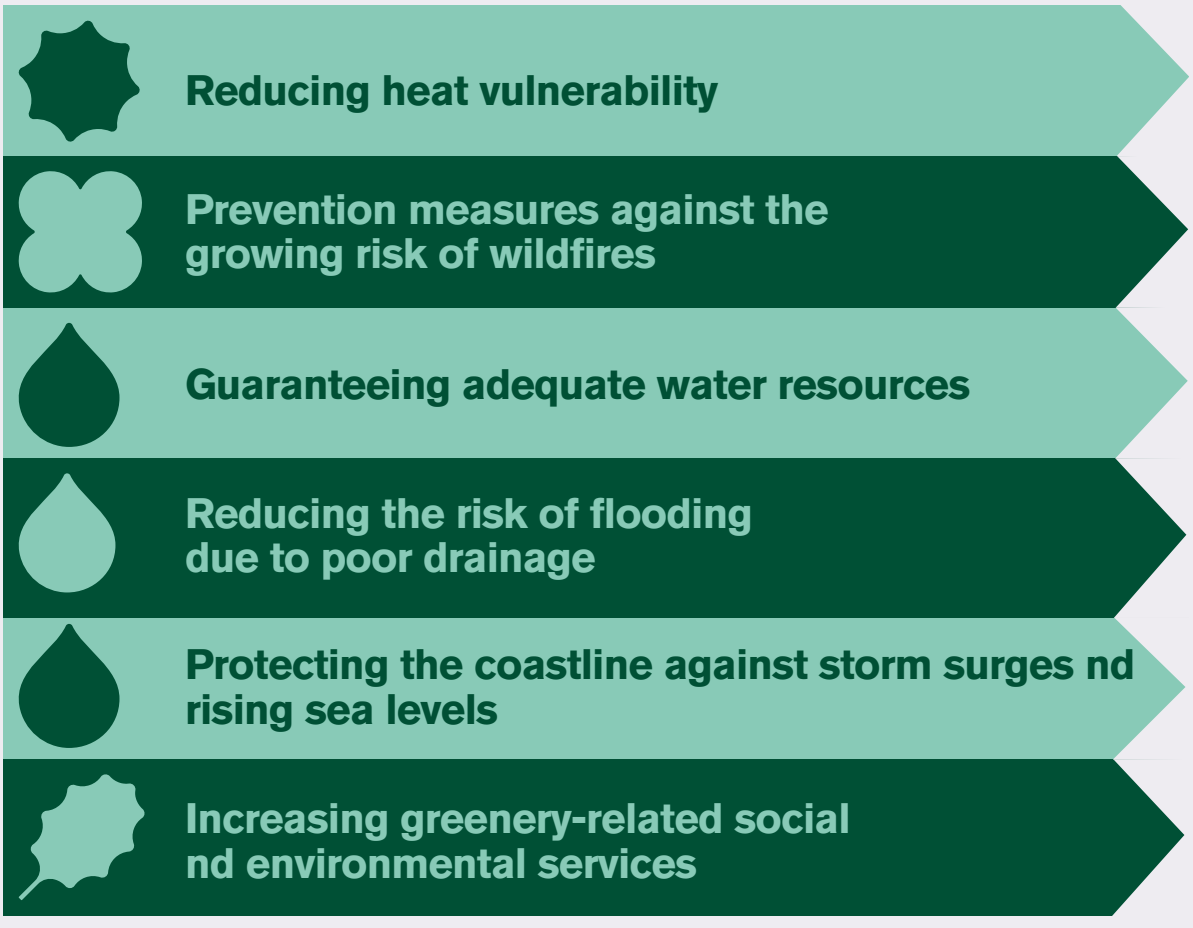
Plans and lines of action	TOTAL
A. Energy Transition Plan	268,575,000 €
B. Mobility Plan	1,095,843,380 €
C. Neighbourhood Climate Plan	98,440,000 €
D. Resilience Plan	234,591,000 €
E. Heat Plan	111,670,000 €
F. ‘Let’s Change for the Climate’ Plan	40,400,000 €
Total general	**1,849,519,380 €**

LINES OF ACTION / NEEDS

TO DECARBONIZE BARCELONA



TO ADAPT BARCELONA



PROGRAMS / ANSWERS

ENERGY TRANSITION PLAN

MOBILITY PLAN

NEIGHBOURHOOD CLIMATE PLAN

RESILIENCE PLAN

HEAT PLAN

‘LET’S CHANGE FOR THE CLIMATE’ PLAN

ENERGY TRANSITION PLAN

In accordance with the aim of achieving an 80% reduction in carbon emissions by 2030, there are various lines of action focusing on increasing the use of renewable energy compared to other types of energy, improving efficiency and reducing energy consumption. Mobility-related mitigation actions can be found in the Mobility Plan, and those relating to construction are set out in the Neighbourhood Climate Plan. Internal municipal mitigation actions and those relating to waste can be found in the "Let's Change for the Climate" Plan.

A1. SUPPORTING THE ENERGY RENOVATION OF BUILDINGS

Description: fostering, encouraging and supporting the energy renovation of municipal facilities and residential buildings and ensuring their thermal comfort. The main measures involve renovating residential buildings, making improvements to schools and promoting social projects.

- Developing a renovation programme for the private residential sector to establish a stable framework with an adequate budget to strengthen the Renovation Office and public-private collaboration.
- Including energy efficiency criteria in calls for grant applications for renovations (high-complexity properties linked to the NextGenerationEU fund).
- Constructing new energy-efficient buildings.
- Upgrading lighting systems and domestic appliances by replacing them with efficient models.
- Decarbonising heating and air conditioning and domestic hot water (DHW) systems.

A2. GENERATING LOCAL AND RENEWABLE ENERGY

Description: solar energy is the city's main renewable resource. We must make good use of it, with the City Council leading by example.

- Making a substantial leap by encouraging action and increasing the City Council's role in this sector, with the aim of reaching 27.2 MWp in municipal buildings and facilities by 2030 (five times the installed power in 2023).
- Covering 10% of electricity consumption in municipal buildings and facilities.

A3. ENCOURAGING SHARED SELF-CONSUMPTION AND ENERGY COMMUNITIES.

Description: helping citizens generate energy as part of their daily activities and maximise energy production in their buildings without worrying about surpluses, as any unused energy can be shared with their neighbours. Encouraging this with the aim of reaching 1 GWp at city level. Covering 30% of electricity consumption in the city.

- Increasing financial support and incentives.
- Improving the support provided and reducing administrative hurdles.
- Supporting the creation of energy communities and the Shared Self-Consumption Service.
- Modernising industrial estates to address climate change.

The City Council has created the Barcelona Sustainable Energy Mechanism (MES Barcelona) to support and speed up the energy transition, with particular emphasis on the generation of renewable energy. This makes it possible to combine private and municipal investment (up to 30%) to fund the installation of photovoltaic solar panels in all kinds of private and public buildings and to implement a business model that promotes good value for money and the proper maintenance of installations in the medium and long terms.

A4. CONSOLIDATING, IMPLEMENTING AND EXPANDING HEATING AND COOLING NETWORKS: EFFICIENT HEATING AND AIR CONDITIONING

Description: public-private collaboration through concessions to help make the main source of energy consumption in buildings (heating and air conditioning, which account for 60% of energy use in buildings) efficient and robust and running on energy from renewable or residual sources. This system is 30% more energy-efficient than individual solutions such as boilers and air conditioning systems. The city's heating and cooling networks are: Districlima (22@-Forum area), Ecoenergies (Marina del Prat Vermell – Zona Franca) and the network to be built in La Sagrera.

In the specific case of the Districlima expansion, a new plant will come into operation in 2025. As a result, the number of buildings connected to its network will increase from 167 to 240 and the area heated and cooled by it will be 1 million square metres larger, leading to an estimated annual CO_2 reduction of 26,000 tonnes.

MOBILITY PLAN

Mobility accounts for over a quarter of total emissions in the city. In order to reduce emissions from transport, we must reduce the need for travel (by creating new urban and metropolitan centres), encourage active mobility (walking and cycling), improve public transport links, increase efficiency in the distribution of goods and support the electrification of this sector.

B1. IMPROVING PUBLIC TRANSPORT

Description: improving the capacity and availability of Barcelona's public transport. The goal is to increase the number of public transport journeys by 16.4% compared to 2023 (with a 40% increase in daily metro journeys, a 40% rise in local commuter train (Rodalies) journeys, a 20% increase in bus journeys inside the city and a 50% rise in intercity bus journeys).

- Connecting the Tram network to Avinguda Diagonal.
- Improving the efficiency and quality of city and intercity bus services.
- Making public train services more efficient and reliable.
- Planning four public transport interchanges in the city's main access routes (Avinguda Diagonal, Avinguda Meridiana, Gran Via Nord and Gran Via Sud).

B2. ELECTRIFYING THE TMB BUS FLEET

Description: reducing emissions and modernising urban and metropolitan public transport by electrifying the TMB bus fleet.

- Ensuring that 75% of buses are zero-emission vehicles by 2030, and reaching 100% by 2036, based on an equal distribution of the cost of this electrification over the two periods.

B3. ENCOURAGING CYCLING

Description: improving the city's cycling infrastructure (spaces for cyclists and secure parking). These are the planned actions for this purpose:

- Creating 14 kilometres of new cycle lanes, and transferring 9 kilometres of existing cycle lanes from pavements to roads, by 2027.
- Creating 17 kilometres of new cycle lanes, and transferring 10 kilometres of existing cycle lanes from pavements to roads, by 2030.
- Increasing the number of electric bicycles in the municipal public bike-sharing service (Bicing) as follows:
  - Adding 1,000 more electric bicycles (with a total of 5,000 electric bicycles) and 74 new bike hire stations (with a total of 593 bike hire stations) by 2025.
  - Having a total of 10,000 electric bicycles by 2030.

B4. INCREASING AND IMPROVING PEDESTRIAN AREAS

Description: increasing the number of traffic-calmed streets, improving accessibility on pavements and redesigning the main urban corridors.

- Introducing traffic calming measures on 20 km of streets near facilities by 2030.

B5. PROMOTING ELECTRIC MOBILITY

Description: promoting the electrification of private and public vehicles.

- Encouraging the electrification of cars: Grants from the Spanish Ministry of Transport and Sustainable Mobility (Moves Plan and others) to replace internal combustion cars with electric ones.
- Electrifying the taxis of the Municipal Institute of Education and Work: Giving guarantees to ensure that vehicles are replaced with zero-emission models.
- Encouraging the electrification of motorcycles: Grants from the Spanish Ministry of Transport and Sustainable Mobility (Moves Plan) to replace motorcycles of over 125 cc. This would apply to 35% of registered motorcycles.
- Encouraging the electrification of mopeds: Grants from the City Council (with an approximate budget of €5 million) to replace mopeds, for battery swapping and to replace motorcycles of up to 125 cc. This would apply to 100% of registered mopeds.
- Increasing the number of EV charging points (investment, regulation and promotion). Consolidating the Endolla Barcelona programme.
  - Increasing the number of EV charging points from 1,000 to 3,000.
  - Doubling the power of slow charging points.
  - Tripling the power of fast charging points.
  - Increasing to 30 the number of battery swap stations in car parks.
- Encouraging the decarbonisation of lorries by moving over to hydrogen and HVO technology.
- Building two hydrogen refuelling stations for heavy vehicles in Llobregat and Besòs.
- Electrifying the fleet of cleaning and waste collection vehicles. The electrification actions have already been planned and are being gradually carried out under the current contract. They are expected to be 66% complete by 2030.

- Electrifying 82% of the fleet of the Municipal Institute of Parks and Gardens. For the remaining 18%, there are as yet no viable electric alternatives on the market.

B6. OPTIMISING FREIGHT LOGISTICS

Description: implementing the Urban Goods Distribution Strategy 2030.

- 33% of home and office deliveries distributed through microhubs.
- 40% of online purchases delivered to collection points.
- 50% reduction in emissions from urban goods distribution (UGD).
- 250 delivery bicycles operating in the city.
- 62,000 tonnes of goods per year carried by rail.
- A shared load capacity platform.

B7. EVOLVING THE LOW EMISSION ZONE (LEZ)

Description: modifying the vehicles that fall foul of the LEZ and adding more control systems.

- Applying the Decree on the Air Quality Plan of the Catalan Government to continue to evolve the LEZ and add more control systems.

NEIGHBOURHOOD CLIMATE PLAN

The Neighbourhood Plan is an extraordinary programme that seeks to reverse inequalities through public policies. The Neighbourhood Climate Plan tackles its climate component, with particular emphasis on the renovation of homes, public spaces and health.

C1. IMPLEMENTING THE NEIGHBOURHOOD PLAN 2025-2028

Description: The draft of the new Neighbourhood Plan 2025-2028 includes actions to a**dapt public spaces and facilities in the city to the climate and social realities of neighbourhoods** (with particular emphasis on boosting the city's green infrastructure, shaded areas and social and environmental services and improving connectivity) and to **promote projects with social return that support access to clean energy** while leading to a lower and more efficient use of energy, particularly in the most vulnerable households, thus helping achieve the decarbonisation and emission reduction targets and mitigate the effects of energy poverty.

- Improving connectivity and pedestrian accessibility within neighbourhoods to enable local residents to access facilities and services more easily with their usual daily travel.
- When drafting projects, ensuring they reflect the necessary studies (e.g. in relation to shade or the reflectance of materials) and a checklist of criteria to ensure premium urban planning standards from an environmental and climate adaptation point of view and in relation to the achievement of the desired goals of increasing greenery, creating shade, depaving, generating energy and sustainable drainage systems, among others.
- Promoting energy collection projects with social return that give local residents better access to clean, local and renewable energy, with particular focus on the most vulnerable households.

C2. ENSURING PEOPLE'S HEALTH AND WELL-BEING IN CONNECTION WITH CLIMATE CHANGE

Description: ensuring people's health in connection with climate change.

- Designing a health and climate change strategy to deliver more on the City Council's undertakings in a cross-cutting way.
- Improving access to healthcare for those who are more vulnerable to the effects of climate change and adapting the health system to this new reality.
- Ensuring that there are alternative energy supply systems and resources in place in case there is a fault with the healthcare system.
- Monitoring and checking for pests to prevent the transmission of vector-borne diseases and applying public health protocols for cases of arbovirus-transmitted infections in the population.
- Taking account of climate considerations in mental health programmes, providing more resources and working collaboratively with the community in relation to these matters.
- Designing the strategy against the feminisation of poverty and job insecurity and addressing the issue of caregiving, all this while taking the climate emergency into account.

C3. IMPLEMENTING THE LOCAL AND INTERIOR SPACES PROGRAMME (PEPI)

Description: The PEPI is the city's main transformation strategy for tackling the causes and consequences of climate change. It seeks to enhance the quality of public spaces and reclaim disused and wasted spaces in neighbourhoods, promoting the growth of new greenery and benefiting local residents' health through climate urban planning. The programme includes three lines of action:

- Programme for the increase and improvement of spaces: this will be carried out in 71 locations, resulting in an additional 22.3 hectares of quality greenery.
- Partition wall and roof programme: 60 partition walls will be redesigned to improve habitability and energy efficiency, and 10 green roofs will be added to municipal nursery buildings.
- Shade programme: 216 new shaded areas will be provided in every district (giving priority to 21 schools and 30 children's play areas in the summer).

C4. MAKING PUBLIC SPACES MORE COMFORTABLE AND EFFICIENT

Description: creating public spaces that support social and community uses, provide relaxation areas for local residents and ensure safety and climate comfort.

- Speeding up and boosting climate adaptation measures in public spaces to meet the thermal comfort needs arising from the new climate situation: more shade, more greenery and more water (while ensuring an efficient and optimised use of water resources).
- Improving the efficiency and safety of lighting.
- Giving pedestrians priority in traffic lights.

RESILIENCE PLAN

Barcelona City Council is promoting a resilience model to build a city that is better able to take on the climate challenges of today and tomorrow, reducing vulnerabilities to its effects and proactively overcoming its impact to ensure residents' quality of life. We therefore propose the following actions to address the main risks associated with climate change, such as drought, flooding, rising sea levels, fire and biodiversity loss. Cross-cutting actions to increase our responsiveness are also included. There is also a specific plan for heat.

D1. ADAPTING TO DROUGHT

Description: ensuring Barcelona's water supply by reducing consumption, tailoring the amount of water used to its intended use and increasing the availability of alternative water resources.

- Implementing a municipal drought resilience plan by investing in groundwater network infrastructure and adapting municipal public space maintenance services to the various drought scenarios.
- Ensuring access to drinking water for those who are most vulnerable to drought restrictions.
- Drawing up a map of potentially vulnerable homes in Barcelona based on drought restrictions for the three emergency scenarios and considering three parameters: building height, residents' age and sex, and socio-economic level.
- Providing financial support for the installation of water pressure sets, the renovation of facilities and the provision of any social services that may be needed.
- Enhancing the catchment and purification systems and infrastructure to increase the amount of drinking water available.
- Using alternative resources for appropriate purposes (such as watering green areas, cleaning streets and sewers).
- Supplying recycled water to the Marina del Prat Vermell neighbourhood for the irrigation of green areas and to clean the streets and use in toilet cisterns.
- Developing a byelaw for the use of greywater as a key tool to reduce the consumption of drinking water at home.

D2. REDUCING THE RISK OF FLOODING AND THE POLLUTION OF THE RECEIVING ENVIRONMENT

Description: reducing the risk of flooding due to poor drainage by improving the city's permeability and sewers while reducing the pollutant load released into the receiving environment.

- Increasing the work carried out under the Comprehensive Master Plan for Barcelona's Sanitation System (PDISBA) and the Technical Plan for the Use of Alternative Water Resources of Barcelona (PLARHAB). These plans include actions such as installing 38 anti-flooding detention tanks in addition to the 12 already in existence, as well as 15 retention tanks in addition to the current 2; adding 238 km to the city's sewers (38 primary and 200 secondary sewers); and upgrading 160 km of the network, 182 hectares of sustainable urban drainage systems and 10 headwater ponds.

- Redoubling efforts in relation to current actions to reduce the risk of flooding. These include, among others, building the rainwater retention system on Avinguda Prim, increasing the drainage capacity of the drainage system in Carrer Vila i Vilà and expanding the system at Avinguda Diagonal to increase drainage capacity by 70%.
- Permeabilising large green spaces in the city and open spaces in facilities, such as school playgrounds.
- Replacing tarmac with permeable paving in some places.
- Installing more aligned tree pits.

D3. PREPARING THE COASTLINE

Description: preparing the coastline for rising sea levels.

- Boosting ongoing actions under the Strategic Plan for Coastal Areas and the Comprehensive Coastline Management Plan.
- Redesigning the Barcelona coastline.
- Reinforcing the wall on Passeig de la Nova Mar Bella and Passeig del Llevant.
- Adding sand to some beaches and redistributing any available sand within the same sedimentary cell to offset any deficits. This may involve, for example, moving sand between beaches, taking sand from the subsoil or using dredging sand from port entrances (to be done by the Spanish Ministry or other public authorities).
- Conducting a study on the protection of Barcelona's beaches.
- Restoring underwater ecosystems.

D4. INCREASING GREENERY-RELATED SOCIAL AND ENVIRONMENTAL SERVICES AND CONSERVING BIODIVERSITY

Description: conserving biodiversity and increasing the surface area covered by green spaces in those parts of the city that suffer from shortfalls in social and environmental services. The aim is to ensure that everyone in the city is within five minutes of an urban green space and to create the 40 hectares of new greenery as envisaged in the Climate Emergency Action Plan (PAEC) within this term of office, to the extent permitted by drought conditions.

- Carrying out the Drought Recovery Plan. Redesigning urban green spaces and making them more resilient by speeding up their naturalisation process. Making the city's green cover compatible with the water restrictions in place.
- Replanting 7,500 palm and other trees; 185,000 m^2 of shrubby, perennial, climbing and ground-covering plants; 13,000 m^2 of flower beds and mixed groups; restoring 825,000 m^2 of meadows and grass; and replacing 150,000 m^2 of lawn with shrubs or perennial plants.
- Carrying out action plans for groups of species vulnerable to climate change, such as amphibians, bats, pollinators, birds and the common hedgehog.
- Boosting marine biodiversity by implementing phase II of the artificial reefs in the Olympic Port and supporting public-private initiatives to restore urban marine ecosystems with special-purpose subsidies.

D5. REDUCING THE RISK OF WILDFIRES

Description: carrying out prevention, management, operational, firefighting and self-protection measures to reduce the risk of wildfires.

- Putting a model forest management framework in place for coordination and operational action for the event of a wildfire starting in or affecting the municipality of Barcelona.
- Compartmentalising the area to reduce the likelihood of a fire escalating into a large wildfire by implementing the Collserola protection perimeter and the strategic management points in the city's mountain neighbourhoods.
- Ensuring that the city has the necessary infrastructure – both operational and for firefighting – to reduce the number of fires. This includes, for example, arranging bridges in mountain neighbourhoods, preparing forest roads, putting new hydrants and water points in place, deploying firefighting resources and opening the Vallvidrera park.
- Maintaining the civil defence plans, holding training and information sessions in mountain neighbourhoods and increasing self-protection measures.

D6. INTEGRATING RISKS IN CLIMATE PLANNING

Description: learning from extreme weather events and improving operating methods.

- Strengthening and publicising current tools, such as the Critical Episode Viewer and the Resilience Atlas.
- Updating the available information on the infrastructures affected by climate risks (such as those particularly affected by rising sea levels or flooding).
- Continuing to work on gaining a better understanding of critical infrastructure to ensure that it works properly (such as mapping, contingency situations, cascading effects and resilience).
- Preparing the current electricity grid for the energy transition and conducting relevant capacity, impact and feasibility studies, as well as good planning.
- Publicising and spreading the word about the city's oceanographic and climate variable viewers (such as oceanographic buoys or cameras to monitor the width of beaches or artificial reefs).

HEAT PLAN

The envisaged measures to prepare the city for the expected increases in temperature include actions to reduce the urban heat island effect, adapt sensitive facilities (such as schools and care homes), provide places to cool down (climate shelters, shaded areas and water-based spaces) and improve knowledge and innovation.

E1. EXPANDING THE NETWORK OF CLIMATE SHELTERS

Description: expanding the network of climate shelters so that everyone in the city has one within a five-minute walk, and improving their quality and coverage and public awareness of them.

- Extending the opening hours of some climate shelters to ensure availability on weekends and in August.
- Opening the city's parks and gardens earlier in the morning so they can be used during the cooler parts of the day.
- Adding to the open playground programme those schools whose playgrounds have been fitted with climate change adaptation measures so that they can be opened up to the public for use as climate shelters outside school hours.
- Providing drinking fountains in municipal facilities.
- Giving vulnerable families free entry to swimming pools.
- Producing more communication materials (such as fans, drinking glasses, advertisements and improvements to the website).
- Holding environmental education actions in climate shelters.
- Adapting climate shelters to the needs of people who care for vulnerable individuals (such as children or the elderly).

E2. ADAPTING SCHOOLS TO CLIMATE CHANGE

Description: adapting schools to the heat through additional passive solutions in both playgrounds and buildings.

- Adapting school playgrounds to climate change through measures such as renaturing actions, shading, depaving, new fountains and more, and ensuring that they are maintained.
- Implementing passive air conditioning solutions in school buildings (such as cross ventilation and sun protection measures) to supplement the School Climate Plan and reduce demand for energy.
- Ensuring that these solutions are maintained.

E3. HEATING AND AIR CONDITIONING IN SCHOOLS: SCHOOL CLIMATE PLAN

Description: installing solar energy systems and adapting Barcelona's schools under the School Climate Plan.

E4. ADAPTING CARE HOMES TO CLIMATE CHANGE

Description: gaining a better understanding of the thermal comfort situation in care homes with people who are vulnerable to climate change (e.g. the elderly or those with physical or intellectual disabilities or mental illness).

- Ascertaining the thermal comfort of these facilities.
- Drawing up a list of thermal comfort solutions.
- Carrying out passive measures to improve thermal comfort, and installing air conditioning when these are not enough.

E5. DEVELOPING A SHADING STRATEGY (SHADE PLAN)

Description: improving thermal comfort in the city by means of permanent, seasonal or ephemeral shading solutions in places where greenery cannot be planted.

- Having a plan for the provision of shade.
- Fitting non-plant-based shade infrastructures (e.g. in public spaces, children's play areas and photovoltaic pergolas).
- Conducting pilot projects with water misting systems in shade structures.

E6. REDUCING THE HEAT ISLAND EFFECT

Description: improving thermal comfort in the city by putting in place reflective solutions to reduce the heat island effect.

- Developing pilot projects with reflective paving to assess their effectiveness in reducing the heat island effect.
- Carrying out a pilot project with reflective roofs in each district to assess their impact on thermal comfort and reducing the heat island effect.
- Promoting the installation of green roofs.
- Supporting and advising local residents' communities wishing to install reflective roofs ("Cool it Yourself" programme).
- Increasing the amount of greenery in the city.

E7. CREATING COOLING WATER PLAY AREAS FOR CHILDREN

Description: improving thermal comfort in the city by means of water solutions that double up as children's play areas.

- Creating a cooling water play area for children in each district.

E8. INCREASING THE NUMBER OF WEATHER STATIONS IN THE CITY

Description: increasing the public's knowledge about the urban climate by installing weather stations that provide information from all over the city.

E9. IMPROVING EMERGENCY HEAT OPERATIONS

Description: improving emergency heat operations by establishing protocols to be followed in the event of extremely high temperatures.

- Conducting a drill for the public based on extreme temperature scenarios in two neighbourhoods, with the participation of care homes, schools, the Guàrdia Urbana (city police), the Fire Brigade, etc.
- Increasing the heat campaign and producing new inclusive communication materials to make them accessible for the elderly, people with disabilities or foreigners (e.g. an inclusive website, short videos, fans, baseball caps, canteens, parasols or the delivery of tips through voice messages rather than SMS).

- Consolidating the governance of heat-related operations.
- Boosting social and healthcare assistance in the summer.

E10. CONTROLLING BAD ODOURS

Description: minimising bad odours resulting from higher temperatures (from some economic activities, sewers or waste).

E11. PROVIDING THE PUBLIC WITH BETTER INFORMATION ON HEAT

Description: providing the public with better information about the services and tools for coping with the heat that are available in the city.

- Developing an app with information on all the heat adaptation resources available in the city (such as shelters, shade, routes, water-based cooling areas and fountains).
- Reinforcing the energy advice points and expanding the service to turn them into climate advice points.
- Providing newcomers with a climate welcome kit containing energy saving and climate adaptation information and resources.

E12. INNOVATION IN THE FIELD OF COOLING

Description: developing pilot projects for cooling through efficient solar energy-powered cooling systems.

LET'S CHANGE FOR THE CLIMATE PLAN

The term *sustainability culture* means all the knowledge, values and practices to be acquired and adopted by the public (both individually and collectively) responsibly, rationally and creatively to tackle social and environmental issues and speed up climate action. The "Let's Change for the Climate 2030" Plan aims to create this culture using reliable information (obtained through an expert advisory committee and improving knowledge), leading by example (through the Carbon-Neutral City Council Programme), by getting the city's stakeholders (such as the More Sustainable Barcelona network or individual citizens) involved and providing all necessary resources.

F1. DESIGNING THE CARBON-NEUTRAL CITY COUNCIL PROGRAMME

Description: designing and carrying out the Carbon-Neutral City Council Programme to reduce the City Council's GHG emissions.

- Establishing the method to be used to quantify emissions from public contracts not included in the current inventory (e.g. non-energy supplies, construction work, food, cleaning services and selective waste collection in municipal buildings).
- Speeding up the renovation and heating and air conditioning of all municipal facilities under an energy efficiency plan for municipal buildings and a specific programme for each type of facility (e.g. libraries, offices, sports centres), including maintenance matters.
- Electrifying municipal vehicle fleets, machinery and heating and air conditioning systems.

- Increasing self-production and self-consumption of energy in municipal buildings.
- Reducing emissions from consumption related to food, construction and municipal events.
- Establishing a set of decarbonising procurement criteria.
- Drawing up an in-house training plan.
- Carrying out internal communication campaigns.
- Developing software to manage municipal vehicle fleets.
- Updating the Guide to Sustainability Criteria In Urban Planning (2021) and moving towards making compliance mandatory.

F2. FUNDING COMMITMENT UNDER THE PLAN

Description: in this government measure, the City Council undertakes to make the necessary additional investments to cover its part. Given the plan's scope and ambition, the search for new financial resources will be crucial.

- Using all available tools to encourage spending by other sectors and secure the necessary involvement of other public authorities.
- Carrying out a foresight study of the fiscal and financial tools available to the City Council.

F3. IMPLEMENTING THE CLIMATE BUDGET AT THE CITY COUNCIL

Description: with the aim of gradually developing a transparent, predictable and shared framework, the City Council also undertakes to carry out a set of climate budgets in accordance with the methods established by the C40 cities network. This will help analyse municipal spending from a climate perspective and ensure it is aligned with its goals. It will be rolled out gradually, starting with the Municipal Investment Plan (PIM). The cost-benefit analysis of the proposed climate measures will provide certainty to help prioritise spending and decide whether extraordinary funding should be sought for specific projects.

F4. ESTABLISHING THE ADVISORY COMMITTEE FOR CLIMATE AND THE ECOLOGICAL TRANSITION

Description: putting in place a group of experts to advise the Catalan Government on sustainability and climate issues (see the section on governance).

F5. PROMOTING COLLABORATIVE DECARBONISATION AND WATER SAVING CHALLENGES

Description: reducing GHG emissions and drinking water consumption among the city's economic sectors and social fabric (e.g. companies, organisations, schools and individual citizens).

- Strengthening the collaborative water and decarbonisation challenges with support from a technical secretariat, holding experience exchange events and designing support materials, among other actions.

F6. HOLDING THE SECOND CITIZEN CLIMATE ASSEMBLY

Description: democratising the actions needed to tackle the climate emergency through inclusive participatory processes.

- Holding the second Citizen Climate Assembly with a random and diverse selection of residents of Barcelona to continue researching, discussing, examining and making recommendations to take effective action against the climate emergency in the city.

F7. STRENGTHENING THE MORE SUSTAINABLE BARCELONA NETWORK

Description: strengthening the More Sustainable Barcelona network to ensure that tools and resources to fight the climate emergency are available to individual citizens too.

- Designing a specific programme to get 18- to 30-year-olds involved and accepting shared responsibility in the fight against climate change: *Joves pel Clima* [Youth for the Climate] programme.
- Designing a specific programme to get people over 65 involved and accepting shared responsibility in the fight against climate change: *Jubilades pel Clima* [Climate Retirees] programme.
- Designing and carrying out the "Let's Change at Home for the Climate!" project so that 50 families – particularly the most vulnerable ones – can receive personalised training and advice every year to improve their daily habits (energy and water consumption, climate adaptation, healthy and sustainable food, sustainable mobility, responsible consumption, etc.), and to promote shared responsibility at home, with stimulating challenges and measurement systems and a commitment to sponsoring and mentoring other households.
- Designing and carrying out the project "Stronger local communities for decarbonisation", which involves striving to launch ten (one per district) drivers of change through community action and engaging 100 households (ten for each driver of change).
- Creating incentives for change, giving discounts and activities to engaged individuals who take action.
- Producing "Let's Change for the Climate!"environmental education guides to educate the public about climate change.
- Holding a "climate action month" in the city's cultural facilities.
- Conducting a survey on environmental values and habits every two years.
- Consolidating and growing the Barcelona Network of Environmental Facilities (XEAB) and promoting collaborative actions and joint events between the various facilities.
- Creating an intergenerational project to get the elderly, young people and maybe even children involved and accepting shared responsibility.

F8. ANNOUNCING MORE CALLS FOR CLIMATE SUBSIDIES

Description: supporting organisations with their climate projects.

- Holding biennial calls for applications for subsidies for non-profit legal entities to fund initiatives for concrete and innovative action to tackle the climate emergency effectively.

F9. IMPLEMENTING AND STRENGTHENING THE ZERO WASTE PLAN

Description: reducing the generation of waste and improving waste collection to lower the associated carbon emissions.

- Raising awareness of the impact of people's consumption choices.
- Helping people understand the impact of a product or service over its life cycle.
- Designing a circular economy strategy.
- Improving selective waste collection (for example, by encouraging the collection of less bulky waste, such as oil and textiles, or encouraging community composting) approached with a gender perspective and creating sufficient consensus among local residents for the gradual roll-out of custom collection systems.

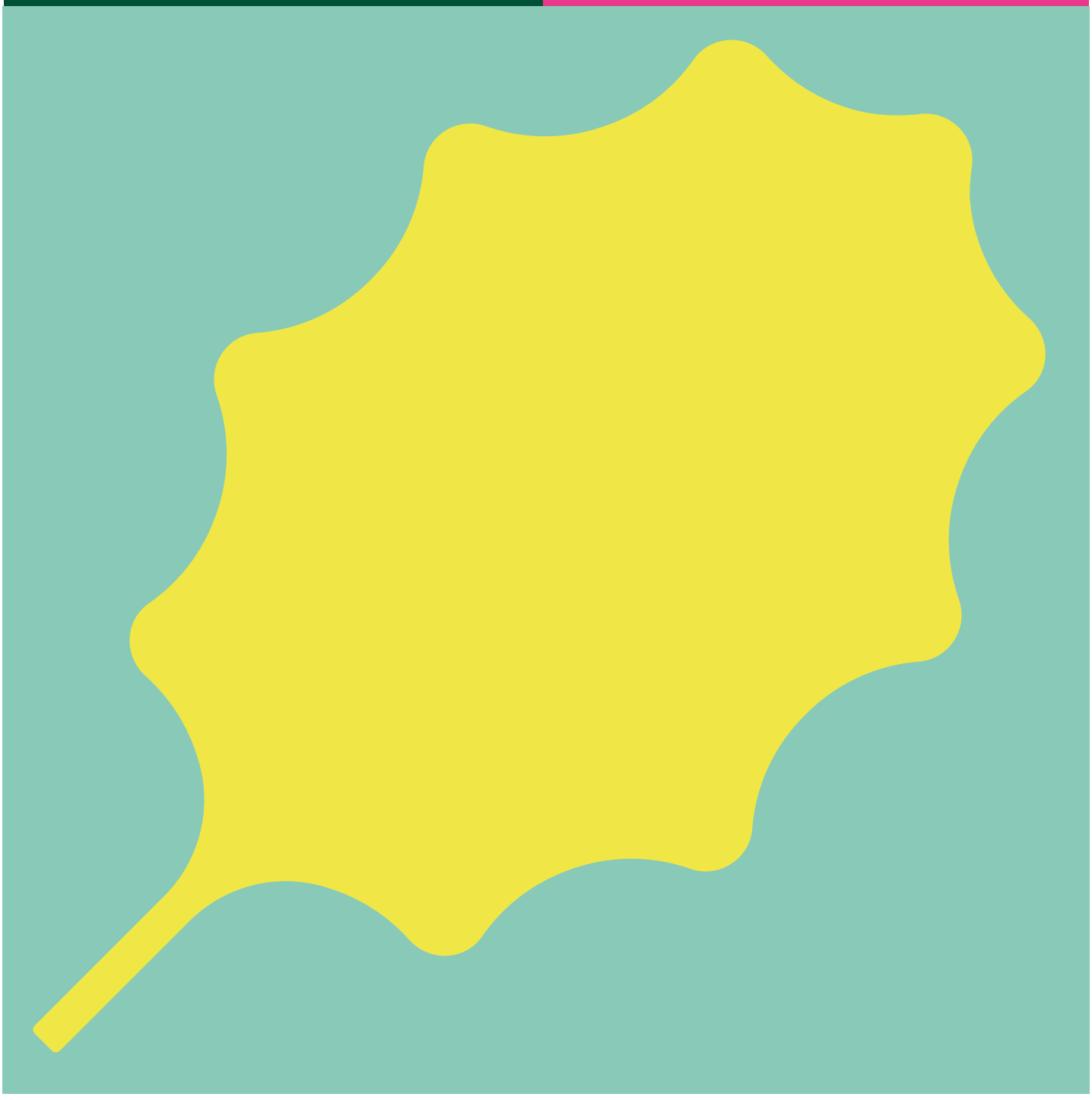
F10. CONDUCTING STUDIES AND RESEARCH AND INFORMING THE PUBLIC

Description: boosting a wide range of research lines to improve scientific knowledge and support the highest standards in the implementation of public policies. This must include at least:

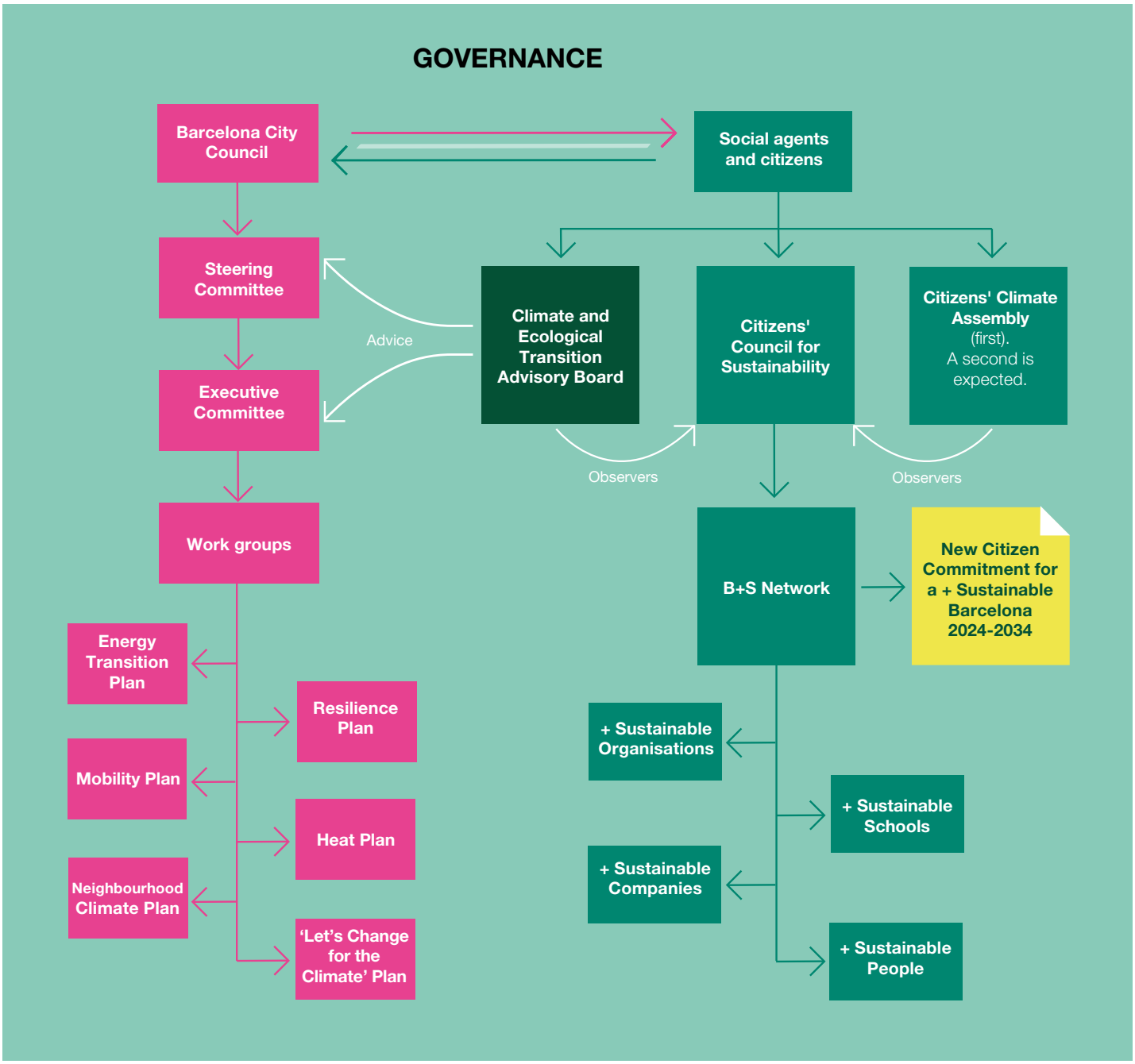
- Foresight studies on risks (such as heat, drought, fire and flooding) and adaptation for various increasing-temperature scenarios.
- An analysis of CO_2 emissions to better include areas that do not strictly fall under the main mission.
- An intersectionality study.
- Climate change and health.
- A climate regulation map and proposed measures to accelerate decarbonisation.
- Fiscal tools to encourage decarbonisation.
- Impacts on the economy and job market, and identification of opportunities.
- Outlining a cost-benefit analysis method for adaptation actions.

PLA CLIMA
Part 4

Who will we do it with?



Climate action governance



Political direction and technical coordination and promotion

Fighting climate change and its consequences is a **top strategic priority** for the City Council. In view of this, a mayoral decree will be issued to create a Standing Committee chaired by the Mayor and formed by political representatives and area managers, which **will decide on and validate climate and economic policies, and an Executive Committee**, chaired by the Manager's Office for Mobility, Infrastructure and Urban Services and made up of the manager's offices and departments of the most involved areas, which will drive forward, **carry out and monitor the government measure**. A new **Advisory Committee for Climate and the Ecological Transition** will also be created. This will support the Catalan Government and the climate emergency specialist team to achieve the climate goals and the Sustainable Development Goals of the 2030 Agenda.

Key stakeholder and citizen involvement

The **Barcelona More Sustainable network**, established over two decades ago, encompasses over 2,000 organisations (including various entities, companies, schools, universities, professional associations, trade unions, cultural facilities and services, public institutions and Barcelona City Council). It is the largest network of city allies for the promotion and implementation of sustainability and climate change policies in the city. The members of the More Sustainable Barcelona Network promote sustainability measures in their organisations, share best practices and carry out projects with the other network members.

The Citizen Commitment for a More Sustainable Barcelona 2024-2034, which provides a roadmap for the actions of the city's stakeholders and reaffirms the More Sustainable Barcelona network's commitment to addressing the identified challenges faced by the city, was renewed this year (2024). Its aim is to move beyond merely connecting stakeholders and exchanging experiences and start driving transformation effectively while expanding and strengthening the network.

The More Sustainable Barcelona network is led by the Citizen Council for Sustainability, a participatory body whose members are democratically elected from and by the organisations in the network. Beyond the Plenary and the Standing Committee of this Citizen Council, specific working groups (dedicated to matters such as alternative water resources and sustainable architecture) are created and conventions open to all members of the network are held, guiding its priorities and influencing public policy.

The new Commitment fosters challenge-based collaborative work to achieve a greater impact on specific issues. The focus during this political term is on two key challenges: mitigation (decarbonisation) and adaptation (water saving).

- Decarbonising: reducing GHG emissions by 80% by 2030, based on an annual reduction of 15% (or equivalent) in accordance with Barcelona's commitment as a member of the European mission "100 Climate Neutral and Smart Cities by 2030", formalised and validated by the European Commission in the City Climate Contract.
- Saving water: improving water management and encouraging its saving. In view of the drought, which may become a chronic problem due to the climate emergency, we plan to reduce domestic drinking water consumption to 90 litres per person per day under normal circumstances, as well as achieve a 15% saving in commercial and industrial uses and a 10% saving in municipal uses.

Thanks to their ability to speed up action and test it for future scaling, challenge-based work or collaborative projects play a key role in networked climate action. They require a comprehensive and collaborative method in which participants work

together to overcome obstacles and help mitigate and adapt to the effects of climate change. They also seek proactive management of the process by the stakeholders involved, based on shared responsibility.

Finally, the **Barcelona Citizen Climate Assembly** also plays a key role in the governance of climate change policies, as it involves randomly selected citizens (who therefore represent all geographic areas and sectors of society) engaging in face-to-face discussion about the measures needed to address the climate emergency. This city-scale initiative was the first of its type in Spain, and the City Council has undertaken to repeat the experience.

Metropolitan and multilevel coordination

Barcelona's decarbonisation and climate adaptation efforts cannot rely solely on the City Council. On the one hand, this is because these policies operate within a metropolitan and multilevel framework, with powers distributed between the various public authorities, and because, as part of a larger ecological and economic context, Barcelona has a duty to consider the stakeholders included in it in order to create consensus and establish alliances. Special emphasis will be placed on increasing collaboration with the institutions in Barcelona Metropolitan Area and helping to create the necessary tools to accelerate decarbonisation at both metropolitan and regional levels.

The Port of Barcelona and Josep Tarradellas Barcelona-El Prat International Airport, two major pieces of infrastructure that are strategic for the city and have a great impact on the region, must be particularly considered at this point. Given their significant emissions, their commitment to decarbonisation will be key to the success of the city's climate transition. The City Council will help and encourage the Port and Airport management teams as necessary to make this possible.

And, on the other hand, because decisions made by other bodies have a very significant impact on Barcelona and its people. In view of this, the City Council will lever institutional loyalty **to increase collaboration with other public authorities and share its priorities and needs publicly and transparently in order to achieve a decarbonised city**.

To that end, **a working group will be established to push forward the coordination of strategic climate change mitigation and adaptation policies with other public authorities**. It will be formed by representatives of other city councils, Barcelona Metropolitan Area, Barcelona Provincial Council, the Catalan Government, the Spanish Government and European institutions.

International cooperation and projection

Climate change must be tackled from a global perspective that takes all of humankind into account and that shows beyond any doubt that collaboration is required at every level to accelerate the transformation as much as possible. Barcelona City Council has been a trendsetter in the climate cause for years, and it is determined to continue in this role.

- **It will further increase both bilateral and multilateral collaboration with cities and other institutions both in Europe and worldwide:**
    - It will continue to support the network of 100 climate-neutral and smart cities on which the mission is based, including the citiES network in Spain, and will be actively involved in the C40 and ICLEI (Local Governments for Sustainability) networks.
    - It will also strive to participate and create alliances in forums such as Eurocities, UN-Habitat and the Global Covenant of Mayors for Climate and Energy, and will continue to play an active role in COP events.

- **It will strengthen ties and increase exchanges with these platforms, at both political and managerial levels**, and will lead multilateral coordination efforts and organise conferences, congresses and other events.
- **It will also maintain its alliance with other European cities to influence community institutions** to structurally increase their responses and resources dedicated to climate challenges at city level. To that end, **the City Council will reinforce the teams engaged in securing EU funding**.

Cross-cutting and transforming strategy

Appealing to society to accept shared responsibility, ensuring access to information, raising awareness about the need to play an active role in the change to be brought about and calling people to action are the core pillars of the communication strategy that must go hand in hand with the execution of the six action plans set forth in this government measure.

The actions defined in it must be widely publicised, and people must be made aware of the collective step forward they entail. The City Council will therefore **increase climate-related communication with the general public using all available channels**. It will stay away from the type of catastrophic thinking that leads to pessimism and resignation. Instead, we must encourage change through a positive lens by highlighting the collective progress entailed in the ecological transition.

The Climate Plan brand and institutional continuity will be promoted, as they provide an umbrella for any actions and policies to be carried out and serve as a significant framework of stability. The "100 cities" mission brand, under which the Barcelona Climate Plan is part of leading cooperation efforts in Spain and Europe, will also be used.

Communication with citizens will also take place directly at street level, through concrete actions in public places and by **creating symbols** to create awareness and help people picture the changes. These changes should be made clear through action. **The City Council will also continue to revamp, expand and publicise its websites and social media channels**, with special emphasis on informing the city's residents about the ways in which it can help them get involved in Barcelona's efforts to decarbonise the city and adapt to the effects of climate change that are already here. A **map of actions to tackle vulnerability to heat will be drawn up**.

Existing channels for specific segments of the population, such as young people and the elderly (BCN+65 app, Vincles BCN) and highly aware people and organisations (such as the More Sustainable Barcelona network) will also be used.

The City Council will work hard to strengthen its ties with educational and cultural institutions and media outlets, as well as any others that help shape discussions in the city, in order to prioritise climate issues by supporting research projects and organising conferences and congresses, among other actions.

Therefore, **rather than carry out a one-off or limited-duration campaign, the idea is to put in place a cross-cutting communication and education strategy that permeates all aspects of Barcelona City Council's institutional communications**, emphasising

shared responsibility, engagement, a willingness to change and the need for a common goal and collective action. We must move away from relativism, unsupportive individualism, pessimism and defeatism. We have been explaining what is going on for decades. And now we must work harder to take direct action with tangible results and create the necessary tools to do so. **Communication must help bring about the necessary cultural shift and convey the fact that the future is not set in stone and there is still a lot we can say and do about it**.

Monitoring, evaluation and learning

Decarbonisation and adaptation to climate change are strategic priorities for the City Council that affect all its areas of action. In order to manage these key and sensitive issues, we must ensure transparency and accountability. For that reason, all relevant information – which will be true, rigorously obtained and scientifically verified – will be published on the appropriate websites and updated on a regular basis.

This monitoring must lead to evaluation, learning and continuous improvement and make it possible to plan the city's transformation within a stable framework and with the highest possible consensus.

We will create a dashboard of key indicators to track the evolution of the situation. Additional specific indicators to track each line of action in detail will also be included.

Monitoring of the government measure will revolve around a monitoring report. This will include both a quantitative analysis based on the indicators mentioned above and a qualitative analysis on the progress of decarbonisation across all the lines of action identified in the mission and adaptation. Progress on the Citizen Climate Assembly's recommendations will also be reported here.

These indicators and the report will form the basis for accountability in relation to Barcelona's climate commitments, the Covenant of Mayors for Climate (through the platform of the Carbon Disclosure Project) and the "100 Climate Neutral and Smart Cities by 2030" mission.

All this information will help identify both any possible barriers and bottlenecks in the implementation of the measures and the opportunities to bring forward completion dates and accelerate action where possible.

The City Council will have a dedicated specialist team to promote, develop and monitor the government measure. Internal coordination mechanisms, specifically the Standing and Executive Committees mentioned above, will be established to ensure the communication of all progress and monitor binding sectoral strategic plans.

The report, which will be public and will be issued on an annual basis, will be submitted to both the Standing Committee and the Citizen Council for Sustainability before being submitted to the Municipal Council Assembly.

System of indicators and dashboard

Table 4. Context indicators

Sector	Indicator	Indicator unit
Environment	Temperature	Average annual temperature
		Maximum temperature reached
	Heat waves	Days with a minimum temperature of over 25 degrees
	Precipitation	Annual aggregate precipitation
	Air quality	Average concentration of NO_2/PM2A
Economy	Size of the economy	GDP growth rate
	Income	Average disposable household income
	Internal	Activity rate
	Green employment	Green economy jobs created
	Economic impact of climate change	Economic losses from events attributed to climate change
Society	Population	Number of homeless people registered as living in the city
	Inequality	80/20 ratio
	Health	Life expectancy at birth
	Energy poverty	Percentage of households that are unable to keep their home at an adequate temperature [differentiating between winter and summer]
Culture and participation	Sustainability culture	Number of people who have interacted with the City Council's sustainability culture programmes

Table 5. Decarbonisation indicators

Sector	Indicator	Indicator unit
Global emissions	Scope 1 and 2 GHG emissions	KMT of CO_2HO
Global energy	Energy consumption	GWh
Transport	Modal share	Percentage of journeys
	Reduction in the need for motor transport due to urban planning, online meetings and other factors	Percentage reduction
	Modal shift: change to public and non-motorised transport	Percentage reduction in passengers – km travelled in private vehicles in favour of using public transport or cycling
	Shared transport	Percentage increase in average number of passengers per car due to more efficient transport arrangements
	Electrification of private vehicles (2040)	Percentage of electrified vehicles
	Electrification of buses	Percentage of electrified vehicles
	Optimisation of freight transport logistics – lorries under 3.5 tonnes	Reduction in distance travelled due to route optimisation (percentage of reduction)
	Electrification of lorries under 3.5 tonnes (2040)	Percentage of electrified vehicles

Sector	Indicator	Indicator unit
Buildings and heating	Renovation of buildings: renovation rate	Annual renovation rate percentage
	New buildings with high energy requirements (maximums)	Percentage of all new buildings
	Efficient lighting and domestic appliances	Percentage of low-consumption public lighting
	Heat generated with low emissions, including heating	Percentage of heat networks out of the total heat generated
		Electricity percentage in heat networks
		Percentage of electricity (heat pumps) in heating and air conditioning systems
Electricity	Electricity generated with low CO_2 emissions	Percentage of total electricity production from fossil fuels
	Renewable energy installed capacity in the city	MWp of generation capacity
Waste	Urban waste generation	kg of waste generated per person per day
	Selective urban waste collection	Percentage of selectively collected urban waste out of all urban waste produced

Table 6.
Climate emergency adaptation indicators

Sector	Indicator	Indicator unit
Ensuring adequate water resources to meet the city's needs	Domestic drinking water consumption per person	Litres/person
	Drinking water supply per person in Barcelona	Litres/person
	Municipal service sustainability indicator (underground water / total water) x100	Volume of underground water / total volume of water
Reducing the risk of flooding due to poor drainage	Percentage of streets affected by rain in a ten-year period	Streets affected by rain in a ten-year period
	SUDS surface area (ha)	Hectares
	km of upgraded sewers	km of upgraded sewers per year
Coastline protection against rising sea levels	Dry beach surface area in September (loss of sand)	Hectares
	Average annual sea level in the Port of Barcelona	Metres
Reducing heat vulnerability	Percentage of the population within five minutes of a shelter	Percentage of the population with a shelter within five minutes
	Increase in shaded places	Hectares
	Heat-related mortality	Number of deaths attributed to heat
Increasing greenery-related social and environmental services	Increase in green space surface area	Hectares
	Percentage of the population within five minutes of an urban green space	Percentage of the population with an urban green space within five minutes
	Global assessment of social and environmental services	
Preparation for the growing risk of wildfires	Burnt surface area	Hectares
	Fire ignition points	

Title
Government Measure Climate Plan

Edited by
Barcelona City Council

Barcelona, November 2024

Climate Plan

Government measure
November 2024

Barcelona

Quadre de comandament

PLA CLIMA

- PLA TRANSICIÓ ENERGÈTICA
- PLA MOBILITAT
- PLA RESILIÈNCIA
- PLA CALOR
- PLA CANVIEM PEL CLIMA

PLA TRANSICIÓ ENERGÈTICA

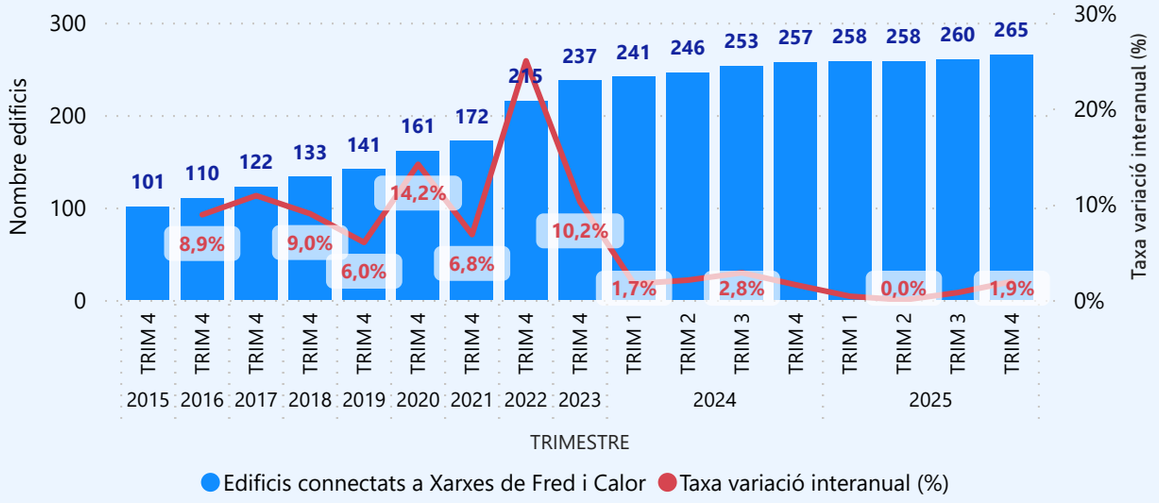
INDICADORS MENSUALS | INDICADORS TRIMESTRALS | INDICADORS ANUALS (I) | INDICADORS ANUALS (II)

Barcelona

2024 2025 G F M A M J J A S O N D

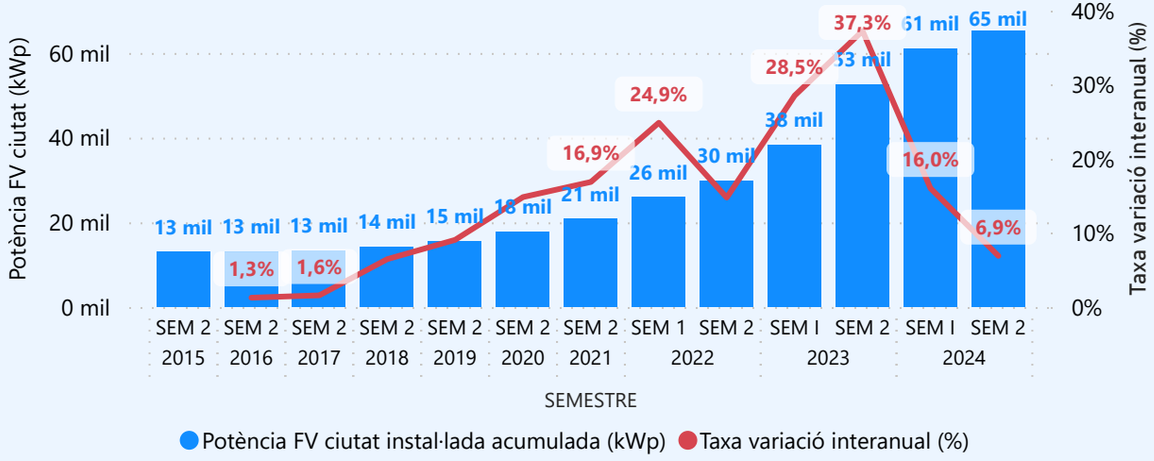
		Últim valor	% var. mes anterior	% variació 2025 vs. 2024
NOMBRE D'AUTORITZACIONS D'OBRES DE REHABILITACIÓ ENERGÈTICA EN EDIFICIS PRIVATS ***Font:*** *Direcció de Serveis de Llicències. Gerència d'Urbanisme.*	***Nota: Les dades dels darrers tres mesos són provisionals***	24 Desembre 2025	-17,2%	71,4%
NOMBRE D'AUTORITZACIONS D'OBRES DE GENERACIÓ ENERGÈTICA EN EDIFICIS PRIVATS ***Font:*** *Direcció de Serveis de Llicències. Gerència d'Urbanisme.*	***Nota: Les dades dels darrers tres mesos són provisionals***	24 Desembre 2025	41,2%	-35,1%
PERSONES ATESES ALS PUNTS D'ASSESORAMENT ENERGÈTIC (PAE) ***Font:*** *Institut Municipal de Serveis Socials*		2.212 persones Desembre 2025	-31,0%	43,2%
TALLS DE SUBMINISTRAMENT EVITATS PELS PAE ***Font:*** *Institut Municipal de Serveis Socials*		3.008 talls Desembre 2025	-5,4%	125,5%
PREU DE L'ELECTRICITAT Mitjana preu mensual de l'electricitat [€/MWh] ***Font:*** *Agència de l'Energia de Barcelona*		77,90 €/MWh Desembre 2025	32,8%	-30,0%
RENOVABLE AL MIX PENINSULAR Proporció de renovables al mix elèctric peninsular (%) ***Font:*** *Agència de l'Energia de Barcelona*		50,90% Desembre 2025	-13,6%	2,2%
CONSUM ELÈCTRIC EDIFICIS MUNICIPALS Monitoratge. Consum elèctric mostra edificis [kWh/m2] ***Font:*** *Agència de l'Energia de Barcelona*		5,07 kWh/m2 Desembre 2025	7,2%	-3,2%

Edificis connectats a xarxes de fred i calor



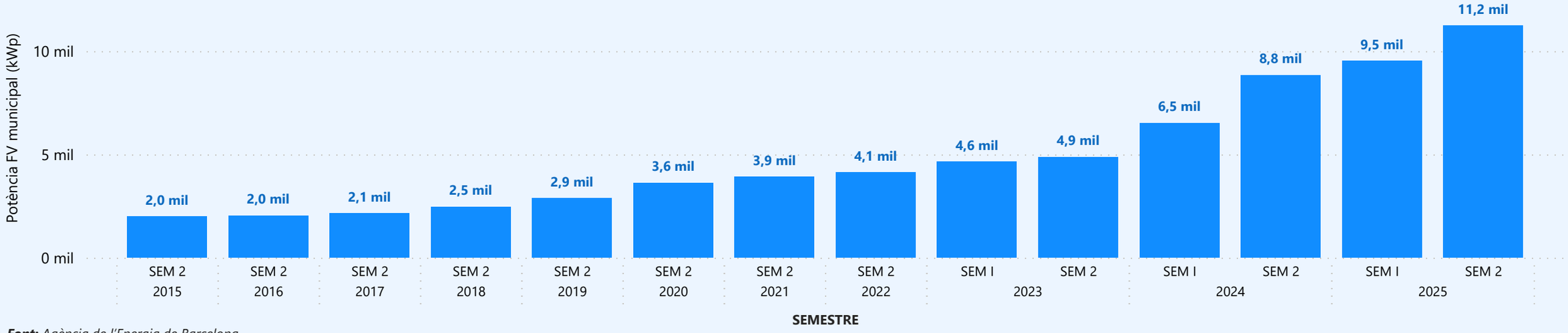
Font: *Agència de l'Energia de Barcelona*

Potència FV ciutat instal·lada acumulada (kWp) i Taxa de variació interanual de la potència FV ciutat instal·lada acumulada (%)



Font: *Agència de l'Energia de Barcelona*

Potència FV municipal instal·lada acumulada (kWp) i Taxa de variació interanual de la potència FV municipal instal·lada acumulada (%)



Font: *Agència de l'Energia de Barcelona*

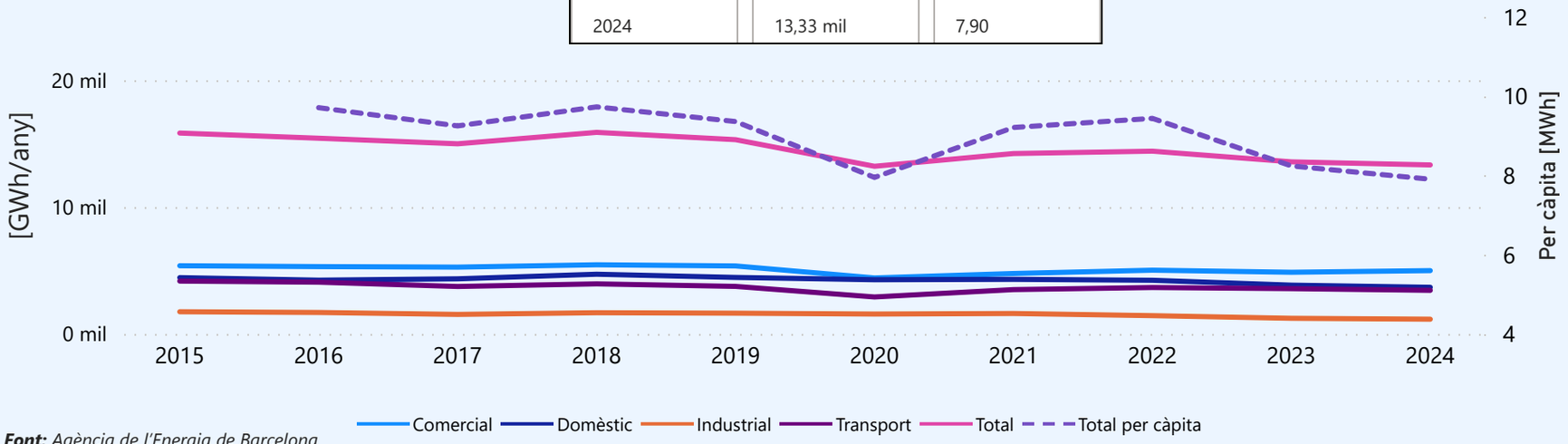
PLA TRANSICIÓ ENERGÈTICA

INDICADORS MENSUALS | INDICADORS TRIMESTRALS | INDICADORS ANUALS (I) | INDICADORS ANUALS (II)

Barcelona

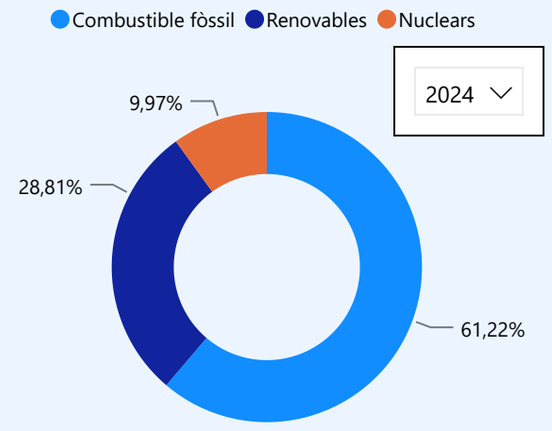
Consum total d'energia per sectors

Any	Consum total	Per càpita
2024	13,33 mil	7,90



Font: *Agència de l'Energia de Barcelona*

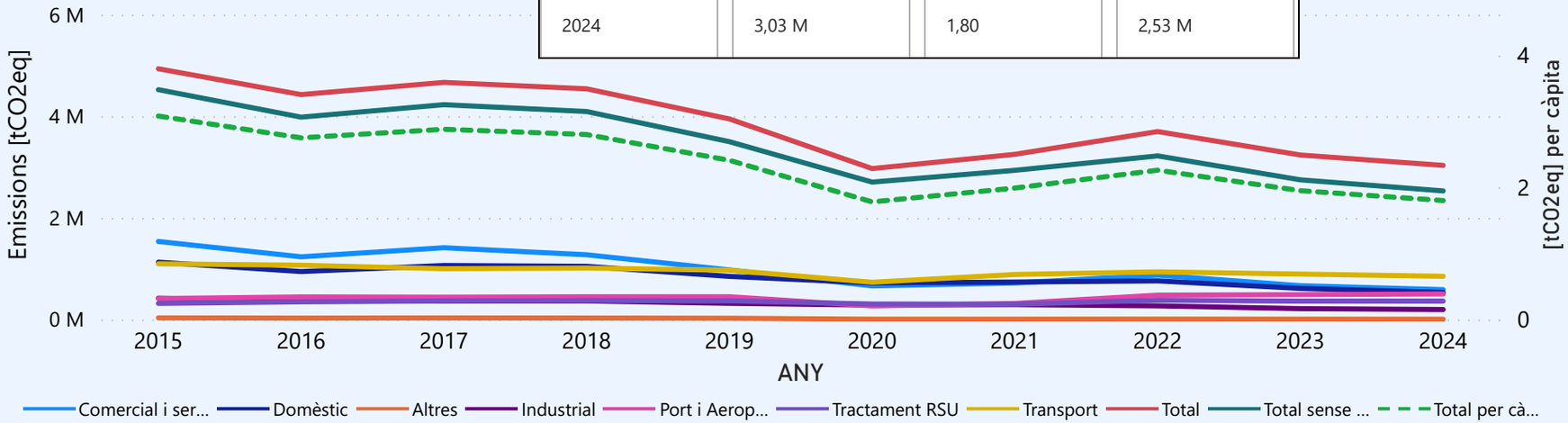
Origen energia final consumida



Font: *Agència de l'Energia de Barcelona*

Emissions de GEH de ciutat per sector

Any	Emissions amb Port i Aeroport	Per càpita amb Port i Aeroport	Emissions sense Port i Aeroport
2024	3,03 M	1,80	2,53 M



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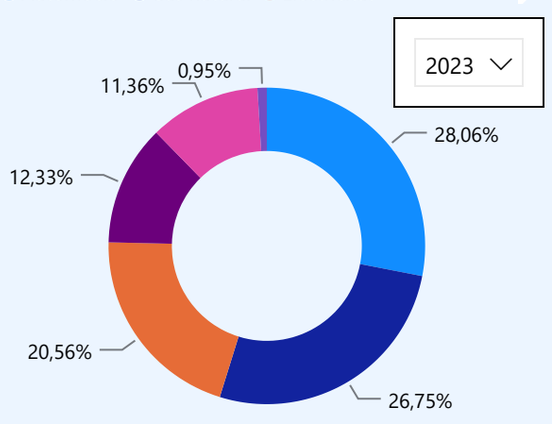
Origen emissions



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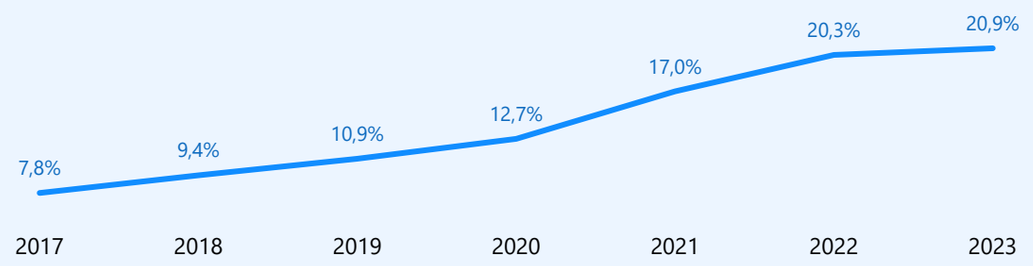
PLA TRANSICIÓ ENERGÈTICA

INDICADORS MENSUALS | INDICADORS TRIMESTRALS | INDICADORS ANUALS (I) | INDICADORS ANUALS (II)

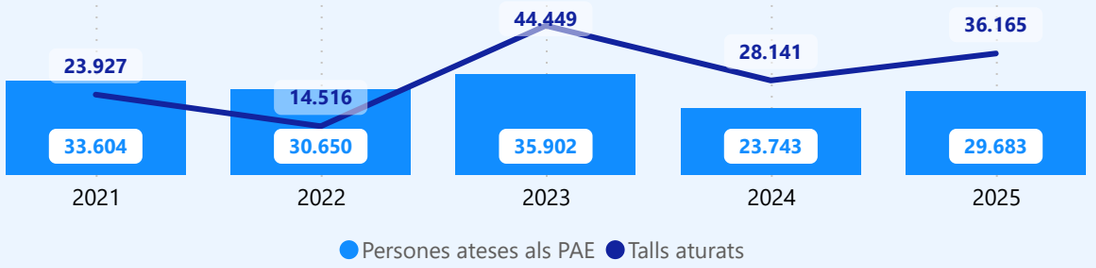
Barcelona

Proporció de llars en pobresa energètica



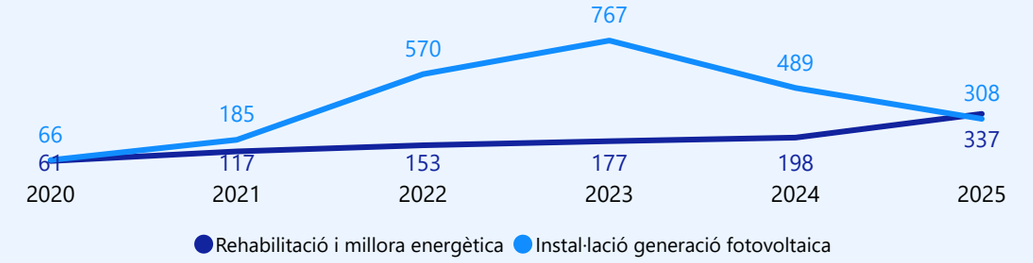
Font: *Estadístiques Metropolitanes de Condicions de Vida*

Persones ateses als PAE i Talls aturats



Font: *Institut Municipal de Serveis Socials*

Nombre de llicències d'obra autoritzades



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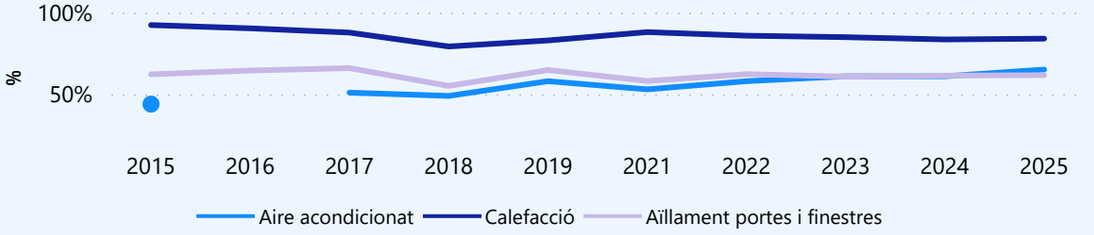
% Persones que tenen aire acondicionat, calefacció o aïllament tèrmic adequat de portes i finestres a casa



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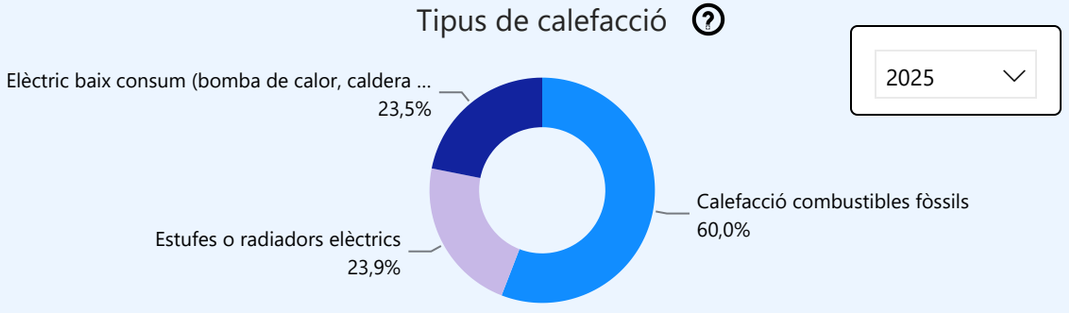
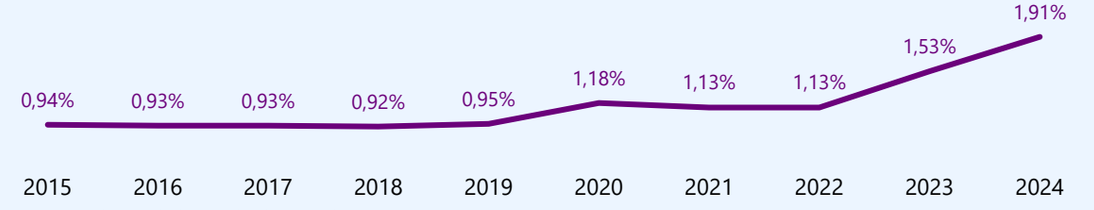
Tipus de calefacció



Font: *Enquesta de Serveis Urbans*

Proporció de l'energia consumida a Barcelona que ha estat generada localment amb recursos renovables



Font: *Agència de l'Energia de Barcelona*

PLA MOBILITAT

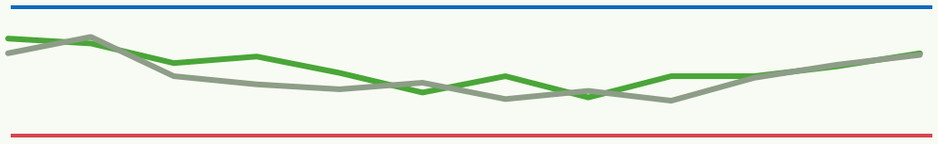
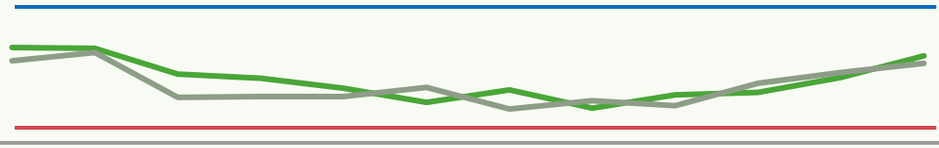
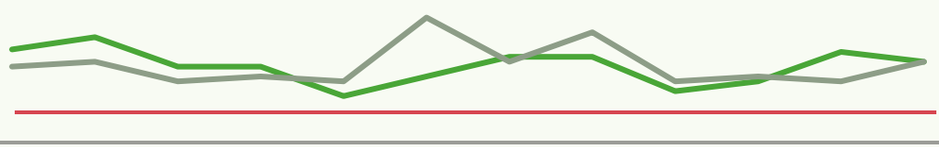
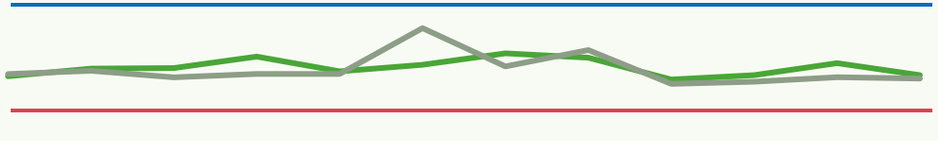
INDICADORS MENSUALS I | INDICADORS MENSUALS II | INDICADORS ANUALS

Barcelona

2024 2025 G F M A M J J A S O N D

	Últim valor	% var. mes anterior	% variació 2025 vs. 2024
VEHICLES DE ZERO EMISSIONS SOBRE EL TOTAL CIRCULANT % etiqueta zero del parc circulant ***Font:*** *Direcció de Serveis de Mobilitat*	6,19% Desembre 2025	-0,04% ↓	1,3% ↑
% VEHICLES ELÈCTRICS (BEV+PHEV) SOBRE EL TOTAL VEHICLES MATRICULATS A BARCELONA ***Font:*** *BSMSA. Indicadors Pla Endolla*	3,95% Desembre 2025	0,07% ↑	
% VEHICLES ELÈCTRICS (BEV+PHEV) SOBRE EL TOTAL VEHICLES MATRICULATS A CATALUNYA ***Font:*** *BSMSA. Indicadors Pla Endolla*	2,47% Desembre 2025	0,06% ↑	
NOMBRE PUNTS DE RECÀRREGA DE VEHICLES ELÈCTRICS DE PROMOCIÓ PÚBLICA DE CÀRREGA RÀPIDA ***Font:*** *BSMSA. Indicadors Pla Endolla*	52 Desembre 2025	0,0%	
NOMBRE D'USUARIS REGISTRATS AL SERVEI ENDOLLA BARCELONA ***Font:*** *BSMSA. Indicadors Pla Endolla*	56.935 Desembre 2025	0,74% ↑	
% USUARIS REGISTRATS ACTIUS SOBRE EL TOTAL USUARIS AL SERVEI ENDOLLA BARCELONA ***Font:*** *BSMSA. Indicadors Pla Endolla*	9,43% Desembre 2025	0,1% ↑	

2024 2025 G F M A M J J A S O N D

		Últim valor	% var. mes anterior	% variació 2025 vs. 2026
NOMBRE DE TRAJECTES DE BICING EFECTUATS ***Font:*** *Barcelona de Serveis Municipals. Bicing*		1.370.801 Desembre 2025	-24,2% ↓	2,1% ↑
NOMBRE DE VALIDACIONS EN METRO I AUTOBUS ***Font:*** *Transports Metropolitans de Barcelona*		66.926.510 Octubre 2025	16,5% ↑	3,0% ↑
NOMBRE DE VALIDACIONS EN TRANSPORT PÚBLIC Bus TMB, FGC, Metro, Rodalies, TRAM ***Font:*** *Transports Metropolitans de Barcelona i Ferrocarrils de la Generalitat*		77.807.769 Setembre 2025	29,7% ↑	4,6% ↑
QUALITAT DE L'AIRE Nivell mitjans immissions NO2_Trànsit (µg/m3) ***Font:*** *Agència de Salut Pública de Barcelona*	*Límit UE 40*  *Nivell guia OMS 20*	33,5 Desembre 2025	15,1% ↑	1,7% ↑
QUALITAT DE L'AIRE Nivell mitjans immissions NO2_Fons urbà (µg/m3) ***Font:*** *Agència de Salut Pública de Barcelona*	*Límit UE 40*  *Nivell guia OMS 20*	24,6 Desembre 2025	13,1% ↑	5,7% ↑
QUALITAT DE L'AIRE Nivell mitjans immissions PM10_Trànsit (µg/m3) ***Font:*** *Agència de Salut Pública de Barcelona*	*Límit UE 40*  *Nivell guia OMS 15*	23,0 Desembre 2025	-5,0% ↓	-24,0% ↓
QUALITAT DE L'AIRE Nivell mitjans immissions PM10_Fons urbà (µg/m3) ***Font:*** *Agència de Salut Pública de Barcelona*	*Límit UE 40*  *Nivell guia OMS 15*	16,3 Desembre 2025	8,9% ↑	-20,5% ↓

PLA MOBILITAT

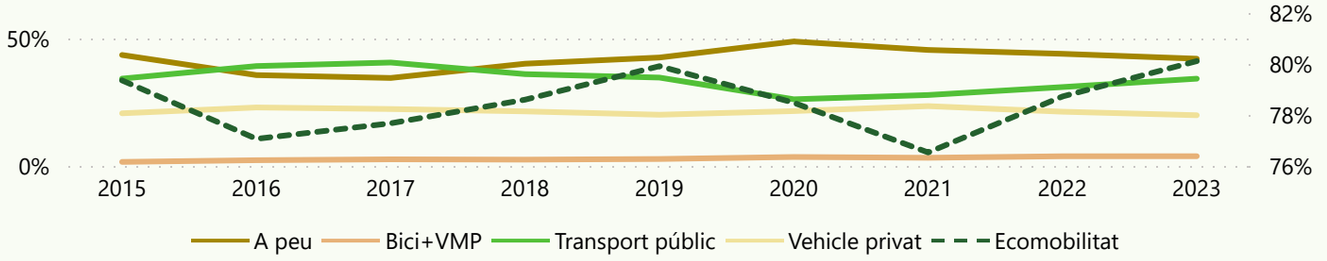
INDICADORS MENSUALS I | INDICADORS MENSUALS II | INDICADORS ANUALS

Barcelona

Milions de desplaçaments en dia feiner (inclou desplaçaments interns i desplaçaments de connexió)

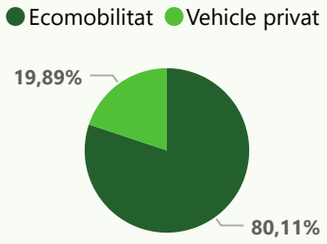
Font: *Enquesta de mobilitat en dia feiner*

Percentatge de repartiment modal dels desplaçaments



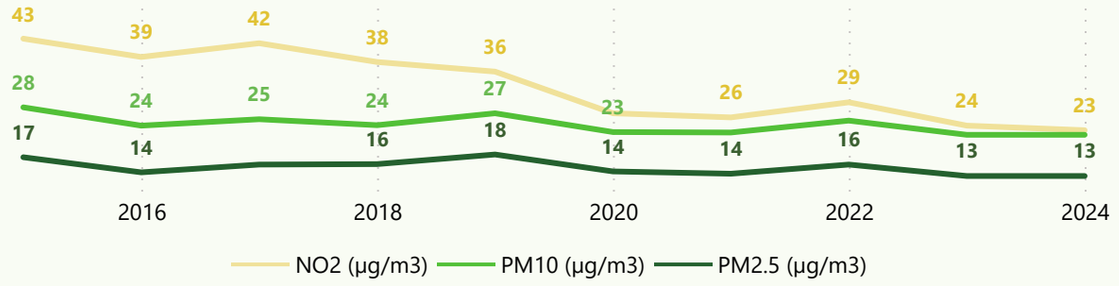
Font: *Direcció de Serveis de Mobilitat*

Ecomobilitat



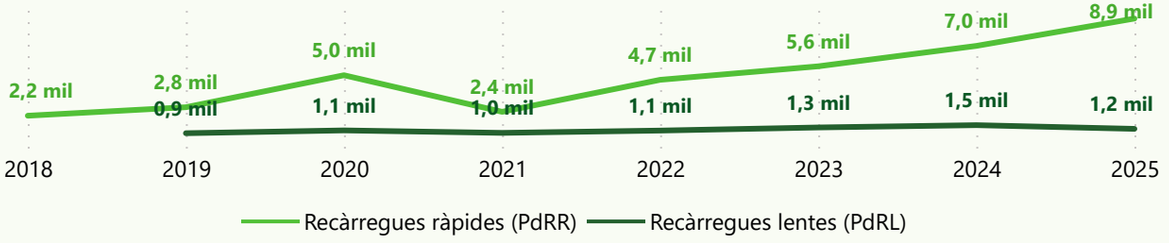
Font: *Direcció de Serveis de Mobilitat*

Concentració mitjana en µg/m3 de NO2, PM10 i PM2,5



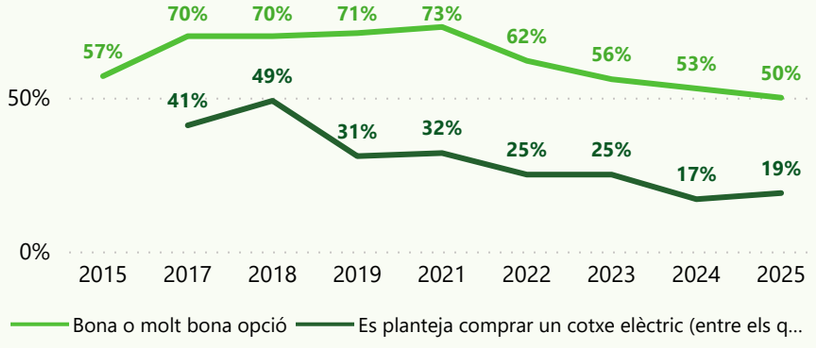
Font: *Agència de Salut Pública de Barcelona*

Nombre de recàrregues ràpides (PdRR) i lentes (PdRR) a la xarxa pública d'electromobilitat



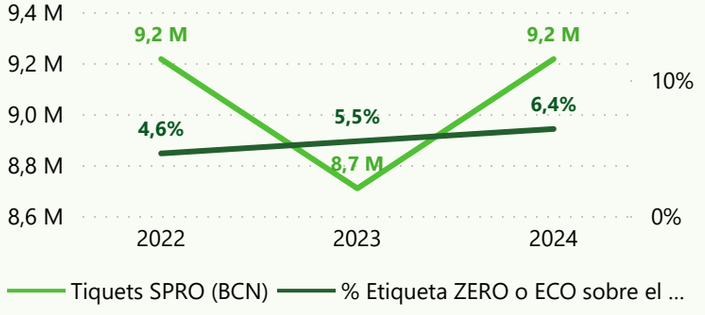
Font: *BSMSA. Indicadors Pla Endolla*

Opinió ciutadana compra vehicle elèctric



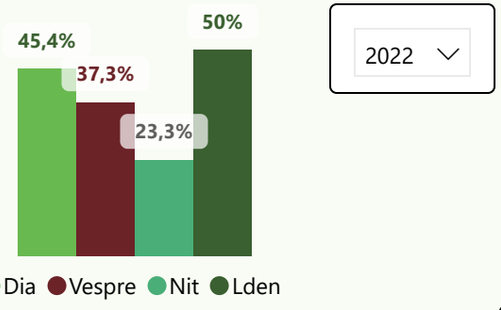
Font: *Enquesta de Serveis Urbans*

Nombre de tiquets SPRO i % amb etiqueta ambiental Zero o ECO



Font: *Direcció de Serveis de Mobilitat*

Percentatge població exposada a nivells mitjans de soroll dia-vespre-nit (Lden) ≥ 55 dB



Font: *Barcelona Regional*

PLA RESILIÈNCIA

INDICADORS MENSUALS | INDICADORS ANUALS

Barcelona

2024 2025 G F M A M J J A S O N D

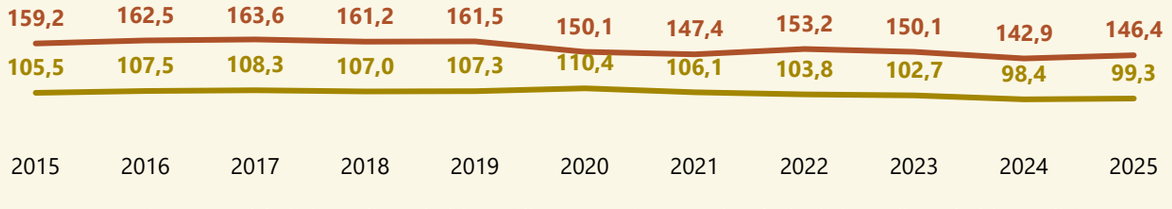
	Últim valor	% var. mes anterior	% variació 2025 vs. 2024
CONSUM TOTAL D'AIGUA POTABLE ⓘ Consum mitjà d'aigua per habitant i dia dels serveis Ajuntament, ús domèstic i per ús industrial i comercial ***Font:*** *BCASA i Padró Municipal d'Habitants*	**143,9 litres** **Octubre 2025**	**1,6%** ↑	**6,3%** ↑
INDICADOR DE SOSTENIBILITAT DELS SERVEIS MUNICIPALS (FREÀTICA/POTABLE) % consum recursos hídrics alternatius sobre consum total dels Serveis Urbans i Manteniment de l'Espai Públic ***Font:*** *BCASA* ****Nota: Les dades del 2024 condicionades per la prohibició d'utilitzar aigua potable per regar a causa de la sequera.***	**26,2%** **Desembre 2025**	**25,1%** ↑	****Nota: No comparable per restriccions sequera al 2024***
QUILÒMETRES DE XARXA DE CLAVEGUERAM REHABILITATS ***Font:*** *BCASA*	**135 Km** **Desembre 2025**	**-65,3%** ↓	**-87,6%** ↓
M² SUPERFÍCIE TOTAL DE SORRA DISPONIBLE ***Font:*** *Direcció de Platges. BCASA*	**222.160 m2** **Desembre 2025**	**12,1%** ↑	**7,9%** ↑
SUPERFÍCIE VERDA CONSERVADA m² de superfície ***Font:*** *Parcs i Jardins*	**10.364.276 m2** **Desembre 2025**	**-0,1%** ↓	**-3,9%** ↓
NOMBRE D'ARBRES VIARIS PLANTATS CADA MES ***Font:*** *Parcs i Jardins*	**216** **Desembre 2025**	**-13,6%** ↓	**-80,2%** ↓

PLA RESILIÈNCIA

INDICADORS MENSUALS | **INDICADORS ANUALS**

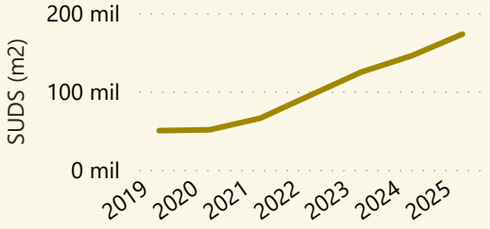
Barcelona

Consum urbà d'aigua i Consum domèstic d'aigua (litres per habitant i dia)



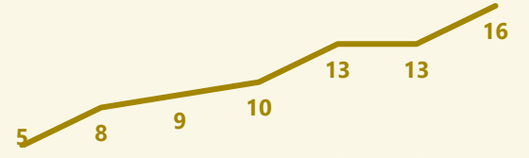
Font: *BCASA*

SUDS (m2)



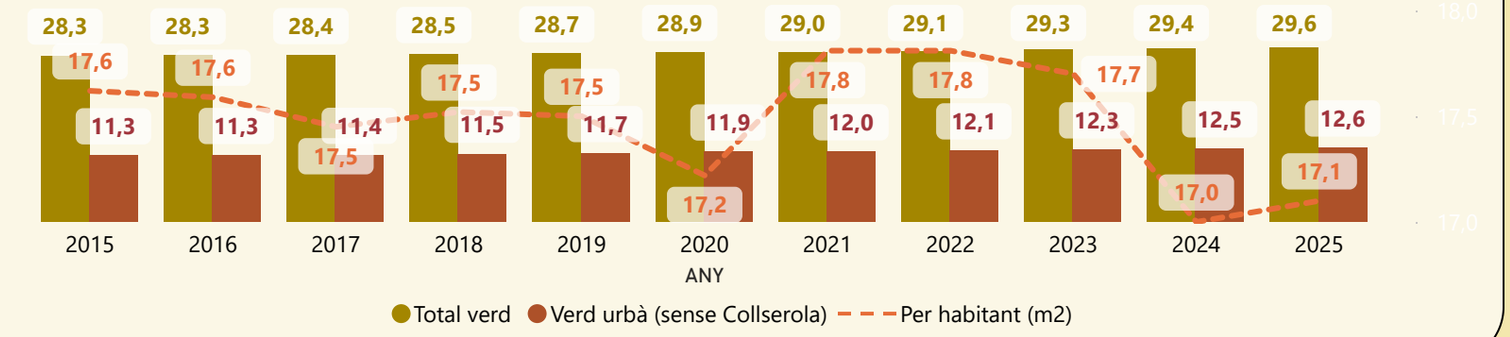
Font: *BCASA*

Refugis biodiversitat



Font: *Parcs i Jardins*

Superfície de verd total (km2) i de verd per habitant (m2)



Font: *Parcs i Jardins*

Intervencions PEPI acabades

2n Trimestre 2025

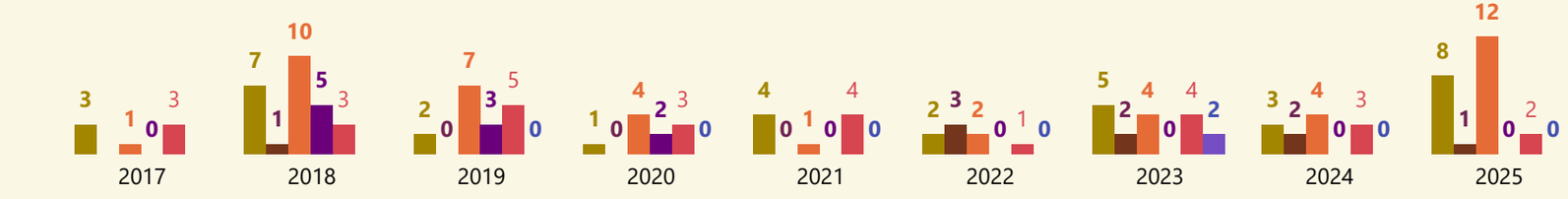
Font: *Arquitecte en Cap*

M2 de verd guanyats PEPI

2n Trimestre 2025

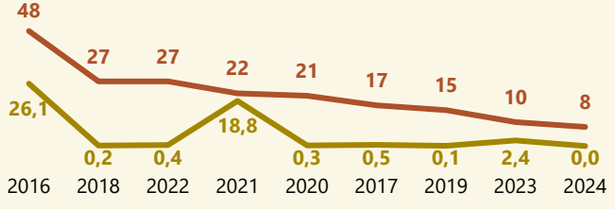
Font: *Arquitecte en Cap*

Activacions del PAM per insuficiència drenant i mal estat de la mar /Activacions del PAM per sequera /Episodis de pluges intenses /Episodis de pluges torrencials /Episodis de ventades /Episodis en fase d'alerta per neu i gel



Font: *BCASA i Protecció Civil Ajuntament de Barcelona*

Nombre d'incendis i superfície cremada per incendis (ha)



Font: *Departament d'Agricultura, Ramaderia, Pesca i Alimentació*

PLA CANVIEM PEL CLIMA

INDICADORS MENSUALS | **INDICADORS ANUALS**

Barcelona

2024 2025 G F M A M J J A S O N D

	Últim valor	% var. mes anterior	% variació 2025 vs. 2024
NOMBRE TOTAL DE SERVEIS OFERTS EN RELACIÓ A LA CULTURA DE SOSTENIBILITAT Activitats, recursos i elements de comunicació ***Font:*** *Oficina de Canvi Climàtic i Sostenibilitat*	**112** **Desembre 2025**	**-26,8%** ↓	**51,4%** ↑
NOMBRE DE PERSONES QUE FAN ÚS DELS SERVEIS DE CULTURA DE SOSTENIBILITAT ⓘ ***Font:*** *Oficina de Canvi Climàtic i Sostenibilitat*	**45.284** **Desembre 2025**	**18,7%** ↑	**56,0%** ↑
NOMBRE D'ADHESIONS AL REPTE COL·LABORATIU DE DESCARBONITZACIÓ ***Font:*** *Oficina de Canvi Climàtic i Sostenibilitat*	**125** **Desembre 2025**	**0,0%**	**73,6%** ↑
NOMBRE D'ADHESIONS AL REPTE COL·LABORATIU D'ESTALVI D'AIGUA ***Font:*** *Oficina de Canvi Climàtic i Sostenibilitat*	**124** **Desembre 2025**	**3,3%** ↑	**49,4%** ↑
RECOLLIDA SELECTIVA SOBRE EL TOTAL DE RESIDUS (%) ***Font:*** *Direcció de Serveis de Neteja i Gestió de Residus*	**42,44%** **Novembre 2025**	**1,0%** ↑	**0,8%** ↑
NOMBRE D'ACCIONS DE COMUNICACIÓ Visites WEB ***Font:*** *Direcció de Comunicació*	**4.147** **Desembre 2025**	**35,7%** ↑	
NOMBRE D'ACCIONS DE COMUNICACIÓ Publicacions a les Xarxes Socials ***Font:*** *Direcció de Comunicació*	**6** **Desembre 2025**	**-25,0%** ↓	
NOMBRE D'ACCIONS DE COMUNICACIÓ Impressions a les Xarxes Socials ***Font:*** *Direcció de Comunicació*	**91.588** **Desembre 2025**	**198,7%** ↑	

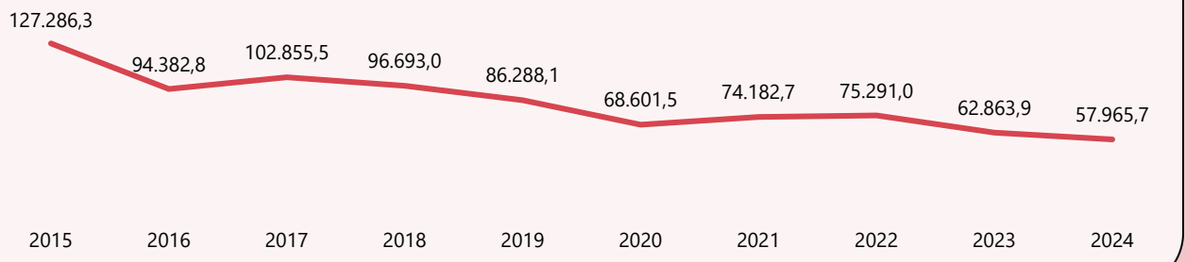
PLA CANVIEM PEL CLIMA

INDICADORS MENSUALS

INDICADORS ANUALS

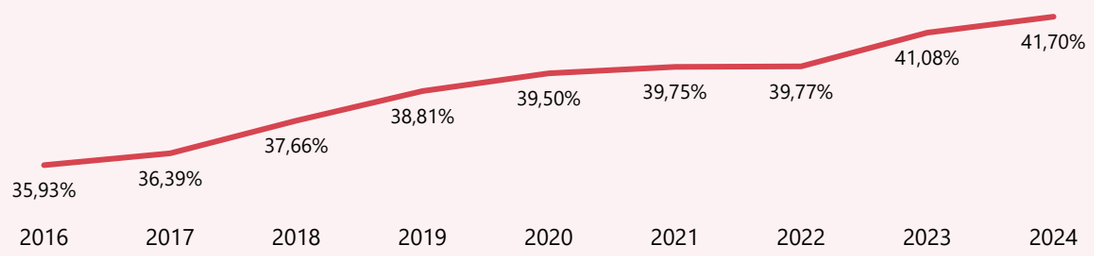
Barcelona

Emissions pla municipal (tCO2eq)



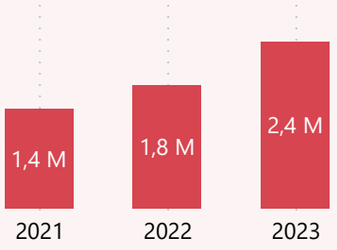
Font: *Agència de l'energia de Barcelona*

Percentatge de residus sòlids urbans recollits que acaben sent reciclats



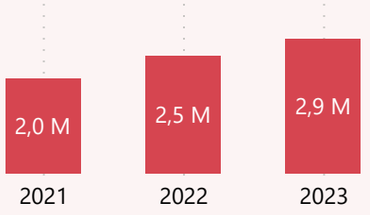
Font: *Direcció de Serveis de Neteja i Gestió de Residus*

Residus evitats amb la recollida selectiva (Kg)

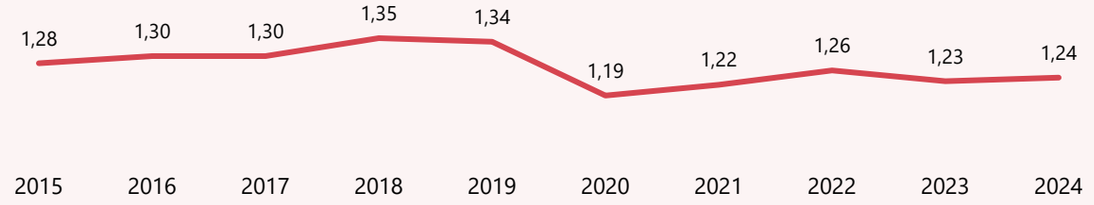


% Població que disposa de recollida de residus individualitzada

Emissions evitades amb la recollida selectiva (Kg CO2eq)



Kg/hab./dia de residus sòlids urbans recollits

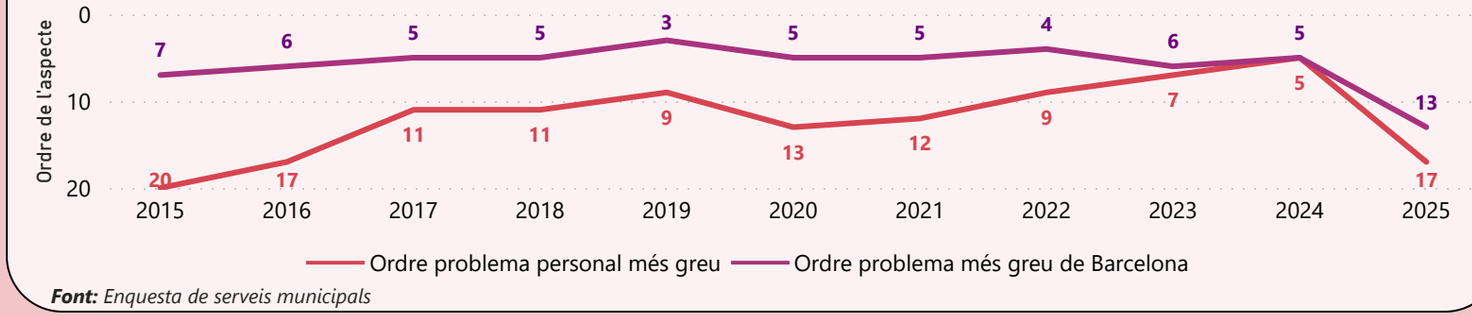


Font: *Direcció de Serveis de Neteja i Gestió de Residus*

Usuaris de les activitats i els recursos dels serveis de cultura de sostenibilitat

Font: *Oficina de Canvi Climàtic i Sostenibilitat*

Posició ordinal de l'aspecte "Canvi climàtic i qualitat ambiental" com a problema personal i com a problema de ciutat més greu



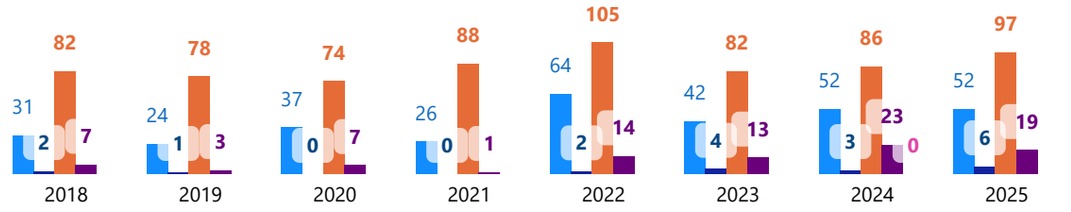
Font: *Enquesta de serveis municipals*

PLA CALOR

INDICADORS ANUALS

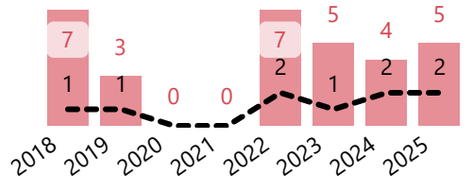
Barcelona

Intensitat calor. Dia i Nit



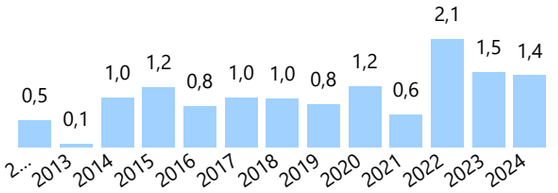
Font: *Barcelona Regional*

Nombre i durada en dies de les onades de calor



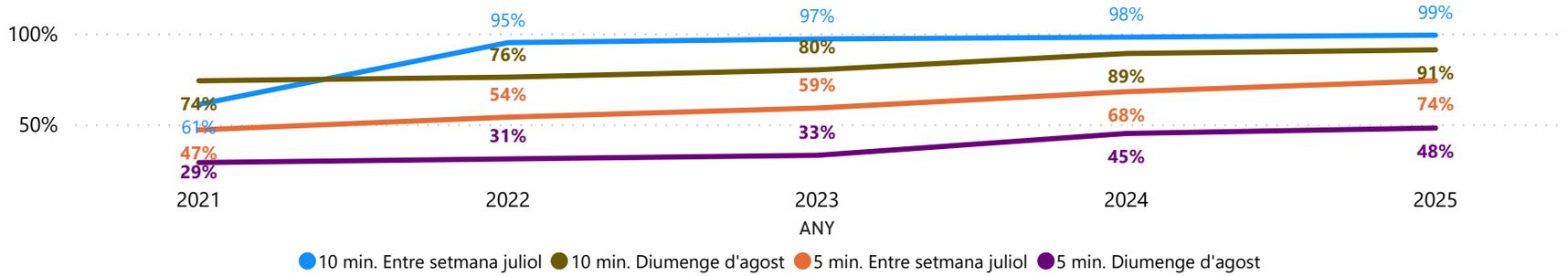
Font: *Barcelona Regional*

Desviació temperatura mínima mitjana respecte mitjana històrica.



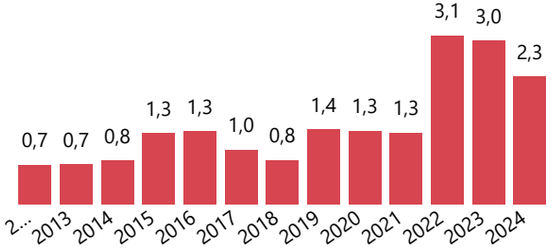
Font: *Servei Meteorològic de Catalunya*

% Població coberta amb un refugi climàtic situat a un radi de 10 i 5 minuts caminant.



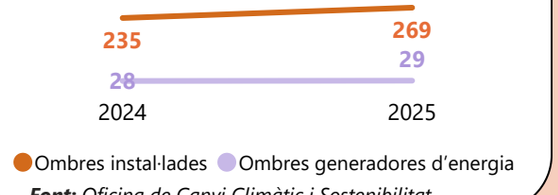
Font: *Oficina de Canvi Climàtic i Sostenibilitat*

Desviació temperatura màxima mitjana respecte mitjana històrica



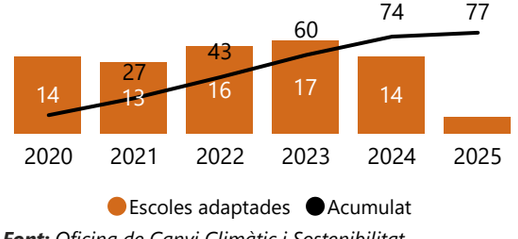
Font: *Servei Meteorològic de Catalunya*

Total nombre d'ombres instal·lades i nombre d'ombres instal·lades generadores d'energia sobre el total



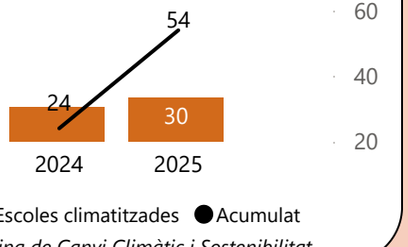
Font: *Oficina de Canvi Climàtic i Sostenibilitat*

Nombre d'escoles adaptades canvi climàtic. Patis transformats.



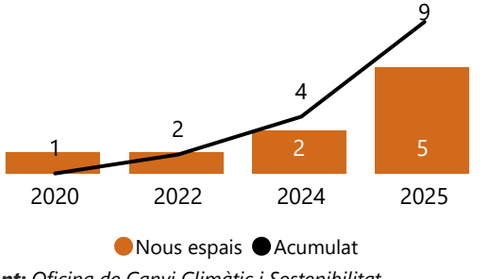
Font: *Oficina de Canvi Climàtic i Sostenibilitat*

Nombre d'escoles climatitzades. Pla Clima Escola



Font: *Oficina de Canvi Climàtic i Sostenibilitat*

Nombre d'espais de jocs d'aigua



Font: *Oficina de Canvi Climàtic i Sostenibilitat*