

Insights and practical solutions from  
Barcelona and Barcelona  
Metropolitan Area

# **BEST PRACTICE COMPENDIUM**

2023



FUNCTIONAL AREAS IN THE EU

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# INTRO

The functional areas receiving targeted support within the *Functional Areas in the EU* project face a wide range of complex challenges. By aggregating all inputs and data provided by the representatives of the functional areas included in the project, a comprehensive set of 20 challenges has been outlined, in line with the main needs and obstacles encountered. These challenges cover strategic and spatial planning, urban regeneration, housing, demographic decline and ageing, economic development, carbon neutrality, circular economy practices, green mobility, energy-efficient neighbourhoods and blue-green infrastructure, governance, smart financing for functional areas, collaborative networks and cross-border collaboration, stakeholder dialogue facilitation and citizen engagement, tourism, culture, branding and creative industries, digitalisation and cloud infrastructure.

The main goal of the *Functional Areas in the EU* project is to foster the generation of multiple solutions addressing the aforementioned challenges. By using this approach, our aim is to enhance the functional areas' capacity to effectively overcome these obstacles, by getting comprehensive responses to the inquiries and concerns raised.

As part of our efforts to support the functional areas, we introduced an exercise focusing on discovering, exchanging, and absorbing best practices. One of the ways we implement this exercise is through virtual and physical knowledge exchanges. For instance, in March 2023, we organised an online knowledge exchange event focused on *Approaches to Strengthening Functional Areas' Governance*. This workshop was attended by 96 representatives from various functional areas in the EU. The keynote speaker, Xavier Tiana Casablanca, Head of the International Relations Service of the Barcelona Metropolitan Area, delivered a session that delved into the history and evolution of the Barcelona Metropolitan Area (AMB). Given that AMB is renowned worldwide as a highly successful model of inter-jurisdictional cooperation, the session aimed to provide attendees with a comprehensive overview and valuable insights into enhancing governance within functional areas.

Upon the session's conclusion, we were happy to see a remarkable level of interest expressed by the FA's representatives regarding the tested models, applied processes, and implemented solutions employed by AMB throughout its development journey. Amongst the multitude of questions addressed by the attendees to Xavier Tiana Casablanca, several priority areas, that are relevant to the current stage of development and the latest projects of the functional areas, emerged. Taking note of these topics as ongoing focal points for the functional areas involved, the project team, with the kind cooperation and openness of the AMB team, arranged a study visit to the AMB headquarters. The purpose of this visit was to gain further insights into the identified subjects of interest.

Hence, throughout a short but very productive working visit, facilitated by a team comprising of AMB experts, we focused on the following key areas: climate change adaptation and mitigation, as well as urban regeneration and planning, with a particular focus on a neighbourhood-level perspective.

During the same timeframe, the project team facilitated a study visit by Zagreb Urban Agglomeration representatives to CCCB: Centre de Cultura Contemporània de Barcelona, as well as to Barcelona City Hall, with the support of the TAIEX Regio Peer2Peer instrument. The purpose of this exchange was to gain insights from CCCB, an entity with 30 years of experience in the field, on approaching the management and governance of a cultural centre. This was particularly relevant as Zagreb Urban Agglomeration is currently engaged in the preparation and implementation of an urban regeneration project centred around the Zagreb City Library and the Paromlin Culture Center – a flagship project to be implemented within the ITI (Integrated Territorial Investments) framework. Zagreb Urban

Agglomeration was interested in gaining applied knowledge from both the Center de Cultura Contemporània de Barcelona and Barcelona City Hall on strategies and approaches for successfully integrating a multifunctional cultural centre into the urban and metropolitan landscape, with the ultimate goal of generating tangible benefits for its residents. Following the visit, we gained a comprehensive understanding of the essential factors that a multifunctional cultural centre consider when starting its work, as well as the primary measures that must be implemented to ensure its sustainability in the medium and long term.

Drawing upon the aforementioned experiences, we have compiled a set of notes encapsulating the key insights gained from our study visits to AMB, CCCB, and Barcelona City Hall. This document serves as a short overview of these entities' long-term success, highlighting a few examples of best practices employed by these three institutions across the following subjects: Urban planning, Urban regeneration, Ecology, sustainability, climate change and energy transition, and finally, Culture.

Hence, this document provides a summary of several methodologies, processes and tools that functional areas can consider adopting. By tailoring them to their unique territorial circumstances, functional areas can effectively address the challenges outlined within the below categories:

- Strategic and spatial planning, urban regeneration and smart financing of functional areas;
- Carbon-neutral city, green mobility, energy-efficient neighbourhoods, housing and blue-green infrastructure;
- Civic engagement and stakeholder dialogue facilitation;
- Governance, cross-border cooperation and cooperation networks;
- Digitalisation and cloud
- Culture and creative industries.

The topics addressed in this document were selected based on the presentations delivered by speakers during the study visit to Barcelona. The work on these issues is a result of the Spanish experts' willingness to share their valuable insights and learned lessons with the functional areas participating in our project, specifically addressing the challenges currently relevant to their concerns. It is important to note that the good practices of the three institutions encompass a much broader range of areas and interventions. Therefore, we highly recommend accessing their official online platforms, where you can find a wealth of information on various other topics of interest.

We hope that this document will help functional areas identify solutions that they can implement within their respective territories. These models of good practices have the potential to yield concrete benefits for both the FAs' residents and their broader ecosystems.

## GETTING TO KNOW AMB - BARCELONA METROPOLITAN AREA

### Targeted challenges: governance, cooperation networks

The AMB is one of the most advanced metropolitan areas in the EU, with a broad mandate that has evolved from strategic planning, to cover territorial and urban planning, mobility, housing, the environment, and socio-economic development. It consists of the city of Barcelona and 35 municipalities, with a total population of over 3.2 million, and is the only formally institutionalised metropolitan governing body in Spain.

The institution was created in 2011, following the enactment of Law 31/2010 by the Parliament of Catalonia. This law marked the transition from the previous three metropolitan entities, namely the Union of Municipalities of the Metropolitan Area of Barcelona, the Environmental Agency (EMSHTR), and the Metropolitan Transport Agency, which were dissolved and replaced by the AMB.

Its work is structured across several thematic areas: Administration and Territory (including housing policies and public spaces), Ecology (water, waste, sustainability), Mobility, transport and sustainability, Urban planning policies development, Social and economic development, International relations and cooperation and Strategic Planning. Each area comprises several agencies or directorates. The comprehensive organisational chart can be consulted [here](#).



Source: AMB

**Administration and territory:** the AMB plans, analyses and develops interventions in public spaces, housing, and infrastructures, in alignment with the Metropolitan Urban Master Plan. It also invests in the development and upkeep of urban parks and public beaches as key metropolitan assets that require a unitary approach. The parks network includes 53 parks in 28 municipalities, while beaches are spread across eight municipalities, within a 42 km coastline.

**Mobility and transport:** the AMB oversees metropolitan public transport (surface and underground), promotes sustainable alternatives (with a total cycling network of approx. 1500 km), implements traffic programming, plans and manages the operation of the taxi service across the metropolitan

area, as well as tourist transport. The AMB addresses air pollution by establishing low emission zones (LEZ), in collaboration with metropolitan municipalities. The LEZ model developed in Barcelona is currently scaled up, through national legislation, across other urban areas in Spain.

**Ecology:** The AMB also has responsibilities in managing water cycles (purification, reuse, supply and sanitation) and waste (with a strong focus on waste prevention and reuse), as well as energy efficiency, environmental health, and sustainability education. As part of its social and economic development mandate, it drafts social policies, supporting municipalities to address inequality. Additionally, the AMB supports economic growth by attracting investors through its Economic Development Agency and economic activity promotion.

**Strategic planning:** the first metropolitan-scale activity of the AMB, entails a process of formulating and updating metropolitan and regional planning documents and studies and enabling strong public participation.

**International outreach:** the AMB advocates for the interests of metropolitan areas and makes a strong case for their importance as a governance level. The main document guiding this activity is the *Internationalisation Plan 2021-2025*, developed across five strategic lines: influence European and international political agenda, secure European and international funds for projects, foster innovation and knowledge management in metropolitan areas, promote international economic outreach and international cooperation. In 2015, the AMB has also initiated the European Metropolitan Authorities forum, becoming a major platform for high-level dialogue, including representatives of the European Commission, European Parliament and the Committee of Regions.

### **The governance structure of the AMB**

The Metropolitan Council serves as the highest governing body within the AMB. It comprises 90 metropolitan councillors, namely mayors and mayoresses, as well as town councillors. The Metropolitan Council is responsible for tasks such as appointing and terminating the presidency of the AMB, approving the Metropolitan Action Plan that outlines projects and services for the mandate, passing ordinances and regulations, and determining rates for metropolitan services. It ensures transparency and public access by providing live broadcasts of its plenary sessions, videos of council sessions, agendas, and minutes of the agreements reached within the Council.

The Presidency holds the authority to direct the government and oversee the metropolitan administration, while the Executive Vice President takes charge of coordinating government actions and project development. In cases specified by law, the Vice-presidencies step in to replace the presidency. The Board of Governors expedites decision-making processes and facilitates administrative tasks.

Metropolitan political groups are formed based on ideological affiliations and serve as organisational structures for the metropolitan councillors. The Council of Mayors acts as a unifying body, integrating the mayors from all 36 metropolitan municipalities. Lastly, the Special Commission of Accounts is entrusted with the responsibility of overseeing and controlling the economic management of the AMB.

The following sections present several innovative initiatives undertaken by the Barcelona Metropolitan Area (AMB), as well as the Barcelona City Council. Due to the strong cooperation model involving the two institutions, several of these initiatives are either replicated from the Municipality of Barcelona to the metropolitan level, or viceversa.

# URBAN PLANNING



# Barcelona Metropolitan Urban Master Plan

## Targeted challenges: strategic and spatial planning

Barcelona and its metropolitan area have experienced remarkable growth and urbanization, leading to the emergence of new territorial challenges and opportunities. To accommodate the needs of its dynamic, thoughtful urban planning is necessary to create livable and well-designed spaces. The new Metropolitan Urban Master Plan (PDUM) sets the vision for the Barcelona Metropolitan Area over the next two decades and is the result of a comprehensive co-design process.

Over the past 40 years, the Barcelona General Metropolitan Plan approved in 1976 has guided the growth of the region by focusing on improving infrastructure, services, and development initiatives. However, with the achievement of many objectives and the emergence of new challenges, it became necessary to develop a new instrument to address present and future needs.

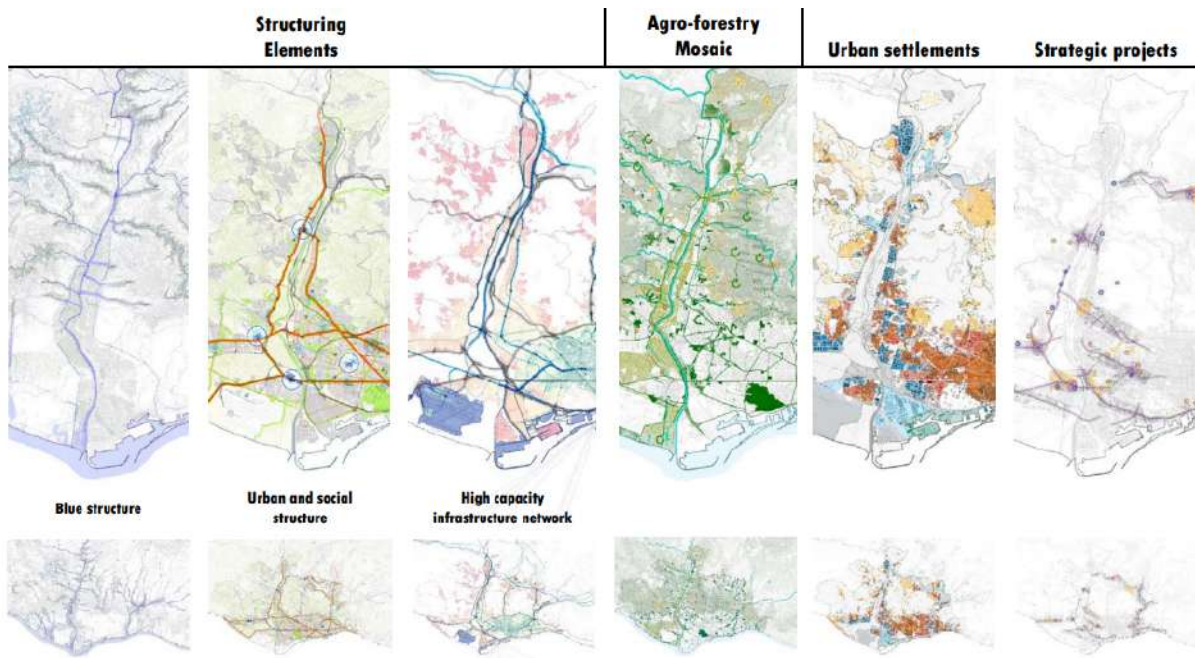
In 2010, the Barcelona Metropolitan Area was empowered by the central government to establish the main lines of development for urban matters in the region, leading to the formulation of a new comprehensive plan for urban development. The initial version of the new Metropolitan Urban Master Plan (PDUM) was approved in 2019, with the final version adopted in 2023.

The development of the Metropolitan Urban Master Plan was facilitated by a favourable technical, political, legal, and administrative environment. Educational institutes provided expertise, while the availability of data and necessary equipment supported the planning process. The political environment, enabled by the law granting urban planning power to the Barcelona Metropolitan Area, allowed for the establishment of a local governing body. The simultaneous development of the plan with the draft for the Territorial Law of the Government of Catalonia provided opportunities for synergies and alignment between the documents. Another crucial aspect of the plan is its participatory process and collaboration framework, which involved stakeholders such as technical services, academia, professionals, and citizens. Through contributions, studies, discussions, workshops, and exhibitions, the plan was co-designed, incorporating the expertise and ideas of over 500 experts. Various materials and catalogues were developed to document the workshops and provide a foundation for the technical aspects of the plan.

The PDUM identifies ten objectives: (1) Strengthen metropolitan solidarity, (2) Promote the metropolitan capital, (3) Naturalize the territory by enhancing the values of the biophysical matrix, (4) Improve the efficiency of urban metabolism and minimize environmental impacts, (5) Articulate the territory from a polycentric structure, (6) Encourage active and sustainable mobility by rethinking metropolitan infrastructures, (7) Promote social cohesion through housing, public space, facilities, and public transport, (8) Rehabilitate and recycle urban fabrics, (9) Increase urban complexity and habitability and (10) Promote the competitiveness and sustainability of the metropolitan economy.

To achieve these objectives, the plan contains proposals under the following sections: metropolitan structure (namely blue structure, urban and social structure, high-capacity infrastructure networks), agroforestry mosaic, urban settlements, and strategic projects.

Framework of the Barcelona Metropolitan Urban Master Plan (PDUM)



Source: AMB

## Metropolitan Avenues: Rethinking the Urban and Social Structure by Transforming Roads

Within the objective of improving the urban and social structure, the approach can be synthesized as aiming to link focal points currently fragmented by segregated infrastructure at the metropolitan level. These focal points, or “centralities” have varying degrees of specialization and metropolitan relevance and need to be interconnected through an integrated transport network that transcends administrative boundaries. Interventions will also contribute to the reorganisation of the urban landscape, and the definition of public spaces, facilitating social interactions. Moreover, this network establishes connections between urban centres and natural areas, through green corridors.

The PDUM envisions the development of the area as a “polycentric urban system articulated by a metropolitan network”. In this context, transforming the road network (particularly old roads and highways) is focused on prioritising public transport, active mobility and enhancing city life. The PDUM classifies roads into four types, ordered according to the intensity of people (not vehicles):

- **Metropolitan avenues**, as the main element of structuring the territory, ensuring sustainable mobility and urban development through their continuity across the area. They enable access to metropolitan centres, parks and open spaces, and public transport nodes.
- **Metropolitan streets**, defined as local roads that have a strong potential for restructuring. They are key for prioritising pedestrian, cycling and public transport.
- **Metropolitan connectors**, which distribute traffic from major roads and can ensure a seamless network for cyclists, pedestrians and public transport users at the metropolitan level.
- **Metropolitan paths**, are routes that facilitate access to agroforestry areas, with a minimum impact.



Visualisation of the Metropolitan Avenues (left), the Metropolitan Streets and the Metropolitan Paths.  
 © Barcelona Metropolitan Area, Felipe Ibarz (PDUM, 2019)

## Transforming ambition into practice

### Vallès Avenue (*Avinguda del Vallès*) - Humanizing the N-150 road

#### Targeted challenges: green mobility, urban regeneration



The Vallès Avenue benefitted from a comprehensive planning process led by the Barcelona Metropolitan Area, aimed at redesigning the 6.5 km long N-150 road, crossing four municipalities. An Integrated Action Plan (IAP) was developed in 2022 through the URBACT RiConnect project, as a “test bed” for the network of planned *metropolitan avenues* – a definitory concept of the Barcelona Metropolitan Urban Master Plan, approved in 2023. The goal was to reimagine the area along the road and transform it into a vibrant civic, green, and commercial corridor that offers enhanced public transportation connections and works as the backbone of the territory.

The area is characterized by its complexity, involving multiple administrations and stakeholders, requiring the participation of various parties, and adopting an integrated approach at different scales. To ensure inclusive decision-making and to gather valuable insights, the project has extensively engaged citizens and institutions through a comprehensive participation process, including co-creation meetings, workshops and large physical events. This collaborative approach has allowed for the joint creation of a site diagnosis and the proposal of actions to be implemented. The 13 objectives of the Action Plan were also co-defined and grouped into five categories: Connecting Avenue, Friendly Avenue, Inclusive Avenue, Healthy Avenue and Metropolitan Avenue. The proposed projects’ contribution to the objectives was weighed in as part of the prioritisation process.



*Source: Action Plan for the Vallès Avenue*

Reflecting its metropolitan dimension, the pilot local plan along the Vallès Avenue incorporates the information and guidelines of the Metropolitan Urban Master Plan (PDU), as part of a larger metropolitan avenue, and requires the management of administrative boundaries and competences at a supra-local level. The plan is guided by four strategies that incorporate the objectives and map the concrete interventions.

### **Territorial Strategy**

The Territorial Strategy for the Valles Avenue envisions a new interconnected structure that integrates the Avinguda del Vallès with its surrounding urban and natural areas. This strategy focuses on longitudinal corridors and transversal corridors aiming to reestablish connections in the territory and addressing the gaps created by existing infrastructures. Existing and proposed transversal corridors are envisioned to serve as meeting spaces for citizens and host open spaces and facilities. The Territorial Strategy also sets a framework for the future integration of infrastructure hubs.

### **Local Strategy**

In order to improve the overall urban environment and promote the well-being of the surrounding areas and neighbourhoods, the plan presents a renewed local urban structure for each municipality along the Valles Avenue. This proposed structure seeks to enhance the existing urban fabric by creating a more livable and cohesive community.

**Ensuring a continuous flow:** The focus is on improving the course of the avenue and adjacent interest areas. This involves enhancing connectivity to the historic center, calming traffic on specific streets, and revitalizing areas that disrupt the continuous flow of the avenue. The plan also suggests establishing a new corridor to connect currently isolated neighborhoods, in order to improve accessibility and cohesion within the area. Measures include transforming

streets to prioritize pedestrians and cyclists. A key success factor was the transfer of ownership of parts of the N-150 road from the Government of Catalonia to the municipalities, allowing for the implementation of pacification actions.

**Connecting the dots:** The concept of “centralities” is introduced by the PDUM to define focal points along the avenue, across three levels: metropolitan, local and neighborhood level. These areas include parks, commercial areas, industrial areas, or public facilities, generating and attracting flows of people. For example, the new proposed corridor includes two centralities - The Maria Regordosa park, where a future major healthcare facility will be built (Hospital del Vallès), and the Uralita area, an industrial zone with several municipality-owned factories. The development and enhancement of these centers contribute to the overall improvement of the surrounding neighborhoods. In the case of the planned regional hospital, new mobility connections are required to ensure access to the facility of metropolitan relevance, providing an opportunity for rethinking the urban fabric around it.

**Repurposing industrial areas:** Obsolete industrial areas are targeted for redevelopment. This involves refurbishing existing structures and creating new amenities such as parks or public spaces.

### **Mobility Strategy**

The Mobility Strategy aims to prioritize and enhance active modes of transportation. It proposes the establishment of new road connections to divert traffic away from the Avinguda del Vallès. This redirection of traffic helps reduce dependence on the avenue and creates an opportunity to reorganise the transportation network. Freed-up space will be dedicated to other modes of transport (public transport, cycling and pedestrians).

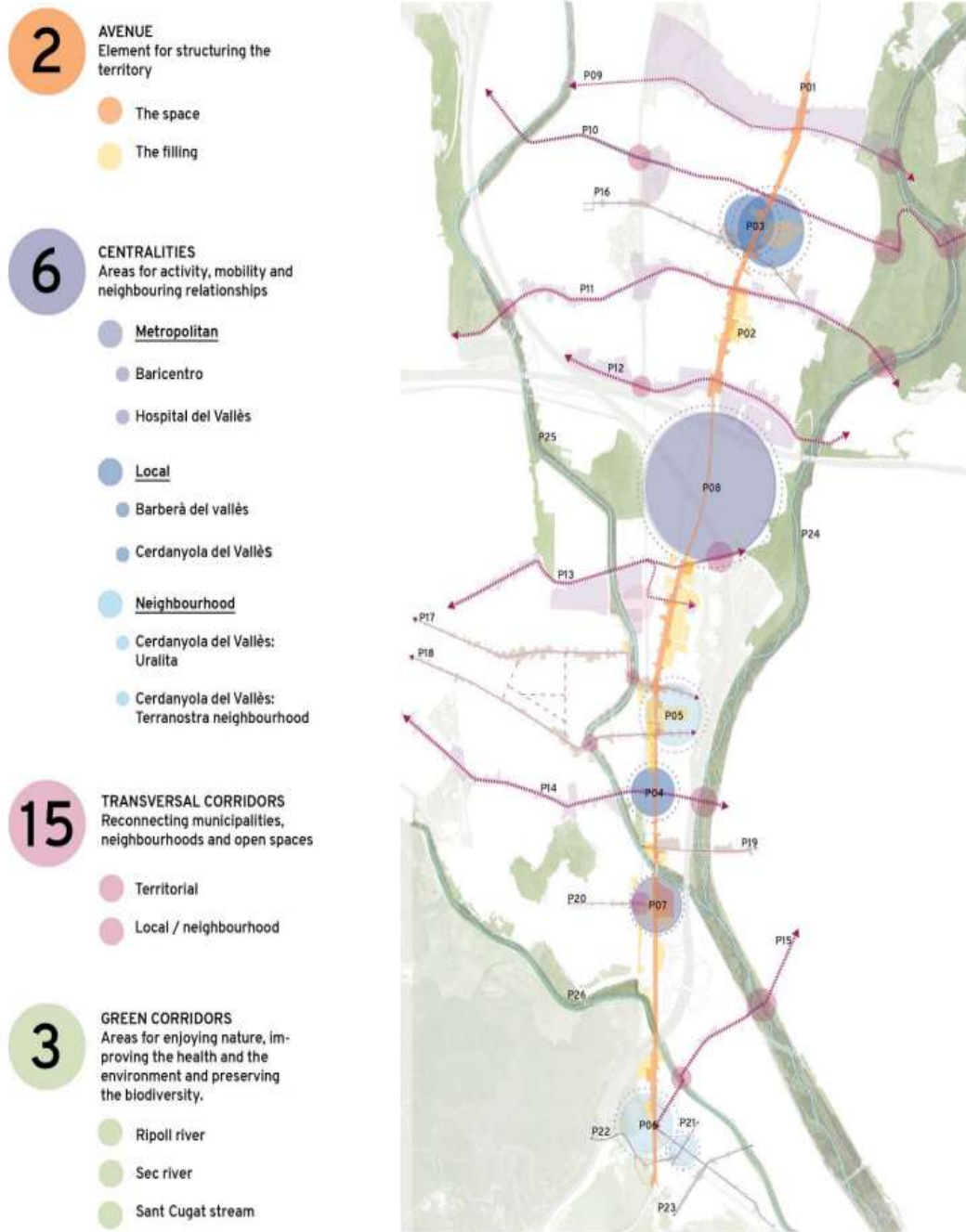
Additionally, the strategy identifies several areas for improvement on the road itself. These include addressing the lack of continuity in the cycle lane, the need to widen the pavements to accommodate pedestrians, and the replanning of car parking facilities.

### **Synthesis Strategy**

In conclusion, a synthesis map has been developed to integrate the three aforementioned strategies (territorial, local, and mobility) and outline the necessary actions to achieve the defined objective:

- **“a more connected avenue**, maximising flows and intermodality, public transport, cycling and pedestrians
- **a friendly and attractive avenue** pacifies the road corridor and regenerates the surrounding fabric
- **an inclusive avenue**, creating meeting spaces and coexistence between different urban uses
- **a healthy avenue**, reducing externalities, re-naturalising and preserving biodiversity and natural connectors.
- **a metropolitan avenue**, i.e. one that is managed jointly by all the stakeholders.”

Vallès Avenue (Avinguda del Vallès) project – key elements



Source: AMB

The Integrated Action Plan for the Vallès Avenue can be consulted here:

[https://urbact.eu/sites/default/files/2023-01/riconnect\\_iap\\_amb\\_sq.pdf](https://urbact.eu/sites/default/files/2023-01/riconnect_iap_amb_sq.pdf)

## Learning tools

### Targeted challenges: spatial planning, digitalisation



Integrated urban planning is one of the main competences of the AMB, exercised through the formulation and approval of the Metropolitan Urban Master Plan (PDUM) and other planning documents. Hierarchically, the PDUM is aligned with planning documents at the regional level (Territorial General Plan of Catalonia - PTG, Metropolitan Territorial Plan of Barcelona - PTMB), and it guides urban planning at the level of the municipalities.

In addition, the AMB collaborates with municipalities in developing territorial studies and provides technical, legal, and financial assistance for action programs and projects. The institution also plays a key role in ensuring the protection of natural areas through applying unitary regulations at the metropolitan level— a competence delegated by the town councils of metropolitan localities.

A wide range of urban planning documents are elaborated in partnership with municipalities, such as studies and approaches to metropolitan issues (e.g. Study of low-density urban developments and the urbanization potential at the metropolitan level), proposals of urban and territorial models (e.g. model for the transformation of a metropolitan road) and urban planning and management documents (e.g. natural park preservation plans, Local plan to transform a stretch of the Metropolitan Avenue of Vallès and build a regional hospital).

Territorial studies cover a wide range of topics – from economic activity, determining urban areas that require special attention (according to the Catalan Law 2/2004 on the improvement of neighbourhoods, urban areas and towns that require special attention), fluvial morpho-dynamics, to the evolution of the housing sector (housing offer, rental price indices, including tourism housing). The data derived from these studies are used to inform the decisions and actions of the metropolitan administration in exercising its competencies.

If you are interested in learning more about the most recent activities of the AMB in the field of urban planning, we recommend accessing the following resources:

- Full archive of [territorial studies](#)
- A [geoportal of cartography](#), including orthophotos, 3d models of the territory, and a land use map
- [IDEAMB platform](#): Spatial Data Infrastructure portal, showing geographic information resources generated by the AMB. It contains 45 layers of geo-referenced data and metadata which can be combined, across the following dimensions: Socio-economic development, Urban facilities (points of interest and services of metropolitan parks and beaches and other urban facilities), Natural spaces (river areas, parks, beaches and other natural spaces), Territorial studies and statistical data, Environmental information (photovoltaic solar radiation potential, potential green roofs, index of vulnerability to climate change, climate shelter network, electricity consumption and other environmental information data), Mobility (bike lane network, park and ride facilities, charging stations for electrical vehicles and other mobility data).
- [Planning geoportal](#), showing the classification of zones and systems determined by current planning, as well as land classification, delineating between urban land, developable land or non-developable land.

Further information can be explored on the AMB page dedicated to urban planning: <https://www.amb.cat/s/web/territori/urbanisme/planejament-urbanistic.html>

## Metropolitan Investment Plan 2020-2030

### Targeted challenges: strategic planning, smart financing of functional areas

The Metropolitan Investment Plan 2020-2023, with a funding allocation of €316.15 million, supports investments in natural areas, public spaces, infrastructure and facilities that contribute to the development of the metropolitan area, providing tangible benefits to each metropolitan municipality. This investment plan adheres to the established methodology of previous mandates, ensuring a predetermined distribution of resources and agreed-upon investments with the metropolitan municipalities. Furthermore, it emphasizes the importance of administrative, technical and financial coordination among institutions, to effectively implement the plan.

### Distribution of financial resources

To elaborate on the Metropolitan Investment Plan 2020-2023, the AMB has conducted an assessment of its investment capacity for the 2020-2023 term, considering multiple factors, such as overall economic scenarios, trends in budget execution and future economic prospects. Moreover, regarding the allocation of available resources for the Program for Territorial Cohesion Actions (PACTE), the AMB has taken into account the differentiation of municipalities based on their participation regime in State revenues (PIE). Consequently, the distribution of resources has been organised in a way that ensures differentiation between two distinct groups of municipalities.

- The first group consists of municipalities with over 75,000 inhabitants, that are affiliated with the tax allocation system. These municipalities contribute to the AMB according to their PIE, both in terms of absolute value and per capita ratio. This group comprises the six metropolitan municipalities with the highest population, excluding Barcelona.
- The second group comprises 29 municipalities with fewer than 75,000 inhabitants, that fall under the general regime of PIE. As part of this regime, these municipalities make individualized contributions to the AMB, which are relatively lower compared to the first group.

The necessary funds required for the execution of the planned investments described in the Plan are regularly reviewed and allocated on an annual basis, taking into consideration the available resources of the AMB for the fiscal years. This approach guarantees that the complete allocation is accounted for in the corresponding budgets spanning from 2020 to 2023.

### The financing programs through which the metropolitan investment plan is implemented

The implementation of the Metropolitan Investment Plan 2020-2023 for the municipalities of the AMB is executed via four distinct programs:

1. **The Territorial Cohesion Action Program (PACTE)**, with a budget of 100 million euros, encompasses actions conducted by the AMB either through direct execution or in collaboration with municipalities. This program encompasses the development of facilities, public spaces and infrastructure.
  - Additional details: PACTE 2020-2023 is implemented in thirty-five municipalities within the AMB, excluding Barcelona, which has its own dedicated program for public space investments. The distribution of funds for the implementation of the Territorial Cohesion Program aims to achieve proportionality, while also addressing inequalities among metropolitan municipalities. Proportionality is achieved by allocating more resources to



municipalities based on their population's weight within the total population of the AMB, excluding Barcelona. The official population data used for this purpose are those published by the National Institute of Statistics as of January 1, 2018. Furthermore, inequalities are balanced by allocating a portion of the resources inversely proportional to the socio-economic level of each municipality. This is determined by considering the gross family income per inhabitant in 2018 as an indicator, weighted by the respective population figures and applied inversely.

- Further information: <https://www.amb.cat/en/web/amb/govern-metropolitana/economia-i-inversions/inversions-i-suports/pla-d-inversions/pacte>
2. **The Urban and Social Improvement Action Program (PAMUS)** is allocated a budget of 181.15 million euros. This program provides funding for various works and interventions carried out by municipalities, as well as for the maintenance and financing of regular services, facilities and municipal actions specifically aimed at users and citizens.
- Additional details: The Urban and Social Improvement Program's total funding amount allows for an annual investment of 45.3 million euros across all municipalities within the AMB, excluding Barcelona. PAMUS serves as a financial resource for supporting the works and interventions conducted by Town Councils, as well as for the maintenance and financing of regular operations related to municipal services, facilities and actions directly benefiting users and citizens (namely initiatives of social interest and those addressing emergency situations). Moreover, PAMUS can also act as a complementary program, supplementing the activities of the Territorial Cohesion Program (PACTE) and providing technical assistance to Town Councils associated with PACTE, as implemented by the AMB in each municipality.
  - Further information: <https://www.amb.cat/en/web/amb/govern-metropolitana/economia-i-inversions/inversions-i-suports/pla-d-inversions/pamus>
3. **The Project and Technical Assistance Program** is allocated a budget of 10 million euros. This program facilitates the supplementation of the AMB's direct project work with external coverage for technical tasks.
- Additional details: The AMB's own services play a significant role in carrying out the technical tasks required for the implementation of various programs within the metropolitan investment plan. Additionally, AMB's teams provide ongoing support to Metropolitan Councils in executing municipal tasks related to their respective technical specialities. However, over time, the technical activities associated with investment and intervention management in the local metropolitan context have become increasingly complex. Consequently, the AMB's services have been enhanced and adapted to meet new challenges and demands from the Councils. Given the current operational capacity and the essential attributes of efficiency and quality inherent in these services, it was deemed necessary to allocate specific resources to supplement the internal work with external technical assistance. Hence, within the framework of the 2020-2023 Investment Plan, an allocation of 10 million euros is expressly dedicated to the projects' concepts and to technical assistance.
  - Further information: <https://www.amb.cat/en/web/amb/govern-metropolitana/economia-i-inversions/inversions-i-suports/pla-d-inversions/projectes-i-assistencia-tecnica>
4. **The Natural and Urban Landscape Improvement Action Program (PSG)** is endowed with a budget of 25 million euros. This allocation is primarily intended for investments in metropolitan river

spaces, restoration of degraded areas, integration of infrastructure, enhancement of connectivity between urban and natural spaces, as well as the implementation of nature-based solutions within cities.

- Additional details: As per the guidelines set in the Metropolitan Investment Plan 2020-2023, this Program aims to promote a range of actions within the territorial scope of the AMB. In addition to the aforementioned funding objectives, the Program seeks to consolidate, restore and enhance the metropolitan green infrastructure, in a broad sense. It aims to safeguard biodiversity, foster metropolitan biological connectivity, establish a sustainable utilization of environmental services and enhance the resilience of these services. The PSG is a metropolitan investment program that aims to provide funding for those actions that are already in progress or at an advanced execution stage from the Program's approval. These actions require a strong involvement of the Town Councils, as expressed through co-financing agreements and management commitments. Additionally, the actions must align with the AMB's philosophy for managing the metropolitan system of open spaces and be in accordance with the strategic and planning documents.
- Further information: <https://www.amb.cat/en/web/amb/govern-metropolita/economia-i-inversions/inversions-i-suports/pla-d-inversions/psg>

Source: [AMB website](#). For further information, please refer to the Metropolitan Investment Plan 2020-2023 for the municipalities of the AMB, available [here](#).

# **URBAN REGENERATION**

The urban future is green, sustainable, and people-oriented, in order to improve human health and protect nature. Global and EU urban development agendas are highly focused on how to accelerate climate actions to reduce pollution and improve quality of life through measures that create green, active, and inviting public spaces for children, adults, and elders. In general, urban areas encounter various significant challenges that impact the quality of life for their residents. These challenges include issues such as poor air quality, noise pollution, inadequate and unsafe public spaces, the presence of heat islands with insufficient shade, limited availability of nearby activities and services, traffic congestion, a scarcity of green areas, sedentary lifestyles among young individuals, and social isolation and reduced independence among the elderly population. At the same time, these challenges also present opportunities for enhancing the well-being of people by taking action to improve public spaces and represent the focus of urban areas around the globe.

### Transforming ambitions into practice

## Transforming Public Spaces: Empowering Communities and increasing sustainable urban mobility through the Barcelona Superblock Model

### Targeted challenges: Strategic planning, Urban regeneration, Climate neutral city

The Superblock Model is one of the solutions implemented by the city of Barcelona to achieve the climate net zero goal and increase the quality of life within its neighbourhoods. The model comprises four important concepts: universal development, sustainable mobility, liveability, and co-design processes. Therefore, this strategic instrument enables the City Council together with the community to plan neighbourhoods for children, adults, and elders to spend time in the streets, find shade, sit, run, cycle, play, or just transit. At the same time, it leads to accelerated climate actions while improving air quality and providing people with the opportunity to have a social and active lifestyle. The key aspect of the strategy is that it shifts focus on improving the public space design by rearranging the functionality of urban streets to expand the space for people, better connect and improve public infrastructure, expand the cycling path and insert greenery. Overall, the Barcelona Superblock Model is a new form of city organisation that developed an urban unit the 'superblock' through which has successfully reversed priorities on public streets by offering direct connections on foot, followed by cycling and public transport, and lastly vehicular traffic.

Through the Barcelona Superblock Model, the city expects to recover [100 hectares for pedestrians and active mobility](#) by reducing the area allocated to vehicle traffic. Coined by Salvador Rueda in the 1980s, the "superblock" concept revolutionises urban spaces by emphasising diverse forms of mobility and functionality beyond traditional car transit. Although the concept did not receive sufficient support for implementation back then, the local government took a significant step in 2016 by introducing the "We fill the streets with life" measure. This measure allowed for the pilot implementation of multiple superblocks, with the Poblenou Superblock serving as the first project. The implementation of the Superblock Model in Barcelona at that time relied on various municipal sectoral plans and commitments, including the Barcelona Commitment to Climate, Urban Mobility Plan, Green and Biodiversity Plan, among others. These plans and commitments were built upon the foundation of the preceding Superblock Programme 2011-2015. By fostering synergies and adopting a cross-cutting approach, they collectively drive a comprehensive transformation in line with the strategic objectives outlined in the legislation, ensuring a cohesive and integrated approach. More information about the strategic framework can be found in the official document, [Let's fill the streets with life](#), under the section with the same name. To regenerate the city and its neighbourhoods, the government adopted in 2023 the [Superblock Barcelona Governance Measure for the Regeneration of Barcelona and Its Neighborhoods \(Mesura de Govern Superilla Barcelona per regeneration Barcelona](#)

[i Els Seus Barris](#)), which lists the vision and strategic directions, the objectives and actions for urban regeneration throughout the city.

To reorganise the functionality of streets, the Barcelona Superblock Model comprises a process to establish the transit routes and group them as basic roads (basic city distribution network), local roads (local distribution network), and vein road (vein distribution network), and transforms the remaining streets into destination spaces by adding greenery and urban furniture. Initially, traffic restrictions are implemented within each neighbourhood, redirecting vehicles towards the main roads surrounding the superblock. This leads to a notable improvement in pedestrian and cyclist accessibility, as numerous streets are opened up for their use. In the superblock area, cars are granted access, but certain measures are in place to promote safer and more pedestrian-friendly streets. These include implementing lower speed limits of 10-30 km/h, introducing zigzag patterns in road layouts, reducing the length of streets available for cars, and implementing one-way streets. All these measures transformed transit corridors into slow streets to protect and enable children, adults and elders to use these spaces. Vehicles are permitted to stop, but parking is not allowed on the streets. Instead, dedicated parking structures or buildings have been constructed. Furthermore, designated spaces for loading and unloading are available with time controls in place. In terms of cycling, bicycles can use streets in both directions but pedestrians have priority. Additionally, the streets within superblocks are well connected to the public transport, allowing people to walk or cycle the streets of the superblock and use the bus or subway for longer distances.

For people to use these spaces beyond a safe space for transit on foot, certain measures were necessary, such as the removal of architectural barriers and expansion of pedestrian space. Fostering spaces for walking and leisure makes room for outdoor terraces. Depending on the location, dimensions of these amenities are established. Also, in terms of design and urban elements, the city focused on developing play spaces, seating areas for relaxation, promenades and shade areas for comfort. The livability of the space was enhanced by considering the allocation of space, ensuring acoustic and thermal comfort, optimising furniture arrangements, improving sidewalks and pavements, enhancing lightning systems and upgrading infrastructure. Additionally, green spaces were enhanced by introducing trees, shrubs, planters, diverse fauna, water features, permeable surfaces, rooftop gardens, and green sidewalks.

An essential factor in facilitating this transformative change in mobility and utility of urban streets is an open, participatory and co-developed process. The action plan for each superblock is collaboratively developed through a neighbourhood steering group and a transparent and active communication. The neighbourhood steering group is formed at the beginning of the process and comprises stakeholders from the respective area who remain engaged throughout the entire process, from design to evaluation. Regular meetings are conducted, including interactions with residents and the private sector, ensuring a constant flow of feedback and collaboration. The steering group serves as a link between the specialists and the neighbourhood, assessing and observing each step of the process and determining the venues and outcomes of various participation workshops and technical endeavours. Overall, to ensure a comprehensive participation process and foster consensus and support within the area, the following key actions are undertaken: engaging with stakeholders who are directly affected but may not typically participate in public debates and consultations, organising community workshops to provide access to information and increase participation, and establishing an online presence through a dedicated platform that enables stakeholders to monitor progress and actively participate.

To further understand the mechanism behind Barcelona Superblock Model, it is essential to understand the three categories of actions: **functional interventions** (these measures imply small functional changes that allow the mobility shift, such as changing streets directions, introducing speed limit and parking restrictions, limit car access, etc.), **tactical interventions** (these interventions are low-cost and operate based on the functional interventions, aiming to enhance the livability of public

spaces by improving their functionality, such as painting the streets or adding urban furniture and plants. Through these actions, people are able to grasp the long-term possibilities.) and **structural interventions** (these initiatives, which are both enduring and costly, are implemented based on the tactical-level interventions and encompass definitive redevelopments that solidify the desired functional shift. Moreover, these initiatives significantly contribute to enhancing the overall livability of the superblocks by establishing and nurturing green spaces, while also promoting biodiversity. Therefore, the design of the space is determined through a competitive process that seeks innovative solutions).

In addition to the mobility shift, several other local strategies are implemented within each superblock, such as the plan for play which enhances intergenerational places for activities and builds a city safe for children, the plan for reintroducing greenery elements within the city to enhance green spaces, expanding the cycling paths and promoting sustainable mobility, increasing the economy, regenerating urban spaces, expanding the public housing stock and so forth. These comprehensive efforts aim to improve the quality of life and promote sustainable development within the superblocks, which are effectively realised at the city level. For example, according to the Barcelona Superblock platform, part of the results are 217 traffic-calmed school environments, 900 children's play areas, 245 km of cycle lanes, and 75% of the city has a speed limit of 30 km/h.

*Examples of streets within two of Barcelona's Superblocks: Saint Antoni and Poblenou*



## Learning tools

The city hall has created several dedicated platforms for the Barcelona Superblock Model, aiming to promote transparency, provide access to information, and facilitate strong communication with all stakeholders.

1. [Superilla Barcelona](#) is the platform that presents the strategic directions, activities undertaken, and results in a friendly and engaging manner. Hence, this website is a tool of transparency and offers an overview to further understand the mechanism behind this program.
2. [Superrils](#) is a database with documents that map all the actions undertaken for each neighbourhood. For example, [Sant Antoni Superblock](#) has a plan that incorporates and presents the strategy behind and key measures to implement the strategy, while also documenting the participatory meetings and process of development.
3. Another important material is [the document with government measures](#) to enable the implementation of Superblocks and the site of the department of [Ecology, Urban Planning and Mobility](#) - the coordinator of this initiative.
4. In 2021, the city's Public Health Agency (ASPB) evaluated, with support from the Partnership for Healthy Cities, the [impact of three superblocks on health and environment](#). The report shows that these investments paid off and highlights the main aspects that improved the quality of life. Additionally, a more complex [document](#) was developed as part of the evaluation process.
5. [The 21st-century streets initiative](#) was developed as part of the Superblock Model, with a primary focus on greening the city. This initiative emphasises the design of public spaces in new urban streets, aiming to create sustainable and vibrant environments.
6. The city hall promotes and implements the city as a play space for all ages through its [Plan for Play](#). At the moment, within the Superblocks, there are more than 900 public spaces for children to play. The ultimate goal of the plan is to ensure that all of them are accessible and inclusive, providing opportunities for children to engage in play and recreational activities throughout the city.
7. [The government measures for urban regeneration](#) within Superblocks provide an overview on all projects implemented and initiatives developed to improve the quality of life within neighbourhoods and accelerate climate actions.
8. The document that exemplifies [the participatory process](#) to implement Superblock is an important material as it provides directions to involve and communicate with all stakeholders to gain support and implement interventions.
9. [An overview](#) on the objectives and results that the city plans to achieve through the Superblock Strategy, which also encompasses and it is aligned with other comprehensive measures that aim to increase the quality of life and sustainable transport.
10. Another important aspect is the implemented initiatives to make residents appreciate and enjoy the superblocks, such as [dedicated events](#).
11. The city organised an [international superblock meeting](#) where various cities gathered to discuss steps and approaches to improve public spaces.

## Plan del Barris (Neighbourhood Plan): Empowering Neighbourhoods to Address Local Inequalities

Targeted challenges: Urban regeneration, Cooperation networks

Barcelona addresses inequalities in various disadvantaged neighbourhoods through a municipal program known as the Barcelona Neighbourhood Plan. This comprehensive initiative covers 23 neighbourhoods, aiming to address and alleviate various social disparities within these communities. The management and coordination of this program are entrusted to Fomento de Ciudad, a municipal company affiliated with the City Council's Municipal Management. With a wealth of experience of 30 years, Fomento de Ciudad specialises in overseeing comprehensive and cross-cutting projects that involve active citizen participation and territorial engagement. This organisation takes the lead in driving significant city initiatives, ensuring their successful implementation and impact.

Fomento de Ciudad traces its origins back to the early 1980s, when the city of Barcelona faced the challenge of transforming itself and improving quality of life in all its neighbourhoods. One notable example of this endeavour was the action taken in the Ciutat Vella district. The initial approach involved a mixed public-private model implemented by the company Promoció de Ciutat Vella, SA (PROCIVESA), which kick-started the regeneration and revitalization of Barcelona's historic centre. Later, in 1999, Fomento de Ciutat Vella SA (FOCIVESA) took over, continuing the transformation process with a dual objective in mind. Firstly, it aimed to restore the symbolic, institutional, and civic centrality that Ciutat Vella held in the past. Secondly, it focused on enhancing the residential dignity and sense of community within the historic neighbourhoods. FOCIVESA prioritised the creation of new urban spaces, the redevelopment of streets to prioritise pedestrian safety and accessibility over motor vehicles, the modernization of infrastructure and service networks, and the provision of neighbourhood facilities in areas such as Raval, Gothic, Sant Pere and Santa Caterina, the Ribera, and Barceloneta.

To fight with social inequalities within the city, Barcelona City Council has created a municipal company to manage and coordinate the actions to improve the quality of life within 23 neighbourhoods through the Neighbourhood Plan, since 2017. This instrument is designed to address challenges such as lack of affordable housing, inferior quality of housing, insufficient amenities and infrastructures, limited economic opportunities, low quality education and so forth. The approach to addressing these challenges involves harnessing the City Council's capacity, resources, and legitimacy alongside the efforts, creativity and effectiveness of neighbourhood actions. The primary goal of the Neighbourhood Plan is to empower residents to organise and set objectives and actions for enhancing collective life in the neighbourhood. It aims to foster social innovation practices and citizen engagement with the explicit aim of improving and strengthening the neighbourhood's social capital. Therefore, the tool is based on four strategic pillars: social rights, education, economic activity and sustainability and represents a comprehensive and transversal approach.

### The main aspects of the Neighbourhood Plan

**The enabler.** The actions outlined in the tool are not implemented by the Fomento de Ciudad. Rather, the company serves as an intermediary body between the City Council's representatives from relevant departments and the local community, as well as other stakeholders, facilitating collaboration and coordination during the implementation process. Fomento de Ciudad works to ensure effective communication and cooperation between all involved parties, promoting the successful execution of the planned actions. To ensure effective management, a dedicated project manager is assigned to each neighbourhood within the Neighbourhood Plan. Additionally, a consultative committee has been established to provide valuable support and guidance throughout the development and execution of the Neighbourhood Plan. The committee serves as a platform for stakeholders to offer insights, contribute ideas, and provide input to further enhance the effectiveness and impact of the plan.



**The selection.** There is a selection process to establish which neighbourhoods are included into the program that takes into account several criteria. These criteria are designed to identify neighbourhoods that would benefit from the program's actions and support. The selection process considers the following factors:

- Average income level: The plan evaluates the average income level of the neighbourhood compared to the city as a whole to establish the neighbourhoods with lower income levels.
- Socio-economic, educational, and socio-sanitary indicators: Various indicators related to socioeconomic conditions, education, and socio-sanitary aspects are evaluated to assess the specific needs of the community. This evaluation provides insights into the challenges faced by the neighbourhoods and guides the development of appropriate interventions.
- Groups with special needs: The presence of groups with special needs is taken into consideration. This includes vulnerable people that may require targeted assistance and support.
- Urban deficit and housing conditions: An analysis of urban deficits and the condition of the housing stock in the area is being conducted. This assessment helps identify neighbourhoods where interventions related to infrastructure, housing, and urban development are crucial.
- Complementary actions or initiatives: The existence of complementary actions or initiatives in the neighbourhood may contribute to its inclusion in the program. This criterion assesses whether the neighbourhoods may benefit from the synergies created by the integration of various programs and initiatives.

By assessing these criteria, the program aims to target neighbourhoods that demonstrate significant needs and have the potential to make substantial improvements with the support of the Neighbourhoods Plan. As a result, the Neighbourhood Plan 2021-2024 includes a total of 15 neighbourhood plans, covering 23 neighbourhoods and benefiting a population of 377,000 people.

**The resources.** Significant resources must be allocated. The program has a total budget of 300 million euros, allocated across various sectors. Specifically, 65 million euros are designated for education and culture, 48 million euros for social rights, 31 million euros for economic activation projects and employment, 43 million euros for housing, and 113 million euros for investments in public space.

**The collaboration.** All the implemented actions are interconnected and involve collaboration and coordination between different departments of the City Council. Moreover, an environment for coordination and cooperation is fostered by providing the opportunity for the local communities or neighbourhoods to shape and monitor the plan and the foreseen activities. This approach is incremental since it enables civic participation, engagement, and ownership, leading to sustainable local solutions. Therefore, community organisations, associations, and groups within the neighbourhood are encouraged to get involved and play an active role in reshaping their city and supporting local initiatives alongside representatives of the local authorities.

**The know-how.** The actions are built based on existing knowledge and experience from previous urban transformation initiatives and projects in Barcelona and the wider region of Catalonia. Hence, the plan is built upon the foundation of lessons learned and best practices, allowing for informed decision-making and effective implementation.

**The assessment.** The allocation of resources to assess and monitor the effectiveness and impact of the actions implemented. This is achieved by establishing mechanisms and frameworks to systematically evaluate results. By allocating resources to evaluation processes, the program aims to ensure accountability, measure progress, and make informed decisions based on the outcomes of implemented actions.

**The areas of intervention.** This instrument addresses inequalities through comprehensive neighbourhood planning, with a focus on collaboration and multi-district impact. Therefore, for each area, specific objectives and actions are grouped in five categories:

- **Education and public health** - The activities within this category are focused on improving the overall system and infrastructure related to education at neighbourhood level to foster a more robust and effective educational environment for the community. Moreover, drawing from the lessons learned during the Covid-19 pandemic, there is an increased focus on cultivating resilience within communities. Consequently, greater emphasis is placed on educational institutions to ensure the continuity of learning experiences beyond traditional school settings, through activities encompassing educational leisure and training.
- **Social rights, gender equality and community action** - Vulnerable residents (elders, children, the unemployed, the migrant population) receive special attention through the actions implemented in this category. The focus is to increase well-being by improving living conditions. The objectives within this category are to tackle gender inequalities, foster a diverse and inclusive community, address mental health issues and social isolation, and further promote a healthy lifestyle through sport and dietary choices. Additionally, a special focus is offered on narrowing the digital gap and enhancing the social capital within the neighbourhoods.
- **Environmental sustainability and climate emergency** - This category focuses on activities that address the disparities resulting from the effects of climate change on vulnerable populations. The goal is to create more sustainable communities and work towards neighbourhoods that have increased green spaces per resident, are characterised by peaceful environments, and have sustainable transportation systems in place. The focus is on promoting environmental sustainability, enhancing quality of life, and ensuring equitable access to resources and opportunities for all individuals within these neighbourhoods. Furthermore, it encompasses the promotion of environmental education and the creation of community green spaces. Efforts will also be made to address and alleviate energy poverty and its associated impacts.
- **Employment, economic impulse and social economy** - Activities developed under this goal are aimed at reviving and stimulating economic growth at neighbourhood level while also supporting and encouraging the development of socially oriented economic models and revitalising small businesses and entrepreneurial activities. Moreover, a particular emphasis is placed on providing support and assistance to the groups that have been most impacted by the economic crisis, as well as local businesses.
- **Public space, accessibility, and liveability** - The goal of these activities is to reduce urban shortages, such as degraded and unused public spaces, low accessibility, the low quality of housing, the deficit of spaces for social engagement, and reduced mobility and lack of connectivity between neighbourhoods and the city as a whole.

The Neighbourhood Plan 2021-2024 adopts a two-tier approach based on the level of vulnerability. In total, there are 23 neighbourhoods, with 15 neighbourhoods included in the current plan and 8 neighbourhoods in the maintenance phase. These 15 neighbourhoods are further divided into two categories. The first category consists of neighbourhoods with new plans and an extraordinary budget and led by a project manager. The second category comprises neighbourhoods with plans focused on addressing long-standing issues through educational, rehabilitation, and employment programs, without a project manager or specific resource allocation. Each program builds upon the previous efforts. Currently, in the first category, seven additional neighbourhoods now benefit from intensive interventions, while eight neighbourhoods continue their activities from the previous program. The same applies to the second category, as eight neighbourhoods have transitioned into a maintenance phase from the previous period.





### Learning tools

- [Fomento de ciudad](#) is a notable example of a dedicated entity that addresses inequalities in disadvantaged neighbourhoods. It undertakes essential tasks to implement integrated projects aligned with local strategic development objectives.
- [The platform of Plan de barrios](#) exemplifies a transparent and consultative process for implementing actions that addresses inequalities within the disadvantaged neighbourhoods. It also serves as an important guiding resource for replicating this model of good practice. To gain a comprehensive understanding of the Neighbourhood Plan, other valuable materials include:
  - The objectives of the [Neighbourhoods Plan](#)
  - An overview of the [Neighbourhoods Plan](#)
  - [Report of the Neighbourhoods Plan 2019-2020](#)
  - Results of the [Neighbourhoods Plan](#)

## Decidim Barcelona: Enhancing Consultations and Participation through Digital Platforms

**Targeted challenges:** Stakeholder dialogue facilitation, Civic engagement, Smart city

The "smart city" concept goes beyond technology and data, utilising them as catalysts to foster an inclusive, participatory, and forward-thinking community. This community collaborates with local authorities to address current urban challenges, relying on data, impact assessments, stakeholder feedback, and ideas. Participatory governance plays a vital role in a smart city, and its effectiveness can be enhanced through user-friendly digital platforms that facilitate participatory and collaborative engagement, complementing traditional communication and onsite consultations.

Barcelona worked to enable the civil society to become a partner in the decision-making process, contributing to improved public policies and development projects. Decidim is the platform that allows a transparent and traceable participation of the citizens in the political life and co-design of future policies. Decidem empowers users to monitor the advancement of citizen proposals, access

results, and explore the responses provided by institutions. Moreover, it operates as a public and digital democratic infrastructure that is built upon free software and open-source code. This design choice ensures transparency and accessibility while fostering a collaborative and inclusive environment for democratic participation.



Source: Decidim.Barcelona, available at <https://www.decidim.barcelona/?locale=es>

### Transforming ambitions into practice

The platform is built upon open-source software, facilitating its reuse and continual enhancement. It seamlessly integrates with decode technologies to ensure security, privacy, and data sovereignty. The City Council's Area for Participation has established a robust code that incorporates democratic safeguards, ensuring responsible usage of the platform. This entails transparency, traceability, and universal access to participation and maintenance, emphasising its free and open-source nature. To foster collaboration and progress, an intermunicipal workgroup has been established to facilitate the sharing of efforts and enhancements to the tool.

Barcelona effectively embraced collaborative decision-making by utilising the Decidim platform, allowing citizens to actively contribute to the co-creation of a strategic city plan. For example, the Municipal Action Plan, launched in 2016, initiated a participatory process facilitated by Decidim Barcelona. One notable advantage of the platform is its capability to track the progress of approved proposals, ensuring transparency and accountability. Decidim serves as a comprehensive digital participation and democratic platform, offering various features such as consultation on open participatory processes, engagement in debates, submission of new proposals, sharing through social media, and monitoring the status of proposals, including those generated both online and during face-to-face meetings. Users have access to all discussions, can follow comments, and review final documents, facilitating a transparent and inclusive decision-making process.

Decidim Barcelona is organised into five sections, facilitating easy navigation and access to essential information. For users to participate in the co-design process are required to register and can add meetings to their calendars. However, they have access to information regarding the process, relevant documents, and information on all meetings held thus far without an account.

- The "**Inicio**" page serves as the main hub, providing users with a comprehensive overview of the platform. Here, you can find current discussions, upcoming meetings, and convenient access to past activities and discussions. It serves as a central point to stay updated on the latest topics and engage with relevant content and events.
- "**Procesos participativos**" refers to a series of structured meetings held within a specific timeframe, aimed at fostering debate and constructive discussions among citizens and municipal authorities. This section of the platform showcases active projects that are open for

debate. Within each project, users have access to general information, details on past and upcoming meetings, and the ability to review and contribute proposals. This section serves as a collaborative space for engagement, providing a platform for exchanging ideas and viewpoints between the public and the responsible authorities.

- **"Organiones de participación"** section presents the participation bodies that serve as regular meeting and communication channels between the citizens and the City Council. These bodies facilitate discussions, collect opinions, and gather proposals with the objective of influencing municipal policies. On [decidim.barcelona](https://decidim.barcelona), users can access information about their meetings, noting that some are private while others are open to the public. If they are open, they have various ways to engage: attending the meetings, adding items to the agenda, or providing comments on the proposals and decisions presented on the platform. This allows for active participation and contribution in shaping the city.
- The **"Iniciativas ciudadanas"** section encompasses the citizen's initiative, which provides a means for individuals to promote collective actions of interest by gathering signatures. Through this process, citizens can advocate for specific actions from the City Council, provided they fall within its jurisdiction. Users have the option to support an initiative and express their endorsement through a digital signature. This facilitates efficient and convenient participation in driving actions that align with collective interests.
- The **"Ayuda"** section encompasses various forms of assistance, including a dedicated space for submitting inquiries, seeking general support, and obtaining guidance regarding residents' initiatives. This section serves as a resourceful platform where users can receive assistance and find the necessary help to address their questions, seek support for different matters, and navigate the process of residents' initiatives effectively.

#### Learning tools

- [Decidim Barcelona](#) is a powerful example of a platform that facilitates transparent and traceable citizen participation in political life and the co-design of future policies. For a comprehensive overview of the platform, you can refer to the following articles: a dedicated piece on [Decidim Barcelona](#), news articles that highlight a [New boost for the Decidim platform](#), how [Decidim is used at metropolitan level](#), and how Barcelona promotes [new participatory processes through Decidim.Barcelona](#).
- [Barcelona Digital City Strategy](#) highlights the strategic directions of the city to become a smart city that enables sustainability and livability by using technology and data as key enablers. Participatory Governance enabled through digital platforms is one of the key topics discussed within the document.

## Digital Twin and Data-Based Urban Planning: Enhancing Sustainable Development

### Targeted challenges: Spatial Planning, Smart City

The term "digital twin" was coined by David Gelernter in 1991. However, it was Dr. Michael Grieves who is credited as the first to apply this concept, specifically in the manufacturing sector in 2002. A digital twin serves as a means to examine an object, employing a virtual environment rather than a simulation. Its applications span various sectors including construction, manufacturing, healthcare, automotive, and urban planning. Within the realm of urban planning, a digital twin allows for real-time visualisation of spatial data in 3D and 4D, incorporating augmented reality into physical

surroundings. This capability empowers policymakers to test concepts, make informed decisions based on data, streamline management processes, and extract valuable insights.

At EU level, there are several actions that promote interoperability of data, support the development of digital twins, and foster innovation among European cities. For example, the [living.in.the.eu community](#) was created with the goal of identifying existing digital twins and fostering a community. In addition, the European Commission has launched dedicated funding calls while other European entities create task forces to promote digital twins by encouraging cities to share experiences, knowledge, initiatives, best practices, and align strategies (e.g. the Eurocities Task Force on Digital Twins).

Barcelona is one of the European cities that created an advanced and comprehensive digital twin project through a shared vision and objective entailed by the Barcelona Supercomputing Center and the City Council. Their plan comprises the development of a sophisticated framework that encompasses a wide range of interconnected data, enabling more accurate and informed approaches to problem-solving and decision-making for improving citizens' lives. Moreover, the ultimate goal is to construct a digital twin tool that goes beyond serving Barcelona alone and can be adopted by other cities interested in leveraging this innovative technology in the future.

The Barcelona Supercomputing Center (BSC) is the result of collaboration between public authorities and the private sector, driven by a shared interest in science, innovation, and education. As the national supercomputer centre, this institution promotes supercomputers as an important instrument for global competitiveness in science and engineering at national and European level. Its research activities are supported through funding programs from the European Union, as well as public research grants from Spain and Catalonia, in addition to collaborations with prominent companies.

The BSC was established in 2005 through a common initiative fostered by the Ministry of Education, Generalitat de Catalunya and the Universitat Politècnica de Catalunya (UPC) to build a National Supercomputing Center in Barcelona. Its establishment was built on the foundation of the European Center for Parallelism of Barcelona (CEPBA), a research institution of the Universitat Politècnica de Catalunya (UPC). Prior to becoming the national centre that it is today, the institution had collaborated with the Supercomputing Center of Catalonia (1995-2000). In 2000, it signed an agreement with IBM to launch together a research institute on Deep Computing and Architecture, while also supporting local research on various other topics of science and engineering. These collaborative partnerships were established by the Universitat Politècnica de Catalunya and other significant entities.

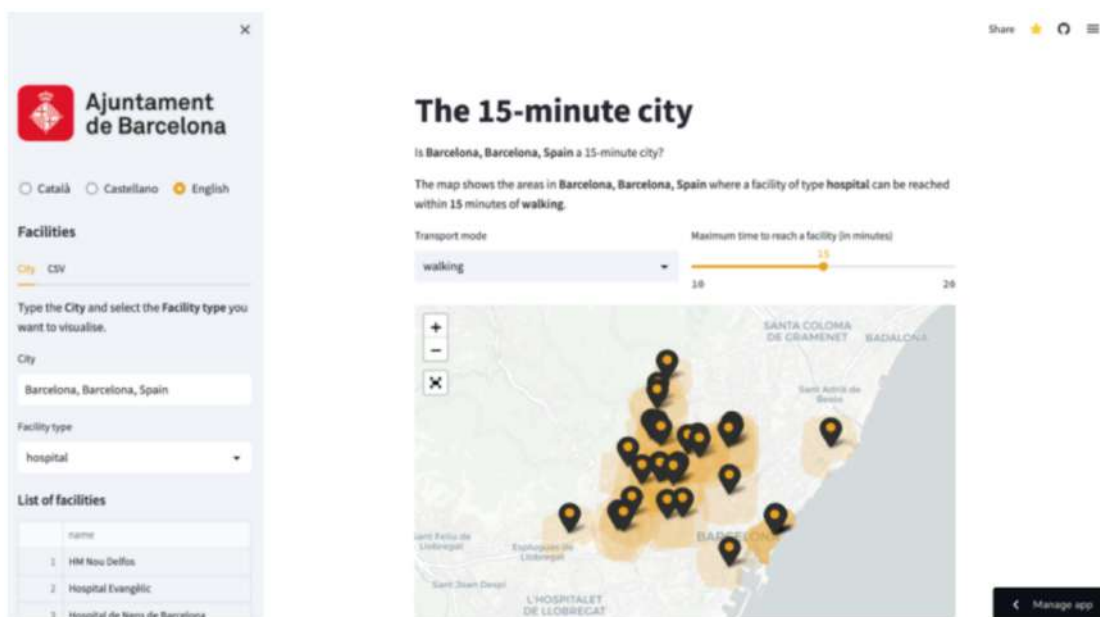
**An example of the utility of the digital twin is its application in analysing whether Barcelona is a 15-minute city and facilitating evidence-based decision-making to enhance good urban planning.** By leveraging big data and supercomputing, cities can harness the power of the digital twin concept to generate predictive insights for public policies prior to their implementation. This involves formulating multiple hypotheses, constructing diverse scenarios, conducting predictions, and performing tests to assess the potential impact of specific projects or policy deployments. Such an approach allows policymakers to make informed decisions and proactively plan for the potential outcomes of their initiatives. In the case of Barcelona, its digital twin enables the assessment of whether the city is a 15 minute city model and helps the Barcelona City Council implement the correct solutions that will improve citizens' wellbeing. The Digital Twin Project was split into two phases to further develop it and reach the city's goal of becoming a global leader.

**In the first phase**, the digital twin project represents another example of a strong local collaboration between the research institution BSC and other public institutions, in this case the Municipal Institute of Informatics and Barcelona Regional. The work of this partnership was the development of a digital twin for better urban planning decision-making. Hence, the incipient phase has as main results the development of a virtual Barcelona as a digital model, which, for example, enabled local authorities and specialists to have access to important data such as the coverage of metro stops within a 10-

minute walk. Another application was to observe where and at what distance are multiple public services (recharging points, health facilities, green spaces etc) placed.

**During the second phase of the project,** Barcelona understood that advancing and becoming a leader in this sector implies joining brain power and technical capacity for further innovation. Therefore, the supercomputers with the highest computing power in Europe were put together through an agreement signed by Barcelona and Bologna, the Barcelona Supercomputing Center (BSC-CNS) and the CINECA Consortium of Universities, along with the University of Bologna. The duration of the agreement is three years, but can be extended for another three. The aim of this collaboration is to improve the process of decision-making in both cities through the construction of urban digital twins. The main areas of interest are urban mobility, energy, urban planning and policies to cut greenhouse-gas emissions.

Besides improving the quality of life of residents and accelerating climate actions for Barcelona and Bologna, this cooperation also provides the opportunity to develop a useful tool for other European cities. It is estimated that it could be operational within 2 to 4 years. If this is the case, BSC will take the leading role in terms of building and providing digital twin solutions for other cities, the Barcelona City Council could provide the necessary data, Barcelona Regional will be the customer, and Barcelona Municipal Institute of Informatics will collaborate and coordinate with other cities.



Source: Barcelona Supercomputing Center, available at <https://www.google.com/url?q=https://www.bsc.es/news/bsc-news/barcelona-tests-digital-twin-developed-bsc-if-it-15-minute-city&sa=D&source=docs&ust=1685144828277005&usq=AOvVaw06EP872KpF6jK586IF8EXo>





Source: *Adjudamento de Barcelona*, available at [https://www.barcelona.cat/infobarcelona/en/tema/smart-city/is-barcelona-a-15-minute-city\\_1272700.html](https://www.barcelona.cat/infobarcelona/en/tema/smart-city/is-barcelona-a-15-minute-city_1272700.html)

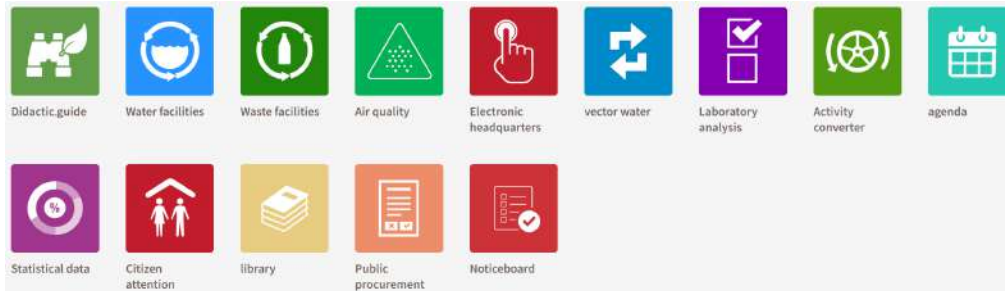
#### Learning tools

- [Details about the agreement with Bologna to develop urban digital twins](#) highlight the importance of establishing the entities with which you have the same goals to address essential needs of the community you serve.
- [Barcelona tests with a digital twin developed by BSC if it is a 15-minute city](#)
- The [report on Barcelona Supercomputing Center 2022](#) provides an overview on why it is important to develop an environment for innovation at local level by empowering research institutions both internally and externally by making them part of the engine of growth of your area.
- [The history of the Barcelona Supercomputing Center](#) offers an important lesson on how to develop and foster collaborations between universities and public and private institutions at local, national, and international level to increase competitiveness and innovation.
- [Barcelona Digital City Strategy](#) highlights the strategic directions of the city to become a smart city that enables a green and livable city by using technology and data as key enablers.
- The “[Engaging twins](#)” report provides an overview of existing digital twins in the EU while also sharing lessons and experiences.

# ECOLOGY

The Barcelona Metropolitan Area prioritizes ecology, environmental sustainability and climate change adaptation and mitigation. It employs a wide range of strategies and measures, including both *soft* approaches (such as strategic planning, governance tools, education models and community services) and *hard* instruments (such as investment projects in energy efficiency, renewable energy production, waste and water management, air quality tools and eco-friendly mobility solutions). These efforts are conducted within a well-regulated strategic framework, that relies on data and involves extensive collaboration with the community and the local ecosystem, covering a place-based process. The measures are implemented through concrete actions, addressing short-term, medium-term and long-term goals.

1 The variety of ecological solutions implemented by AMB



Source: [AMB website](#). For further information, please refer to [this source](#)

### Learning tools

Targeted challenges: carbon neutral city, green mobility, energy efficient neighborhoods, blue-green infrastructure, urban regeneration, stakeholder dialogue facilitation, civic engagement.

#### DIDACTIC GUIDES

AMB has released a collection of didactic guides encompassing a range of subjects including [Territory, Ecology, and Biodiversity](#); [Energy and Climate Change](#); [Sustainable Mobility](#); [Water Cycle](#); [Resources and Waste](#); and [Environmental Health](#). The guides encompass a diverse array of [activities and resources](#) tailored for different audience categories, aiming to promote the adoption of ecological practices among the metropolitan population.

*AMB's thematic guidelines for implementing ecological solutions*



Source: [AMB website](#). For further information, please refer to [this source](#).

#### Key point

**The didactic guides serve as valuable resources for functional areas to implement sustainable solutions tailored to their respective territories.** Functional areas have the opportunity to leverage the above resources, in order to replicate the ecological initiatives undertaken by AMB and promote such environmentally-friendly practices among the population. Acknowledging that change often originates from individuals and that every environmental and climate action contributes to improving our planet's condition, it is recommended to study AMB's successful projects and adapt them to the development level and specific context of each functional area.

## Environmentalization of contracts

Targeted challenges: carbon neutral city, energy efficient neighborhoods, urban regeneration

To enhance the impact of ecological measures implemented at the AMB level, the organisation has proactively engaged in collaboration with third parties. A notable illustration of this approach is the integration of environmental considerations into contracts and the development of reference manuals, aiming to gradually incorporate environmental aspects into the tendering processes of both AMB's own and concessionary companies as well as its municipalities.

In order for this concept to be effectively implemented, a clear and comprehensive framework was necessary. In the case of the AMB, this framework was established through the [Environmentalization Plan for procurement at the AMB](#) (2014-2020). The primary purpose of this plan is to serve as a roadmap for the integration of environmental criteria into the technical specifications of upcoming AMB contracts. It is the guiding document used for conducting environmental tenders within the metropolitan area.

The European Commission's publication, [GPP In Practice, Issue No. 43](#), released in July 2024, provides a comprehensive overview of AMB's best practices in terms of green public procurement. The focus of this paper covers a tender process aimed at establishing a comprehensive service contract for the maintenance of parks in the Barcelona Metropolitan Area. The document outlines all the crucial elements that need to be considered and implemented throughout the procurement procedure, including criteria, objectives, and technical specifications. These specifications encompass various aspects, such as environmental and quality management systems, specific requirements for cleaning solutions, waste management techniques, and inspection procedures. Additionally, the publication covers contract performance clauses, including sustainability criteria and environmental quality parameters, sustainable use of products and packaging, efficient use of resources and facilities, as well as air pollution mitigation measures such as emissions, dust, and noise control. Lastly, the publication also provides guidelines for evaluating performance based on predefined criteria.

### Key point

**The implementation of environmental considerations in contracts can be extended to various procurement processes for goods and services within the functional areas.** The AMB platform provides administrative clauses and technical specifications for a wide range of contract types, encompassing diverse objects, from simple purchases like office supplies to more complex acquisitions such as electric cars or multifunctional equipment. It also includes contracts for service provision, for instance urban collective transport services for night travelers, elevator maintenance services, institutional cleaning and gardening services and more. However, it is essential to adapt these provisions to the prevailing legislation of the specific country from which each functional area originates, as well as to their unique needs, objectives, challenges in terms of green procurement, but also to align the process to the targets established in terms of sustainability. Additionally, when implementing such a model for public procurement procedures, it is recommended to study the directives and recommendations provided by the European Commission on this [matter](#).

Source: [AMB website](#). For further information, please refer to [this source](#).

**SUSTAINABILITY**

The AMB, in collaboration with its metropolitan municipalities, has developed a comprehensive plan and strategy to decrease CO2 emissions in its facilities, including waste disposal sites, sewage treatment plants, offices and other affiliated organisations' premises. This plan is one of several initiatives implemented by the AMB to combat climate change. Additionally, the organisation conducts awareness-raising activities targeted at both citizens and metropolitan entities, in order to promote the integration of sustainability criteria into their daily practices.

## AMB's Sustainability Plan

**Targeted challenges: strategic planning, carbon neutral city, green mobility, energy efficient neighborhoods, blue-green infrastructure, urban regeneration, civic engagement.**

For the 2014-2020 period, the AMB formulated a comprehensive [Sustainability Plan](#), that addresses the global challenges faced by humanity and aligns with the objectives outlined in the EU's Proposal for the 7th General Environmental Program of 2020. Within the Barcelona Metropolitan Area, this plan presents targeted solutions to tackle the local environmental challenges, taking into account the broader global and European intervention framework.

The proposed vision is to position the AMB as a leader in implementing policies with sustainability criteria, fostering environmental protection, biodiversity enhancement and climate change mitigation and adaptation. This vision aligns with the "sustainability and climate change" challenge outlined in the Metropolitan Strategic Plan of Barcelona, aiming to improve the quality of life for citizens. The resulting document serves as a comprehensive action plan, systematically integrating environmental sustainability criteria across all metropolitan sectoral policies, including water management, waste management, urban planning, mobility and more. These criteria are implemented both within the AMB's internal operations and in its external activities.

**The development of the Sustainability Plan followed a rigorous and cohesive process, resulting in the formulation of eight commitments for the sustainable development of the Barcelona Metropolitan Area:**

- Achieve a 10% reduction in greenhouse gas emissions, whether directly or indirectly, by 2015, with the overarching goal of reducing them by 20% by 2020.
- Foster a more sustainable energy mix by assessing the potential for renewable energy sources within the metropolitan area and facilitating the establishment of renewable energy generation networks.
- Encourage the dematerialization of the economy by implementing policies focused on waste prevention, reuse and responsible public procurement and which integrate sustainability criteria.
- Identify areas of exceptional biodiversity value, either due to their unique characteristics or their role in connecting green spaces throughout the metropolitan territory.
- Enhance environmental health and the well-being of citizens by improving air and water quality, addressing issues such as odors, noise and air pollution.
- Promote environmental education for active engagement in sustainability, encouraging a paradigm shift through a combination of experience, innovation, adaptation to diverse public profiles, incorporation of socio-environmental factors and understanding of citizens' evolving motivations.
- Assist municipalities in enhancing the coordination of their plans and measures related to mobility, joint procurement and other areas that can benefit from collaborative efforts, while also contributing to energy efficiency in municipal buildings and public infrastructure.
- Champion the environmental policy of the AMB's institutional headquarters, emphasizing its essential elements and principles.

## Key points

The essential elements derived from this planning process are presented below: needing to be adapted to the functional areas' specific contexts, these key points can also be relevant for other strategic planning documents, such as those addressing climate change adaptation or mitigation.

- 1. A multi-level approach can provide a structured, clear and efficient framework.** The Sustainability Plan incorporates three levels of analysis, which are integrated into the final proposals in a comprehensive and adaptive approach, to address the identified contexts: 1. Analysis and territorial data service. 2. Buildings and services for municipalities. 3. Buildings, infrastructure and services of the AMB.
- 2. The level structuring should harmoniously follow a comprehensive vision.** The Sustainability Plan presents three distinct levels, with common overarching objectives. The first level focuses on the environmental quality of the AMB territory and aims to achieve the Comprehensive Environmental Improvement Plan for the AMB territory. The second level addresses the environmental quality and environmental services in AMB municipalities and is translated into the Plan for the Promotion of Environmental Services in AMB Municipalities. The third level targets environmental quality in AMB management and is furtherly outlined within the Environmental Quality Plan for AMB Management. These three levels are integrated into a cohesive vision that seeks to fulfil the commitments set forth in the Plan.
- 3. The fundamental pillars require the support of a cross-cutting intervention that leverages a positive impact on all of them.** The Sustainability Plan is structured around six thematic axes, which are aligned with other strategic documents of the metropolitan area and revolve around the key pillars of sustainability. The sixth axis is considered a cross-cutting priority, as its impact is essential for and interconnected with all the other five priorities. The thematic axes are as follows: Territory, Ecology, and Biodiversity; Energy and Climate Change; Sustainable Mobility; Production and Consumption Practices; Environmental Health; Education for Sustainability. The cross-cutting axis of education has been translated into the Metropolitan Program of Education for Sustainability, a document designed to serve as a guiding framework for addressing the key priorities and approaches related to awareness and education for sustainability within the jurisdiction of the AMB. This program is developed in close collaboration with the 36 municipalities comprising the metropolitan area, aiming to foster effective cooperation and coordination in this important area.
- 4. An effectively prepared methodology enhances both the efficiency of the process and the quality of the outcome.** The Sustainability Plan was developed by using a well-defined methodology, that encompasses both intermediate and ultimate objectives and follows a phased, chronological approach. This methodology is characterized by its reliance on data (data-driven approach), because various types of data were gathered, inventoried and analyzed, furtherly serving as the basis for determining the actions to be taken. The key stages involved in this methodology, in sequential order, are as follows: gathering and collating information and data, organising workshops, preparing studies, generating new data where necessary, integrating information through collaboration, conducting assessments across the three aforementioned levels, formulating the vision, establishing the commitments and proposing effective action measures.
- 5. Approaches grounded in evidence offer valuable insights and knowledge.** The process followed during the development of the Sustainability Plan is firmly grounded in evidence. Extensive studies and analyses were conducted throughout the planning process, in order to provide scientific evidence for the proposed measures. These studies served as the basis for constructing concrete

sustainability interventions, that address genuine local needs. They include assessments such as the evaluation of the state of metropolitan biodiversity conservation, energy balances of municipalities within the metropolitan area, analyses of light pollution in the Barcelona Metropolitan Area, air quality assessments for metropolitan municipalities, identification of solar energy potential in the metropolitan area of Barcelona, evaluation of ecosystem services provided by metropolitan green infrastructure, assessment of the potential for mini-wind energy generation in the metropolitan area, and more. These studies, along with other valuable resources of a similar nature, are readily accessible online on the website of the AMB.

- 6. By mapping the territory, it becomes possible to devise solutions that directly address real challenges or tap into existing potentials.** The document is based on a well-defined territorial mapping approach, which encompasses two categories of maps. Firstly, there are maps that depict either the present state of the territory or its potential for specific actions or interventions. Secondly, there are maps that illustrate sustainable solutions that can be pursued in the future. This mapping framework provides a comprehensive understanding of the territory, enabling informed decision-making and the identification of appropriate strategies for sustainable development.
- 7. Providing tangible support to all participating municipalities enhances the likelihood of achieving the set targets.** With the aim of translating the proposed measures into tangible actions, the AMB proactively engaged in discussions with the Town Councils, in order to assess their requirements for implementing sustainability solutions. Based on the feedback received, the AMB identified four key types of support that municipalities sought (and that the entity also provides). These include: 1. Technical support, which entails offering expertise and guidance in implementing sustainable initiatives. 2. Legal and contractual support, involving assistance with legal and contractual aspects related to sustainability projects. 3. Dissemination and public awareness support, focusing on promoting sustainable practices and raising awareness among the public. 4. Financial support, which involves providing financial resources and assistance to municipalities in their sustainability endeavors. By offering these types of support, the AMB strives to empower and collaborate with municipalities in their sustainability pursuits.
- 8. The proposals should not be generic, but rather formulated in response to a data-driven diagnosis, that is relevant to the specific level being addressed.** The priority proposals formulated in the Sustainability Plan are not generalized assumptions, but rather carefully substantiated, as they stem from a thorough diagnosis process that involves data collection, interpretation and comprehensive studies. Consequently, specific proposals have been devised for each of the three identified levels, based on their respective diagnostic findings. Furthermore, within each level, priority proposals have been developed for each thematic axis established in the plan. This meticulous approach ensures that the proposed measures are well-grounded and tailored to address the unique challenges and requirements at each level and within each thematic axis.
- 9. Participatory processes enhance both the quality and the expediency of implementing the measures.** The formulation of the Sustainability Plan was guided by an inclusive, transparent and open participatory approach. The co-design process encompassed a range of tools aimed at gathering comprehensive and authentic inputs. These tools included questionnaires and territorial consultation sessions, ensuring that a holistic and diverse range of perspectives were considered during the planning process.
- 10. Detailing sheets for each of the proposed measures can streamline their implementation process, when initiated.** Based on the outcomes of the process described in the preceding nine points, the Sustainability Plan presents specific measures for each thematic axis and level.



Furthermore, each measure is accompanied by a dedicated document, that provides information regarding its objective, description, implementation timeline, indicators, responsible parties, involved stakeholders, budget, prioritization, level of complexity and other pertinent details.

## Learning tools

### Sustainability Protocols - Environmental Criteria for Projects and Works

Targeted challenges: strategic planning, carbon neutral city, urban regeneration

The [Sustainability Protocol for projects and works](#) of the AMB and the Metropolitan Institute for Land Promotion and Asset Management (IMPSOL) was developed as a professional and institutional response to the climate crisis. Its purpose is to provide technicians in the Barcelona Metropolitan Area with the necessary resources to tackle the Sustainable Development Goals (SDGs) outlined in the United Nations' 2030 Agenda. This protocol is designed as a comprehensive tool, that assesses the environmental impact of decisions made during project development and implementation. It offers specific values and three time horizons to guide parties in improving resource management, reducing water and energy demands and promoting biodiversity, sustainable mobility, renewable energies and urban renaturalization. Its objective is to effectively mitigate and adapt to climate change.

AMB recognizes the need to continue working towards sustainable development and acknowledges that progress on this path may be uncertain. As such, the Sustainability Protocol is an ambitious document, that will be subject to constant review and modification as specific objectives are achieved, new opportunities arise and circumstances demand.

This protocol is a comprehensive and multifaceted tool that goes beyond the requirements of current regulations, similar to other methodologies used for implementing environmental criteria (such as DGNB System, LEED, BREEAM, VERDE or SITES). However, unlike these methodologies, the "Sustainability Protocol: Environmental Criteria for Projects and Works of the AMB and IMPSOL" does not rely on a scoring system. Instead, it comprises nineteen mandatory criteria that encompass six overarching areas: Cross-cutting monitoring and analysis; Energy; Water; Materials; Comfort and health; Site sustainability.

#### AMB's Sustainability Protocol – summary

**Sustainability protocol** Quick guide  
Environmental criteria  
for AMB and IMPSOL  
projects and works

**6** fields

- Transversal analysis and follow-up
- Energy
- Materials

**19** criteria

- Water
- Comfort and health
- Site sustainability

v. 1.2 / 2021

These nineteen criteria are evaluated both qualitatively and quantitatively, by objectively focusing on sustainability aspects. The protocol sets forth ambitious objectives, while acknowledging the starting point and establishing achievable initial goals, with increasing requirements over different time horizons (2020, 2025 and 2030). The time frame for achieving the objectives should align with the expected delivery date of the project.

The protocol aims to facilitate the integration of sustainability criteria from the early stages of project development. By optimizing program and design strategies, the criteria establish ultimate objectives, with the goal of minimizing the need for additional elements or technologies. Compliance with the protocol is mandatory and any instances where the application criteria cannot be met require validation and a justified explanation from the Directorate of Public Space Services of the AMB or IMP SOL.

The criteria are categorized into specific requirements, that set different demands based on the type of project they pertain to:

- Equipment building.
- Residential building.
- Urbanization.
  - Street: pertains to linear infrastructures such as streets, bike paths, highways and other mobility spaces.
  - Square: includes public squares and, in certain cases, outdoor spaces of a building with a minimum surface area of 200 m2.
  - Park: encompasses urban and peri-urban parks, characterized by a prevalence of green spaces.

AMB's Sustainability Protocol - summary

The image displays a summary of the AMB's Sustainability Protocol, organized into several key sections:

- Cross-cutting follow-up and analysis:** This section outlines the main goals of the protocol and details 19 specific criteria. It is divided into three main areas:
  - 1 Analysis of alternatives and programme optimisation:** Objective is to assess the sustainability of the initial programme proposal and analyze possible alternatives to minimize the ecological footprint.
  - 2 Integrated environmental follow-up:** Objective is to ensure that decisions affecting the project's environmental sustainability are taken into account from the outset and throughout the drafting and construction process.
  - 3 Efficient maintenance and operation:** Objective is to ensure the durability and proper maintenance of the project and its installations during its service life.
- Energy:** Objective is to optimize energy demand through passive design strategies and reduce primary energy consumption through good installations design and the use of high-efficiency systems. It includes a table of reference data for 2020 horizons (Low, Medium, High) and requirements for energy demand, primary energy consumption (PEC), and energy rating A.
- Water:** Objective is to limit consumption of mains drinking water through highly efficient installations. It includes requirements for maximum water flow rates, grey water recovery systems, water recovery systems, and water consumption in green spaces.
- Materials:** Objective is to implement strategies to limit CO<sub>2</sub> emissions from buildings and public spaces throughout their life cycle. It includes requirements for preliminary definition of materials and construction systems, and maximum values for embodied carbon footprint of materials.

Source: AMB presentation

The Sustainability Protocol encompasses the following dimensions of environmental criteria and requirements: Cross-cutting monitoring and analysis; Energy; Water; Materials; Comfort and health; Site sustainability. **As an example within the Water dimension, the Sustainability Protocol outlines specific requirements, as follows:**

- For buildings, there are maximum water flow values for sanitary appliances.
- Buildings are expected to have greywater recovery systems.
- Buildings with gardens should incorporate rainwater recovery systems.
- There are limitations on water consumption for green spaces, with the inclusion of irrigation facilities.
- Additionally, there is a focus on controlling water consumption in water play areas.

The Sustainability Protocol provides comprehensive details for each criterion. The AMB also provides project developers with tools to calculate the mandatory indicators.

#### Key point

**In order to enhance the impact of sustainability measures implemented at the territorial level, functional areas have the option to develop and implement their own Sustainability Protocols.**

Given the significant number and scale of investment projects carried out not only by the local administrative units within the functional area, but also by various stakeholders such as economic agents, educational institutions and real estate developers, such a solution can prove to be highly beneficial in achieving the environmental protection and climate neutrality objectives. The AMB-developed protocol provides specific criteria and requirements for each mentioned project type, serving as a valuable reference for functional areas in creating their own protocols. While adjustments to the objectives, criteria and requirements are necessary to align with the local context, the AMB model serves as a comprehensive and well-structured foundation, stemming from a lengthy and successful process. It should be noted that functional areas typically undertake similar categories of investment projects, making the AMB protocol an invaluable resource for inspiration and guidance.

Considering that the aforementioned solution is formulated in alignment with the legal, political and strategic framework of the Barcelona Metropolitan Area, we strongly advise functional areas to also refer to the [EU taxonomy for sustainable activities](#) and to the [EU principle of "Do No Significant Harm"](#).

Source: [AMB website](#). For further information, please refer to [this source](#).

## Low emission zones

Targeted challenges: green mobility, urban regeneration

High levels of pollution generated by road traffic pose a serious public health problem in densely populated urban areas. Recognizing the need for coordinated action, The *EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe* creates a harmonized regulatory framework for measuring pollutants (particulate matter, sulphur and nitrogen dioxide, carbon monoxide, lead, and ozone, among others), implementing measures to “combat



emissions of pollutants at source” and ensuring transparency of air quality information. A proposal for a revised Ambient Air Quality Directive was adopted in October 2022, with the objective to align EU air quality standards with the stricter WHO recommendations. The Directive also sets the rules for air quality plans at the local, regional and national level. In this context, low emission zones are mentioned as a means to limit transport emissions through traffic planning and management along with congestion pricing, differentiated parking fees or other economic incentives.

As part of the European Green Deal, the European Commission has established a target to achieve a minimum 55% reduction in the occurrence of premature deaths attributed to PM2.5, relative to the figures recorded in 2005, by 2030. Particulate Matter 2.5 (PM 2.5) refers to the fine particles suspended in the air, with a width of 2.5 microns or less. In comparison with PM 10, these tiny particles pose an even higher health risk.

Low Emission Zones are a key instrument for achieving this target and are included in the most recent Sustainable Urban Mobility Plan (SUMP) guidelines. Cities and metropolitan areas across Europe, including Barcelona Metropolitan Area, have established such zones in their urban centres, where access to more heavily polluting vehicles is restricted.

## Learning tools

The European Environment Agency estimates that at least 238,000 people died prematurely in the EU, due to poor air quality, in 2020 only. To address critical situation, a growing number of cities and metropolitan areas are implementing measures to reduce air pollution at its source, particularly by establishing low emission zones (LEZ). The first LEZ in Europe were created in 1996, in Sweden (Stockholm, Göteborg and Malmö). Currently, there are over 250 cities implementing LEZ across the EU<sup>1</sup>. Often, the set perimeters of these zones have been gradually extended, as complementary facilities are developed, such as public transport routes, park and ride facilities, well-connected cycling lanes. Examples of Low Emission Zones in the EU include:

- **Brussels:** 161 km<sup>2</sup> (all 19 municipalities in the Brussels-Capital region), since 2018.
- **London:** " 1.580 km<sup>2</sup>, covering most of Greater London, since 2017. Ultra Low Emission Zone: 21 km<sup>2</sup>, since 2019.
- **Berlin:** 88 km<sup>2</sup>, covering the centre of Berlin (S-Bahn ring), since 2008.
- **Paris:** covers the entire area within the Boulevard Périphérique ring-road in Paris, as well as a large area of Greater Paris, aiming for a Zero Emission Zone by 2030, since 2015.
- **Rotterdam:** since 2016. The city is already phasing out the low emission zone bans, as a result of reaching its objective: there are very few polluting cars left and air quality has been significantly improved.

Looking forward, reducing emissions and protecting the health of citizens requires taking a step further towards *zero emission zones (ZEZ)*, with current initiatives playing a key role in accelerating the phase-out of internal combustion vehicles.

For more information on low-emission zones across the EU, visit: <https://urbanaccessregulations.eu/low-emission-zones-main>

## Transforming ambitions into practice

### Implementing Low Emission Zones in Barcelona and Barcelona Metropolitan Area

#### Targeted challenges: green mobility, urban regeneration

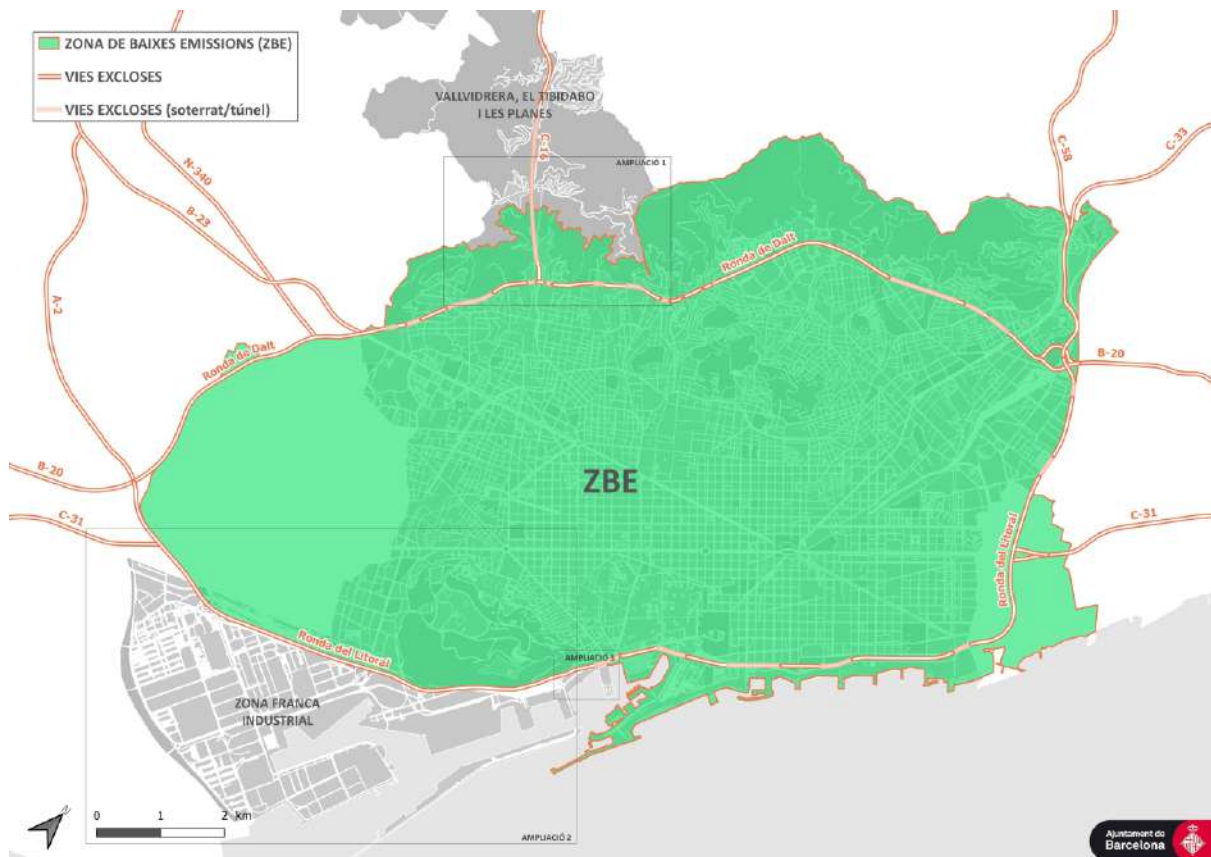
The low emissions zone (LEZ) within Barcelona's ring roads (ZBE Rondes de Barcelona) was launched on 1 January 2020 and is the largest in southern Europe. With an area of more than 95 km<sup>2</sup>, it includes Barcelona and the municipalities adjacent to the city's ring roads, where traffic of the most polluting vehicles was gradually restricted (by type, depending on their environmental label). Measures apply to the entire municipality of Barcelona (except the Zona Franca and the neighbourhoods of Vallvidrera, Tibidabo and Les Planes), and four others: the municipalities of Sant Adrià de Besòs and L'Hospitalet de Llobregat, and part of the municipalities of Esplugues de Llobregat and Cornellà de Llobregat.

The AMB also supports metropolitan municipalities in the deployment and implementation of LEZ. Their establishment requires municipal ordinances, while the regulation for creating a register for authorized vehicles was passed at the metropolitan level, following a participatory process.

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<sup>1</sup> [https://www.transportenvironment.org/wp-content/uploads/2021/07/2019\\_09\\_Briefing\\_LEZ-ZEZ\\_final.pdf](https://www.transportenvironment.org/wp-content/uploads/2021/07/2019_09_Briefing_LEZ-ZEZ_final.pdf)

### Map of the low emission zones in Barcelona



Source: AMB

Since 2019, restrictions were implemented gradually. Initially, traffic was restricted on days when a high level of pollution was recorded, and was limited to cars and other light vehicles without an environmental label (Zero, Eco, C and B). New categories of vehicles that do not meet the criteria for an environmental label were added to the regulation, starting with cars, motorcycles, and mopeds in January 2020, followed by vans in April 2021, lorries and small buses in January 2022, and buses for passenger transport in July 2022.

Certain exemptions are applicable for vehicles used by emergency services, vehicles for people with reduced mobility, and essential services vehicles, provided that they are included in the Metropolitan Register. Additionally, owners of highly polluting private cars, motorcycles, and mopeds without the DGT environmental label can apply for single-day permits to drive in the zone, with a limit of 24 permits per year. The day-permit is regulated by the Council of the Metropolitan Area through a fiscal ordinance and costs between 5-6 euros, depending on the vehicle type.

Vehicles running on petrol manufactured before EURO3 (typically before 2000) and vehicles running on diesel manufactured before EURO4 (typically before 2005 or 2006) are not allowed in the zone. The restrictions also apply to motorcycles, mopeds, vans, trucks, buses, and coaches that do not meet the respective EURO standards. The implementation of the low emissions zone is monitored through license plate-reading cameras located throughout the metropolitan area. Non-compliance may attract fines ranging from 200 to 1,800 euros, while permits and exemptions are enforced in accordance with a dedicated Metropolitan Fiscal Ordinance.

What is the alternative to private vehicles in metropolitan areas? Integrated metropolitan public transport, cycling and walking. To encourage alternatives to private vehicles, a public transport pass allowing free travel for three years on all transport services in exchange for scrapping a highly polluting

vehicle is available. In addition, most major transport stations in Barcelona are also equipped with park and ride facilities, allowing drivers to leave their car and continue their journey using public transport. Initiatives to encourage cycling and walking through urban regeneration projects are also implemented across the metropolitan area, reclaiming the space from motorized vehicles and turning them into quality public spaces that offer opportunities for interaction, play and active travel.

Moreover, to support cleaner mobility, the Metropolitan Taxi Institute is working on improving the taxi fleet's environmental performance. The goal is to reduce the proportion of diesel-only taxis in the localities of the metropolitan area to less than 33% by 2025.

Low emission zones are one of the most efficient measures to improve air quality in dense urban areas. According to the Barcelona City Council, since its introduction in 2020, the measure has led to a reduction of over 50% in the number of vehicles without an environmental label.

Further information is available at [this source](#).

### Learning tools

#### Technical Guide for Implementing Low Emission Zones

The implementation of the Low Emission Zone in the Barcelona Metropolitan Area served as a model for cities throughout Spain and has been included in the new national Law on Climate Change and Energy Transition, approved in 2021. According to this law, cities with a population of over 50,000 and municipalities with more than 20,000 inhabitants that exceed specific pollution thresholds are required to establish LEZs. This requirement applies to 148 municipalities across the country and cover over a half of the total population. The introduction of LEZs is part of Spain's efforts to combat climate change and is also included in the country's Recovery Transformation and Resilience Plan, thus securing the necessary funding for implementation.

The Barcelona Metropolitan Area (AMB), in collaboration with the Spanish Federation of Municipalities and Provinces (FEMP) has developed a [Technical Guide for Implementing LEZs in Spain](#). The guide is based on the Barcelona LEZ and aims to assist other municipalities in implementing similar systems.

The guide outlines key elements for implementing LEZs: regulatory ordinances, automatic control using number plate recognition technology (LEZ 2.0), a common signage system, and communication and public acceptance strategies, which can be adapted, according to specific legislative contexts.

The model for municipal regulatory ordinances is structured as follows: Preamble, General Dispositions, Protection of air quality, Measures of administrative intervention, Regime of sanctions, Derogatory dispositions, and Annexes. With regards to establishing the area of operation, the national law does not indicate a minimum area, but the Guide recommends two options: the entire city / metropolitan area, with the option of excluding industrial areas and restricting vehicles without an environmental badge, or a small area (such as historic centres, residential areas, proximity of schools or hospitals), where only electric or hybrid vehicles should be allowed.

Communication is basic pillar in the implementation and operation of LEZ. In this sense, the guide recommends organising a single campaign, agreed with all the administrations involved, focused on working towards a common end goal: "putting an end to air pollution, which seriously affects people's health". Another key requirement is analysing the perception and acceptance of citizens through surveys.

## Accelerating condominium refurbishment

Targeted challenges: energy-efficient neighbourhoods, housing

More than half of the building stock in the Barcelona Metropolitan Area is over 50 years old. To address the need to accelerate refurbishments, the Metropolitan Housing Consortium (CMH) has embarked on a large-scale plan that is also backed up by a strong financing mix, including a loan from the EIB. As a public associative organisation formed by the Government of Catalonia and the Barcelona Metropolitan Area (AMB), it was created specifically to “support housing policies and services and in order to improve and speed up the formalities in terms of housing of the metropolitan area citizens.”

The CMH has developed a [Metropolitan Plan for Rehabilitation \(PMRH\)](#) of buildings in the metropolitan area of Barcelona. It includes all localities except Barcelona, with a focus on multi-family buildings constructed before 1980. The plan’s timeline is 2020 to 2030 and aims to improve living conditions by addressing issues such as energy efficiency and lack of accessibility, while stimulating the economy, generating employment opportunities and contributing to reducing urban segregation in the metropolitan area.

The plan proposes a set of targeted support measures according to the economic conditions of different neighbourhoods (level of disposable income per family). Considering that neighbourhoods accommodating lower-income families have a higher proportion of pre-1980 buildings, resulting in higher energy costs for residents with limited economic and self-management capacity, extensive instruments were developed for this category (financial instruments with a longer repayment period, communication, management and advisory services).

Therefore, the plan comprises four programs with different levels of public involvement (and configuration of support instruments) based on the local self-management capacity of the community and income levels, with the largest palletary of options available for communities with a high concentration of families with a disposable income of less than 24,000 euros. Additionally, it includes specific support measures for single-family buildings and interior renovation.

The main instrument through which the Metropolitan Housing Consortium operates to accelerate large-scale renovation projects is the ACR (Areas of Conservation and Rehabilitation). The concept was introduced by Law 18/2007 on the right to housing, to address the needs of vulnerable communities. It allows the administration to take on the role of managing the entire rehabilitation process in these areas, including dialogue and cooperation with communities. The administration can bid for public works and transfer collection quotas to owners, which can be paid in monthly instalments over long periods. The administration monitors payment arrears and offers the option of an advance payment to owners who are unable to meet the fee. ACRs are designated areas where multiple buildings are grouped together, allowing for large-scale renovation projects, managed by the CMH (Metropolitan Housing Consortium) through this instrument.

The plan also provides a framework for communication and mediation efforts, as management of large refurbishments for privately owned buildings is a complex process, due to difficulties in reaching consensus.



## Learning tools

### **Palletary of instruments applied for large scale-energy refurbishment projects in vulnerable neighbourhoods**

#### **SUPPORT**

**Technical project drafting:** call for grants for the drafting of projects organised by CMH), including accessibility improvement project.

**Online estimation tool:** The CMH introduced an online tool on its website that will enable communities or professionals to access a preliminary estimate of the investment required for energy rehabilitation of a chosen building envelope. It will provide approximate information on potential energy savings, subsidies, and available mechanisms.

#### **FINANCING**

**Financing the technical documentation:** The CMH has secured a €2.8M grant from the ELENA Program of the European Union. This grant will cover 90% of technical fees, management costs, inspections, energy certificates, rehabilitation projects, as well as mediation and communication expenses. It aims to provide support for low-income homeowners for refurbishing multi-family houses in vulnerable urban areas of the AMB and is implemented between 2021-2024.

**Financing the interventions:** The Metropolitan Area of Barcelona (AMB) was granted a loan of €50M by the European Investment Bank, aiming to generate an overall investment of €100M in energy rehabilitation and accessibility of the housing stock. This funding will support the rehabilitation of 10,000 homes in disadvantaged districts (defined as ACR neighbourhoods) with a repayment period of 20 years. The initiative aims to benefit up to 30,000 people, offering favourable financing terms for accessing funds, through tailored credits lines. The project is part of the Smart Finance for Smart Buildings initiative promoted by the EIB and the European Commission, supporting investments in energy-efficient building improvements. The implementation of the project will result in annual energy savings of over 20,500 MWh and is expected to create more than 1,000 jobs by 2024.

**Subventions:** The Housing Plan provides subsidies to homeowners and property communities, covering 35% of costs for energy efficiency, conservation, and accessibility works. Additionally, a returnable financial aid mechanism will be implemented to assist individuals facing economic difficulties. This aid allows beneficiaries to receive an advance payment of up to 100% of the unsubsidized portion, which will be registered as a charge and repaid to the CMH upon a property sale or when the individual has the necessary resources.

#### **MANAGEMENT**

**Proximity offices:** The CMH plans to establish local neighbourhood offices within these programs to provide increased support to communities. These offices will be located in municipal premises, conveniently situated near the rehabilitation areas. Their main responsibilities will include providing information and promoting rehabilitation tools based on community demand.

**Areas of Conservation and Rehabilitation (ACRs)** established by Law 18/2007 on the right to housing enables the administration to engage in dialogue and cooperation with communities, acting as the manager of the entire rehabilitation process and allowing for the long-term

repayment of the costs by owners with a low income. ACRs encompass areas with multiple buildings, facilitating large-scale renovations.

### **COMMUNICATION**

The CMH plans to launch a comprehensive communication campaign, in collaboration with the member municipalities, to disseminate information about the CMH and the available support instruments.

Source: Metropolitan Plan for Rehabilitation (PMRH)

## **Transforming ambition into practice**

### **Pilot project for the large-scale refurbishment of condominiums in Santa Coloma de Gramenet**

The municipality of Santa Coloma de Gramenet near Barcelona has launched an energy retrofitting programme called *Renovem els Barris* in the south and central-south neighbourhoods of the city, including the first Conservation and Rehabilitation Area (Street Pirineus). The incorporation of complementary support mechanisms, in addition to subsidies, can greatly boost building rehabilitation efforts, according to an evaluation of the pilot project of the Metropolitan Plan for Rehabilitation.

The renovation of 32 private buildings (26 condominiums and 6 single family houses) in Carrer Pirineus involved 1,100 inhabitants and 649 owners, focusing on improving the thermal envelope and adding thermal insulation to the facades. The pilot test in Santa Coloma de Gramenet generated 25 jobs over two years with an investment of €2,16 mill. including a grant of €510,000 from the Barcelona Metropolitan Area.

To overcome barriers and encourage owner investment in energy retrofitting, the key has been to provide attractive and flexible financing systems tailored to the socio-economic reality of owners. Different financial instruments were offered, including 60 monthly instalments without interest, a 50-50 payment split, or the registration of the debt in the property register (the owners are required to repay the subsidy when the property is transferred through inheritance or sale).

The project organisation involved a collaborative effort among the Council of Santa Coloma, owners, residents' communities, associations, research institutes, and construction companies. The Council acted as a project manager, coordinating, and providing financing resources, while research institutes conducted energy audits. The financial input of the Council also covered energy efficiency certificates, the urban landscape competition and human resources involved. The City Council led the process and acted as a mediator with the owners and residents to achieve a consensus on how the energy building retrofitting would take place.

Considering that there was no obligation of the communities included in the ACRs to accept the option to energetically rehabilitate their homes, the clear communication of benefits, active participation and consensus-building among residents and owners were crucial for the success of the energy retrofit. Interactive meetings were organised, allowing stakeholders to engage with project representatives and address their concerns. Additionally, an urban landscape competition allowed owners and residents to choose the design of the facades, fostering a sense of neighbourhood identity and enhancing the overall aesthetic appeal.

For further information, please refer to this [source](#).

## The first Conservation and Rehabilitation Area (Street Pirineus) before rehabilitation works



Source: Council of Santa Coloma de Gramenet

### Learning tools

#### Affordable housing and rental price regulation

##### Targeted challenges: housing

In addition to increasing energy efficiency of condominiums and reducing energy poverty, the Barcelona City Council and AMB are actively seeking to ensure decent homes for everyone and combat gentrification and real estate speculation. In particular, the Right to Housing plan (2016-2025) aims to double the affordable and high-quality public housing supply in the city (up to 12,000 public dwellings). Special attention is given to addressing the housing needs of young people and the elderly, with a significant number of dwellings designated for them.

To address social housing needs, the City Council and AMB have established the Barcelona Metropolitan Housing (Habitatge Metròpolis Barcelona), the first public-private rental housing operator in Spain, with the aim of constructing 4,500 social housing units within eight years. Another key institution is the Metropolitan Housing Observatory (Observatori Metropolità de l'Habitatge de Barcelona), which provides data analysis and consulting services on metropolitan housing. Territorial studies of reference indices of the rental prices, housing offer and the evolution of the sector, are published on the website of the AMB and are used to inform measures and policies.

Besides new constructions, the city of Barcelona is also purchasing existing dwellings, thereby expanding the housing stock under the control of the city, and collaborates with social housing foundations and cooperatives to facilitate affordable rental housing and cohousing options. Moreover, temporary assisted-housing units are being constructed using shipping containers to address immediate housing needs.

In 2020, the City Council also passed a Municipal Law to regulate housing rental prices aiming to decrease the reference price by 5% over a five-year period. The law targets areas where the housing market is experiencing significant pressure. To classify a municipality as an area with a housing market under pressure, it must meet at least one of the following criteria:

- Rental prices are noticeably higher than the average in Catalonia.
- The average rent exceeds 30% of the normal income for a family unit or the average rent for individuals under 35 years old.
- The rent has shown a cumulative annual growth of three points above the RPI (Retail Price Index) over the past three years.

The law reduces prices of rentals in areas above the reference rate. Initially, the housing markets of 61 municipalities have been designated as under pressure for a period of one year. The list is subject to yearly updates, based on market changes. For more information, please also refer to the [Practical Guide to the Rental Price Regulation Law](#) developed by Barcelona Metropolitan Housing.

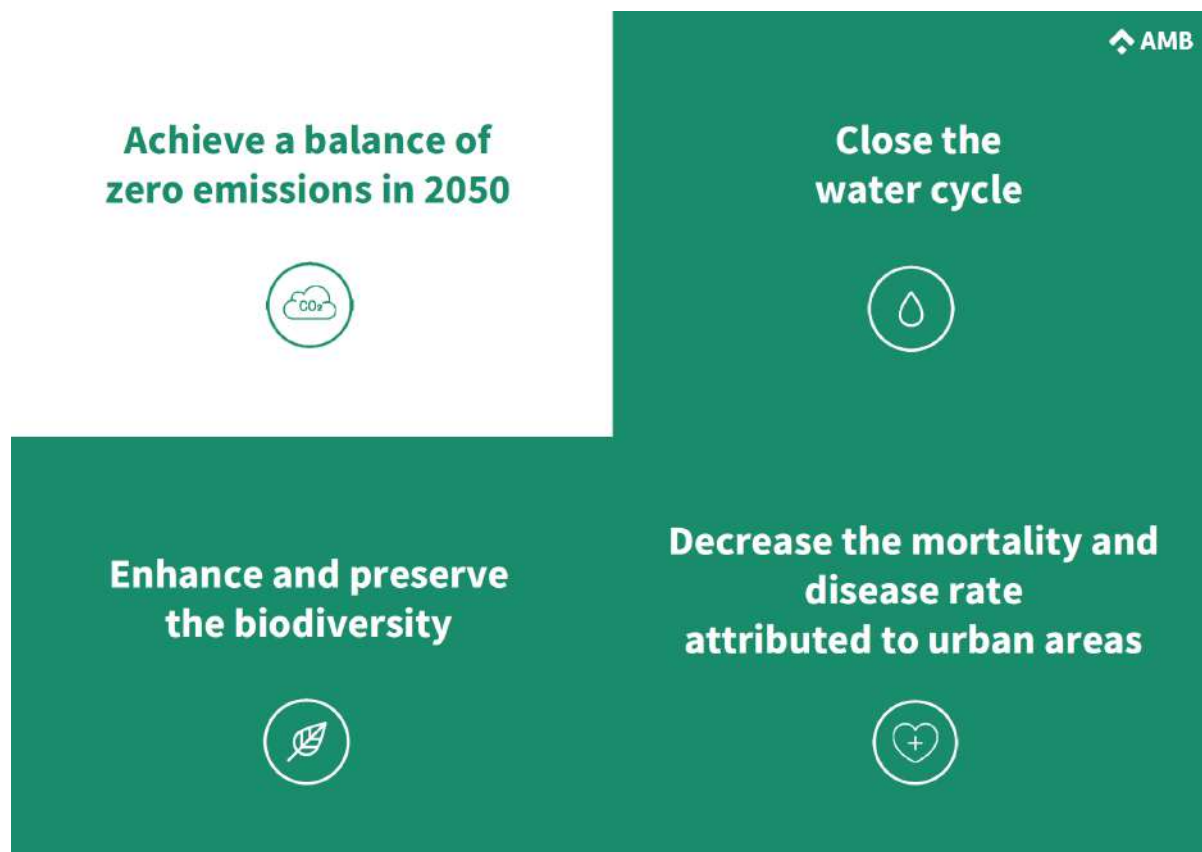
Sources: [UN Habitat](#) and [Habitatge Metròpolis Barcelona](#).

# **CLIMATE CHANGE**

The climate within the metropolitan region of Barcelona is undergoing transformation and will persist in doing so throughout the entirety of the 21st century. Noteworthy climate risks in this area encompass heightened temperatures, diminished average annual rainfall, intensified occurrences of extreme weather events, diminished water availability, escalated incidence of fires, sea level elevation, and health-threatening impacts resulting from the heat island effect and heat waves.

In this given context, the AMB decided to formulate the Climate and Energy Plan 2030, accompanied by the implementation of a range of measures aimed at both mitigating and adapting to climate change.

*AMB's climate change goals*



*Source: AMB presentation*

*Examples of measures for climate change intervention, based on the mitigation and adaptation objectives in the AMB's priority areas*

FIELD OF ACTION	GOALS
<b>CLIMATE CHANGE MITIGATION</b>	
Embodied Emissions	<ul style="list-style-type: none"> <li>• Reduce the amount of materials</li> <li>• Limit the embodied CO2 (kgCO2/m<sup>2</sup>)</li> </ul>
Operational Energy	<ul style="list-style-type: none"> <li>• Limit the energy demand and the total primary energy consumption (kWh/m<sup>2</sup>·year)</li> <li>• Generate renewable energy (kWp)</li> </ul>
<b>CLIMATE CHANGE ADAPTATION</b>	
Water	<ul style="list-style-type: none"> <li>• Recover and reuse water</li> <li>• Manage the surface runoff (Sustainable Urban Drainage Systems)</li> <li>• Use alternative water resources</li> </ul>

	<ul style="list-style-type: none"> <li>• Limit the water consumption of irrigated areas (l/m<sup>2</sup>-year)</li> </ul>
Biodiversity and Habitat Loss	<ul style="list-style-type: none"> <li>• Promote and preserve the biodiversity <ul style="list-style-type: none"> <li>○ Identify the species that hold significant natural value</li> <li>○ Increase the biodiversity in the project environment</li> </ul> </li> <li>• Decrease the mortality and disease rates attributed to urban areas <ul style="list-style-type: none"> <li>○ Increase the green spaces (% surface)</li> <li>○ Reduce the heat island effect (% surface) <ul style="list-style-type: none"> <li>○ Avoid the use harmful materials</li> <li>○ Promote the sustainable mobility</li> </ul> </li> </ul> </li> </ul>

*Source: AMB presentation*

### Measuring GHG emissions

The AMB diligently monitors these measures and undertakes the preparation and publication of reporting documents based on this ongoing process. More precisely, every two years, AMB conducts a comprehensive assessment of greenhouse gas (GHG) emissions within its jurisdiction. This assessment serves as a crucial tool for formulating and tracking policies and initiatives aimed at mitigating climate change. It forms the foundation for evaluating the effectiveness of implemented measures. The inventory follows the guidelines provided by the IPCC and incorporates the EU's reference framework for setting reduction targets, distinguishing between diffuse emissions and emissions from regulated combustion and energy production activities (RCDE). Additionally, AMB conducts an annual assessment of greenhouse gas emissions within its organizational scope, in accordance with the Carbon Strategy. This assessment focuses on the main powers and services provided at an institutional level, including waste treatment, water cycle facilities, mobility and transportation enterprises, maintenance of parks and beaches, and self-owned offices.

### Local Climate Change Adaptation Plans

Furthermore, in its capacity as the territorial coordinator of the Pact of Mayors for Climate and Energy and in accordance with the 2030 Climate and Energy Plan and the Climate Emergency Declaration, the AMB undertakes the development of local climate change adaptation plans, known as PLACCs, for its metropolitan municipalities. In recent years, 25 PLACCs have been formulated (of the total, 22 were created by AMB) and an additional 2 are scheduled for completion between 2023 and 2024. These local plans align with the climate objectives and targets outlined in the AMB Climate and Energy Plan 2030, ensuring a comprehensive and coordinated approach to strategic planning and implementation across the entire metropolitan region. As an example, the PLACCs incorporate the criteria established by the Climate Shelter Network and the bioclimatic criteria for parks etc. These local climate change adaptation plans encompass a wide range of actions in various areas, such as coastline management, addressing heatwaves, preserving natural spaces, promoting health and managing water resources etc. The AMB dedicates periodic resources, both in terms of human capital and budget, to the development of these documents. Moreover, each municipality within the metropolitan area receives ongoing specialized support from AMB experts, in order to facilitate the elaboration of their respective local climate change adaptation plans.

Source: [AMB website](#). For further information, please refer to [this source](#).

### Carbon Strategy

Furthermore, within the framework of the climate change initiatives, the AMB has formulated the Carbon Strategy, aimed at mitigating CO<sub>2</sub> emissions. This strategy encompasses multiple sectors, including the AMB's central office facilities, the waste treatment equipment, the water supply and treatment systems, the management and maintenance of parks and beaches, as well as mobility companies. This document applies to both the AMB's own operations to and those operated under concession agreements. The overarching goal established in the Carbon Strategy is to achieve a 30%

reduction in emissions by the year 2030, compared to the emissions recorded in the reference year of 2011. This objective translates into a significant 43% decrease in emissions compared to the estimated emissions in the base year of 2005, which was established by the European Union and encompasses its member states, including the Generalitat de Catalunya.

Source: [AMB website](#). For further information, please refer to [this source](#).

### **ISO Standard for GHG emissions**

Within the same contextual framework, the AMB implements the UNE-EN ISO 14064-1 certification, to quantify and report greenhouse gas emissions associated with the facilities and services encompassed by the Carbon Strategy. To achieve this, audit cycles are conducted over a three-year period. The initial cycle of audits took place in 2014, focusing on the verification of emissions for the years 2011, 2012, and 2013. The subsequent audit cycle commenced in 2017, verifying emissions for the years 2014, 2015, and 2016. In 2018, the emissions for 2017 were audited, etc. Currently, the scope of the Strategy includes 58 organisations and facilities. By strategically sampling these centers, nearly 100% of the Strategy's scope can be audited. For instance, in 2017 alone, a total of 24 centers underwent audits, and throughout 2018 and 2019, other 15 and 11 facilities, respectively, were audited. Over the period spanning from 2011 to 2017, emissions have been successfully reduced by 24%.

Source: [AMB website](#). For further information, please refer to [this source](#).

## **Transforming ambitions into practice**

### **AMB's Climate and Energy Plan 2030**

**Targeted challenges: strategic and spatial planning, urban regeneration, carbon-neutral city, green mobility, energy-efficient neighborhoods, blue-green infrastructure, stakeholder dialogue facilitation, civic engagement**

The [Climate and Energy Plan 2030](#) integrates three long-standing strategies employed by the AMB in combatting climate change: the Carbon Management Strategy, the Roadmap for the Energy Transition and the Adaptation Plan. In addition, aiming to ensure a comprehensive alignment of the metropolitan strategic planning documents, the Climate and Energy Plan harmonizes recent metropolitan policies, incorporating previous initiatives such as the AMB Sustainability Plan and the Climate Declaration. This document shows AMB's heightened commitment to progress towards carbon neutrality within the metropolitan region through a genuine energy transition, representing an ambitious approach to tackling climate change.

Through collaborative efforts from all local administrations, the Plan endeavours to facilitate a significant reduction in CO<sub>2</sub> emissions by 2030 for the AMB, while simultaneously promoting a genuine energy transition that prioritizes the generation of local and renewable energy, thereby enhancing self-sufficiency. Within the scope of the AMB's services (encompassing waste management, water cycle, mobility etc.) the Plan sets forth an objective to decrease emissions by 43% in relation to the levels recorded in 2005. However, when considering all the proposed measures, both at the territorial level and in the services provided by the AMB, it is estimated that the Plan will contribute to a 13.2% reduction in emissions. To attain the European target of a 40% reduction, active collaboration is imperative from various stakeholders, including municipalities, other administrations, key logistics entities and citizens alike.



This commitment extends to sustainable mobility, aiming to achieve a substantial 30% reduction in CO2 emissions, which will be integrated into the AMB's Metropolitan Mobility Plan. Moreover, the comprehensive involvement of various actors within the AMB and its metropolitan municipalities is sought, in order to drive the generation of renewable energy. This includes initiatives such as housing rehabilitations and the economic activity zone program, alongside the implementation of municipal projects with the support of the metropolitan energy operator.

### Key points

**1. To ensure the Climate Action Plan is not merely a theoretical exercise but rather a practical and implementable strategy, it is crucial to establish a clear structure, consisting of well-defined lines of action.** However, given the complexity of such an ambitious endeavour, the design process must truly account for local priorities, while also aligning with the European framework. For instance, the Climate and Energy Plan 2030 of the AMB aims to address climate change and facilitate a genuine energy transition within the Barcelona's Metropolitan Area. To accomplish these objectives, a comprehensive array of actions has been identified, encompassing both structural measures such as the promotion of renewable energies, as well as governance measures like public awareness campaigns and capacity building in terms of technical and political aspects. In the case of the AMB, the interventions have been systematically organised into four overarching areas, that transcend administrative, jurisdictional or sectoral boundaries. Under the umbrella of these four overarching areas, a range of specific lines of action has been identified, encompassing a multitude of tangible and targeted measures. To enhance organisational efficiency and facilitate the monitoring process during both the implementation and post-implementation stages, each action outlined in the Climate and Energy Plan 2030 is assigned a unique code, based on its respective domain and corresponding line. Following this structured approach, the plan comprises a total of 92 actions categorized into 13 distinct lines and 4 areas of action. Within the context of the AMB, the four identified priorities are: "Renaturalize to be more resilient," "Renewable energy," "Climate justice" and "Metropolitan governance." These priorities are further subdivided and classified in the following way:

- **NATURALIZING FOR GREATER RESILIENCE AND BETTER LIVING (CODE: RES)**
  - LINE RES-1 - 4 actions (Buildings adapted to the new climatic conditions)
  - LINE RES-2 - 8 actions (More green spaces, more permeable and cooler areas)
  - LINE RES-3 - 3 actions (Promotion and preservation of biodiversity)
  - LINE RES-4 - 4 actions (A resilient and sustainable coastline over time)
- **ENHANCING LOCAL RENEWABLE GENERATION AND IMPROVING ENERGY, WATER AND OTHER RESOURCES' EFFICIENCY (CODE: ENER)**
  - LINE ENER-5 - 14 actions (Provision of local renewable energy for everyone, at all times)
  - LINE ENER-6 - 19 actions (Reduction of demand and more efficient energy management)
  - LINE ENER-7 - 6 actions (More efficient water management)
  - LINE ENER-8 - 5 actions (Metropolitan infrastructure adapted to extreme conditions)
  - LINE ENER-9 - 5 actions (Circular economy as a sustainable metropolitan model)
- **A TERRITORY AND CITIZENS ACTIVE AND COMMITTED TO CLIMATE JUSTICE (CODE: EDU)**
  - LINE EDU-10 - 5 actions (Education and awareness about climate change and adaptation at all levels of society)
  - LINE EDU-11 - 5 actions (Education and awareness about energy at all levels of society)
- **METROPOLITAN AND COORDINATED GOVERNANCE WITH THE MUNICIPALITIES (CODE: GOV)**
  - LINE GOV-12 - 7 actions (Improved coordination among entities)
  - LINE GOV-13 - 7 actions (Enhanced energy and climate capacity of the AMB)

2. **As in the case of other territorial documents of strategic importance, climate action plans must be guided by principles that promote environmental and climate sustainability, social inclusivity and citizen participation, while fostering the overall development of the functional area, through innovative solutions and models.** Within the context of the AMB, the Climate and Energy Plan adheres to a comprehensive set of principles that underpin and integrate into all the actions outlined in the Plan. These principles include climate justice, territorial balance, social cohesion, participation, sustainability and the cultivation of a new energy sustainability culture.
  
3. **The categorization of priorities into hierarchical-territorial levels of intervention can optimize the implementation process of the proposed measures, while providing clarity to the stakeholders that responsible for carrying out the established actions.** This approach enables place-based interventions, facilitating the clear delineation of responsibilities and streamlined monitoring of results. Simultaneously, it allows for the vertical integration of activities, thereby expediting the realization of the envisioned objectives. Within the AMB's Climate and Energy Plan, actions are organised based on three levels of intervention: metropolitan, municipal and institutional.
  - At the metropolitan level, actions focus on projects that necessitate a shared metropolitan vision or operation, addressing metropolitan competencies or policy coordination.
  - The municipal level encompasses actions implemented collaboratively with local governments, involving one or more municipalities.
  - The institutional level encompasses actions that impact the AMB institution itself, including its facilities, concessionaire companies, offices, fleet vehicles etc.
  
4. **The formulation of a climate action plan necessitates a thorough understanding of the actual circumstances, which can be assessed by utilizing precise and up-to-date data.** These evidence-based considerations should serve as the foundation for establishing the plan's objectives and actions. For instance, the AMB adopted a chronological work process, that followed an evidence-based approach. It involved undergoing a diagnosis for each proposed pillar, which resulted from specific analysis activities, that also incorporated participatory elements. These diagnoses then informed the proposed objectives. To maximize the potential of achieving the set objectives, the plan put forth concrete measures in the form of actions. These actions encompass a range of results, such as tools, models and mechanisms to be implemented in order to fulfil the predetermined targets.
  - **The approach employed for the pillar titled "TOWARDS SERVICE PROVISION WITH A 43% REDUCTION IN EMISSIONS BY 2030 (VS. 2005)"**
    - The diagnosis stage encompassed the comprehensive assessment of both overall greenhouse gas emissions and emissions within specific sectors (such as mobility, water, waste, territory, housing and offices) of the AMB institution, along with the 57 participating facilities and companies. This involved calculating annual emissions, updating emission factors and analyzing year-to-year trends. Importantly, this process was designed to be participatory, aiming to enhance the participants' comprehension of existing mitigation commitments and foster greater engagement and dedication towards the goals.
    - Building upon the findings of the diagnosis, the primary objective was to establish overarching global objectives for the entire institution by 2030. This entailed considering the progress made in emission reduction during the period from 2011 to 2015, ensuring alignment with other international commitments and incorporating the vision articulated by the participating companies through the participatory process.
    - Consequently, during the third stage, two distinct directions of action were defined for the action plan. The first direction involved identifying and implementing specific actions focused on energy savings and efficiency, as well as the integration of renewable energy sources. The second direction involved

- establishing sector-specific indicators that accurately reflect the carbon intensity of various processes. These indicators were designed to provide a comprehensive assessment of the environmental impact within each sector.
- In conclusion, the preceding process outlined in the earlier sections yielded several significant outcomes. The results include the identification of 12 specific actions, such as the procurement of electric vehicles for the fleet, the upgrading of machinery to achieve energy savings, the implementation of a smart system to monitor and manage fuel consumption and the adoption of paper-saving measures in office environments, among others. Additionally, the process fostered the establishment of a participatory and transparent framework among organisations, serving as a foundation for monitoring the Strategy's progress and facilitating the exchange of experiences and best practices. Furthermore, to ensure effective oversight and continuous improvement, a technical Monitoring Committee was established. This internal committee serves as a structured mechanism for presenting results, exchanging information on actions and setting sector-specific objectives.
  - **The approach employed for the pillar titled "TOWARDS A TERRITORY WITH 30% RENEWABLES AND 30% ENERGY EFFICIENCY "**
    - The diagnosis phase encompassed several essential processes, including: 1. Performing an updated energy diagnosis of the AMB, focusing on the assessment of energy consumption and CO2 emissions at three distinct levels: metropolitan, municipal and institutional. 2. Computing the present energy mix within the AMB, together with providing insights into the sources and composition of energy utilized. 3. Projecting energy consumption for the years 2024 and 2030, based on a comprehensive analysis of socio-demographic factors and climate conditions. These projections aimed to anticipate future energy demands within the area.
    - Drawing upon the diagnostic process and the resulting findings, three objectives were formulated. The first objective aims to establish benchmarks by comparing national objectives (including Catalonia and metropolitan municipalities) and international targets. The second objective centers on selecting an appropriate base year to serve as the reference point for setting objectives. Lastly, the third objective encompasses defining metropolitan targets for renewable energy generation, energy efficiency improvements and CO2 emissions reductions to be achieved by the year 2030.
    - Subsequently, the action plan materialized through the implementation of three key directions. Firstly, it involved the establishment of a participatory forum comprising experts from relevant sectors. This forum facilitated knowledge sharing, collaboration and informed decision-making. Additionally, specific actions were identified and developed within three distinct areas: renewable energy generation, energy efficiency and the promotion of a new energy culture. Moreover, tailored financing mechanisms were associated with each initiative to ensure the effective implementation of these actions, guaranteeing the necessary resources and support for their successful realization.
    - Based on the aforementioned information, the main results have been established. Firstly, the roadmap encompasses a total of 36 actions, resulting in substantial energy savings of 5,950,891 MWh per year and a reduction of 2,094,327 tons of CO2-e emissions. This achievement corresponds to an 11% decrease in energy consumption by the AMB compared to the Business-as-Usual scenario for 2030, as well as a 13% reduction in emissions compared to 2005 levels. Furthermore, the implementation of these actions is expected to generate a production of 3,416,894 MWh per year of renewable energy by 2030. This amount constitutes approximately 7% of the projected energy

consumption for the Barcelona metropolitan area in 2030 and an impressive 331% of the current energy consumption of the AMB institution. This renewable energy production is approximately 3.3 times greater than the institution's current energy consumption. Recognizing the need for financial resources in achieving the set targets, the budgetary allocation of the AMB for the implementation of the 36 actions has also been outlined. The AMB's financial contribution amounts to 5.19% of the total budget, with 0.46% sourced from the regular budget of the Metropolitan Energy Agency and 4.73% from the Metropolitan Fund for Energy Transition.

- **The approach employed for the pillar titled "A METROPOLIS MORE RESILIENT TO CLIMATE IMPACTS "**

- During the initial stage, a comprehensive assessment of climate risks was conducted, encompassing the following key steps: identification of climate risks that directly impact the AMB, based on the analysis of existing climate studies and future projections and a systematic determination of the primary climate risks that pose significant threats to the AMB.
- After analyzing the primary climate risks impacting the AMB, the subsequent step involved assessing their potential impact. This process started by identifying the specific impacts arising from the identified climate risks within various sectors of the AMB. Subsequently, participatory sessions were conducted, involving both group and individual discussions with experts from all relevant sectors, to validate and refine the identified impacts. Finally, a comprehensive assessment of the impacts was carried out, considering two key factors: the exposure level, which denotes the degree of impact on the AMB and the resilience level, which indicates the extent of preparedness and adaptation measures in place within the AMB to mitigate these impacts.
- Subsequently, a set of adaptation actions was formulated. This process involved several key steps: firstly, identifying and defining adaptation actions that directly corresponded to the identified impacts in each sector. Secondly, conducting participatory group and individual sessions, wherein technicians from all relevant sectors actively participated, providing their expertise and insights to refine and validate the proposed adaptation actions. Lastly, a comprehensive assessment and prioritization of the adaptation actions were undertaken, considering their significance and importance, as determined by the technicians within the AMB.
- Consequently, the process's main result consisted of identifying and formulating 43 adaptation actions, which were allocated to seven distinct areas within the AMB. These areas include urban planning, public space and infrastructure, building-housing-projects and construction, waste management, water management, environmental education and socio-economic development.

**5. The coordination process plays a vital role in ensuring a holistic and responsive approach from a territorial perspective, while actively engaging relevant stakeholders.** Effective collaboration with stakeholders is essential for the functional areas and the cooperative efforts of member municipalities significantly influence the attainment of desired outcomes, both in terms of expanding impact and expediting results. In the context of the AMB, coordination, participation and dissemination are facilitated through regular meetings of key bodies, namely the Resilience Table, the Metropolitan Table for a New Energy Model and the Technical Monitoring Commission of the Strategy. These meetings involve various stakeholders, such as internal AMB departments, other administrations, citizens, private sector entities, industries etc., based on their specific relevance and needs. Additionally, close coordination with metropolitan municipalities is pursued, for those adaptation actions that have metropolitan-level implications. Continuous coordination and dialogue with businesses and organisations encompassed by the Strategy are also in place, ensuring the ongoing evaluation and adjustment of emission reduction objectives, in alignment with the proposed or forthcoming lines of action outlined in each organisation's roadmap.

6. **The commitment to climate change adaptation and mitigation extends beyond the implementation of actions and necessitates ongoing monitoring, feedback and recalibration processes.** Such an approach ensures the continuous evaluation of results, the identification of areas for improvement and the incorporation of necessary technical updates. In the case of AMB, the follow-up process for the climate and energy plan encompasses three distinct, but complementary reporting mechanisms, that ensure the continuous monitoring, evaluation and refinement of the climate and energy plan, fostering a dynamic and adaptive approach to climate change adaptation and mitigation within the AMB.
- **ANNUAL MONITORING REPORT:** This report focuses on assessing the execution of planned actions for the respective year. It involves evaluating the objectives and the achieved results, proposing improvements and monitoring key indicators. Additionally, the inventory of the Mitigation Strategy will be updated annually, to ensure the inclusion of the latest data.
  - **BIENNIAL REVIEW REPORT:** This report entails the evaluation of objective attainment and proposes modifications, updates or improvements to the objectives and actions. It considers any new studies on climate change and energy that have been conducted within the AMB, incorporating relevant findings into the review process.
  - **TRIENNIAL CONVENTION OF THE CLIMATE AND ENERGY PLAN:** This convention serves as a platform to bring together all stakeholders involved in the Plan. It provides an opportunity to assess the progress of the Plan and facilitate discussions on its advancement. Through this convention, the collective efforts and achievements of the stakeholders are reviewed and further strategies for enhancement are deliberated.

Source: [AMB website](#). For further information, please refer to [this source](#).

## Program for Actions in Energy and Climate (PMEC)

**Targeted challenges: strategic planning, smart financing of functional areas, carbon-neutral city, energy-efficient neighborhoods**

The [PMEC](#) is a funding program initiated by the Metropolitan Area of Barcelona, with an annual allocation determined by the available budget. The program's focus is on initiatives related to energy transition, encompassing renewable energies, energy efficiency, as well as mitigation and adaptation to climate change. Additionally, it encompasses awareness and promotion projects, needed in order to ensure a fair transition and foster a new culture of sustainability. The allocated funds for planned investments are adjusted and allocated annually, based on the budget availability of the Metropolitan Area of Barcelona (AMB) in subsequent years. This ensures full funding within the corresponding budgets for the period from 2020 to 2023, with a long-term vision towards 2030, which aligns with the EU's commitments for member states.

Since the approval of the initial Sustainability Plan of the AMB, which concluded in 2020, and the subsequent approval of the 2030 Climate and Energy Plan, the AMB has conducted studies to explore energy potential, planned and managed energy facilities and provided technical support to municipalities in matters of climate mitigation and adaptation. These actions involve a metropolitan perspective, as they require a supra-local vision. The metropolitan approach is essential for expediting actions to achieve objectives, capitalizing on economies of scale and supporting member municipalities in navigating the increasingly complex landscape of energy management.

**PMEC supports various priority lines, in line with the aim to drive sustainable development and address the challenges posed by climate change within the metropolitan area:**

- **100% Renewable Municipalities by 2030:** This priority line aims to achieve emission neutrality in municipal energy consumption, specifically buildings and public lighting, before 2030. The objective is to install 100 MWp of new photovoltaic capacity and reduce energy consumption by 50%.

- **Energy Communities:** The Energy Communities priority line aligns with the European Commission's directives, which emphasize the idea of placing citizens at the core of the new energy model. The focus is on empowering consumers to actively participate in energy-related decision-making and transitioning from passive consumers to proactive participants.
- **Carbon Management Strategy:** The Carbon Management Strategy priority line concentrates on reducing greenhouse gas emissions within the metropolitan territory and the AMB institution by 2030. The objective is to implement measures that effectively mitigate climate change impacts.
- **Climate Change Adaptation:** The Climate Change Adaptation priority line involves the contribution of the AMB in enhancing the resilience of metropolitan municipalities against rising temperatures and extreme weather events. The aim is to implement adaptation measures that mitigate the adverse effects of climate change.
- **Studies on Climate Change Mitigation:** The Studies on Climate Change Mitigation priority line focuses on conducting research and analysis to maintain comprehensive and up-to-date knowledge for informed decision-making in metropolitan planning and programming. This line ensures that the P MEC remains well-informed and equipped, in order to effectively address climate change mitigation.
- **Awareness, Training, and Environmental Education (cross-cutting line):** The Awareness, Training, and Environmental Education priority line cuts across all the previous lines, complementing their objectives and tailoring initiatives to their specific needs. It aims to raise awareness, provide training opportunities, and promote environmental education, in order to foster a broad understanding and engagement with the P MEC's goals.

#### Key point

**The AMB procedures provide explicit and well-defined criteria for the types of actions eligible for P MEC support. In developing their own programs to finance local energy and climate initiatives and projects within their territories, the functional areas can draw inspiration from the considerations employed by the AMB when supporting such initiatives. They can also incorporate the requirements imposed by the AMB for projects funded through its program. These guidelines serve as a valuable resource for the functional areas in ensuring the effectiveness of their own financing programs.** The AMB adheres to a set of clear principles when selecting actions to be funded through the P MEC. Here are some of the key principles, provided as examples and which can be found in their entirety in the P MEC programming document, that is available below:

- Technical assistance is offered through the AMB staff responsible for the relevant services. In cases where the assigned staff members are unable to handle specific tasks due to workload constraints, external contractors may be engaged.
- For actions related to the Covenant of Mayors (for which the AMB acts as the coordinating body), municipalities need to demonstrate their participation and compliance with the commitments established by the EU.
- Regarding other types of actions (projects, supplies, etc.), the selection process involves competitive bidding among all demands submitted by municipalities during designated open submission periods throughout the funding period. The call for proposals ensures transparency and the participation of all interested parties, following the provisions of current regulations, including the AMB Regulation with subsequent approval by the relevant granting authority.
- Actions that require collaboration from municipalities for civil works, supply, installation, etc., are subject to regulated agreements, governing such collaboration.
- The AMB may also promote metropolitan actions that benefit all municipalities, such as promotional activities, studies, information provision, advice, dissemination, non-formal education activities, participation in Catalan, national or European associations and organisations that are involved in climate and energy policies, direct subsidies for citizens or related businesses etc.

- Due to differences in funding sources between the P MEC and other investment programs, the same project cannot receive joint funding from both the P MEC and other investment or subsidy plans offered by the AMB.

Source: [AMB website](#). For further information, please refer to [this source](#).

## Climate shelters

Targeted challenges: carbon-neutral city, energy efficient neighborhoods

In Barcelona and its metropolitan area, climate change has led to the anticipation of more frequent and severe heatwaves, posing a significant threat, particularly among vulnerable populations (elderly, children, people with chronic illnesses and people in a difficult socio-economic situation). Therefore, climate shelters aim to provide support to those who are most at risk and are the most impactful in low-income communities.

OUTDOOR SHELTER (with green background)



INDOOR SHELTER (with blue background)



A major climate change adaptation measure implemented by the City Council of Barcelona and Barcelona Metropolitan Area (AMB) is the creation of a network of indoor and outdoor climate shelters, in order to protect people from excessive temperatures (both heat and cold). Since 2020, 74 climate shelters were established at the level of the Metropolitan Area, while another 200 are available in the city of

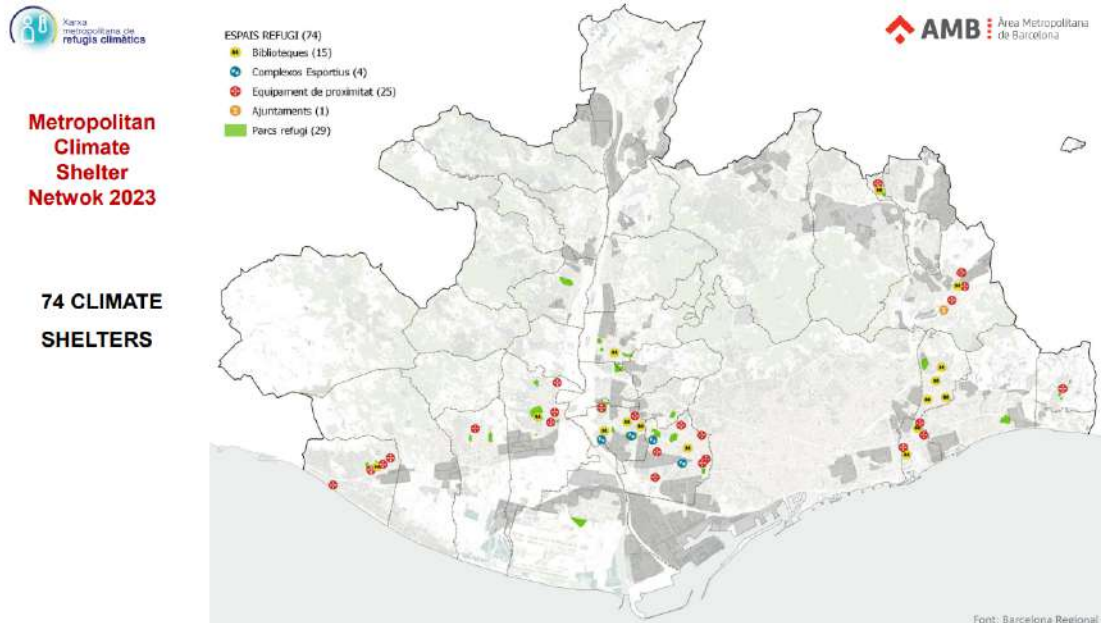
Barcelona.

The Climate Plan (2018-2030) includes a set of measures aimed at addressing heat waves. These include the identification of existing and potential climate shelter spaces, deepening the scientific understanding of the health effects of heat, extending the knowledge on urban climate, as well as creating water gardens, improving the thermal comfort of climate shelter facilities, and interventions on pavements and rooftops. By 2030, the plan has set the objective of offering access to a climate shelter within a 5 minute walking distance to 100% of the population of the city.

### Key points

- Climate shelters are spaces that can ensure a temperature of up to 26 Celsius degrees and can be situated either indoors or outdoors, depending on the available resources;
- In the Barcelona Metropolitan Area indoor climate shelters are operational throughout the year, protecting people from both excessive heat and cold, while outdoor ones are activated seasonally (June 15 - Sept 15);
- Climate shelter locations include public and private facilities and public spaces;
- The partnering entities will implement a standard set of services;
- Additional measures include extending open hours of parks to 24 hours or creating permeable, green school courtyards;
- Some examples of climate shelters are municipal facilities (particularly schools, libraries or sports centres) and public spaces (such as parks and gardens), which have a distinct signage and are highlighted on an online map;
- Extending the network aims to ensure territorial equity within the city, and the measure has also been adopted at the metropolitan level. Currently, 80% of the metropolitan population is at a 10 minutes walking distance from a climate shelter.

## Network of climate shelters in the Barcelona Metropolitan Area



Source: AMB

The Barcelona Municipality has also developed an app for mapping the drinking fountains available in the city, to help users find the closest to them, called *Fonts Bcn*. Besides directions, the app also offers information on the historical and artistic background of the water facilities, some of which are part of the city's heritage.

Source: [AMB website](#). For further information, please refer to [this source](#).

### Learning tools

#### Schools as climate shelters

Schools have undergone a transformation into climate shelters through a collaborative effort involving authorities, organisations, and schools with educational projects. Children from every school have been actively involved in the decision-making process regarding specific initiatives. Among these, concrete surfaces of playgrounds have been renaturalized, and new sheltering outdoor spaces have been created, providing shade through the use of pergolas. The initiative has also focused on enhancing the natural environment by planting trees, installing new water points, while promoting water conservation and management within school premises.

The measures have been implemented as part of the Urban Innovative Actions (UIA) project 'Adapting schools to climate change through green, blue, and grey measures', in eleven schools. Blue measures include water points, green measures refer to shaded spaces and vegetation, and grey measures focus on improving the insulation of buildings.

Further information: [Urban Innovative Actions project: Adapting schools to climate change through green, blue and grey](#)

A similar project was implemented within the UIA framework in Paris (OASIS - *School yards: Openness, Adaptation, Sensitisation, Innovation and Social ties: Design and transformation of local urban areas adapted to climate change, working jointly with users*).



# **ENERGY TRANSITION**

The energy transition entails a gradual shift from fossil-based energy sources to renewable and locally sourced energy, accompanied by transformations in energy production, distribution, management and consumption practices. In alignment with this objective, the AMB has initiated a strategy to foster this transformative paradigm and, ultimately, cultivate a new energy culture.

Consequently, energy efficiency initiatives implemented in the Barcelona metropolitan area exhibit remarkable diversity. These encompass a wide range of projects, such as energy compatibility systems, energy-certified buildings, international research initiatives, ESCO projects, NZEB projects, solar roof installations facilitated by the AMB and executed by local councils, solar roof constructions commissioned by the AMB and other noteworthy local endeavours in support of the energy transition. It is also worth noting that the Barcelona Metropolitan Area is Spain's leading local public authority in photovoltaic public building investments, with €26 million invested during 2019-2023, from ERDF funding, as well as the AMB budget.

To ensure transparency and information accessibility for the community, ecosystem and other relevant stakeholders, as well as to promote the significance of energy transition and monitor the progress of implemented measures, the AMB has mapped all these projects through an interactive virtual platform. Moreover, comprehensive details regarding each initiative are available on the official website. The mapping exercise also encompasses municipal plans for photovoltaic roofs, strategic projects, planned solar roof installations and other similar elements.

### Key point

**Such a digital visualisation solution, showcasing the entirety of energy transition initiatives, is a valuable tool for functional areas** looking to highlight their commitment to energy efficiency and clean energy production and to evaluate the territorial energy transition process.

### *Energy efficiency projects implemented and scheduled within the Barcelona Metropolitan Area's jurisdiction*



Source: [AMB website](#). For further information, please refer to [this source](#)

## Transforming ambitions into practice

### Solar energy generation – Legally-binding instructions at the municipal level

**Targeted challenges: carbon-neutral city, energy-efficient neighborhoods.**

The city of Barcelona is a pioneer in promoting solar-energy systems. As early as 2011, the Barcelona Environment Ordinance made it mandatory to incorporate solar energy systems for the generation of hot water and electricity for domestic use in new constructions, renovated buildings, or buildings that have undergone significant changes in their use. Moreover, the Barcelona Metropolitan Area is a leading local public authority investing in solar renewable energy at the national level, with the highest

level of investments in photovoltaic panels installed on the rooftops of public buildings (€26 million invested during 2019-2023, from ERDF funding, as well as the AMB budget)

The Energy Protocol for Municipal Projects and Construction Works and Equipment (Energy Protocol) sets guidelines and targets to improve energy efficiency and promote renewable energy generation in municipal building projects. The protocol aims to ensure that municipal public building projects meet the required energy standards, combining two technical instruments:

- [Technical instructions for the application of environmental criteria in works projects](#) in the field of energy
- [Instructions for the incorporation of the objective of renewable energy generation in the municipal actions related to the drafting of works projects and urban planning instruments.](#)

The Energy Protocol applies to all bodies associated with Barcelona City Council and other voluntary public bodies. It provides the necessary information for documentation related to energy efficiency, renewable energy generation, and energy monitoring at different stages of projects and works. To comply, professionals involved in municipal building projects must prepare energy documents for each project phase, following the organisation and content defined in the Energy Protocol.

Since 2020, the existing guidelines of the Energy Protocol have been strengthened by a new set of Instructions to incorporate the renewable energies objective into municipal initiatives relating to construction projects and urban planning instruments, approved by the City Council. These cover not only the construction and rehabilitation of buildings but also urbanization and infrastructure projects and urban planning instruments.

### Key points

- The incorporation of renewable energy generation into all municipal projects is mandatory;
- An analysis to maximise the utilization of renewable and local energy resources must be conducted before each project;
- Generation facilities need to be integrated into the architecture and the landscape of public spaces;
- The project budget must include an estimate of the energy generation cost;
- The Barcelona Energy Agency is responsible for ensuring compliance with these instructions and serves as a guidance, assessment, and control body.

### 15 principles for the optimum integration of photovoltaic installations

15 principles for the optimum integration of photovoltaic installations			
Assess the viability of incorporating solar energy in new and fully renovated buildings	Prioritise selecting multifunctional and stackable solar collectors	Respect existing buildings when incorporating solar energy	Consider the characteristics of the surrounding buildings
Keep within the boundaries of and respect the host building's profile	Group together all the solar collectors on one surface	Select solar panels with a rectangular shape	Evaluate the alternative versions and models of the selected products
Maintain an equal distance between the solar collectors on the surfaces and the lines of the host building	On flat roofs, install the solar collectors away from the edges and at a low height	Combine thermal and photovoltaic collectors in the same installation	Ensure colours blend in
Measure and coordinate the joints between the panels and the plates	Minimise the visibility of the structure and the support installation	Take care of all the details	Consult the resources catalogue for solar integration

Source: <https://www.energia.barcelona/>

For further information, please refer to [this source](#).

## Metropolitan Table

**Targeted challenges:** stakeholder dialogue facilitation, cross-border cooperation, cooperation networks, civic engagement, carbon-neutral city, energy-efficient neighborhoods.

One valuable instrument that the AMB implements is the [Metropolitan Table for a New Energy Model](#), which helps both the AMB and its municipalities in the energy transition pursuit. Acting both as a forum and as a working group, the Metropolitan Table facilitates discussions and debates to foster the energy transition.

One of the initiatives introduced by the Metropolitan Table involves creating a collection of measures that municipalities can adopt in their local regulations, in order to encourage the energy transition. Furthermore, studies were conducted to renovate public buildings in line with NZEB criteria, environmental factors to be incorporated into contracts and digital tools (such as the solar calculator) were developed, in order to encourage and enhance the energy transition at the metropolitan level.

The Metropolitan Table acts as a technical focal point in the energy sector for all the metropolitan municipalities. Its fundamental aim is to facilitate efficient communication channels between the municipalities and the AMB. The table serves as a venue for sharing success stories, addressing shared challenges, identifying obstacles, exploring funding opportunities and discussing municipal requirements, thus promoting collaboration and knowledge sharing among the participants.

### Key point

**The functional areas could organise similar round table discussions involving representatives from the local administrative units, primarily focusing on the energy transition.** As in the AMB's case, such a platform would enable municipalities within the functional areas to share their energy-related issues, leading to the development of customized and impactful energy transition policies. In a subsequent stage, this model could even be further expanded to engage other stakeholders, by involving local economic actors, citizens and civil society organisations, non-governmental organisations, educational institutions, universities, together with research and development bodies, as participants in the working groups.

Source: [AMB website](#). For further information, please refer to [this source](#).

## Energy Communities

**Targeted challenges:** carbon-neutral city, energy-efficient neighborhoods, civic engagement

The AMB actively encourages the establishment and optimal operation of [energy communities](#). Several metropolitan municipalities already have municipal energy and housing offices that provide services to the metropolitan area's residents interested in establishing collective self-consumption practices or energy communities.

Apart from providing citizens with comprehensive information on energy communities and their advantages, the [AMB dedicated page](#) also features models individuals can adopt for self-consumption. The online platform offers easily accessible and explicit details on various options, including individual photovoltaic self-consumption, shared photovoltaic self-consumption, energy communities and aérothermal heat pump technology.

Three noteworthy examples of initiatives from the Barcelona Metropolitan Area, which complement other measures taken by residents, are:

- **Prat de Llobregat Energy Community:** The Municipal Council carried out the installation of photovoltaic panels on 22 municipal roofs and 3 churches. To oversee this initiative, a non-profit limited liability company was created, led by the Council and involving the participation of the Users' Association (formed specifically for this purpose). As part of a pilot project, 0.5 kWp is temporarily allocated to 45 families from the Charles Darwin School.

- **Vilawatt Viladecans:** Vilawatt offers environmentally-friendly electricity through its proprietary marketing company. To participate in the energy community, individuals are required to become customers of Vilawatt and choose them as their electricity supplier. The Municipal Council is currently implementing a 1 MW solar capacity installation on the rooftops of public facilities, with intentions to transfer the management and operation to Vilawatt. Furthermore, endeavours are underway to establish a specialized energy community that could leverage photovoltaic self-consumption in the municipal market.
- **Ruby Brilla:** Rubí Brilla offers a complimentary service that assesses the potential for renewable energy savings and the formation of collective self-consumption communities. They also provide guidance to neighboring communities in the energy retrofitting process to achieve energy, emission and cost savings, while improving comfort and quality of life.

**To foster and enhance local residents' engagement in green energy practices, the AMB provides a diversity of incentives. These incentive programs undertaken by the AMB include:**

### **PILLAR 1. SELF-CONSUMPTION, STORAGE AND AEROTHERMIA**

#### **INCENTIVE 1.1. Financial Incentives for self-consumption and storage with renewable energy sources and renewable thermal systems:**

The AMB provides financial incentives to support self-consumption and storage of renewable energy sources, as well as renewable thermal systems. There are a total of six funding program, and the following ones specifically apply to citizens:

- Incentive Program 4: This program supports the installation of self-consumption systems, whether photovoltaic or wind, in the residential sector, public administrations and the tertiary sector, with or without storage;
- Incentive Program 5: This program focuses on integration storage (batteries) in self-consumption facilities that utilize renewable energy sources. It applies to the residential sector, public administrations and the tertiary sector;
- Incentive Program 6: This program supports the installation of solar thermal, biomass, geothermal, hydrothermal and aerothermal systems (excluding air-to-air technologies) for air conditioning and/or domestic hot water.

The beneficiaries of these programs within the residential sector include:

- Natural persons who are not engaged in any economic activities;
- Legal entities that do not conduct economic activities but provide goods and/or services in the market, including tertiary sector entities or organisations;
- Communities of owners;
- Renewable energy communities and citizen energy communities (for programs 5 and 6).

### **PILLAR 2. ENERGY REHABILITATION**

#### **INCENTIVE 2.1. Aid program for the energy rehabilitation of buildings (PREE)**

Currently, the initiative is specifically targeted towards municipalities with less than 5,000 inhabitants and aims to promote actions that revitalize the existing real estate sector, improving its energy efficiency and reducing energy consumption. The scope of these actions covers single-family residential buildings, multi-unit residential buildings and buildings of various other uses (such as administrative, healthcare, educational, cultural etc.), and individual residential units or premises within a building.

In terms of beneficiaries within the residential sector, the following entities are eligible:

- Natural or legal persons, whether private or public, who own buildings intended for any purpose;
- Communities of owners or groups of communities of owners of residential buildings used for housing purposes;

- Owners who, collectively, possess ownership rights without having established a formal Horizontal Property regime;
- Renewable energy communities and citizen energy communities.

### **INCENTIVE 2.2. HELPLINE FOR RESIDENTIAL ENERGY REHABILITATION**

The Housing Agency of Catalonia manages a program called the Aid Line for Residential Energy Rehabilitation, which aims to support the energy-efficient renovation of homes. This program is available for communities of owners, individuals and rehabilitation agents and it is funded through European financing. The loans provided under this program serve to finance investments that meet the eligibility criteria set by the Housing Agency of Catalonia.

### **INCENTIVE 2.3. DEDUCTIONS ON PERSONAL INCOME TAX**

Individuals who undertake an energy renovation project in their homes can benefit from deductions of up to 60% of their investment. The specific details include:

- Deductions of 60% (up to a maximum of €15,000 per year): This applies to renovation works for increasing energy efficiency in buildings primarily used for residential purposes. To be eligible, the non-renewable primary energy consumption indicator must be reduced by at least 30%, or the building must have an energy rating of A or B.
- Deductions of 40% (up to a maximum of €7,500 per year): This category pertains to improvements made to the individual's main residence or a property intended for rental before December 2023. To qualify, the non-renewable primary energy consumption indicator must be reduced by at least 30%, or the building must have an energy rating of A or B.
- Deductions of 20% (up to a maximum of €5,000 per year): This deduction is applicable to improvements made to the individual's tertiary residence or a property intended for rental before December 2023. The requirement is that there should be a minimum reduction of 7% in the demand for heating and cooling.

### **PILLAR 3. BONUSES TO THE IBI AND THE ICIO FOR SELF-CONSUMPTION INSTALLATIONS**

The majority of municipal councils provide incentives in the form of tax bonuses for the installation of self-consumption systems, specifically for the Tax on Real Estate and the Tax on Constructions, Installations and Works.

#### **Key points**

- 1. Functional areas are responsible for actively promoting and supporting the establishment and growth of energy communities within their territories.** They can apply tools similar to the ones employed by the AMB, such as effectively disseminating information to / educating citizens about the functioning and advantages of joining energy communities. Additionally, promoting existing energy communities serves the dual purpose of showcasing them as models of good practices and facilitating their expansion by attracting new members.
- 2. Both functional areas and their member municipalities have the potential to effectively stimulate the adoption of energy transition practices among the citizens, through the provision of incentives.** These incentives can be tailored according to the financial and technical capacity of each functional area. For instance, as an initial step, a pilot program can be implemented on a smaller scale, for example, by testing it in a limited number of localities or by offering lower financial incentives (such as not imposing significant burdens on the managed budgets). Such solutions encourage citizens to actively participate in energy transition practices, eventually leading to substantial impacts within the metropolitan area. Moreover, these practices can generate positive spillover effects to other local administrative units.

Source: [AMB website](#). For further information, please refer to [this source](#)

**CULTURE**

# Management model for multifunctional cultural centres: Centre de Cultura Contemporània de Barcelona (CCCB)

Targeted challenges: culture and creative industries, citizen engagement, urban regeneration

The Centre de Cultura Contemporània de Barcelona (CCCB) is a cultural centre located in the Raval neighbourhood of the Ciutat Vella district in Barcelona, Spain. As one of the former suburbs of the city, with a strong multicultural profile, but also marked by structural social challenges, the neighbourhood benefits from targeted measures to reduce inequalities and co-create its future. The success of CCCB can also be attributed, in part, to its location, as it enables easy accessibility for a wide range of visitors and proximity to the local community.

Over the years, the CCCB building dating back to the 12<sup>th</sup> century has been used for various purposes, naming a church, a monastery, a military barracks and correctional facility, and a charitable establishment (Casa de Caritat). The former Casa de Caritat was transformed into the current complex of contemporary culture through a rehabilitation project in the Raval neighbourhood. The creation of the centre was approved by a consortium formed by the Diputació de Barcelona and Ajuntament de Barcelona in 1989, and the works were finalised in 1994.

According to the CCCB webpage, the arts centre covers “the original structure of the former Casa de Caritat, with three wings arranged in a U-shape around a large central courtyard (The Pati de les Dones) and the former theatre of the Casa de Caritat”. The Casa de Caritat underwent a remodelling project in 1991, which included the addition of a glass façade as a lookout point over the city. While beautiful, the glass façade is not a sustainable solution today due to its high energy cost. The external facades also feature the original graffiti and majolica decorations from the 1920s, as well as construction elements characteristic of the original buildings. Furthermore, the open space between the buildings (The Pati de les Dones) is open to the public, which provides the feeling that the cultural centre is integrated within the city and neighbourhood, establishing a solid connection between the cultural centre and its citizens. Another addition to CCCB is the former Casa de Caritat theatre, which became the Teatre CCCB in 2011.

## Facilities

A large open-air venue (The Pati de les Dones) with an audience capacity of 360 people, a space for functions (The Hall) with a capacity for 340 people, a space for 150 people with a foyer and a hall (the Mirador), two lecturer rooms used or training with a capacity of 170 and 60 people, an auditorium (186 people), a multi-purpose hall with an audience capacity of 500 people (Sala Teater), Sala Raval Conference Room (110 people), and a reception and catering area for the Sala Teatre or the Sala Raval.

## The organisation structure of the centre

The governance and organisational models of the CCCB may serve as a blueprint for other public and private entities looking to create major cultural facilities and can be adapted according to the local contexts.

The "Centre de Cultura Contemporània de Barcelona" is governed in the form of a consortium by the Diputació de Barcelona (DIBA) and the Ajuntament de Barcelona (AB), which annually contribute a respective sum amounting to 75% and 25% of the operating costs. The management team has both cultural and management experience, which was incremental for the success of the centre.

## Governing bodies and management

- The General Council: approves the general lines of programming, regulations and orders, the annual budget, how to manage services, the workforce, and the organisational chart, among other functions. The following entities make up the Board: a) Presidency: DIBA President; b) Vice-presidency: Mayor of Barcelona City Council c) 12 members (3 from the AB and 9 from the DIBA) d) The CCCB's General Director.



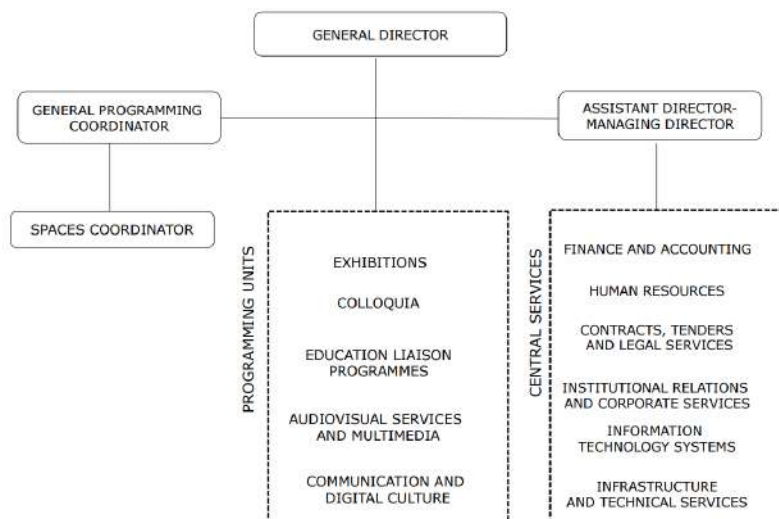
- The Presidency: represents the consortium on an institutional level, calls, presides over, suspends, and adjourns the General Council sessions, approves the settlement of the budget, and appoints the General Director and the Treasurer, among other functions.
- The Special Accounts Committee: approves the annual accounts and reflects the same criteria of representation as the Board of Trustees
- General Manager: organising and supervising services, producing cultural and management programmes, assuming the official representation of the Centre, exercising direct command in personnel matters and financial management of the Centre, among others.

The Management governance entities are:

- The Strategic Management Committee deals with strategic issues and meets weekly. It is formed by the General Director, Management Director, Programming Coordinator.
- The Management Committee deals with operation and general management issues, short-term planning, and programming, and meets fortnightly. Its competence is: General Director, Management Director, Programming Coordinator and Heads of Programming areas.
- The Planning Committee deals with long-term planning and programming and meets monthly. It is formed by the General Director, Management Director, Programming Coordinator and Heads of Programming areas. Monthly meeting.

The CCCB has the autonomy to handle its regulatory affairs, internal organisation, financial matters, programming, and planning, among others, and carries out its services according to the laws and regulations outlined in the Local Regime legislation. The organisational chart below highlights the main departments of the CCCB, with a clear separation between the programming activities (exhibitions, colloquia, education liaison, audio-visual services and multimedia, communication, and digital culture) and the supporting services that bring these programs to life.

**Organisational chart of the CCCB**



Source: CCCB

The centre employs a total of 92 professionals across its various departments, including a marketing team. Additionally, it collaborates with external companies to handle essential services such as cleaning and security.

### **Mission and vision**

Barcelona is a civic capital with a rich architectural and industrial tradition. The CCCB was founded on the idea that a cultural centre should not "invent" its mission and identity, but build on pre-existing assets, values, and realities. For example, the city's history and knowledge related to urbanism and architecture informs the Centre's function of reflecting on cities and public space. The centre

successfully works with universities, NGOs, and citizens and has both local and international projects. Besides, reflecting on public spaces contributes to shaping new ideas and involves children and their families. Being a space of citizens, it is not limited in terms of topics of discussion. Overall, “the CCCB deals with the key challenges of contemporary society through different languages and formats, with an extensive programme that includes major thematic exhibitions, series of conferences and literary meetups, film screenings and festivals.”

### **Programme and activities**

The CCCB’s program is split into four departments: thematic exhibitions, film, debates, and education & mediation. The centre’s activities are organised around four key areas: "cities, words, bodies, and technosphere". Additionally, it prioritizes inclusivity and accessibility through programs such as the Alzheimer and Apropa Cultura. For example, accessibility is ensured through “accessible documents in Braille, large print and/or Easy Read, hearing loop in conferences, free entry with a disabled ID card, wheelchairs, guide dogs are allowed into the building and exhibition spaces, and adapted toilets”.

For 2023, the institution aims to become a hub for intellectual and artistic exploration by focusing on creativity, experimentation, and critical examination of the world. The program is designed around timeless philosophical questions and the future of humanity in an age of algorithms. Other topics of interest are the future of cities and the power of water and oceans. To successfully implement the 2023 program, the CCCB plans to strengthen international partnerships and work with the cultural and educational community at local and regional levels.

### **Business model and funding**

The funding for the activity of the CCCB comes from public funding from the Consortium members (Diputació de Barcelona and Ajuntament de Barcelona), complemented by revenues from admission charges, income from services, and grants and other public or private income (patronage and sponsorships). Public contributions and other public entities make up about 95% of the CCCB’s budget, followed by own income (tickets, memberships, touring exhibitions, space hire, sponsorships, co-production, publications) and income from assets (restaurant and bookstore concessions).

The centre has a web page which promotes its activities and venues. In terms of venue hire for events, there is a price list for each space. It is worth mentioning that the COVID-19 pandemic has significantly impacted the centre’s rental revenues, with a 37% decrease in the number of visitors from 2019 to 2022.

Looking at expenditures, salaries represent a large part of the total current expenditure, followed by structural costs and activity costs. The salary costs include costs for new staff, temporary contracts, insurances, salary increases and contingencies. In terms of structural costs, in 2023, 75% are represented by big structural external contracts (security, cleaning, maintenance, IT systems and utilities). Due to the recent rise in the cost of energy, most of the total sum is represented by electricity costs, followed by security and access control. Lastly, activity expenditure covers the activities of the Exhibition, Mediation, Colloquium and Audio-visual departments, External resources and production and Communication.

In terms of capital expenditures, the Diputació de Barcelona finances 100% of the investment budget, which is split into three categories: activities (materials and equipment), general services (security, office furniture, IT equipment and licences) and building (renovation, modernisation).

### **Key points:**

#### **Innovative approaches**

- While it is an institution of culture, it doesn't belong to elites but to all citizens. As such, this approach places the centre as an agora where locals can express their opinions.
- The management understood that culture and education must be linked. Hence, it created a bridge between the two parts within the centre. For example, they work on education inside the Raval neighbourhood, with a diverse immigrant community (more

than 50% of the population was born abroad). This linkage also supports the continuity of activities throughout the day, as educational activities can be programmed in the first part of the day (as opposed to visitor time peak, in the afternoon)

- The centre gives partners spaces for exhibitions and offers them a budget. For example, partners can use spaces for thematic exhibitions, book releases, etc.
- Their communication is mostly online, with very few printed elements. Additionally, the marketing team invests and pays attention to aspects that make their content inclusive and accessible (e.g., subtitles for videos)
- The IT department is governed by three principles: flexibility, security, and maintainability. Therefore, they are flexible enough to offer different solutions in terms of technical aspects, while also being prepared for cybersecurity threats, ticketing, procurement, and for communicating and being transparent (e.g., video streaming events through Zoom or YouTube).
- In 1999, the CCCB created the **European Prize for Urban Public Space**, a biennial initiative that works as a permanent observatory of European cities ([publicspace.org](http://publicspace.org)). The scope of this competition is to focus on and highlight initiatives and projects that improve public spaces in terms of design and functionality. In return, this event created a big international network for the centre and a global visibility.

### Lessons learned and recommendations

- Establishing a cultural centre may be straightforward, yet the crucial challenge lies in its sustainability. In response, CCCB places emphasis on several key factors, including securing massive cultural funding from the local budget, establishing robust internal management practices within the institution, and providing an inclusive and attracting environment for the locals.
- One invaluable piece of advice is to have a well-defined understanding of the additional offerings the space can provide beyond its primary functions, such as a public library or exhibition area. From its very inception, CCCB focuses its philosophy on the city and the public spaces, with a deliberate intention to integrate a traditional element - in the case of CCCB, it is the architecture of Barcelona.
- By investing sufficiently in the quality of the content, visibility will naturally follow. Therefore, giving attention to each promoted cultural product is crucial, as it enhances the overall image of the cultural centre.
- Thriving cultural centres seamlessly blend into the local ecosystem. CCCB does it by ensuring they do not duplicate or overlap with existing local initiatives. Additionally, it is crucial to integrate the institution within the local community by fostering genuine exchanges with the residents.
- To maximize options and optimize data utilization, it is crucial to employ digital solutions. For instance, the CCCB uses artificial intelligence to identify speakers in the archived videos. CCCB experts recommend cultural centres to adopt software solutions that evolve alongside society, ensuring the flexibility mentioned earlier.
- Cultural centres are advised to have multiple digital solutions available to cater to different scenarios. For instance, it is important to acquire necessary solutions in preparation for adverse situations like a pandemic, including VPN tools, online communication platforms, and others.
- The hiring processes should prioritize transparency, openness, and meritocracy. An effective recruitment process can involve independent juries composed of both local and international representatives, for unbiased selection.
- Renting arrangements should be thoughtful and well-balanced. CCCB caters to the needs of renters by providing spaces with complementary functionalities, including areas for hosting receptions, congresses, seminars, and social events, as well as halls with suitable capacity for festivals and major presentations, alongside exhibition spaces. Diversity is crucial in this regard, as the spaces should offer options for concerts, screenings, events, seminars, courses, work sessions, and more.

- As a result of the aforementioned factors, the CCCB is widely recognized, not only by citizens and the local ecosystem but also by the public administration, as an exemplar of successful neighbourhood regeneration in Raval, a vibrant part of Ciutat Vella. The centre's accomplishment is largely attributed to its strong connection with the local community, as the CCCB consistently emphasizes its role in the city and its mission to serve the people. Remaining inclusive and accessible, the centre continuously engages with individuals of all ages and proactively seeks to understand the needs, challenges, perspectives, and opportunities of both the city and its residents.

Further information: <https://www.cccb.org/en>

Additional photos: <https://www.cccb.org/en/services/venue-hire>

## Learning tools

### CCCB: Insights for cultivating local initiatives with cultural, social and educational impact

#### THE STRATEGIC DIMENSION

##### HAVE A CLEAR PATHWAY

The cornerstone of long-term success lies in a well-defined idea that shapes the trajectory of the long-term cultural programs organised within the centre. This approach allows the creation of a clear profile for the cultural centre, mitigating the risk of it becoming a mere exhibition space. By adhering to the established development direction, the risks of community/ecosystem dissatisfaction are mitigated, and resource distribution becomes more efficient. In this regard, maintaining focus on the initial idea is paramount. Often, projects exceed the available funds, but rather than being an obstacle, this should serve as a motivating force to seek innovative solutions for transforming the core idea into reality.

##### CHOOSE THE PILLARS ON WHICH TO BUILD THEMATIC ASPECTS

After formulating the core idea of the centre, it is important to establish the main pillars that will serve as the bedrock for thematic elements. The thematic aspects will furtherly provide the framework for organising cultural programs over extended periods. For instance, at the beginning of each year, CCCB unveils a yearly cultural program (with 3-4 major exhibitions), that is aligned with its core vision. This program serves as the foundation for all the events and activities scheduled throughout the year.

##### PROJECTS SHOULD BE DIVIDED INTO MULTIPLE LEVELS

Within the CCCB, cultural diversity is ensured through a three-tier project division approach. The first level encompasses projects initiated and executed solely by the CCCB, with own resources. The second level comprises initiatives proposed by external actors that align with the CCCB's profile, for which the CCCB provides free space. The third level encompasses projects that fall outside the CCCB's profile, and for these, rental services are offered only if they adhere to the CCCB's values.

##### ENSURE CULTURAL INDEPENDENCE AND FREEDOM

Cultural centres need to prioritize independence and freedom in cultural matters. The management team should have the liberty to make decisions aligned with the vision / pathway they have established from the very beginning.

##### BE OPEN TO OTHER INSTITUTIONS, BUT KEEP YOUR AMBITION

Fostering partnerships with other local institutions or initiatives, such as film festivals, is vital to ensure a lively atmosphere within the centre throughout the year. CCCB, for instance, offers support to local initiatives that align with its values by providing spaces and even funding. These local initiatives, in turn, bring content and audiences, playing a crucial role in maintaining the CCCB's distinctive profile.

**LOOK BEYOND THE INDIVIDUAL**

However, it is essential that these initiatives align with CCCB's overall vision and direction. Additionally, co-production plays a crucial role. In certain instances, CCCB collaborates with other producers, even in external spaces beyond the centre, to present its exhibitions. The CCCB restrains from organising monographic exhibitions, focused on the work of individual artists, but rather places their works into a broader historical or thematic narrative. Through this approach, cultural centres can create a space where towering figures of iconic artists do not over-power the program - when they are featured solely, the approach is focused on showcasing their work as a lens on a larger topic (e.g., *Pasolini's Rome* exhibition). By embracing larger thematic contexts, cultural centres can avoid fostering an unhealthy atmosphere of competition (particularly among local artists) and instead nurture an environment that celebrates the collective growth and interconnectedness of artists.

**CULTURE IS HARD TO BE SUSTAINABLE, BUT FAITH IS WHAT MAKES THE DIFFERENCE**

By truly believing in the potential of the cultural centre (which demands substantial investment in terms of effort), it becomes possible to give it a distinct political and cultural profile. This, in turn, will help in transforming the centre in a pivotal landmark for local development. Income streams are subject to fluctuations influenced by external factors. To ensure financial sustainability during times of crisis, such as the pandemic or the economic recessions, CCCB strategically adjusts the number of activities offered through negotiations, while maintaining its renowned cultural offerings without significant compromise.

**FINANCIAL SUSTAINABILITY DEPENDS ON EXTERNAL FACTORS**

**THE OPERATIONAL DIMENSION**

**BUILD THE MANAGING TEAM BEFORE BUILDING THE CENTER**

To ensure a well-defined trajectory for the cultural centre's development, it is crucial to establish a cultural management team prior to its construction. This team will be responsible for shaping the centre's vision, devising the development plan, and organising the programs to be offered. A useful approach in this regard involves forming a local consortium comprising cultural experts from diverse yet complementary fields.

**THE QUALITY OF THE HUMAN CAPITAL IS INFLUENCED BY THE TEAM'S FLEXIBILITY**

Cultural centres should be mindful of the potential changes within their teams and consider them when designing the organisational structure and employment contracts. Furthermore, providing training is crucial for staff members, both in terms of general topics applicable to the entire team and specific expertise required for individual roles.

**CULTURAL CENTERS NEED BRAINS AND HANDS BOTH INSIDE AND OUTSIDE THE ORGANISATION**

The effective functioning of a cultural centre can be achieved through a harmonious collaboration between an internal team (the one responsible for managing the centre, for instance its cultural programs), and an external one (that offers support through outsourced activities, such as technical production, maintenance, cleaning, and security services). Such a combination of expertise can ensure the well-rounded operation of the centre. Nevertheless, sensitive aspects and those closely tied to preserving the values of the cultural centre should not be outsourced to subcontractors.

**VIGILANCE SHOULD DICTATE RELATIONS WITH SUPPLIERS**

From the very first stage of conceptualization, it is necessary to ensure a vigilant oversight in supplier relationships, to ensure compliance to pre-established criteria. For instance, when engaging with architects, it is important to ensure their compliance with the essential functional requirements of the space.

<b>BUILDING SPACES WITH SUSTAINABILITY AS THE UTMOST PRIORITY</b>	When constructing cultural centres, it is essential to utilize materials that foster self-sustainability, regarding both the financial and the environmental perspectives.
<b>PUBLIC FUNDING MATTERS</b>	Active support from the public administration, backed by dedicated funds, is of utmost importance for cultural centres. However, it is imperative that public financing be supplemented with additional sources of income, such as the provision of facility rentals, to ensure financial sustainability.
<b>MICROFUNDING HOLDS EQUAL SIGNIFICANCE TO MAJOR FINANCING</b>	It is important for every member of the institution's staff to actively seek micro-financing (to be proactive in fundraising) for specific projects. Such contributions can serve as valuable complements to the primary sources of financing, bolstering the financial sustainability of the cultural centre.
<b>IT IS ESSENTIAL TO HAVE DIVERSE COMMUNICATION CHANNELS</b>	Ensuring audience engagement involves the use of diverse communication channels, specifically those that are universal and cater to different generations. This remains a challenging task for institutions like the CCCB, as the discussion surrounding audience outreach is a complex topic.
<b>EQUIPMENT MAKES THE DIFFERENCE</b>	CCCB consistently and continuously invests in equipping its spaces appropriately. As a result, most of the essential equipment for cultural productions is supplied by CCCB. Naturally, these technical resources are supplemented by specialized facilities from partners, based on the specific nature of the cultural events being organised.

### **THE LOCAL DIMENSION**

<b>CULTURAL CENTERS SHOULD REFLECT A PRE-EXISTING ITEM OR VALUE</b>	Cultural centres should embody and reflect a pre-existing element or value of significance. For instance, CCCB effectively captures and transposes the pivotal role that architecture has in shaping the identity of Barcelona.
<b>INFUSE THE SPACE WITH A STRONG LOCAL ESSENCE AND ROOTEDNESS</b>	To garner acceptance from the local community, cultural centres must integrate themselves into local networks through proactive projects (both as response to various local actions and as their own initiatives). However, it is equally important to not overlook the connection with the international sphere, as it enables the optimal integration of the global dimension of art. Therefore, projects must be conceived on a dual level, encompassing both the local and international dimensions.
<b>COLLABORATING WITH THE PUBLIC ADMINISTRATION IS ESSENTIAL</b>	As an example, CCCB collaborates with the City Council on the project 'Open City': The Biennial of Thought. Through this partnership, the two institutions join forces to provide Barcelona with a dedicated space that fosters intellectual discourse and the exchange of ideas.
<b>THE CONNECTION WITH THE EDUCATIONAL SPACE IS THE KEY</b>	To become locally rooted, cultural centres should engage in collaborations with educational institutions such as kindergartens, schools, and universities. This collaboration could, for instance, ensure the utilization of available spaces during morning hours when visitor traffic is typically low, for instance through workshops and activities involving students and teachers. By feeding the need for culture to the youth, the centre nurtures its future audience for the years to come. This principle is founded on the genuine necessity of disseminating knowledge among young individuals to achieve a lasting social impact.

### **THE CONNECTIVITY DIMENSION**

<b>LOCATION MATTERS</b>	The strategic positioning of CCCB in the heart of the city brings significant advantages. As a prominent landmark, CCCB attracts a
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**THE BUILDING'S  
ACCESSIBILITY CAN  
FOSTER SEAMLESS  
PASSAGE**

steady stream of individuals traversing through the city centre. When people see the opportunities presented by CCCB, it leads them to spontaneously engage with the cultural offerings and avail themselves of the provided amenities.

When the cultural centre becomes an integral part of the city, it transcends its mere spatial function and thrives as a vibrant component of the community. For the CCCB, this aspect is pivotal as it has a significant local audience, comprising over 70% of its visitors, including residents from the metropolitan area. In this context, the challenge is to avoid repetition while striving to provide diverse exhibitions that cater to the local public. The satisfaction derived from effectively serving the local audience justifies the efforts made in offering a wide range of exhibitions.

**CREATE THE ESSENCE  
OF A PUBLIC SPACE**

Cultural centres should evoke the essence of a public space, creating a genuine sense of community engagement. Such an example refers to incorporating moderate commercial spaces, such as cafes or shops featuring local producers and artists, on the ground floor. These establishments not only draw people in but also provide a valuable amenity for residents, ensuring the continuous liveliness of the space beyond cultural events.

**THE DIGITAL DIMENSION**

**IT FLEXIBILITY,  
SECURITY AND  
MAINTAINABILITY**

Flexibility, security, and maintainability of IT processes and tools are the three guiding principles that determine the successful operation of a cultural centre, from the digital solutions' perspective. Consider, for instance, the aspect of flexibility when procuring digital solutions: IT experts must assess the ease of changing, replacing, or relocating the solutions if necessary; in some cases, aesthetics may even need to be compromised to ensure durability. Furthermore, these three principles should be compiled into versatility, as there may be instances where digital solutions need to be combined with one another: thus, the advice is to procure tech tools that have extensive functionalities.

**THE TENSION BETWEEN  
THE DIGITAL AND  
PHYSICAL  
ENVIRONMENTS  
SHOULD NOT BE  
UNDERESTIMATED**

While heavily immersed in the latest digitization trends, the CCCB places significant emphasis on physical experiences. The centre achieves it by prioritizing its role of being a physical space.

**LESS CAN BE MORE  
EFFICIENT**

An example about how CCCB strives to enhance its efficiency is the adoption of a unified digital ticketing solution, in collaboration with various local institutions. This aspect holds significant importance in fostering audience connection and engagement, by simplifying the ticketing process for cultural exhibitions. The ease of use of digital solutions by the public directly impacts the success of cultural activities. Additionally, this model facilitates seamless monitoring of data that measures the events' success.

**DON'T OVERLOOK  
CYBERSECURITY**

Given the substantial data managed by cultural centres, cyber security holds great significance. To mitigate any potential risks, a significant portion of the CCCB's IT budget is dedicated to cyber protection tools. As stated by CCCB experts, ensuring security is not just a question of how, but also a matter of when.

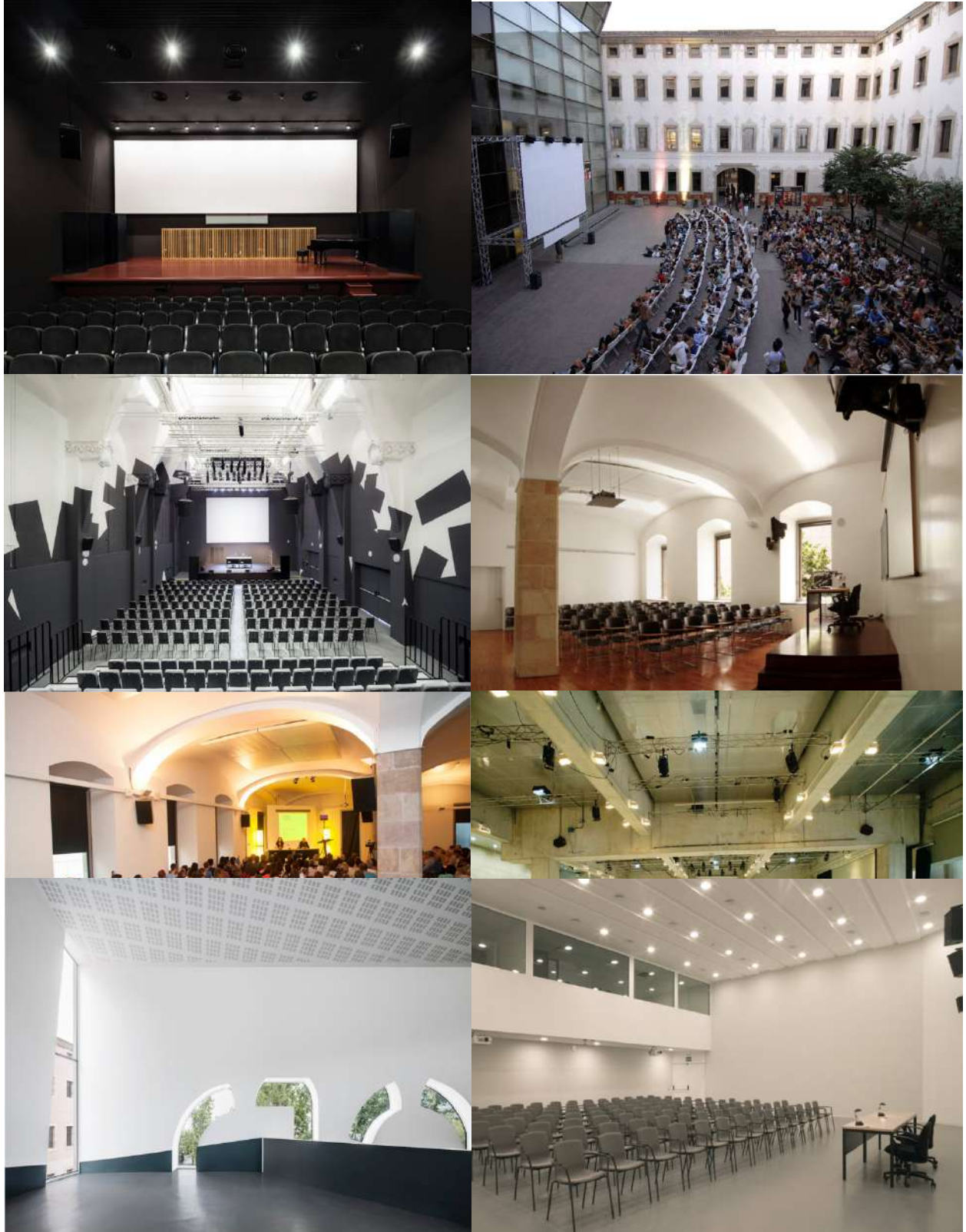
**INNOVATE BY  
ACQUIRING SOFTWARE**

Software plays a vital role in improving both internal and external processes. The CCCB actively seeks innovative solutions daily, procuring

the latest licenses and digital services to improve its overall functionality.

**NEWSLETTERS REMAIN  
AN EFFECTIVE  
COMMUNICATION  
METHOD**

Newsletters serve as an important solution for event announcements, particularly for those individuals who are not at ease with social media and social networking.





# **ADDITIONAL RESOURCES**

## FACILITIES AND SERVICES

- [Facilities for sustainable water management within the AMB territory](#)
- [Facilities for sustainable waste management within the AMB territory](#)
- [Laboratory services](#) are provided for the analysis of environmental samples required by the AMB's various services and are suitable for water, waste, soil and air tests.

## DIGITAL TOOLS:

- [The Air Monitoring Tool](#) is a complimentary digital service that gives notifications when the Generalitat de Catalunya issues warnings regarding atmospheric pollution situations.
- [Aquaprint](#) is a computational tool used for the quantification of the carbon footprint and water footprint within the Metropolitan Area of Barcelona. It facilitates the calculation of footprints across various facilities associated with the water cycle.
- [The online converter tool](#) that facilitates the compliance with the mandatory authorization of wastewater discharges, by enabling the use of the provisions outlined in Law 20/2009, of December 4, on Prevention and Environmental Control of Activities in Catalonia (PCAA) and the Catalan Classification of Economic Activities (CCA 93/CCA 09).
- [The digital tool](#) that enables citizens to assess the environmental impact of their food recipes.
- [The Energy Portal of the Barcelona Metropolitan Area](#), that offers comprehensive information on the energy consumption trends of the municipalities in the Barcelona Metropolitan Area, specifically focusing on their public lighting equipment and services.
- [The metropolitan energy map](#), that stands as the foremost comprehensive energy mapping project at the European level, using real and high-resolution data.
- [The carbon management results](#) of AMB's different facilities, organisations and service concessionary companies.
- [The AMB Blog](#) that presents news and insights about climate change and energy transition.

## PROJECTS:

- [Energy transition projects](#)
- UIA: [Adapting schools to climate change through green, blue and grey](#) – showcasing measures to transform schools into climate shelters
- UIA: [Schoolyards OASIS: Openness, Adaptation, Sensitisation, Innovation and Social ties: Design and transformation of local urban areas adapted to climate change, working jointly with users](#)
- Interreg NW Europe: [Retrofitting project Santa Coloma de Gramenet](#)

## OTHER RESOURCES:

- [Climate scenarios tutorial](#)
- [Publications on climate change by AMB](#)
- [Complete technical documents and informative summaries of the studies of the Metropolitan Observatory of Climate Change \(METROBS\)](#)
- [Guide for calculating greenhouse gas emissions \(Catalan Climate Change Office\)](#)
- [Studies generated in each of the six thematic axes of the AMB's Sustainability Plan](#)
- [The cartography derived from diverse PSAMB studies, that provides an interactive, dynamic, and personalized platform for accessing the key findings of AMB's sustainability studies.](#)
- [Resources provided by AMB on air quality](#)
- [Publications regarding energy transition topics](#)
- [The administrative clauses and technical specifications that establish the guidelines and requirements for incorporating environmental considerations into the contract process](#)
- [Best practice on Climate Shelters in Barcelona](#)

- [Metropolitan Investment Plan 2020-2023](#)
- [AMB Internationalisation Plan 2021-2025](#)
- [Metropolitan Rehabilitation Plan 2030](#)
- [Webpage of the Metropolitan Housing Consortium](#)
- [Practical Guide to the Rental Price Regulation Law](#)
- [Metropolitan Plan for Rehabilitation of buildings in the metropolitan area of Barcelona](#)
- [Internationalization Plan 2021-2025 - AMB](#)



FUNCTIONAL AREAS IN THE EU