

7. Water Cycle Strategic Plan for the Integrated Water Cycle (PECIA) of the metropolitan area of Barcelona + Alternative resources

The main planning tool for metropolitan water management is the Strategic Plan for the Integral Water Cycle (PECIA). The main objective of PECIA is to ensure the supply of water to the metropolitan territory for all uses, in quantity and quality, in a sustainable, resilient and efficient manner. This will be done with actions that increase the guarantee of supply, improve governance and management, optimize available resources, promote the use of local resources, reduce environmental impact and improve the quality of water bodies with a horizon of 2050.

Tags: Strategic water plan, Water management.

CHALLENGES ADDRESSED:

- **Water scarcity and demand management:** balancing the growing demand for water due to population growth and urbanization in the Barcelona metropolitan area with limited water resources, taking into account the increasing climate impacts.
- **Water quality management:** ensuring that water quality meets health and environmental standards while managing pollution from urban runoff, industrial discharges, and agricultural practices

MAIN OBJECTIVES:

- **Ensure the supply of water to the metropolitan territory for all uses,** in quantity and quality, in a sustainable, resilient and efficient manner.
- **Provide a joint vision of the current functioning of the integral water cycle** in the metropolitan area, analysing the current sources of supply that supply it, what types of water demand occur, how the different systems relate to each other and how they are managed.
- **Identify the interrelationships** that are established between these three branches, what conditions each one has and what synergies can be established in favour of sustainability, resilience and efficiency of the entire cycle.

+ FACTS

Project type: Water management strategic plan

Partners: Àrea Metropolitana de Barcelona (AMB)

Beneficiaries: Barcelona municipality

Date: February 2023 - Ongoing

+ PROJECT DESCRIPTION

The Strategic Plan for the Integrated Water Cycle in the metropolitan area of Barcelona works at a reflective level and offers a global perspective of the entire cycle. It includes points that extend beyond the jurisdiction of the Metropolitan Area of Barcelona (AMB) but are necessary to maintain this holistic view. The available data and information have been major constraints in defining the scope and scale of the work. For example, with respect to water supply networks, data was requested from companies, but the information received

concerning their operation (consumption, breakdowns, operation schemes, exploitation protocols, detailed equipment data, tank geometries, etc.) was very limited. As for the high-level sewage network, it was not possible to obtain complete information for modelling and diagnosis (sections, elevations, unique elements, etc.). Despite this, significant effort was made to characterize and analyse the status of each system in the case of water supply and to estimate the volumes discharged into the environment in the case of sanitation.

The development of the Strategic Plan is pioneering in terms of its approach and content, it differs from more common water-related documents, which are highly technical, specialized in a single system, and have a more focused and strategic scope. Examples of these would include master plans for water supply or sanitation, where the main objective is improving the service through infrastructure.

Conceptually, the Plan aims to provide a comprehensive view of all water systems and propose actions that ensure the good condition of both groundwater and surface water bodies, aligning with the guidelines set out by hydrological plans. It addresses both infrastructure improvements and other management actions, knowledge enhancement, and governance.

+ IMPACTS AND RESULTS

Through the PECIA, the use of regenerated water in the metropolitan area is to increase progressively over time. According to the forecasts, this plan should enable an increase in the use of regenerated water from 56.151.000 m³ in 2022 to 115.864.731 m³ in 2050.

Within the different sectors, the use of regenerated water is expected to increase as follows by 2050:

- For **agricultural** irrigation: from 5.151.000 m³ in 2022 to 51.355.538 m³ in 2050.
 - For **industrial** use: from 100.000 m³ in 2022 to 14.025.091 m³ in 2050.
 - For **recreational** use: from 150.000 m³ in 2022 to 823.989 m³ in 2050.
 - For **urban** use: from 2.514.507 m³ in 2025 to 6.192.763 m³ in 2050.
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