

Barcelona

Towards zero-emission construction in a climate-neutral city

KEY FACTS

Population
1,713,247
in the city

City area
101 km²

Construction activity
€4.14 billion
gross value added, 2025

Climate goal
Carbon neutral
by 2050

LOCATION



WHY BARCELONA?

- Ambitious and highly integrated climate plan
- Climate adaptation plays a central role in municipal renovation works
- Sole city in Southern Europe with demonstrating ZECS
- Pathfinder and source of knowledge for cities in the region

STATUS FOR ZERO-EMISSION CONSTRUCTION

Barcelona aims to reduce its greenhouse gas emissions by 45% by 2030 relative to 2005. In 2022, the city signed the Big Buyers Working Together Joint Statement of Demand of Zero Emission Construction Sites (ZECS), committing to deploying at least 50% electrified machinery at municipal worksites by 2030. Since 2022, Barcelona has run multiple pilots with electric construction equipment, allowing the city to gather data on greenhouse gas savings, reductions in air and noise pollution, and on-site waste heat reduction. Deploying ZECS in Barcelona faced grid-connection issues and extensive administrative procedures to secure on-site connections. Early on, limited market maturity of emission-free machinery also posed significant challenges. Today these barriers have been partially overcome through sustained demand for equipment in demonstration projects, close cooperation with contractors and equipment suppliers, workforce adaptation, and practical testing of charging solutions.

BARCELONA POLICY MIX TO ACCELERATE ZERO-EMISSION CONSTRUCTION

POLICY INSTRUMENT	STATUS TODAY	EXPECTED IMPACT	SUGGESTED NEXT STEPS
City Climate Plan Barcelona Pla Clima aims to cut the city's GHG emissions by 45% from 2005 levels by 2030 and achieve carbon neutrality by 2050.	+ Sustainable City Council Programme imposes environmental criteria on municipal works contracts.	●●○ Medium	Estimate construction's share of the local carbon footprint. Promote ZECS as an adaptation measure to cut localised waste heat.
Pilot and demonstration of ZECS To date, the city has conducted three pilots using electric construction equipment.	The city has collected data on GHG, air pollutants, noise, and waste heat emissions and built confidence among workers and contractors in zero-emission construction.	●●○ Medium	Pilot zero-emission works during extended or night hours during heat alerts. Embed ZECS requirements in public procurement through technical specifications, selection or award criteria.
Public procurement electrification target By 2030 the city committed to deploy at least 50% of electric machines in municipal worksites.	In 2022, the city signed the BBWT Joint Statement of Demand for ZECS, and it may incorporate ZECS requirements into all future tenders.	●●○ Medium	Require fossil-free construction as a transitional step to cut near-term emissions. Develop a procurement roadmap that sets the year by which all municipal construction sites must be zero-emission.
Market dialogues Civil works procurement officials host roundtables with economic operators.	Collaborating with private operators increased support for ZECS and market readiness for emission-free equipment.	●●● High	Share lessons via national city networks and promote stakeholder working groups to reach more private operators. Engage Spanish infrastructure owners to pilot ZECS on large infrastructure projects.

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