



Heat mapping to decarbonise a former industrial hub



Bilbao, Spain

IN A NUTSHELL

Once a polluted industrial landscape, Bilbao is now committed to transforming towards a carbon-neutral future. To succeed in this conversion, they have developed a new energy strategy focused on decarbonising heating including in-depth renovation of public buildings, rolling out heat pumps and creating district heating and cooling networks.

Strong commitment to climate neutrality

Over the last few decades, Bilbao has transformed from a polluted industrial centre into a dynamic service-focused city. Now, it is embracing a new energy strategy to significantly reduce greenhouse gas emissions with the aim of reaching climate neutrality by 2050. The city has included sustainability and energy-efficiency criteria in its ongoing transformation through the Bilbao Environmental Strategy 2050. Efforts were strengthened with the successful implementation of its Sustainable Energy Action Plan (SEAP), initiated in 2012, exceeding the goal of reducing CO2 emissions by 20% by 2020. The city is now advancing its efforts under its Sustainable Energy and Climate Action Plan 2030 (SECAP), with the aim of reducing GHG emissions by 55%.

A strategy for decarbonised heating

Since nearly half of Bilbao’s energy consumption comes from buildings, addressing their energy inefficiency is critical. The building sector was responsible for 33% of CO2 emissions in 2018, and many buildings do not meet high energy-efficiency standards. Hence why the city of Bilbao is prioritising building upgrades, especially in areas where district heating networks can significantly contribute to decarbonising the urban landscape. To achieve this goal, the city is participating in the Decarb City Pipes 2050 project, the municipality’s first project dealing with decarbonising the heating and cooling sector. The aim is to develop a strategic Heating and Cooling (H/C) 2050 Plan, supported by the creation of a Transition Roadmap. This roadmap provides essential information on the city’s heating and cooling landscape, identifies barriers and strengths,

BILBAO

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<p>Population: 347,648 (2020)</p>	<p>Area: 41.43 km²</p>
<p>Signatory to the Covenant of Mayors since: May 2010</p>	<p>Overall CO₂ emission reduction target: 55% by 2030 Climate neutral by 2050</p>

and outlines the most relevant instruments for achieving zero-emission heating and cooling systems. Furthermore, it presents an in-depth mapping exercise developed with the help of various information sources.

The Heating and Cooling 2050 Plan

Bilbao's Heating and Cooling Plan was developed around the city's vision of a fully electrified heating and cooling system by 2050. It entails a comprehensive transformation, aimed at replacing fossil fuel combustion systems with electrically driven heat sources and promoting low-temperature heating and cooling networks in various areas. This strategic plan will enable new sources of energy to be exploited, including aerothermal heat pumps, collective systems based on geothermal exchange, and connections to heating and cooling networks using various energy sources such as waste heat, hydrothermal and geothermal. By 2050, the overall demand for space heating is expected to be reduced by 20–30% with demand for hot water becoming the main end-use of heat, while cooling demand is expected to increase due to climate change and building insulation levels.

Lessons learnt and next steps

The Heating and Cooling Plan is a valuable initial conceptual tool enabling the city to select the most appropriate strategies for achieving high energy efficiency and zero emissions from buildings (individual solutions such as heat pumps, centralised district heating, etc.) depending on the features of each district. Nevertheless, the city achievements owe much to an effective and autonomous urban governance model based on collaborative public-private partnerships, bringing together local and central government alongside private stakeholders. This synergy is a clear advantage for the successful completion of the heating transition.

The City of Bilbao acknowledges the substantial work ahead and the need for additional resources to achieve climate neutrality and ensure its heating transition. The recent creation of the BioArtigas energy agency is a significant milestone for the city, as this agency will play a crucial role in shaping the city's long-term environmental strategy and fostering collaborative efforts across all council departments. The next steps for Bilbao are improving the mapping exercise and integrating additional layers of data, such as existing sources of waste heat and electricity grid data. While these reports need to be carefully evaluated by the city council, they will be in line with and support the efforts laid out in the city's SECAP.



55% reduction in GHG emissions by 2030

2050: Climate neutrality

2012: Publication of the Action Plan for Sustainable Energy

33% of CO₂ emissions came from the building sector in 2018

USEFUL LINKS

- » <https://shorturl.at/ghxL7>
- » <https://decarbcitypipes2050.eu/bilbao/>
- » <https://shorturl.at/bcsxF>
- » <https://rb.gy/ilsm5y>