BESANCON'S TRANSITION FROM FOSSIL FUELS TO LOW-CARBON DISTRICT HEATING

Located in eastern France, in the Bourgogne-Franche-Comté region, Besançon is recognised as one of Europe's most liveable cities, thanks in part to its extensive green spaces, making it one of France's greenest cities.

Today, Besançon is extending this ambition to its heating system. Its district heating network is at the heart of this transformation, supporting the shift towards a cleaner, more sustainable and locally sourced energy system.

A historical district heating system

The Besançon Planoise district heating network was created in 1968 to support the development of a new neighbourhood and meet growing heating needs. From the beginning, the network relied on local resources, with a waste incineration plant providing the first heat source and supporting a circular approach to waste management.

Over time, the network supplied thousands of homes, the university hospital (CHU), public buildings and local businesses. The 62-metre chimney built in 1972 became a symbol of this industrial era, reflecting an energy model initially based on fossil fuels: first heavy fuel oil, then coal from 1983 onwards.

Today, the network is operated by ENGIE through Chauffage Urbain Besançon Planoise (CUBP) on behalf of Grand Besançon Métropole. After ending coal use in 2017 and heavy fuel oil use in 2021, the network has completed a major energy transition.

BESANÇON, FRANCE

Sources used:

- Waste-to-energy recovery
- Biomass

Technologies used:

- District heating
- Heat recovery systems

Key figures

- 90% renewable and recovered energy
- CO_2 emissions reduced from 30,000 t/year (2005) to 2,700 t/year (2025)
- 25% reduction in heat prices for connected users
- 74 km network by 2030
- 23,000 equivalent dwellings by 2030
- 35,000 tCO_2 avoided/year

A highly renewable and efficient energy system

The network now operates with more than 90% renewable and recovered energy, mainly from waste-to-energy recovery and locally sourced biomass from within an average radius of 50 km around Besançon.

This transformation has significantly reduced the network's environmental impact: CO_2 emissions have been divided by 11 between 2005 and 2025, decreasing from 30,000 tonnes per year to around 2,700 tonnes per year.

At the same time, connected users have benefited from a 25% reduction in heat prices.

The network combines local renewable resources with natural gas used only as backup during very cold periods, ensuring both decarbonisation and security of supply.

Expanding and modernising the network for the future of the territory

Building on this success, Grand Besançon Métropole is pursuing an ambitious westward extension of the district heating network. By 2030, the network will reach 74 km and supply 23,000 equivalent dwellings, compared with 16,000 today.

The project will cover around 18% of the metropolitan area's current heat demand and avoid approximately 35,000 tonnes of CO_2 emissions every year, reinforcing the role of district heating as a key tool for the territory's energy transition.

The programme also includes the modernisation of the Planoise energy site, replacing former fossil fuel-based equipment with new energy recovery technologies. New heat recovery systems from combustion gases will provide an additional 5.1 MW of capacity and further improve network efficiency. Lower distribution temperatures will help reduce energy losses and extend the benefits of this low-carbon infrastructure to more local stakeholders.

A model of local energy transition

The transformation of the Besançon Planoise district heating network shows how existing infrastructure can become a key driver of the energy transition.

By combining renewable local resources, lower emissions, competitive prices and reliable energy supply, Grand Besançon Métropole demonstrates that ecological and economic objectives can go hand in hand.

Step in Besançon's heat strategy:

PARTIALLY IMPLEMENTED

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