Best Practice #3: Bordeaux extending its district heating coverage

Name:	Bordeaux extending its district heating coverage
Geography:	France, Bordeaux
Organization interviewed:	Bordeaux Métropole
Organization interviewing:	Energy Cities
Website:	https://www.bordeaux.fr/p153197/le-reseau-de-chaleur-du-grand-parc-s-agrandit https://energy-cities.eu/wp-content/uploads/2022/12/ECF-Case-Study-Bordeaux.pdf
Category:	Local H&C decarbonisation plan
Description:	In Bordeaux's urban area, nine major district heating networks are currently operational, boasting diverse energy sources with a minimum of 80% renewable energy per network. These sources include geothermal energy, waste incineration, biomass, wastewater treatment, and cogeneration utilizing both gas and biomass. Five additional projects are poised for implementation pending concessions for building and operating the networks. Moreover, comprehensive feasibility studies conducted by the metropolitan area have identified potential areas for new district heating network development, prioritizing heat demand density as a key factor. These studies have identified 16 potential new zones for development, encompassing various stakeholders such as hospitals, schools, social housing, and businesses. By 2026, these initiatives are projected to triple the existing district heating capacity, adding 450GWh to the current 200GWh, effectively meeting the needs of over 45,000 households. Geothermal energy and biomass will serve as the primary fuels, contributing to increased renewable energy production in the region. Each contract for creating or operating public district heating networks includes specific clauses aimed at supporting the integration of unemployed individuals, thereby bolstering local employment opportunities. Furthermore, the feasibility studies and demonstrated network extension potential have led to the creation of six additional job positions within the municipality, supported by the ELENA fund provided by the European Investment Bank (EIB), dedicated to urban district heating initiatives.
	Questions:
1.	Since the factsheet drafted in 2022, how have the 5 projects of extension of district heating evolved? How is the implementation going?

Bordeaux is currently witnessing notable developments across its nine major heating networks, both operational and planned. Here are some recent highlights:

Grand Parc Energie: The local authority has acquired a private gas-based heating network, intending to transition it to geothermal energy and biomass. This expansion is expected to triple its capacity. Although progress is on track, rising costs pose a challenge. The network aims to achieve 85% of its energy output from renewable sources by the end of 2024, predominantly serving existing buildings. Notably, an innovative approach involves reinjecting water into the drinking water table to enhance geothermal energy efficiency, alongside the imposition of Power Purchase Agreements (PPA) to mitigate energy price inflation.

Merignac Centre: This 20GW residential biomass project commenced operation in autumn 2023. While technically straightforward, considerable efforts are devoted to public awareness campaigns to address concerns surrounding wood sourcing and air quality near the biomass heating plant.

Le Haillon: Initially conceived as an 8GW network under direct municipal management, this project faced setbacks due to delays in the associated development projects. Challenges included site acquisition for biomass boilers and complex project management. Despite its experimental nature, the project is now under reconsideration.

Métropole Sud: A large-scale 185GW heating network project involving major partners and existing networks is currently under negotiation. Notably, the project introduces a mixed contract model, with the city investing in biomass equipment reimbursed by the concessionaire through royalties, alongside provisions for network expansion.

Réseau Brise Buchat: This small-scale project covering four communes faces challenges in securing unanimous support and potential geothermal energy volume constraints.

Aéoroparc: An ambitious 80GW network project within an economic zone, including the airbase, aims to integrate new constructions. The project introduces a mixed contract model, with the city proposing biomass investment to remain competitive.

Bordeaux also explores numerous small-scale network possibilities, reflecting its commitment to comprehensive energy exploration. However, connecting existing residential sectors to urban heating networks remains a logistical challenge.

2. What are some of the key challenges/barriers you've encountered so far?

Several barriers have been identified in the advancement of heating network projects:

- **Land Acquisition:** Difficulty in securing suitable land, particularly for the installation of infrastructures such as biomass plants.
- **Construction Delays:** Projects often face setbacks due to delays in the construction schedules of new buildings, hindering progress in heating network implementations.
- **Centralized vs. Individual Heating:** The absence of policies incentivizing large consumers to adopt central heating poses challenges, especially concerning future cooling needs.
- **Expertise Shortage:** The economic and legal complexities demand specialized skills and extensive engineering knowledge. While Bordeaux's metropolitan authority collaborates with in-house experts and project management assistants, budget constraints and recruitment difficulties impede the creation of new positions.
- **Energy Price Volatility:** Recent crises, including geopolitical tensions and the COVID-19 pandemic, have disrupted carbon price stability, complicating project forecasting.

Escalating electricity prices also strain geothermal projects.

- **Local Governance and Contacts**: Limited awareness of heating networks at the local level and a shortage of local contacts hamper project identification and development opportunities, such as land monitoring and network connections.
- **Work Acceptance**: Work constraints associated with district heating networks are burdensome, leading to cost overruns and delays, and fostering reticence among local authorities.
- **Stakeholder Engagement**: Challenges persist in persuading and involving key stakeholders, crucial for project advancement.
- **Building Connectivity**: While network classification mandates connections for new buildings, connectivity for existing structures remains optional, posing information gaps.
- **Residential Sector Connectivity**: Challenges arise in managing networks with numerous individual subscribers, coupled with a lack of industry interest in undertaking such connections. Technical and economic obstacles further complicate residential sector connectivity, despite public demand and interest.

3. Can you list at least 3 key success factors that have made this project successful?

Key success factors observed include:

- **Robust Political Backing**: The Metropolis has demonstrated unanimous and resolute political support for the development of RCUs, illustrating a significant commitment from elected representatives. This support is evident in substantial investments, such as €50 million earmarked for mixed contracts aimed at enhancing heating network infrastructure over the next three decades. Moreover, this initiative is projected to generate employment opportunities within the department.
- **Existing Infrastructure**: Leveraging the existing district heating networks provides a valuable foundation. The presence of established infrastructure fosters a culture of familiarity and expertise, facilitating the expansion and enhancement of these networks.
- **Regulatory Environment in the Aeronautical Sector**: Companies operating in the aeronautical sector face regulatory pressures to mitigate their carbon footprint. Consequently, there is a heightened interest in exploring sustainable solutions, particularly for the numerous sites within the Bordeaux metropolitan area. This regulatory framework incentivizes innovation and collaboration in reducing environmental impact.
- **Innovative Contractual Approaches**: Embracing innovative contractual models, such as mixed contracts, underscores a commitment to adaptability and efficiency. Mandating Power Purchase Agreements (PPA) and implementing mechanisms to incentivize investment and network expansion demonstrate a proactive approach to contractualization.
- **Supportive National Policies**: The favorable national landscape, exemplified by initiatives like ADEME's Fonds Chaleur and France Chaleur Urbaine programs, provides additional momentum. These programs, coupled with robust sector-specific publicity, create an environment conducive to the growth and development of urban heating solutions.