

Viability of district heating networks in temperate climates: Benefits and barriers of cold and warm temperature networks

The decarbonization of the heat supply and the achievement of a higher energy security calls for the substitution of conventional fossil fuel boilers by other means of heat supply. In dense urban areas, where the pipe network cost is proportionally lower, district heating can be an attractive solution for this goal. If there is a possibility to recover heat that would otherwise be wasted or produce renewable heat centrally in a more economic manner, this can be a very cost-effective solution for decarbonising the heat supply. Networks for district heating have traditionally distributed heat at a temperature sufficiently high to virtually all consumers. In cold district networks, the network is maintained at close to ambient temperature (10-30°C), and require the heat to be boosted at the consumer level. Cold networks have drawn plenty of research attention thanks to several advantages such as their capacity to provide with the same network both heating and cooling or using more economic piping. Nonetheless, comparisons between the two technologies have been seldom performed in the literature. This study has aimed to fill this gap and has drawn an economic comparison between these two solutions in a case study for the city of Bilbao, which presents a mild oceanic climate but features a very dense urban fabric.

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