

ESTIMATION OF APPROPRIATENESS OF AREAS FOR DISTRICT HEATING AND COOLING SYSTEM CONSIDERING THE DISTRIBUTION OF BUILDING HEAT SOURCE SYSTEM

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There are a number of studies that evaluated the appropriateness of areas for district heating and cooling systems. While heat demand density is used as indicator in the evaluation, this method assumes that all the buildings in the evaluated district are connected to district heating and cooling system. This assumption brings overestimation when the method is applied to existing districts since there are buildings that equip package air-conditioning systems and cannot connect to district heating and cooling system due to the absence of heat delivery pipelines. This paper evaluated the extent to which the conventional evaluation method overestimates the appropriateness of areas via a case study for districts of Osaka city if the stock of heat source systems was taken into account. The result of the case study showed that although there exists 78 districts (500m square area) with an annual heat demand density larger than 4.2 TJ/ha (1 Tcal/ha) in Osaka city, the number of districts satisfying the condition of heat demand density decreases to 33, if buildings equipping distributed heat source system are excluded. The total annual heat demand in the selected areas decreases from 21 TJ/ha to 6 TJ/ha.