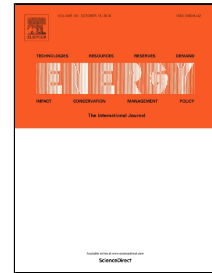


# Accepted Manuscript

Future District Heating Systems and Technologies: On the role of Smart Energy Systems and 4<sup>th</sup> Generation District Heating

Henrik Lund, Neven Duic, Poul Alberg Østergaard, Brian Vad Mathiesen

PII: S0360-5442(18)31879-6  
DOI: 10.1016/j.energy.2018.09.115  
Reference: EGY 13809  
To appear in: *Energy*  
Received Date: 13 July 2018  
Accepted Date: 17 September 2018



Please cite this article as: Henrik Lund, Neven Duic, Poul Alberg Østergaard, Brian Vad Mathiesen, Future District Heating Systems and Technologies: On the role of Smart Energy Systems and 4<sup>th</sup> Generation District Heating, *Energy* (2018), doi: 10.1016/j.energy.2018.09.115

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Version R1 Marked-Up-Manuscript: 6 September 2018

Perspective:

# Future District Heating Systems and Technologies: On the role of Smart Energy Systems and 4<sup>th</sup> Generation District Heating

Henrik Lund<sup>a,\*</sup>, Neven Duic<sup>b</sup>, Poul Alberg Østergaard<sup>a</sup> and Brian Vad Mathiesen<sup>c</sup>

<sup>a</sup>Department of Planning, Aalborg University, Rendsburggade 14, 9000 Aalborg, Denmark

<sup>b</sup>Department of Energy, Power Engineering and Environment, University of Zagreb, Lučičeva 5, 10000 Zagreb, Croatia

<sup>c</sup>Department of Planning, Aalborg University, A.C. Meyers Vænge 25, 2450 Copenhagen, Denmark

\*Corresponding author: [lund@plan.aau.dk](mailto:lund@plan.aau.dk)

## Abstract

This paper provides a perspective on the development of future district heating systems and technologies and their role in future smart energy systems. The reviewed papers elaborate on or otherwise contribute to the theoretical scientific understanding of how we can design and implement a suitable and least-cost transformation into a sustainable energy future. Focus is on the important role of the next generation of district heating and cooling technologies. The status of the scientific contributions demonstrates a high level of understanding of how to deal with the technical aspects. The primary current challenge seems to be the understanding of the implementation of these.

**Keywords:** Smart Energy Systems, District Heating, District Cooling, Sustainable Energy, Renewable Energy.

## 1. Introduction

The analysis and planning of a world-wide transition towards an environmentally benign energy system are steadily gaining importance as the world faces difficulties in reaching the modest Paris goals for climate change mitigation. One area that has gained attention over the years is the heating sector and its integration into future smart energy systems. This is for instance the topic of a series of conferences titled *International Conference on Smart Energy Systems and 4th Generation District Heating* that has become an annual event in Denmark.

Globally, the current position of district heating and cooling shows how these technologies have strong potentials for being viable heating and cooling supply options in a future world. However,

Download English Version:

<https://daneshyari.com/en/article/11026458>

Download Persian Version:

<https://daneshyari.com/article/11026458>

[Daneshyari.com](https://daneshyari.com)