

## Accepted Manuscript

Title: Energy planning of low carbon urban areas—Examples from Finland

Authors: Mari Hukkalainen (née Sepponen), Mikko Virtanen, Satu Paiho, Miimu Airaksinen



PII: S2210-6707(17)30415-8  
DOI: <http://dx.doi.org/10.1016/j.scs.2017.09.018>  
Reference: SCS 772

To appear in:

Received date: 18-4-2017  
Revised date: 14-9-2017  
Accepted date: 17-9-2017

Please cite this article as: Hukkalainen (née Sepponen), Mari., Virtanen, Mikko., Paiho, Satu., & Airaksinen, Miimu., Energy planning of low carbon urban areas—Examples from Finland. *Sustainable Cities and Society* <http://dx.doi.org/10.1016/j.scs.2017.09.018>

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.

# Energy planning of low carbon urban areas - Examples from Finland

Mari Hukkalainen (née Sepponen)<sup>1</sup>, Mikko Virtanen, Satu Paiho, Miimu Airaksinen

VTT Technical Research Centre of Finland Ltd, P.O Box 1000, FI-02044 VTT, Finland. Email  
addresses: [firstname.lastname@vtt.fi](mailto:firstname.lastname@vtt.fi)

## Highlights

- Urban planners need to evaluate the environmental impacts of design options.
- A method is proposed for a district energy and CO<sub>2</sub> emission analysis.
- Kurke tool is developed to support low carbon urban energy planning.
- The method is tested in two real life case areas in Finland.
- CO<sub>2</sub> emissions can be reduced up to 78% via energy supply choices.

## Abstract

During urban planning, city planners and municipal authorities make various choices that impact districts' energy efficiency and emissions significantly. However, they often lack information about the actual effects of the design options. This paper describes a methodology, embedded to a tool called Kurke, that aims to support the planning of sustainable and energy efficient urban areas by analysing the energy performance of city plans and the impacts of their energy design alternatives on carbon dioxide emissions during planning. The methodology supports holistic energy analysis of urban areas, including

---

<sup>1</sup> Corresponding author. Present contact: [mari.hukkalainen@vtt.fi](mailto:mari.hukkalainen@vtt.fi), phone: +358 40 736 7698, Fax: +358 20 722 7009. Permanent contact: [mari.hukkalainen@iki.fi](mailto:mari.hukkalainen@iki.fi)

Download English Version:

<https://daneshyari.com/en/article/4928128>

Download Persian Version:

<https://daneshyari.com/article/4928128>

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