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## A GIS-based model to assess buildings energy consumption and usable solar energy potential in urban areas

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### Highlights

- A GIS-based model has been developed to improve energy management of residential buildings
- Buildings energy consumption and usable solar energy potential has been assessed in urban areas
- Possible installations of PV and solar thermal systems have been considered to reduce non-renewable thermal and electricity needs
- The methods have been applied in in two different urban contest

### Abstract

This paper illustrates a GIS (Geographic Information System) based approach for assessing thermal and electric energy consumptions and usable solar energy potential of residential buildings in order to increase their independence from fossil fuels.

After integrating and simplifying previous researches, a methodology for estimating thermal energy needs, both for heating and hot water supply, and electric energy demand for assessing PV and solar thermal productivity is presented.

For each single building the decrease of non-renewable thermal and electricity needs has been estimated both considering possible installations of PV and solar thermal systems.

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