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ABSTRACT

This editorial introduces the sixth volume of the International Journal of Sustainable Energy Planning and Management. Topics include methodology for assessing solar power and solar heat potentials using geographical information systems using Swiss cases, a similar analysis focusing on solar power in Kenya and the spatio-temporal distribution of the production, and the establishment of the correct economic framework conditions or incentives to promote changes towards renewable energy systems taking a Danish community as a case. Lastly, an article investigate the Chinese district heating sector with a view to identifying alternatives to the present coal-based heating infrastructure.

Keywords:

Solar mapping
Integration of energy sectors
District heating transition
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1. Introduction

This editorial introduces the sixth volume of the International Journal of Sustainable Energy Planning and Management and covers topics ranging from solar energy in Switzerland and Kenya to the financial viability of municipal wind power projects in Denmark to the transition of the Chineese district heating sector towards low-carbon or renewable fuels.

2. Solar energy

Two of the articles presented in this volume address spatial analyses of solar power, however using different methodologies and cases. Quiquerez *et al.* [1] investigates two cases in the Geneva region in Switzerland for the suitability for heat and electricity production. The analyses are based on a GIS assessment of roofs, available space and competition between technologies for producing electricity, domestic hot water (DHW) and space heating. Meeting space heating demands while also meeting DHW demands markedly reduce the available space for PV panels. Also, dwellings in built-up areas have a much less potential for solar energy than dwellings in rural areas in terms of roof areas per capita. In the city the potential production is about 700 kWh per person while in rural or suburban areas, the potential production is 1,870 kWh per person.

Kenya has a higher solar irradiation than Switzerland, however the technology is only being adopted slowly. Oloo *et al.* [2] investigate the potential for solar power based on both a modelling approach based on locations and weather data (cloud data, transmissivity) and based on actual measurements for correlation analyses. They found good agreement between the theoretical modelling approach and the empirical data particularly in the non- mountainous areas. More than 70% of the land area in Kenya has a solar energy potential of more than 5kWh/m^2.

3. Transition towards renewable energy

Maxwell *et al.* [3] look further into the implementation of renewable energy basing their analyses on a case study of a Danish community, where they investigate how to

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change the general financial setting so wind power on the one hand lowers end-user costs while on the other hand lessen their dependence on subsidies. A cornerstone in their suggested solution is an increased integration across sectors – electricity, heating and transportation.

Lastly, Zhang and Di Lucia [4] on to one high coal demands; the Chinese district heating sector. In Northern China, 80% of all urban buildings are connected to district heating networks, of which 84.4% is covered by coal. Thus, Zhang and Di Lucia investigate the possibility for an energy transition looking at potentials for natural gas, biomass, geothermal energy, ground source heat pumps, municipal solid waste, and industrial excess heat. All is explored from a resource availability perspective but also from an institutional and an actor perspective. They acknowledge the potentials and the important role of district heating grids in future energy systems, but also find that "*Although DH systems offer technical opportunities to integrate different sources of energy and utilise resources that are difficult to employ in individual heating systems, the coal regime is particularly resistant to change*".

References

[1] Quiquerez L, Faessler J, Lachal B, Mermoud F, Hollmuller P GIS methodology and case study regarding assessment of the solar potential at territorial level: PV or thermal? Int J Sustainable Energy Plan Manage 6(2015) pages 3–16. dx.doi.org/10.5278/ijsepm.2015.6.2.

[2] Oloo FO, Olang L, Strobl J Spatial Modelling of Solar Energy Potential in Kenya. Int J Sustainable Energy Plan Manage 6(2015) pages 17–30. dx.doi.org/10.5278/ijsepm.2015.6.3.

[3] Maxwell V, Sperling K, Hvelplund F Electricity cost effects of expanding wind power and integrating energy sectors. Int J Sustainable Energy Plan Manage 6(2015) pages 31–48. dx.doi.org/10.5278/ijsepm.2015.6.4.

[4] Zhang J, Lucia LD A transition perspective on alternatives to coal in Chinese district heating. Int J Sustainable Energy Plan Manage 6(2015) pages 49–69. dx.doi.org/10.5278/ijsepm.2015.6.5.