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Renewable energy technology developments, trends and policy implications that can underpin the drive for global Climate Change

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Abstract

This special issue is dedicated to the research presented and discussed at the 8th International Conference on Sustainable Energy & Environmental Protection held from the 11th to the 14th August 2015 in Paisley, Scotland. The contents of this special issue are within the aims and scope of Renewable and Sustainable Energy Reviews. The aim of the International conferences on Sustainable Energy & Environmental Protection is to gather experts, practitioners and early career researchers together in a relaxed environment to present their research findings. The articles published in this special issue summarise a snapshot of the diverse range of topics from bioenergy and biogas, energy storage and district heating and energy in buildings to carbon emissions, carbon flux in soil and social aspects of carbon discussed at the conference within the framework of sustainable development. A total of eighteen extended manuscripts were invited by for consideration for publication following the conference and after a robust review process by experts in the field a total of ten articles were accepted.

Keywords

Renewable energy technology, biogas, bioenergy, industry, batteries, district heating, policy, carbon emissions, economics, social aspects, energy storage

List of abbreviations

BEM = Building Energy Modelling

CHP = combined heat and power

CO₂ = carbon dioxide

EU = European Union

GHG = greenhouse gas

SEEP = Sustainable Energy & Environmental Protection

TRL = technology readiness level

UK = United Kingdom

1.0 Introduction

The annual international Sustainable Energy & Environmental Protection conferences and associated special issue journals gather together leading experts, practitioners and early career researchers in the diverse and multi- and inter- disciplinary field of renewable energy and sustainable development to discuss, solve and debate the challenges facing society due to global warming and climate change [1], [2], [3]. The 8th International Conference on Sustainable Energy & Environmental Protection (SEEP2015) was held in Paisley, Scotland from the 11th to the 14th August 2015. The guest editors have a diverse background, expertise and knowledge in the field of renewable and sustainable energy including natural gas [4], [5], [6], hydrogen [7], biomass [8], [9], biogas [10], [11], wind integration and optimisation [12], [13], [14], [15], [16], [17] energy storage [18], [19], [20], [21], fuel cells [22], [23], [24], electricity markets [25], [26] and climate change [27], [28]. As experts, practitioners and early career researchers our challenge is to offer direction, guidance and solutions to the 21st century ‘energy quadrilemma’ challenge facing the planet, this generation and future generations [29]. This editorial concisely overviews ten articles published in this SEEP2015 special issue that aim to solve this energy and environmental challenge.

2.0 Overview

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5.0 Conclusion

In conclusion, this SEEP2015 special issue of Renewable and Sustainable Energy Reviews highlights some of the ground breaking technology, policy and trends research currently on-going across Europe and the world in the field of renewable energy and sustainable development. This work provides critical policy signposts and technology solutions to the public, industry and decision-makers to solve the energy quadrilemma.

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