



## Editorial

## Circular economy and renewable energy



## A B S T R A C T

## Keywords:

SEEP conference  
Renewable energy  
Energy storage systems  
Circular economy  
Bio-energy  
Anaerobic digestion

This paper is an Editorial for the special issue (SI) of Energy Reviews (RSE) dedicated to the 10th International Conference on Sustainable Energy and Environmental Protection SEEP, held in Bled-Slovenia. During the conference more than 300 papers were presented, around 25% of these papers were accepted for this special issue.

Papers discussed different topics related to renewable energy, energy storage systems and some environmental issues related to transportation. During this conference Prof Olabi presented a keynote talk on the relation between circular economy and renewable energy, case studies about implementing this concept in Scotland were included in his presentation.

This editorial will give a short description on the relation between circular economy and renewable energy, then it will be followed by addressing the accepted papers in this special issue.

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## 1. Introduction

As defined by the 7th Environmental Action Programme of the European Commission, “Circular Economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected” [1]. Ref [2] discussed different points such as: energy efficiency in buildings, industrial process and transport, bio based economy focused on bio based chemicals and biofuels, and how they can be related to circular economy.

The following Figs. 1 and 2 presents a schematic drawing for Circular and Linear economy.

In Scotland a number of companies are using organic waste materials to produce bio-gas through Anaerobic Digestion process. Other projects related to heat recovery, by using waste heat to produce thermal or electrical energy.

In future SEEP editions, this topic will be more investigated and more papers are welcomed to show how waste materials or energy can be recycled to produce a useful energy and other products.

The series of SEEP Conferences have been established in 2004 by Prof A.G.Olabi, during the last years nine special issues have been published [3–10], and the conference editor has contributed in many publications related to different topics on renewable energy and environmental protection [11–20].

## 2. Content details

This special issue presents some selected and peer reviewed papers from the 10th International Conference on Sustainable Energy and Environmental Protection SEEP. In this edition, about 300 papers were presented, 140 papers were invited to submit an extended version to the Energy Journal. After peer review, 70 papers were selected to be published as a special issue in this journal.

These articles can be described as:

- Protection and Thermal Management of Thermoelectric Generator System Using Phase Change Materials: An Experimental Investigation [21].
- Selective Conversion of Cassava Mash to Glucose using Solid Acid Catalysts by Sequential Solid State Mixed-Milling Reaction and Thermo-hydrolysis [22].
- Recent meteorological and marine studies to support nuclear power plant safety in Finland [23].
- Dynamic Management of Loading Bays for Energy Efficient Urban Freight Deliveries [24].
- Catalytic pyrolysis of tulip tree (*Liriodendron*) in bubbling fluidized-bed reactor for upgrading bio-oil using dolomite catalyst [25].
- An investigation on solar drying: A review with economic and environmental assessment [26].
- Design parameters of the timber-glass upgrade module and the existing building: impact on the energy-efficient refurbishment process [27].
- Impact of large scale power plant connection on congestion in the algerian electricity transmission system [28].
- Effect of addition of biogas slurry for anaerobic fermentation of deer manure on biogas production [29].
- A hybrid power plant towards 100% energy autonomy for the island of Sifnos, Greece. Perspectives created from Energy Cooperatives [30].
- Experimental study on an SI engine fuelled by gasoline - acetylene mixtures [31].
- Assessment of Thermal Comfort and the Impact of Natural Ventilation under Current and Future Climatic Conditions in Educational Buildings of Southern Europe [32].
- Defining corporate energy policy and strategy to achieve carbon emissions reduction targets via energy management in non-energy intensive multi-site manufacturing organisations [33].



Fig. 1. Presents the linear economy.

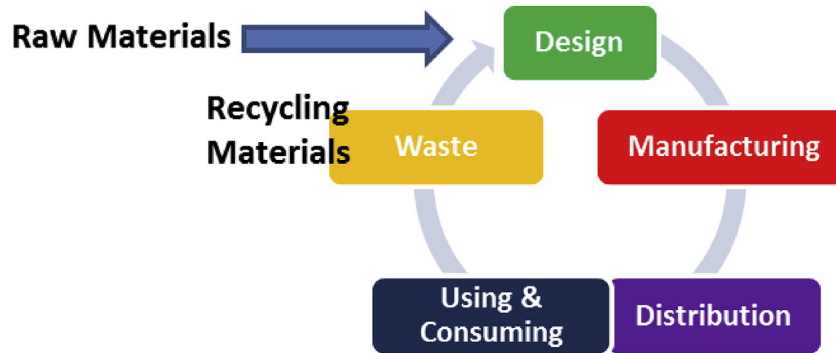


Fig. 2. Presents the linear economy.

- Short-term probabilistic forecasting of wind energy resources using the enhanced ensemble method [34].
- Kinetic study for the co-pyrolysis of lignocellulosic biomass and plastics using the distributed activation energy model [35].
- An optimal renewable energy management strategy with and without hydropower using a factor weighted multi-criteria decision making analysis and nation-wide big data - Case study in Iran [36].
- Heat transfer performance of CO<sub>2</sub>, ethane and their azeotropic mixture under supercritical conditions [37].
- CO<sub>2</sub> Capture from Syngas Generated by a Biomass Gasification Power Plant with Chemical Absorption Process [38].
- Spatial prediction of renewable energy resources for reinforcing and expanding power grids [39].
- Biomass fast pyrolysis in a shaftless screw reactor: a 1-d numerical model [40].
- Optimal design of the electric connection of a wind farm [41].
- Energy and economic efficiency of camelina and crambe biomass production on a large-scale farm in north-eastern Poland [42].
- Discovering the patterns of energy consumption, GDP and CO<sub>2</sub> emissions by cluster methods in China [43].
- Modelling of a Square Channel Monolith Reactor for Methane Steam Reforming [44].
- Production of value-added liquid fuel via microwave co-pyrolysis of used frying oil and plastic waste [45].
- Deciphering biostimulation strategy of using medicinal herbs and tea extracts for bioelectricity generation in microbial fuel cells [46].
- Replacement of energy crops with bio-waste in existing anaerobic digestion plants: An energetic and environmental analysis [47].
- Influence of the building shape on the energy performance of timber-glass buildings located in warm climatic regions [48].
- The Impact of Bed Material Cycle Rate on In-Situ CO<sub>2</sub> Removal for Sorption Enhanced Reforming of Different Fuel Types [49].
- New Approximation Algorithms for the State Functions of Water and Steam for the Application of Transient Processes and Fast On-Line Applications [50].
- Determination of a building's balance point temperature as an energy characteristic [51].
- Energy Recovery from the Water Cycle: Thermal Energy from Drinking Water [52].
- Biohydrogen production from mixtures of agro-industrial wastes: chemometric analysis, optimisation and scaling up [53].
- Influence of Different Bed Material Mixtures on Dual Fluidized Bed Steam Gasification [54].
- Environmental impact assessment of building envelope components for low-rise buildings [55].
- Study and simulation of the energy performances of a grid-connected PV system supplying a residential house in north of Algeria [56].
- Simulation of electrical energy production in archimedes screw-based ultra-low head small hydropower plant considering environment protection conditions and technical [57].
- PM from the combustion of heavy fuel oils [58].
- RDF incineration modelling through thermo-chemical conversion and gaseous combustion coupling [59].
- Optimal Price of Electricity of Solar Power Plants and Small Hydro Power Plants - Technical and Economical Part of Investments [60].
- Catalytic methanation of Carbon Dioxide Captured from Ambient Air [61].
- Numerical analysis of a non-steady state phenomenon during the ignition process in a condensing boiler [62].
- Carbon-based sorbents impregnated with iron oxides for removing mercury in energy generation processes [63].
- Cooling energy simulation and analysis of an intermittent ventilation strategy under different climates [64].
- Process simulation of an efficient temperature swing adsorption concept for biogas upgrading [65].
- Review of policies and measures for sustainable and energy efficient urban transport [66].
- Influence of driving rain and vapour diffusion on the hygro-thermal performance of a hygroscopic and permeable building envelope [67].
- Effects of climate change on the health of citizens modelling urban weather and air pollution [68].
- Modelling and performance analysis of a hybrid system for a residential application [69].

- Spatio-temporal assessment of integrating intermittent electricity in the EU and Western Balkans power sector under ambitious CO<sub>2</sub> emission policies [70].
- Linking design and operation performance analysis through model calibration: parametric assessment on a passive house building [71].
- Improvement of passive behaviour of existing buildings through the integration of active solar energy systems [72].
- Macro approach analysis of dark Biohydrogen production in the presence of zero valent powered Fe<sup>0</sup> [73].
- Thermal performance and embodied energy of standard and retrofitted wall systems encountered in Southern Europe [74].
- Impact of increased solar penetration on bill savings of net metered residential consumers in India [75].
- A simple stochastic method for modelling the uncertainty of photovoltaic power production based on measured data [76].
- Catalytic conversion of waste cooking oil to fuel oil: catalyst design and effect of solvent [77].
- Exergy, exergo-economic, and exergy-pinch analyses (EXPA) of the Kalina Power-cooling cycle with an ejector [78].
- *Ampelodesmos mauritanicus* pyrolysis biochar in anaerobic digestion process: evaluation of the biogas yield [79].
- A candidate material for mercury control in energy production processes: carbon foams loaded with gold [80].
- Fuel Flexible Gasification with an Advanced 100 kW Dual Fluidized Bed Steam Gasification Pilot Plant [81].
- Biodiesel production from castor oil in Egypt: process optimisation, kinetic study, diesel engine performance and exhaust emissions analysis [82].
- Geospatial characteristics investigation of suitable areas for photovoltaic water pumping erections, in the southern region of Ghardaia, Algeria [83].
- Reducing environmental impacts of the ups system based on PEM fuel cell with circular economy [84].
- Linear  $\alpha$ -alcohols production from supercritical ethanol over Cu/Al<sub>2</sub>O<sub>3</sub> catalyst [85].
- Magnetically recoverable catalysts for the conversion of inulin to mannitol [86].
- Modelling of an expandable, reconfigurable, renewable dc microgrid for off-grid communities [87].
- Extraction of ZnO thin film parameters for modelling a ZnO/Si solar cell [88].
- Performance of solar air collector in the climatic condition of North Eastern India [89].
- Sustainable energy storage for solar home systems in rural sub-Saharan Africa - a comparative examination of lifecycle aspects of battery technologies for circular economy, with emphasis on the South African context [90].
- An investigation into the use of water as a working fluid in wraparound loop heat pipe heat exchanger for applications in energy efficient HVAC systems [91].
- Practical limit of energy production from seawater by full-scale pressure retarded osmosis [92].
- Valorisation of high acid value waste cooking oil into biodiesel using supercritical methanolysis: Experimental assessment and statistical optimisation on typical Egyptian feedstock [93].
- Greener Synthesis of 1,2-Butylene Carbonate from CO<sub>2</sub> using Graphene-Inorganic Nanocomposite Catalyst [94].
- Renewable source penetration and microgrids: effects of milp-based control strategies [95].
- Hybrid renewable energy systems for renewables integration in microgrids: influence of sizing on performances [96].
- Effect of ethanol on Mulberry bark hydrothermal liquefaction and bio-oil chemical compositions [97].

- Intelligent techniques for forecasting electricity consumption of buildings [98].
- Use of *Zymomonas mobilis* immobilized in doped calcium alginate threads for ethanol production [99].
- Energy efficiency enhancement and waste heat recovery in industrial processes by means of the Heat Pipe technology: case of the ceramic industry [100].
- An inhouse code for simulating heat recovery from boilers to heat water [101].
- Phase-changing materials for thermal stabilization and thermal transport [102].
- Optimisation of automotive diesel engine calibration using genetic algorithm techniques [103].
- Angular speed control of an induction motor via a solar powered boost converter-voltage source inverter combination [104].
- Market regulation and environmental productivity changes in the electricity and gas sector of 13 observed EU countries [105].

### 3. Conclusions and remarks

In this special issue of the international conference of sustainable energy and environmental protection SEEP2017, all the above papers have been presented and discussed, which cover some important points related to the conference scope. Energy Developments, Energy Storage Systems, Circular Economy, Environmental Issues and others, all were discussed. In spite of major progress in this field but more research and developments are required to achieve the hope of 100% renewable energy with reasonable cost.

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