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Poul Alberg Østergaard*, Rasmus Magni Johannsen

Department of Planning, Aalborg University, Rendsburggade 14, 9000 Aalborg, Denmark

ABSTRACT

This 37th volume of the International Journal of Sustainable Energy Planning and Management present novel analyses on the Nigerian electricity sector with focus on stakeholders in centralised and decentralised electricity supply. Analyses of Berlin-Brandenburg in Germany shows the prospects of 100 % renewable energy systems here. Industry is an important target in the energy transition, so a model is developed to analyse energy savings potentials. Within the heating sector, much of the individual dwellings in Central and Eastern Europe are impacted by a fuel trap, trapping them between two essentially undesirable options – biomass and natural gas. Also, within the residential sector, a new analysis probes in the feasibility of installing photo voltaics in India, and lastly, an interesting article investigates the local economic and employment effects of increased biofuel production.

Keywords

Stakeholders in Nigeria;
100 % RE system in Germany;
Industrial energy savings;
Trap between biomass and gas;
PV feasibility;
Employment and regional effects;

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1. Contents

In this volume of the International Journal of Sustainable Energy Planning and Management, Edomah [1] investigates changes in the Nigerian electricity sector based on stakeholder mapping and an interest-influence matrix. Existing central infrastructures have a strong connection between stakeholders, while decentralised do not. In previous work on Nigeria in this journal, Umoh & Bande [2] presented analyses for residential energy savings, Ogundari and co-authors [3] addressed off-grid systems for new housing developments, and Akinwale & Adepoju [4] looked into factors influencing the update of renewable energy technology. Ugulu addressed solar systems [5], finding barriers and motivations and Khaleel and Chakrabarti [6] looked more holistically at models and scenarios for Nigeria in an energy system transition context.

Traber and co-authors [7] investigate the prospects of a 100% renewable energy system for the Berlin-Brandenburg region in Germany using a cost minimisation model. They find that a predominantly PV-based system with the use of hydrogen and electrification is feasible from both a time and a cost perspective. Co-author Breyer [8] has previously provided an extensive review of 100% renewable energy systems, and this journal has previously looked into low-temperature district heating [9], the role of heat and electricity storage [10] and the acceptance of transmission lines in Germany [11].

Richter et al. [12] probe into industrial energy savings as an important element in the energy transition. The authors studied energy efficiency measures, applied multi-criteria assessment for the prioritisation and developed a tool for these PROMETHEE II, which was subsequently applied to a case company. A key element in the transition of the industrial sector is the electrification of the sector as explored by Sorknæs [13] and for which Johannsen and co-authors [14] developed European pathways. Appiah investigated the uptake of renewable energy sources in the Ghanese industry [15], Tötzer investigated *Urban Manufacturing* [16] and Østergaard and co-authors [17] investigated the energy system effects of changing compositions of industry and

*Corresponding author e-mail: poul@plan.aau.dk

other sectors and derived effects on temporal demand patterns. Barkhordar [18] investigated the rebound effect with a focus on industry.

In this volume, Szép et al. [19] investigate the usage of solid fuels in residential heating in Central and Eastern Europe, finding that many households are in a dual trap; trapped between biomass and natural gas. Natural gas provides a better local environment but makes residents susceptible to market changes – while the biomass alternative provides poorer local air quality but without the strong market exposure. Szép has previously reported analyses on residential savings in Hungary [20] and more broadly on the European Union [21] in this journal. Biomass usage is a recurring theme in 100% renewable energy transition studies (see e.g. [22]), thus while it is a renewable energy source for house heating, as a restricted source, it has better potential uses where it can provide flexibility [23]. Local air polution has also previously been a motivation for the study of alternatives [24].

Kumar et al. [25] investigate the prospects of rooftop solar installations in India with a focus on the residential sector, finding financial feasibility. Previous work in this journal in India has presented analyses on hydropower [26] and energy efficiency [27]. In addition, several analyses have investigated photo voltaics. This includes analyses from a spatial perspective [28–30] and analyses focusing on acceptance and adaption [5,31–33].

Finally, in this volume, Romero and co-authors [34] investigate the effects of biofuel usage in developing countries on the regional economy and employment. The authors stress amongst others "*the relevance of measuring exhaustively the effects of renewable energy in the economy, environment, and society*" and "*the distinction between transient and more permanent effects of alternative policies*". A previous study in this journal has focused on employment effects in Portugal [35]. Abdallah stressed the inclusion of employment effects in his work on Kenya [36] and Bishoge did the same from a Tanzanian perspective [37].

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