Cite this article
Norton B (2020)
Editorial.
Proceedings of the Institution of Civil Engineers – Energy **173(3)**: 93,
https://doi.org/10.1680/jener.2020.173.3.93

Energy

ice Publishing

Editorial

Brian Norton DSc, MRIA
Professor, Technological University Dublin, Dublin, Ireland

Striving for the 'decarbonisation' of electricity production is a primary route of supply-side energy emissions reduction. The interventions required to achieve this are diverse, ranging from the regulatory, such as emissions trading, to the technological, with examples being changes in the fuel mix for electricity generation to the rapid deployment of a wide variety of renewable energy technologies. In this issue, papers address some specific challenges in sustainable electricity production technologies with work reporting aspects of offshore photovoltaic (PV) and vertical axis wind turbines (VAWTs) as well as a major two-part study dealing with the grand challenges of the transition to low carbon dioxide electricity in the UK.

Honnur Vali *et al*. (2020), in a briefing paper, examine 'Potential regions in the Persian Gulf to deploy offshore floating photovoltaic systems'. Key factors that are considered are water depth, its salinity and the ambient temperatures. Lower ambient temperatures offshore, compared with adjacent land, are advantageous as they should lead to offshore PV operating with higher solar energy conversion efficiencies than their land-based equivalents. Honnur Vali *et al*. identify six potential geographic regions in the Gulf that may be particularly suitable locations for offshore PV. In 'Blade number effect on the optimal energy efficiency for a modified Savonius rotor' Zhao *et al*. (2020) analyse the operational characteristics of this type of VAWT. Specific design recommendations are made on the optimisation of wind energy utilisation efficiency. The method employed may find broader use in the realisation of other similar VAWT types and in inter-comparisons between small-scale and novel wind turbine types. 'Socio-technical transitions in UK electricity' by Foxon *et al*. (2020a, 2020b) is the outcome of work undertaken in a large, wide-ranging inter-disciplinary study. It is presented in two parts. Part 1 elaborates on 'history, actors and pathways' with particular attention given to identifying the key drivers that led to past transitions (Foxon *et al*., 2020a). Part 2, 'technologies and sustainability', gives the evidence-base that determines the choices available to policymakers and other stakeholders (Foxon *et al*., 2020b). The three low-emission electrification strategies identified, though informed by experience in other comparable countries, are, in their specifics, unique to the economic, regulatory, infrastructural and resource-availability factors unique to the UK. The authors note the crucial importance of adopting holistic long-term perspectives to examining new policy directions that are inclusive in scope and implications when considering their sustainability.

REFERENCES

Foxon TJ, Hammond GP and Pearson PJG (2020a) Socio-technical transitions in UK electricity: part 1 – history, actors and pathways. *Proceedings of the Institution of Civil Engineers – Energy* **173(3)**: 109–122, https://doi.org/10.1680/jener.19.00051.

Foxon TJ, Hammond GP and Pearson PJG (2020b) Socio-technical transitions in UK electricity: part 2 – technologies and sustainability. *Proceedings of the Institution of Civil Engineers – Energy* **173(3)**: 123–136, https://doi.org/10.1680/jener.19.00076.

Honnur Vali MS, Gupta N, Goh K and Umar T (2020) Potential regions in the Persian Gulf to deploy offshore floating photovoltaic systems. *Proceedings of the Institution of Civil Engineers – Energy* **173(3)**: 94–100, https://doi.org/10.1680/jener.19.00061.

Zhao T, Zhang X and Zheng M (2020) Blade number effect on the optimal energy efficiency for a modified Savonius rotor. *Proceedings of the Institution of Civil Engineers – Energy* **173(3)**: 101–108, https://doi.org/10.1680/jener.19.00031.