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Book Review

"Is Renewable Energy Affordable?" By Derek George Birkett; Cambridge Scholars Publishing, Newcastle upon Tyne, UK. (2019). Price £58.99 ISBN (10): 1-5275-2046-3; ISBN (13): 978-1-5275-2046-2

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Abstract: This book is written by a retired grid engineer and deals with renewable sources of energy and the instability of the electrical distribution grid. Derek Birkett carefully goes through the arguments about the electrical supply and the effect of intermittent and variable renewable sources of energy on grid stability. As a result of investment in renewable energy and the increasing costs of carbon taxes levied on fossil fuel fired generation, the government has created a situation which is very expensive for consumers and industry, and is unsustainable. The government has intervened in the energy market and provided subsidies and policy support for renewable energy without considering the consequences for the stability of the electrical grid system. The government has no strategic vision of the future for energy generation and no expertise to draw upon. Consumers experience increasing energy costs, power outages and blackouts which will be costly and hard to recover from. Derek states quite clearly that " . . . *the state should no longer use environmental regulation for political purposes unless there is a clear imperative for national well-being and security*."

Keywords: Energy generation; grid stability; government policy; lack of strategy; increasing costs to consumers; blackouts; power cuts

1. Introduction

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This book is written by a retired grid engineer and deals with the thorny problem of renewable sources of energy and the instability of the electrical distribution grid. Successive governments have attempted to choose the sort of energy generation mix that is needed for the future to mitigate climate change. However, all of this is predicated upon some assumptions which may well be quite wrong. For example, climate change is a highly controversial area of research and there are numerous points of view as to the causes of climate change and the remedies that might be used to mitigate or adapt to climate change.

Despite the government's views on the free market it has intervened in the energy market and provided subsidies and policy support for renewable energy without considering the consequences for the stability of the electrical grid system. Indeed since the demise of the Central Electricity Generating Board (CEGB) the government has no strategic vision of the future for energy generation and no expertise to draw upon.

Derek Birkett carefully goes through the arguments about the electrical supply and the effect of intermittent and variable renewable sources of energy. It would seem that as a result of investment in renewable energy (wind turbines and solar panels) and the increasing costs of carbon taxes levied on fossil fuel fired generation, the government has created a situation which is very expensive for consumers and industry and is unsustainable.

As more and more intermittent and variable renewable sources of energy are added to the grid system, more and more adjustments have to be made to the power output of spinning reserve (i.e., fossil fuelled traditional thermal energy generation) which was originally designed to run at a constant speed for base load. These adjustments (i.e., winding up and winding down the power output of thermal generating power stations) creates additional wear and tear upon these facilities which were designed to run continuously. This will wear out these facilities earlier than intended and result in the need to build more thermal generating capacity based on fossil fuels. Unfortunately, government policy, and indeed the activist lobby in this area, will resist the building of more thermal generating capacity further leading to the possibility of a greater number of power outages, blackouts and limiting the ability of the grid system to restart and provide energy as would be expected in a civilised and developed country.

This situation has not been properly thought through by governments and lessons have not been learned from other countries such as Germany which has come upon great difficulties in phasing out the use of coal while at the same time trying to maintain a vibrant manufacturing sector. The recent "Gillets Jeune" protests in France have also had an impact on policy with regards to carbon taxes and the use of renewable energy versus traditional thermal energy.

This leads to a scenario of an electrical supply industry with ageing plant where coal generation is being prematurely taken out of service and an urgent need to replace this capacity for the baseload on the system. The obsession with reducing carbon dioxide emissions has resulted in an impasse of enormous consequences for future generations. In an economy largely driven by knowledge and innovation using sophisticated computer systems any power outage or blackout is likely to cost billions of dollars or pounds and disrupt the economy rather more than any other incident that one could imagine, other than perhaps war.

Yet this is all self-inflicted, the obsession with reducing CO_2 emissions is rather foolish given that carbon dioxide is the basis of the entire food supply chain and may have very little effect upon the climate according to recent studies of equilibrium climate sensitivity. But Derek is an engineer, and a very good one by all accounts, and tries to steer a path that might be beneficial for policymakers to look at in some detail. Derek points out that there is massive waste of resources in supporting renewables which produce very little electrical energy compared to their installed capacity and what is produced is variable and intermittent. This waste is inexcusable and there is a groundswell of opposition to low carbon policies initiated by the EU.

Ultimately all the charges, subsidies and support for renewables will fall upon the consumer. Similarly the power outages and long delays in re-establishing power to consumers will lead to serious questions about government policy and the ability of governments to really understand the energy generation industry.

Derek is highly critical of any carbon capture and storage program as this would dramatically increase costs and reduce efficiency of thermal generation. It is suggested by other sources, that as much as 35% of the energy generated would be used in carbon capture and storage depending upon the technology used.

I have read papers which state that currently we are in a 'climate crisis' situation. This may or may not be true. However for the average consumer who experiences weather there does not appear to be any crisis except for the looming crisis of increasing energy costs, maintaining energy generation and the experience of power outages and blackouts which will be costly and hard to recover from. Derek states quite clearly that " . . . *the state should no longer use environmental regulation for political purposes unless there is a clear imperative for national well-being and security*." I wholeheartedly agree and I strongly recommend this book to anyone interested in energy generation, sustainability, the stability of the electrical grid system, and the future of the United Kingdom after Brexit.