

# ON TARGET?



Dr Scott Steedman

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As we step gingerly into a new political era it is timely to take stock of where we are and where we are heading in the unsettled world of energy supply and climate change policy. Over the last few years, the UK has been in the vanguard of international political opinion, setting demanding targets for the reduction of carbon emissions. In recent months, Government departments, industry leaders and The Royal Academy of Engineering have been working through the challenges that such targets impose and the potential consequences for our economy.

Paul Golby FEng, Chief Executive of E.ON UK, has talked of a 'trilemma' in relation to the carbon costs and consequences for our future energy mix, arguing that we are torn between the conflicting pressures of affordability, security of supply and environmental legislation. The Academy published its own report in March, *Generating the Future: UK energy systems fit for 2050*, which worked backwards from the Government target of 80% reduction in CO<sub>2</sub> emissions by mid century to deduce a series of alternative pathways that could theoretically de-carbonise our power supply to meet current aspirations.

None of these scenarios look remotely achievable given the scale of the undertaking ahead, the state of the national economy today and the lack of strong political leadership. By comparison

with our European neighbours, we are further disadvantaged by our historic low base of installed renewable energy capacity and therefore by the higher mountain that we need to climb to meet the European targets. Thus affordability, and the impact that these costs will have on our economic competitiveness, demands that we look very carefully at the targets we have set ourselves in the UK.

There are several guiding principles that should inform engineering advice to government on this issue. Firstly, between a quarter and a third of our ageing generating capacity are expected to close over the next decade and must be replaced. (Coal and oil power stations are closing because of air quality legislation; nuclear stations are closing as they come to the end of their operational life.) Ofgem, the independent authority regulating gas and electricity markets reported in February this year that beyond around 2015 there is a serious prospect of power shortages and recommended urgent action to stimulate investment. Not enough new power stations are on order today and those that are under construction are gas (combined cycle gas turbine or CCGT), rendering our environmental targets even more difficult to attain.

Secondly, our engineering solutions must increase the resilience of our infrastructure through diversity of supply and increased energy storage (ideally storage of electricity). Thirdly, improving efficiency and reducing demand are fundamental to closing the gap – less controversial perhaps, but challenging because of the scale and granularity of the problem (there are over 25 million households in the UK).

"Never waste a good crisis" was how Hilary Clinton put it in Brussels in March last year in a speech addressing energy security and

climate change. On our present trajectory, however, we show every sign of doing just this. In the words of Ofgem, "There is a need for unprecedented levels of investment to be sustained over many years in difficult financial conditions and against a background of increased risk and uncertainty."

As a regulated sector, energy infrastructure is everyone's business and we have a responsibility as a nation to set a clear framework and to get it right first time. We need stronger engineering advice to Government, and the good news is that this is happening.

Tempting as it is to challenge the impossibility of achieving national targets, more important is to put forward specific engineering solutions that clearly satisfy the affordability, dependability and sustainability trilemma. In its first report, published in March this year, Infrastructure UK (part of HM Treasury), outlined its intent to prepare a National Infrastructure Plan before the end of 2010 to support decisions on prioritisation and timing of infrastructure investment.

The Academy, representing the engineering profession, should support this vital work with pragmatic, evidence-based engineering solutions for energy infrastructure that are feasible at scale and in time. Overcoming the energy crisis that looms ahead by creating a sustainable national infrastructure means considering not only our environmental aspirations and social obligations but, fundamentally, balancing these against our industrial competitiveness.

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