

Submission to Scrutiny Committee of the Energy Bill
Dr Robert Gross
Director, Centre for Energy Policy and Technology
Policy Director, Energy Futures Lab
Phil Heptonstall, Research Associate
Imperial College
London SW7 1NA
Robert.gross@ic.ac.uk

Introduction

The Centre for Energy Policy and Technology at Imperial College was created in 1998 to provide a cross discipline research base to inform national and international policymakers. ICEPT works at the interface of technology, economics and policy. ICEPT papers are widely cited in Select Committee Reports, Departmental White and Green Papers and by bodies such as the Committee on Climate Change. A 15 strong research and teaching team is comprised of engineers, natural and physical scientists, economists and policy analysts. ICEPT has strengths in technology assessment, innovation policy and modelling. **Dr Robert Gross** is Director of ICEPT. He is also a Co-Director of the UK Energy Research Centre and the Policy Director at Imperial's Energy Futures Lab. He directs a substantial research programme, teaches at post graduate level on Imperial's MSc courses on Environmental Technology and Sustainable Energy Futures. He has published extensively on energy policy and technology. In Spring 2011 and again in 2012 he was specialist advisor to the Energy and Climate Change Select Committee enquiries into energy market reform (EMR). He was a member of the DECC academic advisory council on EMR. In 2008 he acted as Specialist Advisor to the House of Lords Committee on the European Union enquiry into the feasibility of the 2020 targets for renewable energy. He has contributed extensively to government policy development through commissioned reports, independent assessments and membership of numerous committees and steering groups. He is Co-Chair of the British Institute of Energy Economics.

Relevant research papers and reports can be found here

<http://www3.imperial.ac.uk/icept/publications/workingpapers>
<http://www.ukerc.ac.uk/support/tiki-index.php?page=TPA%20Overview>

The author has undertaken extensive analysis of 'what works' in energy policy, drawing upon international experience and analysis of the interaction between policy design, investor needs, technological deployment and cost reduction. Some of the key issues outstanding associated with the Bill and relevant to the Committee are set out briefly below.

1. - Philosophically and pragmatically, the Bill is right-minded. The Committee should not be swayed by arguments rooted purely in economic theory, divorced from investment reality. Long run, fixed price contracts are essential to investment in new nuclear and most renewables.

In the absence of intervention electricity companies will invest in gas fired generation. The reasons for this are that gas fired power stations are cheap and quick to build, flexible in operation and gas price movements pass through to consumers. This last point is critical and not often well understood. In the UK, and increasingly in other countries, gas generators are 'price makers' in power markets. If the price of gas goes up the price of electricity goes up with it, offering investors

an inherent hedge. High gas prices do not deter investment in gas fired generation. However, the electricity wholesale price volatility that results from this effect acts as a major impediment to investment in capital intensive, 'price takers' such as nuclear power and renewables. **Even if the levelised cost of nuclear/wind and gas is similar, rational investors will still prefer to invest in gas.** These effects are explained more thoroughly here <http://www.ukerc.ac.uk/support/tiki-index.php?page=InvestingInPower>

2. - Gas/power market price interaction is the principal reason why arguments that the Bill amounts to 'picking winners' and could be replaced by a simple carbon tax/price, are wrong. A carbon tax offers a partial solution to the climate change problem. However it is not the sole solution, and cannot replace the long run fixed price feed in tariffs that the government proposes. Investors in long lived, capital intensive asset based forms of power generation (nuclear power, wind, hydro) require power stable prices. Carbon taxes cannot deliver this. Moreover, carbon taxes set high enough to promote investment in the least cost 'marginal' new low carbon option (likely to be onshore wind) will create a huge producer surplus for existing low carbon generators (nuclear, hydro, landfill gas and existing wind). This is an economically inefficient means to promote development of new low carbon technologies. By contrast, feed in tariffs can be targeted to technologies and have proved very successful at promoting deployment of emerging energy technologies. This in turn has allowed 'learning by doing' to deliver large reductions in the cost of wind and solar technologies. These arguments are explained in more detail here. <https://workspace.imperial.ac.uk/icept/Public/On%20Picking%20Winners%20low%20res.pdf>

3. – Innovation and cost reduction requires deployment, R&D alone is insufficient.

For similar reasons to those set out in point 2, the Committee should not be swayed by arguments that the government could put more money into R&D instead of creating investable conditions for low carbon technologies. Innovative effort is essential to getting cost effective low carbon technologies. This includes research, development and demonstration. However, the absence of policies that allow for deployment of emerging technologies as they emerge from the R&D stage creates a 'valley of death'. Promising technologies are unable to begin the process of real world learning that is essential to making them viable. Feed in tariffs are a well proven means by which to allow emerging technologies to begin to progress along their learning curve, ultimately allowing costs to fall to levels where subsidies are no longer needed. These arguments are set out in more detail here.

<https://workspace.imperial.ac.uk/icept/Public/On%20Picking%20Winners%20low%20res.pdf>

4. - A 'decarbonisation target' would help provide long-term investment certainty. Including an explicit 2030 target to reduce the UK power sector's carbon emissions in the Bill would help in particular to ensure investment certainty in the low carbon energy supply chain. The absence of such a target risks creating a perception that there will be a 'cliff edge' post 2020, where renewable energy investment will almost cease. This has very deleterious effects for the UK. It discourages investment by British and international companies in the supply of equipment and services needed to make and install renewable energy. The result is that UK bill payers support industrial jobs and provide economic value to neighbouring countries such as Denmark and Germany. This seems a rather poor deal for UK households.

5. - Concerns on the ability of independent renewable energy generators to access the electricity market must be addressed (Chapter 6, Sections 34 and 35): Internationally, most feed in tariffs offer some form of obligation to connect. Developers have a good degree of certainty that they will be able to connect to the grid, and that they will be able to realise the price set by the scheme. The government's proposals do not guarantee connection, and the way the UK power market functions means that independent renewable energy developers may not be able to realise the benefits that the Contracts for Difference are supposed to offer. Independent generators fear that the 'Big 6' will have little incentive to offer them attractive power purchase terms, or indeed any power purchase agreements at all. The Bill therefore risks undermining investment in renewables by all but the large vertically integrated developers. This has the potential to decrease competition and innovation, increase costs and decrease industrial benefits to the UK.

The Bill Committee should carefully consider the concerns and proposals put forward by independent generators regarding the risk of their access to the electricity market deteriorating in the years to come. Another partial solution to this problem would be to increase the threshold for the microgeneration feed in tariff from 5 MW to 30 or 50 MW as recommended by the Energy and Climate Change Committee. This could offer smaller developments and particularly community owned schemes a more attractive environment.

6 - An enabling power to support energy efficiency measures should be introduced now.

Current energy efficiency policies are fraught with difficulty. Yet in many cases energy efficiency could offer a cheaper means to decarbonise and deliver security of supply than investment in new generation. One option would be an 'energy efficiency feed in tariff'; the details and merits of such need to be assessed. However we know that it requires an enabling power in primary legislation. The Bill should provide an enabling power for energy efficiency measures now to avoid any delays in implementing the conclusions of DECC's consultation process on electricity demand reduction.