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PARLIAMENTARY BRIEFING

UK Energy Security: Westminster Hall Debate

5 September 2012

This briefing was prepared for the Westminster Hall debate, 6 September 2012, on the Eighth Report from the Energy and Climate Change Committee, Session 2010-12, on the UK's Energy Supply: Security or Independence (HC 1065) and the Government's response.

Summary

- The UK energy system faces unprecedented challenges – massive investment, the imperative of decarbonisation, and high and volatile fossil fuel prices.
- It is easier to remove carbon emissions from the power sector than other sectors of the economy. The Government must make an explicit commitment based on the Committee on Climate Change's advice to decarbonise the power sector by 2030 to around 50gCO₂/kwh and accelerate policies to achieve it.
- There are many solutions on both generation and demand side to help deliver a cost-effective, secure and decarbonised power sector: widespread adoption of energy efficiency in the domestic, commercial and industrial sectors; substantial investment in a wide range of renewable energy technologies; and greater integration with European grids. These will be even more important if delays to Carbon Capture and Storage (CCS) projects and rising costs in the nuclear industry continue.
- WWF's *Positive Energy* report shows conclusively that by 2030, it is perfectly feasible for renewables to meet at least 60% of the UK's electricity demand while meeting rigorous energy security 'stress tests'. Energy efficiency measures could reduce the capital costs of generation and interconnection infrastructure required in the UK by 2030 by around £40bn.
- Reducing demand for electricity is more cost-effective than building new generating capacity and the related transmission / distribution infrastructure. Efficiency measures should therefore be fully incorporated in the Energy Bill.
- There is a clear benefit to the UK economy of expanding renewable electricity, and developing a domestic renewable manufacturing industry. A recent report by the Centre for Economics and Business Research found investment in offshore wind could lead to an increase in UK GDP of 0.2% by 2015, and add

0.4% to GDP by 2020.¹ The report also found the offshore wind industry could wipe out nearly three-quarters of the UK's current balance of trade deficit.

- Gas has a useful role in the near-term, but the forthcoming Gas Strategy must heed the CCC's advice on near-decarbonisation of the power sector by 2030.
- Current rising costs to consumers are mainly due to increases in fossil fuel prices and are a cause for concern. Investment in energy efficiency and renewables will likely lead to lower costs in the long term than central business-as-usual scenarios.

Energy security and climate change

In its World Energy Outlook, the International Energy Agency warns that in the absence of rapid investment in low-carbon technologies, the infrastructure we will have in place by 2017 will produce all the greenhouse gases that we can afford to see emitted if we want to limit global average temperature rises to within 2°C, an objective that is now shared by a growing number of countries following the UN negotiations in Durban. If current energy investment patterns are allowed to continue, this would lock the world into warming of at least 6°C by 2100.

Energy security must be viewed in the context of the threat of climate change, and the urgency of decarbonising our energy system. A major question is whether the UK is delivering the clean energy infrastructure at sufficient pace and at sufficient scale to face these challenges.

Decarbonisation

Removing carbon emissions from electricity generation is easier than saving carbon in other energy use sectors of the economy. The Committee on Climate Change (CCC) has repeatedly advised that the power sector will need to be near-decarbonised by 2030 with a carbon intensity in the region of 50gCO₂/kWh, in order for the UK to stay on track for meeting its legally binding commitment of reducing its carbon emissions by at least 80% by 2050 compared to 1990 levels.² The Government should make this 2030 goal an explicit commitment in the forthcoming Bill and ensure all its policies across departments deliver the 'step change' in decarbonisation the CCC calls for in order to meet the first four carbon budgets.

A diverse energy mix without nuclear

Recent developments in the UK's nuclear market (such as the withdrawal of key utilities from the nuclear market and continually rising cost estimates for new plants)³ make it unlikely that the nuclear sector will be able to significantly increase low-carbon capacity by 2030. However, a diverse, secure and low-carbon energy mix can be delivered without new nuclear power.

WWF's *Positive Energy* report⁴ (based on analysis developed by energy consultants Garrad Hassan) showed that a mixed portfolio of renewable technologies could provide well over 60% of the UK's electricity demand by 2030 if the UK's renewable energy sector was allowed to grow at a steady rate over the next two decades. This would make renewable energy the key driver for delivering a secure and near-decarbonised power sector by 2030. The analysis challenged the factually dubious claims put forward by those arguing that renewable energy is synonymous with the lights going out. By using a system security test significantly more challenging than the ones used in the Government's own projections, *Positive Energy* made clear that a power system mainly based on renewables could be just as secure as one based on a dominant mix of fossil fuels and nuclear power.

¹ CEBR, [The Macroeconomic Benefits of Investment in Offshore Wind](#), June 2012

² See in particular the CCC's [Fourth Carbon Budget report](#)

³ See paragraph 15 of WWF-UK's response to the ECCC inquiry on the Energy Bill for more details.

⁴ WWF-UK, [Positive Energy](#), November 2011

Energy efficiency

Energy efficiency policies are the most cost-effective way of delivering energy security and decarbonisation. Ambitious measures could keep energy demand at pre-recession levels of 340TWh, with major cost savings in the process. A recent McKinsey report commissioned by DECC shows that electricity use could be reduced by the equivalent of 40% of total electricity demand by 2030 (a massive 155TWh) by implementing electricity saving measures in the domestic, commercial and industrial sectors.⁵ However, McKinsey estimate that existing policy will deliver savings of only 14% (54TWh), barely one third of the total potential, and the existing policy framework is insufficient to deliver. WWF-UK recommends greater ambition and pace in the Green Deal, energy efficiency measures in the forthcoming Bill, and cross-department policies to deliver efficiency measures across all sectors.

The UK Energy Research Centre estimates that a combination of energy service demand change and efficiency improvement in the transport and residential sectors could reduce energy demand in these two sectors by more than 50% by 2050 compared to business as usual levels.⁶ Not only is the potential for energy demand reduction key in helping reduce emissions, it is also compelling from an economic point of view – they estimate that “in an energy system constrained to 80% carbon emissions reduction, the main effect of social and lifestyle change is to reduce the costs of delivering a low-carbon energy system, up to £70 billion.”⁷

The future role for gas: impacts on climate, security and consumers

WWF-UK recognises that unabated gas-fired power stations will have a useful role to play as a bridging and system balancing fuel in a power sector that is near-decarbonised by 2030, but the future role of gas needs to be carefully monitored from both an environmental and energy security perspective. The forthcoming Gas Generation Strategy must recognise the primacy of the Climate Change Act, acknowledge the CCC's advice on decarbonisation by 2030 (below), and not put short-term economic gains over long-term savings.

The CCC recently clarified that ‘the role for unabated gas fired power generation should be limited to balancing the system in 2030, by which time the share of unabated gas generation in the total should be no more than 10%, compared to 40% today. A second dash for gas, resulting in a higher share of unabated gas in 2030, would neither be economically sensible nor compatible with our legislated carbon budgets.’⁸ A ‘dash for gas’ would also result in greater cost to consumers than policies focused on energy efficiency and renewables.

The International Energy Agency's *Golden Age of Gas* report⁹ makes clear that a new ‘dash for gas’ would put the world on a path to warming of at least 3.5°C, significantly above the 2°C rise threshold which international policy efforts are trying to avoid, and would have catastrophic consequences for the global economy, human societies and the natural world.

From an energy security perspective, the UK is already over-reliant on gas which exposes our economy to high and volatile prices. According to DECC, 46% of the UK's electricity generation came from gas-fired power stations in 2010 (41% in 2011), with 80% of the UK's 26.2 million homes relying on gas for domestic heating. This current over-reliance on gas has been the major factor behind the substantial increases in UK dual fuel consumer bills between 2004 and 2010.

⁵ McKinsey for DECC, [Capturing the full electricity efficiency potential of the UK](#), 2012

⁶ UK Energy Research Centre, [Making the transition to a secure and low-carbon energy system](#)

⁷ Ibid, p103.

⁸ CCC, [Statement by David Kennedy on Unabated Gas Fired Generation](#), 24 May 2012

⁹ International Energy Agency, [World Energy Outlook 2011](#), November 2011

Cost to consumers

Domestic energy bills increased from £605 in 2004 to £1,060 in 2010, but media reports on the impact of 'green taxes' are misleading. According to the CCC's recent review of household bills, 63% of this increase was caused by rising gas prices (£290 of the £455 increase).¹⁰ They also noted that over 80% of the average energy bill increase between 2004 and 2010 was unrelated to reducing carbon emissions. Support for renewables only amounts to a minor fraction of recent energy bill increases. The CCC showed that of the average £430 domestic electricity bill for 2010, only £16 was directly attributable to supporting renewable energy infrastructure (with £17 being linked to the carbon price and £25 to energy efficiency programme).

Looking forward, consumer bills will rise under any scenario – but scenarios that combine greater energy efficiency and greater deployment of renewables can help significantly limit cost to consumers. For instance, whilst the CCC predicts that the average domestic energy bill will increase from £1,060 in 2010 to £1,250 by 2020, its analysis also suggests that the scope for energy efficiency savings in the UK is such that energy bills could be kept close to 2010 levels by 2020 if effective energy efficiency policies are introduced.

Electricity Market Reform Bill

Recent developments in the nuclear market and repeated delays to the UK's CCS programme make it unlikely that either technology will be able to provide significant amounts of low-carbon capacity by 2030. WWF-UK is therefore of the view that increased deployment of renewable energy technologies coupled with a greater focus on improving energy efficiency and increasing the UK's interconnection with European grids are the most viable options to deliver a secure and cost-effective decarbonisation of the UK's power sector by 2030.

The forthcoming Bill must therefore bring forward a coherent and well adapted package for deploying renewables and energy efficiency infrastructure quickly and at scale. WWF-UK recommends the Bill should contain:

- An explicit decarbonisation target of 50g/KWh by 2030;
- A finance mechanism appropriate for small and large scale renewable infrastructure;
- Enabling powers for an energy efficiency support mechanism, with the detail of that support mechanism being developed in secondary legislation.

The Electricity Market Reform Bill is a crucial opportunity to put the UK firmly on track to near-decarbonisation of the power sector by 2030 and for the Government to intervene in the market to provide greater investment certainty for low-carbon technologies. For further details, see WWF-UK's evidence to the Energy and Climate Change Committee.

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¹⁰ CCC, [Households Energy Bills – impacts of meeting carbon budgets](#), December 2011. The impacts of renewable energy support measures over the coming decade should also be seen in the context of DECC's predictions that the price of gas will continue to rise in the coming decade, from 44p/therm in 2010 to 68p/therm in 2020 in DECC's central gas price scenario.