REF
RENEWABLE ENERGY FOUNDATION

21 JOHN ADAM STREET, LONDON, WC2N 6JG

TEL: 020 7930 3636. FAX: 020 7930 3637

A BRIEFING NOTE AND COMMENT ON THE UK GOVERNMENT'S RENEWABLE ENERGY STRATEGY

Introduction

On the 15th of July 2009 the Secretary of State for Energy and Climate Change, the Rt Hon. Mr Ed Miliband MP, published *The UK Renewable Energy Strategy* (see http://www.decc.gov.uk). The strategy is designed to meet the EU Renewable Energy Directive which specifies that that the UK should supply 15% of its Final Energy Consumption (FEC) from renewables by 2020.

It should be noted this target is focused specifically on obtaining quantities of energy and does not bear directly on green house gas emissions reductions targets, though it is related at one remove with climate change policy.

In the following discussion we show that, regrettably, the UK Government is probably mistaken with regard to the size of the target. This error arises since the target is 15% of an unknown quantity, namely Final Energy Consumption in 2020. In our view Government estimates of FEC in 2020 are overly optimistic. The potential error is large, and **the target will probably be around 20% greater than that for which the government is planning**. This has significant implications for feasibility and cost

Analysis

1. The EU Renewable Energy Directive requires the UK to obtain 15% of its Final Energy Consumption (FEC) from renewable sources by 2020. This covers all sectors, electricity, heat, and transport. Shortfalls will be subject to heavy penalties.
2. UK final energy consumption is currently 150 million tonnes of oil equivalent (mtoe), or about 1,750 TWhs of energy.
3. The 2020 FEC target would therefore be about 260 TWhs. This is a very large quantity. For comparison, it can be noted that the UK currently generates about 400 TWhs of electrical energy annually.

4. In last year's *Renewable Energy Strategy Consultation* Government said it expected UK Final Energy Consumption to stay stable up to 2020.

5. In its response to the consultation REF observed that this seemed very unlikely, since population was expected to increase, to around 64 million, and the UK government is also predicting a return to economic growth.

6. REF also remarked that there was no strong evidence anywhere in the world that improvements in energy efficiency, though highly desirable in the interests of economic competitiveness, would produce a reduction in total consumption: as the great energy economist W. S. Jevons said in 1865 "*[…] it is wholly a confusion of ideas to suppose that the economical use of fuels is equivalent to a diminished consumption. The very contrary is the truth.*"[1]

7. REF noted that since energy consumption would probably increase Government was almost certainly underestimating the target magnitude. REF pointed out that in some EU data sets Final Energy Consumption was predicted to rise to around 185 mtoe, an increase of over 23% on current levels. This scenario is not addressed in the *Renewable Energy Strategy*.

8. In fact, Government now hopes against all evidence that Final Energy Consumption in the UK will actually fall. This is implausible without economic collapse, severe social distress, and a consequent increase in poverty. **If Government believes that economic decay of this kind is likely, then it should say so.**

9. On its current view Government predicts that the 2020 EU target will be 240 TWh of energy (a reduction from the 263 TWhs predicted in the 2009 consultation[2]), however:

10. According to rough calculations based on more realistic and earlier EU data projections dating from 2003, REF suggests that the target will instead probably be in the region of 300 TWhs, some 25% larger than the government's estimate.

11. At the lower levels Government admits that these targets will be very difficult to achieve. At the higher levels they are almost certainly infeasible. Indeed, there are reasonable doubts about the attainability of the lower quantities. For example, the levels of wind currently suggested (upwards of 25 GW) as necessary for the lower target would confront the UK with unprecedented balancing and grid management

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[1] W. S. Jevons, *The Coal Question* (1865), p. 140.

[2] DECC, *Renewable Energy Strategy* (2009), 37.

problems, and while Government puts a brave face on this it is as yet uncertain whether physically and economically practical solutions can be provided in time.

12. Turning back to the likely underestimate of target magnitude: the error matters since the difficulties and costs of achieving the targets are non-linear, that is to say the difficulty and thus cost of a marginal TWh of renewable energy increases significantly.

13. Consequently, adding 25% more renewable energy than is planned in the Renewable Energy Strategy would incur significantly more than 25% extra cost. A precise estimate is almost impossible (an informed guess might be 50% more costly).

14. Furthermore, the EU proposes to fine countries that miss their target. If the Government has underestimated the target this exposes the UK to heavy penalties.

15. REF concludes that **the Government's *Renewable Energy Strategy* is extremely and heroically optimistic about the scale of the targets, and so almost certainly underestimates the risks, the difficulties and the costs facing the UK**.

16. Mr Miliband might reply by pointing to the notional benefits of the RE Strategy. For example, the claimed reduction in emissions and reduced gas imports. In fact these benefits are either modest or questionable.

17. The Government's *Renewable Energy Strategy* claims that it will save 750 million tonnes of CO_2 between now and 2030 (eg. p. 8). That is approximately 37.5 mt CO_2 per year.

18. The UK currently emits 530 mt CO_2 and the world some 28,000 million tonnes per year.[3]

19. So the *Renewable Energy Strategy* would deliver annual savings of 7% of UK emissions and just 0.1% of current world emissions at extreme costs, and additional fiscal strain on already fragile economy. Clearly, this is not a good bargain, and reinforces the point we have often made that renewables are poor emissions reducers, whatever other virtues they might have.

20. This is particularly disappointing since the UK's role in global climate change policy is to provide an economically compelling example, rather than any quantitatively significant contribution. At present our policy is unlikely to provide a constructive lead to any state in either the developing or developed world.

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[3] International Energy Agency, *World Energy Outlook* 2008 (IEA: Paris, 2008), 507.

21. For example, subsidised and mandated wind power on the scales currently contemplated by government will impair the economics of other plant but fail to provide compensating value. Investors in the still indispensable firm capacity needed to meet peak load (60 GW at 5.30 on a winter's day) will have no option but to minimise their risk by seeking the least capital intensive generation, which is gas-fired.

22. In this light we can see that government claims that the *Renewable Energy Strategy* will reduce natural gas imports by 20 to 30% are misleading. While renewables for heat might reduce gas imports to some degree, and are therefore genuinely desirable, in the electricity sector **the very aggressive wind policy (26 GW of installed capacity) will ensure that for economic and technical reasons no other generation capacity except gas can be built, thus deepening and compounding UK gas dependency rather than alleviating it.**

23. In other words, the *Renewable Energy Strategy* effectively makes capital intensive but high efficiency coal and nuclear infinitely too risky for investors, who will reduce their exposure by selecting the least capital intensive plant available, namely gas-fired generators, or, as is already apparent, scaling back investment in the UK altogether.

24. It must be emphasised that **contrary to Government assertions the renewables policy is a gas policy in disguise**.

25. Accidental and overwhelming dependence on gas for electricity would be unwise at the best of times; but with the rapid depletion of sovereign resources it can only be regarded as extremely risk prone.

26. Finally, for the avoidance of doubt, on a rational and economic scale renewables have something to offer the UK as fuel savers and price hedges, but **renewables on the irrational and politically driven scale outlined in the *Renewable Energy Strategy* will become a dangerous liability**. Distressed and painful policy corrections are inevitable.

27 July 2009