REF
RENEWABLE ENERGY FOUNDATION

DE MORGAN HOUSE, 58 RUSSELL SQUARE, LONDON, WC1B 4HS

TELEPHONE: 020 7637 4847; WEB: www.ref.org.uk

Progress Towards the 2020 Renewables Target: 2015 Update

An Analysis of Data from DECC's *Renewable Energy Planning Database*

Summary & Conclusion

This note updates REF's report of the 5th of May 2014 on progress towards the electricity component of the 2020 European Union Renewables Directive target for renewable energy. In that report we noted that significantly more renewable electricity capacity had been granted planning consent than was needed to generate the electricity component of the 2020 target (110 TWh).

The present study shows that over the last year DECC has not been successful in addressing the overheating of the sector and that there is now 49 GW of consented capacity (21.2 GW built, 28.1 GW under or awaiting construction) and that the overshoot has grown very significantly, from 5% to 34% (37.7 TWh).

The subsidies required to fund an overshoot on this scale would exceed the Treasury's Levy Control Framework limit of £7.6bn per year by approximately £1.5bn per year.

Furthermore, we note that there is still a very large quantity of additional renewable energy capacity seeking planning consent (14.7 GW). If all that capacity is consented and built, which we recognize is unlikely, the overshoot would rise to 67% (73.4 TWh).

The scale of this prospective overshoot is all the more remarkable when it is recalled that the United Kingdom faced the largest incremental increase in renewable energy of any of the EU 27 countries, with the exception of Malta and Luxembourg, and that between 25% and 40% of the EU-wide costs of the target would fall on the United Kingdom alone.[1]

[1] See the leaked briefing 2008 for ministers published by the *Guardian* newspaper: http://image.guardian.co.uk/sys-files/Guardian/documents/2007/08/13/RenewablesTargetDocument.pdf

We therefore repeat our earlier conclusions with emphasis: It is clear from DECC's data that generous subsidies have overheated the renewable electricity sector, resulting in very significant oversupply relative to the agreed EU targets and the Levy Control Framework. **In fact, even allowing for some attrition of consented sites, if all capacity in the pipeline were refused immediately, the electricity component of the 2020 target would still be exceeded, and could continue to be met by repowering of existing sites.**

Oversupply on this scale is clearly undesirable for investors since government will have little option but to step in to protect consumers from additional cost, either through cuts to subsidies or measures to prevent construction of unnecessary plant.

The oversupply of consented plant also has important implications for decision makers in the planning system considering new projects still be brought forward. We infer that decision makers should now be giving greater weight to negative local impacts and less weight to the achievement of the European Union targets, which are in principle met.

Detailed Analysis and Data

In the National Renewable Energy Action Plan (NREAP) of 2009, DECC estimated that electricity generated from renewable sources would provide about 117 TWh towards a total target of 238.5 TWh, with the balance being made up of renewable transport fuel and heat.[2] DECC has subsequently revised its estimate of the total target magnitude down to an upper limit of 225 TWh (see *Renewable Energy Roadmap* Update 2013). Assuming the same proportional share, of 49%, this would result in an electricity requirement of about 110 TWh.

In assessing whether there is sufficient plant to meet this target, REF used the latest available monthly summary of DECC's Renewable Energy Planning Database (REPD) dated April 2015 (published 15 May 2015), and calculated total capacities in each of the categories, *Operational*, *Under Construction*, *Awaiting Construction*, and *Submitted to the planning system*, for the technologies in the categories in our previous report.

We judged that it is very likely that those awaiting construction will actually be built, with many projects aiming to register under the Renewables Obligation before 2017 when the system closes to new entrants and projects of greater than 5 MW must register under the less generous Feed-in Tariff with Contracts for Difference (FiTs CfDs).

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2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47871/25-nat-ren-energy-action-plan.pdf

Therefore, the capacity potentially already available to meet the 2020 target is the sum of that already operational and that under or awaiting construction, in other words the "consented" capacity.

It is possible to calculate the probable output from this consented capacity by employing technology specific load factors from DECC's own data, as summarized in the table below.

Table 1: Source: Renewable Electricity Generation Capacities, Operational, Under and Awaiting Construction, and Submitted to the planning system, together with estimate outputs. Source: DECC, Renewable Energy Planning Database (REPD) April update published 15 May 2015; *Digest of United Kingdom Energy Statistics (2013)* calculations by REF.[3]

Project Status	Biomass	Hydro	Solar	Tidal	Waste	Wind Offshore	Wind Onshore	Total
Operational (GW)	3.7	0.5	3.8	0	0.8	4.1	8.3	21.2
Under Construction (GW)	0.5	0.01	0.3	-	0.2	1.1	1.3	3.4
Awaiting Construction (GW)	3.2	0.1	2.8	0.1	0.7	12.6	5.2	24.7
Total Consented Capacity (GW)	7.4	0.61	6.9	0.1	1.7	17.8	14.8	49.3
Submitted in the Planning System (GW)	0.3	0.02	1.7	0.3	0.1	5.2	7.1	14.7
Load factor	66%	36%	10%	8%	68%	34%	26%	–
Est. output from consented capacity (TWh)	42.8	1.9	6.0	0.1	10.1	53.0	33.7	147.7
Est. output from capacities in planning (TWh)	1.7	0.1	1.5	0.2	0.6	15.5	16.2	35.8

Notes: a) Load factors derived from DECC, Digest of United Kingdom Energy Statistics (2013), *Table 6.5, use the conservative unchanged configuration data where possible. For the sake of consistency with our previous statement we have not used the 2014 data b) For reasons of concision, Geothermal and Wave data have been removed from the table, though their minor contributions are recorded in the totals.*

It can be seen that the 49 GW of consented capacity would generate 147.7 TWh of electrical energy, which is 34% in excess of the quantity required to meet the 2020 electricity target. It can be noted that in our previous report, in May 2014, there was 35.3 GW of consented capacity with a predicted output of about 111 TWh.

[3] https://www.gov.uk/government/statistics/renewable-energy-planning-database-monthly-extract

Furthermore, DECC's REPD data does not include all renewable generation eligible to meet the target. Namely it omits:

a) Smaller solar photovoltaic and other generation that is constructed as permitted development and does not pass through the planning system

b) Existing large, unsubsidized, hydro.

c) Generation that is below 10 kW, regardless of whether it is visible in the planning system.

We are also aware from planning data obtained from local authorities in some areas, mostly in Scotland, that the REPD under-reports planning applications even in those areas which it endeavours to cover. This is not entirely surprising, since the numbers of applications are large and difficult to track.

Employing data from DECC's *Digest of United Kingdom of Energy Statistics* (2014), Table 6.4 we estimate that there is a further 1.5 GW of hydro generating about 4 TWh that is not recorded in the Renewable Energy Planning Database. Similarly, examination of the Renewables Obligation and Feed-in Tariff records, held by Ofgem, suggests that the operational installed capacity of solar generation is closer to 4 GW, not 3 GW as recorded by REPD. It would appear, then, that the REPD data understates the actual renewable electricity capacity, and the degree of target overshoot predicted here is a conservative estimate.

Furthermore, and crucially, as the table shows, there is a further 14.7 GW of renewable capacity pending in the United Kingdom planning system, down from 18 GW recorded in the 2014 release of this analysis. This is equivalent to a quarter of the currently consented capacity. If we apply the same load factors to this pending capacity as were used to estimate output from the consented generators, we see that it could generate nearly 36 TWh of energy. If all this was consented, which we recognize is unlikely, it would add to the overshoot already probable from consented capacity, and drive the surplus up to around 67%, and adding further to the overshoot of the Levy Control Framework cost limits.

We recognize that Mr Davey, when Secretary of State, believed that only about 70% of consented capacity would actually be built.[4] We doubt that the attrition rate would be as high as Mr Davey assumes but assuming that this figure proves to be correct across the

[4] http://www.ref.org.uk/ref-blog/317-new-ed-davey-letter-confirms-that-onshore-wind-targets-for-2020-are-already-met

board for all technologies, it would reduce the capacity currently awaiting construction from 24.7 GW to 17.3 GW, and the overshoot from 37.7 TWh to 15 TWh, or from 34% to 14%. This is still a very substantial overshoot.

In conclusion, it is obvious that in spite of DECC's attempts to cool the renewables sector, for example through early closure of the Renewables Obligation to solar, the industry continues to bring forward an oversupply of electricity projects for which there is no subsidy budget.

John Constable

Lee Moroney

15 May 2015