Research Note 131 | 6 October 2013

Renewable subsidies after the Energy Bill

Renewable energy – such as wind – is only competitive thanks to generous Government subsidies. Those subsidies are paid for by consumers in higher energy bills.

Ministers have claimed that prices will fall over time thanks to greater economies of scale – as the subsidies expand the industry – and greater certainty for investors – with the introduction of "contracts for difference". But the announcement that high subsidies will continue for the foreseeable future suggests that strategy has failed, despite the transfer of risk from investors to consumers. And the high cost of renewable energy raises serious questions over whether it will be possible to combine the Labour Party commitment to freeze energy prices with the deployment of more expensive capacity.

Key findings of this research:

- Total support for renewable energy through the main subsidy scheme (the Renewables Obligation and/or contracts for difference) will rise from around £2 billion in 2012-13 to over £5 billion in 2018-19 as more capacity is added to the network.
- Onshore wind will receive a guaranteed electricity price double the typical wholesale electricity price. Offshore wind will receive triple the typical wholesale price.
- The Government appears likely to miss a critical target to reduce the cost of renewable energy. The target to reduce the cost of offshore wind to £100 /MWh by 2020 – will almost certainly be broken as offshore wind will still receive £135 /MWh in 2018-19, falling from £155 /MWh next year (in 2012 prices). Despite that, the Committee on Climate Change (CCC) has warned that the proposed level of subsidy means that "required investment is at risk".
- But the Renewables Obligation and contracts for difference are not the only policies that encourage the deployment of renewable energy. Onshore wind will receive around £45 /MWh in net subsidy and offshore wind around £100 /MWh in net subsidy in 2014-15, relative to gas. That net subsidy includes contracts for difference, the Climate Change Levy and the carbon price.

Increasing the use of renewable energy when it requires such a generous level of subsidy will create significant costs for consumers. It would be better to focus on supporting research aimed at reducing the cost of renewable energy before deploying it at scale, rather than deploying it now while the cost is so high that major emitters will not follow Britain's example.

Contracts for difference

Contracts for difference will be the main subsidy for renewable energy from next year. Under contracts for difference, investors will be compensated if wholesale electricity prices fall below a price set by the government, known as the "strike price". The Government recently announced the strike prices for different sources of renewable energy from 2014-15 to 2018-19.[1]

	Draft strike prices, £ /MWh, 2012 prices				
	2014-15	2015-16	2016-17	2017-18	2018-19
Advanced Conversion Technologies (with or without CHP)	155	155	150	140	135
Anaerobic Digestion (with or without CHP)	145	145	145	140	135
Biomass Conversion	105	105	105	105	105
Dedicated Biomass (with CHP)	120	120	120	120	120
Energy from Waste (with CHP)	90	90	90	90	90
Geothermal (with or without CHP)	125	120	120	120	120
Hydro*	95	95	95	95	95
Landfill Gas	65	65	65	65	65
Offshore Wind	155	155	150	140	135
Onshore Wind	100	100	100	95	95
Sewage Gas	85	85	85	85	85
Large Solar Photo-Voltaic	125	125	120	115	110
Tidal Stream*	305	305	305	305	305
Wave*	305	305	305	305	305

For those sources marked with a * the subsidy is only for smaller projects, larger projects will be negotiated on a case-by-case basis.

In 2014-15 the strike prices will be much higher than the typical wholesale electricity price of around £50 /MWh:

- **£100 /MWh for onshore wind – double the typical wholesale price**
- **£155 /MWh for offshore wind – more than triple the wholesale price**

The level of support is very similar to that provided under the existing Renewables Obligation. Under that scheme, generators receive a Renewables Obligation certificate – worth around £45 – for each megawatt hour of onshore wind and two – worth around £90 – for each megawatt hour of offshore wind.

[1] The details are available here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209361/Levy_Control_Framework_and_Draft_CfD_Strike_Prices.pdf

The similarity between the level of subsidy under the old Renewables Obligation regime and the new contracts for difference suggests two conclusions:

- **Renewable energy subsidies have failed to deliver reductions in cost.** Government policy was supposed to reduce costs by creating economies of scale and driving technological innovation but renewable energy still requires very similar levels of subsidy despite years of subsidy. Offshore wind, in particular, does not appear to be on course to meet the Government target that it should cost £100 /MWh by 2020. It will receive a strike price of £135 /MWh (in 2012 prices) in 2018-19.

- **The Energy Bill has failed.** The greater certainty provided by contracts for difference was supposed to reduce the cost of renewable energy. But despite the transfer of energy price risk from investors to the public, the Government has still felt it necessary to offer a similar level of subsidy with only modest reductions in future years.

Total subsidies

The total subsidy under the Renewables Obligation can be calculated by multiplying the buy-out price – which was £40.71 in 2012-13 – by the size of the obligation – 48,915,432 ROCs in 2012-13. By that method, the total subsidy in 2012-13 was just under £2 billion.

That total subsidy is likely to rise considerably. The CCC expects that renewable energy generation will rise considerably between now and 2018-19.

Generation, TWh	2012-13	2018-19
Onshore wind	13.4	30.5
Offshore wind	8.7	29.8
Biomass (solid)	6.7	15.5
Marine	-	12.6

The estimates of total subsidy each year below are based on the CCC estimates for generation by technology and the strike prices listed above and assume the same level of subsidy /MWh in 2013-14 as 2014-15 and a wholesale electricity price of £65 /MWh. They should give a good approximate estimate of the total subsidies in each year and over the period.

Year	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Subsidy, £ billion	1.99	2.35	2.69	3.12	3.91	4.59	5.32

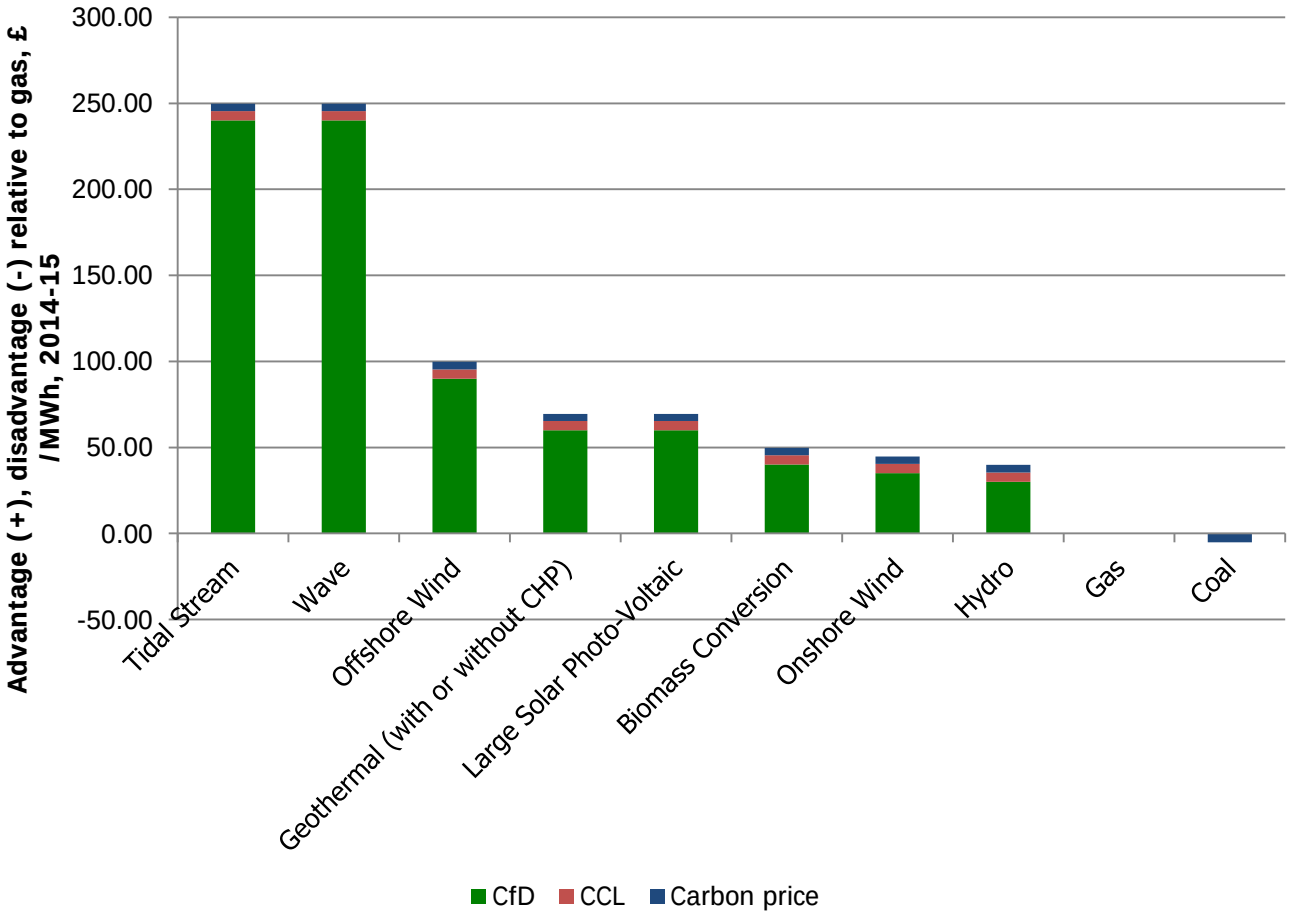
Other support

There are a range of other Government policies that support the development of renewable energy instead of conventional energy. Other than contracts for difference, the most important are likely to be the Climate Change Levy and the European Union Emissions Trading System now strengthened with the carbon price floor (implemented through an adjustment to the Climate Change Levy).

Renewable energy will enjoy a significant subsidy relative to conventional coal and gas power in 2014-15.

	Advantage (+), disadvantage (-) relative to gas, £ /MWh			
	CfD	CCL	Carbon price	Total
Tidal Stream	240.00	5.41	4.40	249.81
Wave	240.00	5.41	4.40	249.81
Offshore Wind	90.00	5.41	4.36	99.77
Geothermal (with or without CHP)	60.00	5.41	4.05	69.46
Large Solar Photo-Voltaic	60.00	5.41	4.04	69.45
Biomass Conversion	40.00	5.41	4.31	49.72
Onshore Wind	35.00	5.41	4.36	44.77
Hydro	30.00	5.41	4.44	39.85
Gas	0.00	0.00	0.00	0.00
Coal	0.00	0.00	-5.08	-5.08

That analysis assumes that conventional gas generation costs around £65 /MWh (higher than the current wholesale electricity price) and the carbon price is £9.55 /t CO_2. Other policies often considered as subsidies – like the reduced rate of VAT for domestic heat and power – are ignored as they do not give an advantage to one source of energy over another.


Advantage (+), disadvantage (-) relative to gas, £ /MWh, 2014-15
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
Tidal Stream
Wave
Offshore Wind
Geothermal (with or without CHP)
Large Solar Photo-Voltaic
Biomass Conversion
Onshore Wind
Hydro
Gas
Coal
CfD
CCL
Carbon price