2012

PUBLIC FUNDING FOR GREEN ENERGY IN A CONTEXT OF CRISIS

Country report (United Kingdom)

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Table of contents

1. Introduction **3**

2. Renewable energy deployment **4**
2.1. General energy data **4**
2.2. Renewable electricity, heat and transport **6**
2.3. Power capacity, production and technologies **6**

3. Renewable energy sector **7**
3.1. Economic aspects **7**
3.2. Employment aspects **8**
3.3. Environmental and other aspects **8**

4. Overview of energy support instruments **12**
4.1. Types of support schemes **12**
4.2. Overall effectiveness evaluation **15**
4.3. Cost of meeting the targets **15**

5. The economic crisis in financing renewable energy **16**
5.1. Economic situation **16**
5.2. Changes in support schemes **16**
5.2.1. Electricity market reform (EMR) 16
5.2.2. Renewables Obligation post-2009: New Bandings 19
5.2.3. Feed-in Tariffs 20
5.2.4. Renewable Heat Incentive 20
5.2.5. Green Investment Bank 21
5.2.6. Climate Change Levy 21
5.2.7. Low Carbon Building Programme 21

5.3. The future of the RE sector by 2020 ..... **22**

6. Social debate about renewable energies **24**

7. Conclusions and key messages **29**

Annex **31**

Bibliography **33**

1. Introduction

The UK starts from a low base when it comes to renewable energy. When the Conservative government came to power in 2010 Prime Minister David Cameron announced that this would be the greenest government ever – however a recent poll showed that just 2% of the population now believe this to be true. However analysis by consultants PriceWaterhouse Coopers says offshore wind plays a make or break role in the UK's ability to hit its energy targets and time is running out very quickly on the country's ability to achieve them.[1]

The 2009 Renewable Energy Directive sets a target for the UK to achieve 15% of its energy consumption from renewable sources by 2020. This target reflects the UK's low starting point– compared to Sweden which has a target of 49%. However, even with the lower target the UK rate of growth in the renewable sector is still seen by many in the green sector as too slow to meet this target. The UK Government assured the EU in its Renewable Energy Strategy last year that it envisaged 30% of electricity to come from renewable sources by 2020 - the vast majority being on- and offshore wind.

Areport by Renewable Energy Association (REA) predicts that the UK is set to miss its renewable energy targets resulting in billions of pounds being added to energy bills as the country relies increasingly on imported gas.[2] The green sector has also had to deal with mixed messages coming from government with recent rows over energy policy casting doubt on the government's commitment and putting off investors. For example, over 100 Conservative MPs called on the prime minister to cut subsidies for onshore wind power, alarming the renewables industry. There has been open hostility between the Department of Energy and Climate Change and the Treasury – with the chancellor George Osborne describing green initiatives as putting the UK out of business and talking about the burden on businesses of endless social and environmental goals.

However, in November 2012, the government published the long-awaited Energy Bill, which sets out major reform for the electricity market. It is hoped that the measures contained in the Bill will create the £110 billion that is needed to transfer from the UK's dependency on fossil fuel for energy to using a wider mix of energy sources such as wind and biomass.

The Bill has been fraught with controversy and has led to months of political wrangling. This has been a difficult time to encourage investment in the renewables sector with so much uncertainty. While some aspects of the Bill, such as a bigger budget for renewables, have been widely welcomed by the renewables sector there are key elements such as the failure to set a carbon cap for 2030 that are seen as negative for investor confidence.

[1] PwC: Meeting the 2020 renewable energy targets: Filling the offshore wind financing gap July 2010: www.pwc.co.uk/sustainability-climate-change/publications/meeting-the-2020-renewable-energy-targets.jhtml

[2] Renewable Energy Association, Renewable Energy: Made in Britain..April 2012

2. Renewable energy deployment

2.1. General energy data

In 2011, 3.8% of final energy consumption was from renewable sources – up from 3.2% in 2010. Energy from renewable sources represented 4.1% of the UK's total primary energy demand – up from 3.3% the previous year – this is slightly higher as thermal renewables are measured including the energy that is lost in transformation.[3]

Renewables were behind 9.4% of the **electricity** generated in the United Kingdom in 2011, a 2.6 % point increase on 2010. Focusing on electricity only, renewables in 2011 amounted to 34,410 GWh, an increase of 8,565 GWh (33%) on 2010.[4]

Wind continued to be the leading technology for the generation of electricity from renewable sources during 2011 accounting for 45% of renewables generation. Hydro power provided a further 17%. However the combined generation from different bioenergy sources accounted for 38% of renewable generation, with landfill gas alone making up almost two-fifths of the bioenergy generation. [5]

Nearly half (46%) of final energy consumed in the UK is used for heat. The main other uses of energy are split between energy for transport (41%), and energy to provide electricity for lighting and appliances (8%).[6]

Final consumption by sector

Final energy consumption by sector (energy supplied basis).

UK million tonnes of oil equivalent

	Industry	Transport	Domestic	Other(a)	Total
2011	25.7	54.7	39.4	17.6	**137.5(a)**

(a) Mainly agriculture, public administration and commerce[7]

Energy intensity

Analysis of energy intensity since the current economic crisis shows that both primary and final energy consumption are at a similar level in 2010 as thirty years earlier in 1980 although GDP has doubled in the period – this means that energy intensity (energy per unit of GDP) has halved.[8]

Energy intensity by sector 2011 [9]

[3] Department of Energy and Climate Change (DECC): Renewable Energy in 2011. www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/articles/5629-renewable-energy-2011-et-article.pdf

[4] DECC: Renewable Energy in 2011

[5] DECC, Digest of United Kingdom Energy Statistics, July 2012

[6] DECC The Future of Heating March 2012 http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/heat/4805-future-heating-strategic-framework.pdf

[7] DECC, Digest of UK Energy Statistics, table 1.1.5; Energy Trends, table ET 1.3

[8] DECC. Energy Efficiency Deployment Office: Evidence Brief. February 2012 www.decc.gov.uk/assets/decc/11/consultation/4287-energy-efficiency-deployment-office-evidence-brief.pdf

[9] DECC: Energy Consumption in the UK 2012 update www.decc.gov.uk/assets/decc/Statistics/publications/ecuk/266-ecuk-overall-2010.xls Sources: Department of Energy and Climate Change - secondary analysis of data from the Digest of UK Energy Statistics, Office of National Statistics and the Department for Transport

	Transport	Domestic	Industrial	Service	Energy Ratio
2011	94.1	80.4	70.3	51.4	60

Transport energy use per passenger kilometre and per tonne of freight.
Domestic energy consumption per household.
Industrial energy consumption per unit output.
Service sector energy consumption per £1 million of Gross Value Added (2009 prices).
Energy ratio: Total inland consumption of primary energy per £1 million Gross Domestic Product. Index: 1990 Energy Ratio = 100 (243 tonnes of oil equivalent per £1 million GDP). 2011 = 60 (145.8 toe).Total inland consumption of primary energy per £1 million Gross Domestic Product

Imports/Exports

In 2011, the UK imported more energy than it produces, the first time this has happened since 1974.[10]. In 2011, 36.5% of energy used in the UK was imported.

The UK imported more coal, manufactured fuels, crude oil, electricity and gas than it exported; however the UK remained a net exporter of petroleum products.

According to the Renewable Energy Association (REA), renewables generate a turnover of about £12.5 billion a year, with exports worth about £1.6 billion last year.[11]

Grid interconnection with Europe

Great Britain currently has three operational cable interconnectors with Ireland, France and the Netherlands. The French and Dutch interconnectors predominantly flow electricity to the UK.[12]

Future projects include grid interconnection with Belgium and Norway and increasing capacity with France and Ireland.[13] National Grid has also announced plans to work with Denmark's Energinet.dk and a study has been launched to look at building the first electricity connection between the two countries.[14]

There is also a campaign for a European supergrid seen as key to meeting the 2020 targets. At the moment the government has to pay some generators to switch off because there are not enough wires to deliver electricity from where it is produced to where it is needed.[15]

[10] DECC, Digest of United Kingdom Energy Statistics, July 2012
[11] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012
[12] The Guardian http://www.guardian.co.uk/environment/2011/apr/11/uk-netherlands-power-cable-britned
[13] NCE, http://www.nce.co.uk/news/energy/power-connection-between-britain-and-denmark-to-be-studied/8629751.article
[14] National Grid press release April 2012.
[15] Renewable Energy Focus.com "European supergrid would be beneficial for UK grid" September 2011

2.2. Renewable electricity, heat and transport

Electricity

Between 2010 and 2011 there was an increase of 23% in the input of renewable sources into electricity generation. Hydro grew by 56%, with combined on and off-shore wind increasing by 52%, and bioenergy sources increased by 13%.

Heat

Around 14% of renewable sources were used to generate heat in 2011. Domestic use of wood is the main source for renewables used for heat – making up over a third (35%) of the renewable heat total.

Transport

During 2011, biodiesel accounted for 3.6% of diesel, and bioethanol 3.3% of motor spirit. The combined contribution of liquid biofuels for transport was 3.5%. In 2011, 13% of the renewable sources used in the UK in primary input terms were liquid biofuels for transport.[16]

2.3. Power capacity, production and technologies

The government report that the largest contribution to renewables and waste energy in input terms (around three quarters) is from bioenergy, with wind generation and large-scale hydro electricity production making up the rest. Less than 3% of renewable energy comes from renewable sources other than biomass, wind and large-scale hydro. These include solar, small-scale hydro, heat pumps, and geothermal aquifers.[17]

Just under three quarters (73%) of the 8,674 ktoe of renewable energy (excluding nonbiodegradable wastes) produced in 2011 was transformed into electricity. While bioenergy is the principal technology in terms of fuel inputs, hydro electricity and wind power together provide more in terms output.[18]

See table 1 in Annex for capacity of, and electricity generated from, renewable sources.

[16] DECC, Digest of United Kingdom Energy Statistics (DUKES) National Renewable Statistics 2012, July 2012

[17] DECC, Renewable Energy in 2011 www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/articles/5629-renewable-energy-2011-et-article.pdf

[18] DECC, Renewable Energy in 2011 www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/articles/5629-renewable-energy-2011-et-article.pdf

3. Renewable energy sector

3.1. Economic aspects

According to a report by the Renewable Energy Association (REA) the total UK turnover for all renewables and their supply chains in 2010/2011 was just over £12.5 billion. Its calculations show renewables generated exports of just under £1.6 billion in 2010/11, with wind technologies the biggest contributor. On average, exports represent approximately 13% by value of the UK renewable energy sector's turnover. It also reported that overall there were a total of around 6,500 companies working in renewable energy and its supply chains across the UK in 2010/11.[19]

Analysis of the green economy as a whole continues to show positive results. A report by Green Alliance shows that the UK exported low carbon and environmental goods and services to 52 countries in 2010-11, totalling £11.8 billion.[20]

Meanwhile a report by the UK's biggest employers' group the CBI estimates that the green economy is worth £122 billion a year, 8% of GDP, and grew at 4.7% in 2011.CBI analysis suggests that green business may have accounted for over a third of all UK growth in 2011/12.[21]

For details on number of companies by technology and export value of each technology see table 2 in Annex.

Electricity prices

A report published in November 2011 by the Department of Energy and Climate Change (DECC) found that household electricity prices increased by 16% in 2011, with gas prices rising by 25% over the same year. DECC attribute these increases mainly to rising wholesale costs, adding that UK wholesale gas prices rose by almost 40% in 2011. DECC also notes that energy and climate change policies, which make up around 7% of a household energy bill, do not account for the energy that these policies help people save.

DECC's analysis suggests that by 2020 an average household bill will have increased from £1,249 in 2011 to £1,285 – however, it suggests that these bills would have risen to £1,379 without energy and climate change policies, and so these policies will have a net impact of reducing bills by 7%, saving the average household £94. These policies include those which fund renewable energy as well as energy efficiency policies. The report concludes that international gas prices, and not energy and climate change policies, are behind recent energy bill price increases, and that this upward trend would continue over time with or without policies.[22]

[19] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012
[20] Green Alliance: Green economy: a UK success story August 2012
[21] CBI: The Colour of Growth: Maximising the Potential of Green Business July 2012
[22] DECC (2011) 'Estimated impacts of energy and climate change policies on energy bills'.

3.2. Employment aspects

The REA report estimates that in 2012 there are 110,000 people employed in the UK renewable energy sector– up from just over 99,000 in the 2010/11 financial year (see table) in part because of the recent national boom in solar power. The report believes there is the potential for a total of 400,000 jobs if the 2020 renewable energy targets are met. The data includes employment in firms either partly involved or for which servicing the renewables supply chain forms over 20% of their business.[23]

Offshore/onshore wind power and its supply chain is the single biggest employer with 31,400 people working in this sector. Towards the end of 2011, it is thought that solar power employed around 25,000 people. All bio-energy technologies combined employ nearly as many as wind at 31,200.

Renewable Energy Employment (2010/11)

Technology	Jobs
Wind	31,400
Solar PV	15,650
Solar thermal	7,550
Waste to energy	6,000
AD	2,650
Solid biomass fuels	8,950
Biomass boilers	4,530
Biomass CHP	2,190
Biomass power	3,350
Biofuels	3,500
Heat pumps	7,300
Wave and tidal	800
Hydro	4,950
Deep geo	200
Total	**99,020**

Data supplied by the Renewable Energy Association. [24]

3.3. Environmental and other aspects

According to the DECC, carbon dioxide (CO2) made up 84% of total UK greenhouse gas emissions in 2010, the latest year for which final results are available. In 2011, UK net emissions of carbon dioxide were estimated to be 456.3 million tonnes (Mt). This was 8.0 % lower than the 2010 figure of 495.8 Mt.

In 2011, an estimated 40% of carbon dioxide emissions were from the energy supply sector, 26% from transport, and 15% from each of the business and residential sectors.

Between 2010 and 2011, provisional estimates indicate that CO2 emissions decreased in the residential sector by 22% (19 Mt), 6% (12 Mt) from the energy supply sector, 8% (6 Mt) from the business sector, and 1% (2 Mt) in the transport sector.[25]

However while the Committee on Climate Change has welcomed the drop in greenhouse gas its research shows that 3 percentage points of this fall were due to the

[23] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012
[24] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012
[25] DECC Statistical release March 2012 www.decc.gov.uk/assets/decc/11/stats/climate-change/4817-2011-uk-greenhouse-gas-emissions-provisional-figur.pdf

mild winter temperatures in 2011, while the rest was down to rising energy prices, falling real income and transitory changes in the power generation mix. Only around 0.8 percentage points of the drop in greenhouse gas emissions was due to specific measures aimed at reducing emissions.[26]

Positively data shows that renewables have contributed to a reduction in power sector emissions. These emissions account for around 27% of UK greenhouse gas emissions and provisional data for 2011 suggests power emissions fell by 7% from 156 MtCO2 in 2010 to 146 MtCO2.

This is attributable to reductions in demand and carbon intensity of generation. Carbon intensity fell by 2%, from 496 gCO2 /kWh in 2010 to 486 gCO2 /kWh in 2011 due to an increased share of renewables and nuclear generation in the mix. There was a 31% (8 TWh) increase in renewable generation, due to favourable weather conditions for wind and hydro as well as an increase in capacity (2.9 GW).[27]

Energy self-sufficiency

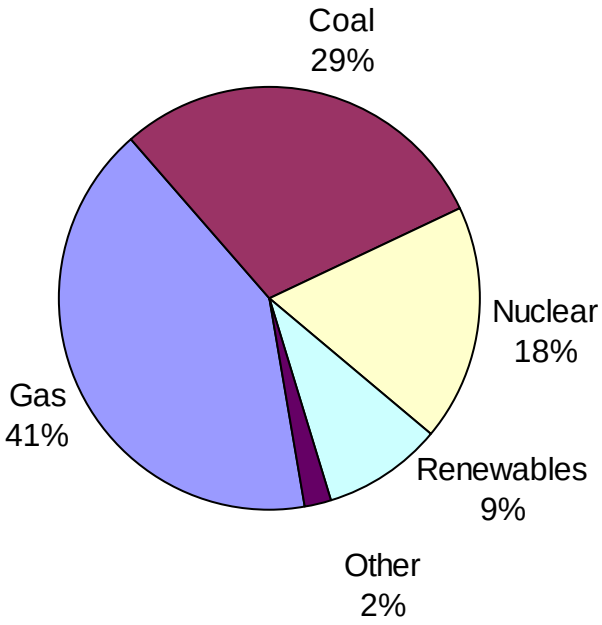
There was a 2.7% decrease in the **total supply of electricity** in the UK in 2011, to 374.0 TWh, the lowest level since 1997. The DECC reports that indigenous electricity supply fell by 2.7% and net imports of electricity more than doubled, to 6.2 TWh as imports rose and exports fell. [28]

Over a third (36%) of energy used in the UK is imported. The UK has been a net importer of fuel since 2004. The UK imported more coal, manufactured fuels, crude oil, electricity and gas than it exported; however the UK remained a net exporter of petroleum products. [29]

Meanwhile, UK primary energy consumption in 2011 on a temperature adjusted basis,was down nearly 2% - consumption has been dropping over the previous six years. High gas prices made it less attractive for **electricity generation** in 2011 and its share of electricity fell by six percentage points: Gas accounted for 41% of electricity supplied in 2011 whereas renewables has increased to 9%.[30]

[26] Committee on Climate Change, Meeting Carbon Budgets – 2012 Progress Report to Parliament, June 2012
[27] , Meeting Carbon Budgets – 2012 Progress Report to Parliament, June 2012
[28] DECC Digest of UK energy statistics July 2012
[29] DECC, Digest of United Kingdom Energy Statistics July 2012
[30] DECC, Digest of United Kingdom Energy Statistics (DUKES) National Renewable Statistics 2012, July 2012

Electricity supply by fuel 2011



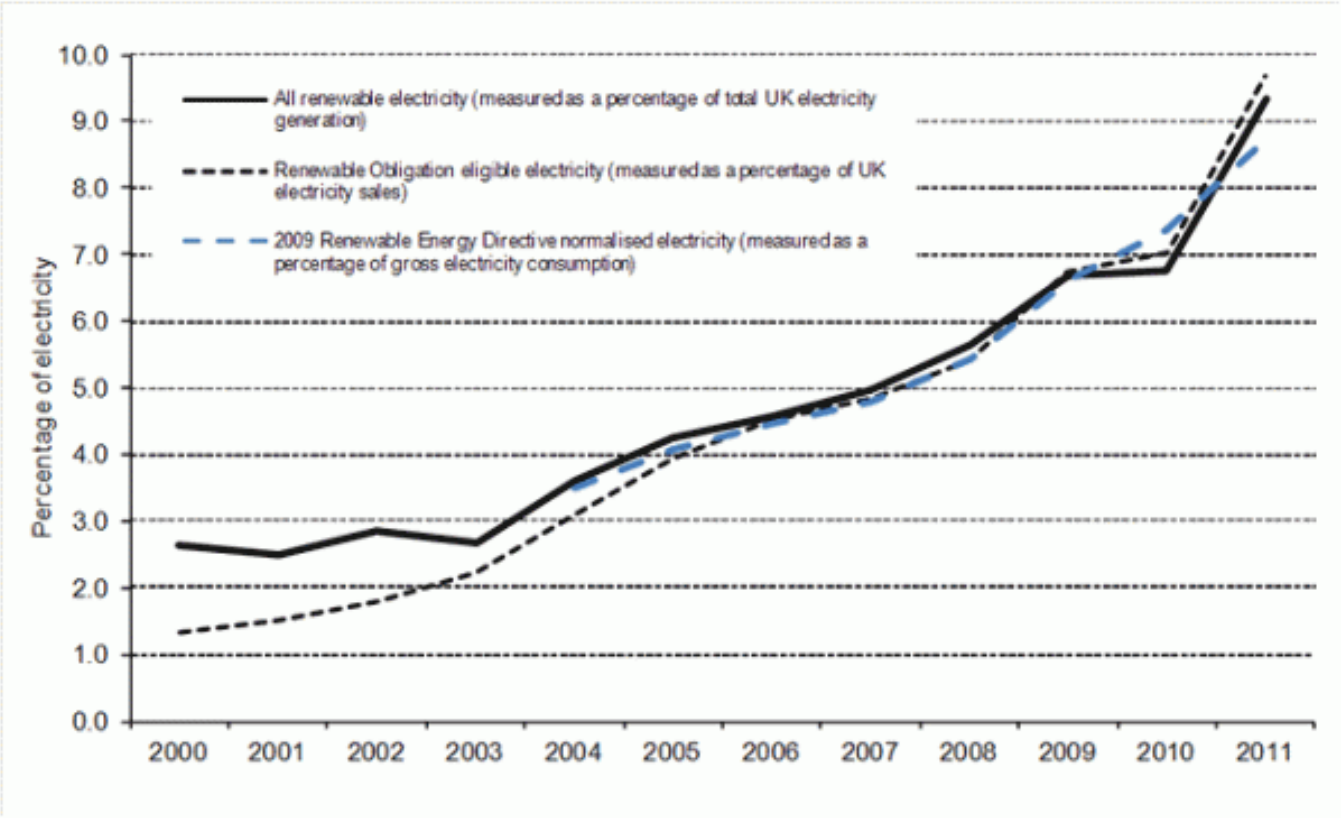
Source: DECC Digest of UK Energy Statistics 2012

The use of renewable energy to produce electricity has grown year on year in the UK. Growth is down to an increase in wind energy capacity, such as offshore wind farms. Since 2000, the main contributors to the increase in electricity generated from renewables have been wind (+29 % a year on average), small scale hydro schemes (+11 % a year), landfill gas (+8 % a year), municipal solid waste (+7 % a year), and sewage sludge digestion (+7 % a year).[31]

Between 1990 and 1996 the volume of renewables used to generate electricity grew at just over 6% a year rising by over 14% over the subsequent seven years. Between 2003 and 2010 it averaged at 12% a year.[32]

[31] DECC Digest of UK energy statistics 2012
[32] DECC Digest of UK energy statistics 2012

Growth in Electricity Generation (percentage) from Renewables since 2000



Source: DECC Digest of UK energy statistics 2012

Percentages of energy derived from renewable sources:

	2007	2008	2009	2010	2011
Eligible renewable energy sources as a percentage of capped gross final energy consumption (ie the basis for the Renewable Energy Directive)	1.8	2.4	3	3.2	3.8
Renewable energy as a percentage of primary energy demand	2.2	2.6	3.1	3.3	4.1

Source: DECC Digest of UK energy statistics 2012

4. Overview of energy support instruments

In the UK energy and climate change policies are funded through levies and general taxation. Levy-funded policies (such as the renewables obligation (RO), feed-in tariffs (FiTs) place the obligation of funding onto the energy companies, who then pass on the cost to the consumer through the energy bills.

4.1. Types of support schemes

4.1.1. Renewable Obligation (RO)

RO is a regulatory scheme for encouraging the generation of renewable electricity from various low-carbon electricity technologies. It is primarily aimed at electricity suppliers and encourages them to use an annually increasing proportion of electricity from renewable sources. If they do not comply they pay a penalty. The aim is to increase renewable generating capacity.

The scheme was launched in 2002 and will remain open to new projects until March 2017 with financial support provided for up to 20 years (2037). The proportion of electricity coming from renewables is measured against total electricity sales. Examples of RO eligible sources include wind energy, wave and tidal energy, landfill gas, sewage gas, geothermal, hydro, photovoltaics, energy from waste, biomass, energy crops and anaerobic digestion. The regulator Ofgem which administers the RO, issues Renewables Obligation Certificates (ROCs) to qualifying renewable generators. These certificates may be sold by generators directly to licensed electricity suppliers or traders [33].

Evaluation

According to government analysis, since the RO's introduction in 2002, it has succeeded in supporting the deployment of increasing amounts of renewables generation from 3.1GW in 2002 to 13GW in the first quarter of 2012. It also says that RO has increased the level of renewable electricity in the UK from 1.8% in 2002 to 9.4% in 2011. It is currently worth around £2 billion a year in support to the renewable electricity industry.[34]

Another government commissioned report carried out by AEA environmental consultants in 2010[35] found that for **onshore wind** the introduction of the Renewables Obligation had drawn in more investors than the Non-Fossil Fuel Obligation scheme it replaced and accordingly the rate of installation of new wind farms has increased since its introduction. The report said that for this technology the combination of the RO and FiTs has proved to be effective in the medium term.

[33] DECC: Digest of UK energy statistic 2012
[34] DECC, www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/renew_obs/renew_obs.aspx
[35] AEA for DECC , Analysis of Renewables Growth to 2020. March 2010 www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2185-analysis-of-renewables-growth-to-2020-aea-report.pdf

4.1.2. Feed in Tariffs (FiTs)

FiTs is a support scheme to encourage the generation of low-carbon electricity from smaller scale technologies. It is primarily designed for households, communities and small businesses investing in projects up to 5MW. The idea is that it will help increase the investment in small-scale renewable electricity through financial incentives for each kWh generated. It was introduced in April 2010. New entrants are able to benefit from the scheme for 10-25 years, depending on the technology. The technologies currently covered by the FiTs are: solar photovoltaics (PV), hydro, anaerobic digestion (AD), wind and domestic scale microCHP.

The small generators receive a certificate once their installation has been carried out and they then have to apply to an energy company to claim the Feed-in Tariff.

Evaluation

According to data released by Ofgem a total of 248,010 renewable installations have been registered under the FiTs scheme since 1 April 2010. 1,090.683MW of Total Installed Capacity has been registered under FiTs since 1 April 2010. A total of £46,869,264.23 in FiT payments was due to generators in the quarter January to March 2012.

The vast majority of new installations are photovoltaic, accounting for 99% (99,629) of all installations registered between 1 January and 31 March 2012. In the last quarter (up to 31 March 2012) 26 new hydro and 330 wind installations were also registered. [36]

Cost of deployment

The Office of National Statistics (ONS) has classified the cost of the RO support scheme as a tax and the money that is spent on the renewable energy generation as public expenditure. In 2011/12 the budget for the RO support scheme was £1,750 million and FiTs was £94 million.[37]

4.1.3. Renewable Heat Incentive (RHI)

The Renewable Heat Incentive (RHI) is the main support scheme for encouraging take-up of renewable heat at all scales.

The scheme is expected to stay open to new applications until at least 2020. Once in the scheme, support lasts for 20 years.

The RHI is a tariff scheme similar to the FiTs, payable to energy users generating their own renewable heat. The energy user receives a premium rate for every unit of heating that is generated by their heating system.

The first phase of the scheme is for the non-domestic sectors and the big heat users in the industrial, business and public sector. It opened for applications in November 2011 and covers a range of technologies such as air source heat pumps, biomass boilers, solar thermal, and ground and water source heat pumps.

The second phase of the RHI scheme should include more technologies and include the domestic sector.

The domestic sector currently has access to the **Renewable Heat Premium Payment (RHPP)**. The RHPP was launched because of delays in implementing the Renewable Heat Incentive (RHI) for domestic customers. It provides cash-back vouchers towards

[36] Ofgem Feed-in Tariff update June 2012 www.ofgem.gov.uk/Sustainability/Environment/fits/Newsletter/Documents1/Feed-in%20Tariff%20Update%20Newsletter%20Issue%208.pdf

[37] Ofgem's response to the ICER Renewable Supply and Affordability Project May 2012

the cost of adopting technologies such as Ground Source Heat Pumps and Air Source Heat Pumps. It is available for installations carried out between 21st July 2011 and March 31st 2013.

It will be superseded by the domestic RHI which is aimed at householders who want to replace their current heating with renewable heating or householders who have installed any such technology since 15 July 2009.

Expenditure

£860 million has been made available from central government funding to support the RHI over the period 2011-2015.[38]

4.1.4. Low Carbon Building Programme

The Low Carbon Buildings Programme was a £137 million grants programme for the funding and installation of domestic and non-domestic (in the not-for-profit sector) microgeneration technology. It ran from spring 2006 and closed to new applications in May 2010.[39] It gave grants for the installation of small-scale, onsite energy technologies such as solar panels and wind turbines to householders, public, community and not-for-profit sectors.

Evaluation

The scheme was widely seen as underfunded and frequently left eligible applicants unable to access grants. Funding for domestic schemes was well below demand. The government had to allocate the £12.5million for households in monthly segments to avoid it all being used up immediately: In March 2007 demand was so high that funds ran out in just over an hour.[40] When the scheme was closed it led to a funding gap before applicants could access the RHI scheme.

The 2010 AEA government commissioned report said the Low Carbon Buildings Programme (LCBP) was effective as in 2008 this grant secured a larger than ten–fold increase in PV capacity.[41]

[38] DECC (2011) 'RHI Scheme: Frequently Asked Questions'
[39] DECC Low Carbons Building Programme Final Report http://www.decc.gov.uk/en/content/cms/funding/funding_ops/innovation/historic/buildings_prog/buildings_prog.aspx
[40] The Guardian, http://www.guardian.co.uk/environment/2007/mar/02/energy.money
[41] AEA for DECC, Analysis of Renewables Growth to 2020. March 2010

4.1.5. Renewable Transport Fuel Obligation (RTFO)

This is an ongoing regulatory scheme launched in April 2008 to encourage fuel suppliers to up the percentage of renewable fuel in road fuel.

The Obligation places a legal requirement on road transport fuel suppliers to ensure that 5% of their overall fuel sales are from a renewable source by 2013/14.[42]

4.1.6. Climate Change Levy: Renewables Exemption

On 1 April 2001, the Government introduced the Climate Change Levy (CCL). It is a charge on non-domestic supply of electricity in the United Kingdom but there is an exemption from this levy for renewable electricity and in 2003 this was extended to electricity produced from good quality CHP[43]. This is done through Renewables Levy Exemption Certificates (Renewables LECs) awarded to generating stations, for each Megawatt hour (MWh) of renewable electricity generated.[44]

4.2. Overall effectiveness evaluation

The AEA government commissioned report from 2010 said the UK should narrowly meet its 2020 target but only if it stays committed to all its energy support instruments: "the initial indication is that the target is achievable on the basis of the current strategy so long as all of the available opportunities are progressed." [45]

The AEA report 'Analysis of Renewables Growth to 2020' states that meeting the 2020 targets depends heavily on the key technologies of onshore wind, biomass heat and power and especially offshore wind plus a number of technologies making smaller contributions. The report does however warn that investment returns must be sufficient to attract developers and consumers, as the markets will not react in sufficient volume without that. It also advised that there is a need across the board to strengthen renewable energy supply chains, as the UK starts from a low base.[46]

4.3. Cost of meeting the targets

The Made in Britain report by the REA highlights how the predicted costs of promoting RE deployment have altered due to the new economic circumstances. It explains that when the UK's Renewable Energy Strategy was published in 2009[47], the government estimated that meeting the 2020 targets would cost, to 2030, a cumulative £60 billion more than the cost of conventional energy. [48] The REA points out that this estimate was based on DECC's "central scenario" fossil fuel price projections for 2020. However, due to the recent dramatic rises in energy prices, the DECC's 'High' fossil prices scenario in 2020 is now most likely. This reduces the additional cost of renewables by a factor of four from £60 billion to £16 billion, i.e. around 12 per person per year.[49]

[42] Ofgem's response to the ICER Renewable Supply and Affordability Project May 2012
[43] Good Quality refers to CHP generation that is highly efficient in operation, meeting the standards set down in the EU CHP Cogeneration Directive
[44] www.ofgem.gov.uk
[45] AEA for DECC Analysis of Renewables Growth to 2020. March 2010.
[46] AEA for DECC Analysis of Renewables Growth to 2020. March 2010.
[47] HM Government, The UK Renewable Energy Strategy, July 2009.
[48] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012.
[49] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012.

5. The economic crisis in financing renewable energy

5.1. Economic situation

According to the European Economic Forecast, economic growth in the UK was weak and uneven in 2011, with GDP growth of 0.7% for the year as a whole.[50]Investment across the economy which had been expected to contribute positively to growth, actually fell by 0.6% in the final quarter of 2011 and by 1.2% over the year.

Data from the Office for National Statistics (ONS) [51] shows that unemployment finally rose in the second half of 2011 after public sector employment fell by more than 4% in 2011. The latest figures from the ONS show that the unemployment rate was 8.1 % of the economically active population, down 0.1 on the quarter.

In 2010 and 2011 overall final energy consumption in the UK was at its lowest level since 1984. The decrease between 2010 and 2011 was mainly driven by the 18% reduction in gas consumption, resulting from a milder winter in 2011.[52]

5.2. Changes in support schemes

The government continues to express its commitment to meeting the 15% target on renewables but it is clear that limiting cost has influenced policy decisions. However, it is worth noting that projects that have already secured funding are not affected by the changes outlined below.

5.2.1. Electricity market reform (EMR)

An overview

In November 2012 the government published the energy bill for electricity reform that it hopes will generate in the region of £110 billion that is needed to create a clean energy infrastructure by 2020: This would be double the current rate of investment.

The Electricity Market Reform (EMR) will apply to all installations above 5MW and so the Renewables Obligation (RO) will be phased out.

There is broad agreement that reform is needed: Over the next decade, around a fifth of existing power generating capacity will come off-line. The government states that EMR is being introduced in order to ensure fair competition in the energy market that is currently dominated by the dominance of the Big Six energy companies and also to set the long-term framework to reduce the UK's dependence on fossil fuels.

In the lead-up to the Bill being published there has been much uncertainty in the energy market about how the EMR would function - this was profoundly disturbing for the renewables sector.
The Bill was published after lengthy negotiations in the Coalition government. The junior partners, the Liberal Democrats, have had to abandon having a 2030 carbon

[50] European Economic Forecast, Spring 2012 United Kingdom
[51] Office for National Statistics ,Labour Market Statistics, September 2012
[52] DECC, Energy consumption in the United Kingdom, July 2012 http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-consumption/2324-overall-energy-consumption-in-the-uk-since-1970.pdf

target in this parliament, while the Conservatives have accepted a three-fold increase to the green budget by relaxing the Levy Control Framework.

EMR measures include:

- Replacing the Renewables Obligation (RO) with Feed-In Tariffs with a Contracts for difference (Fit-CfDs) (see below for more details)
- Emissions Performance Standard (EPS). This will impose a limit on emissions from fossil fuel power stations set at 450g CO2/kwh.
- A capacity mechanism. This provides a back-up mechanism for intermittent forms of generation such as wind to ensure energy security.

EMR: Feed-In Tariffs Contracts for Difference (CfDs)

FiTs CfDs are long-term contracts that will replace existing subsidies. FiTs already exist for small renewables with generation under 5MW. Now the government is proposing as part of the EMR to have FITs for large scale low-carbon generation. FiTs CfDs are set to replace the Renewables Obligation from 31 March 2017 for new developments. Developers will have the option between 31 March 2014 and 31 March 2017 to remain with the Renewables Obligation or to adopt the new approach.

According to the government the new scheme will ensure guaranteed minimum prices for future clean electricity so investors will build new generating capacity. The plan is for generators to sell their electricity to the market and also receive a 'top up' to an agreed level – called the 'strike price'. When the market price exceeds the strike price, the generator will have to pay back the top up.

This system is not widely viewed as beneficial to all forms of technology. While it should benefit nuclear and biomass, there is concern that it will increase costs and risks for intermittent generators such as wind.

Despite concerns to the contrary the government will now act as a “counterparty” for the CfDs which according to the REA means that the contracts will be legally secure and bankable.

The REA has also welcomed the decision to allocate CfDs on a first-come, first-served basis and that contracts will be awarded at an earlier stage in the project development process than originally envisaged. This means that developers will not have to risk taking a project right through to the final investment decision with no guarantee that they would be awarded a contract.

However there is still a lack of clarity as to how these funds will be allocated across renewables, nuclear, CCS and potentially energy efficiency measures. An announcement is expected to be made in 2013.

EMR: Levy Control Framework

In addition the FiTs CfD will be subject to the Levy Control Framework which limits the green levies that can be passed on to consumers in energy bills. Put simply this introduces a limit on how much can be spent on supporting various technologies as the government controls the total amount that can be levied on consumer electricity bills. The Treasury has overall responsibility for levy-funded spending and this new framework has therefore given it a key role in influencing policy for renewable support schemes.

RO and FiTs form part of the Levy Control Framework (LCF). However a government report states that it is too early to say whether the new Electricity Market Reform policies will be classified as levies and therefore subject to the control framework. The spending under the Renewables Heat Incentive is subject to a separate budgeting framework as spending through the RHI is funded from general taxation.. [53]

The renewables sector has welcomed the announcement as part of the Energy Bill that funding from the Levy Control Framework is set to increase three fold. By 2020 the government will guarantee £7.6 billion a year for low-carbon electricity – up from the current limit of £2.35 billion. This will be funded from rises to household energy bills.

“The news that there is rock solid support across government for renewable energy, and clear evidence that Treasury and DECC are in step, provide the industry with exactly the kind of assurances we’ve been calling for,” said Maria McCaffery, RenewableUK’s chief executive. “This blows the last few months of political infighting completely out of the water. This is proof that the Treasury really does get it.”

Renewable Energy Association Chief Executive Gaynor Hartnell, said: “The commitment of the necessary budget for the renewable power sector to meet its share of the2020 target, is very welcome news. This should help to draw a line under the recent politicking, which has been so damaging to investor confidence.”

In a subsequent statement she added that despite the contents of the Bill the renewables sector could not be complacent. “It is vital that confidence in the policy framework is established quickly given the investment hiatus we face. There is still much work to do, to translate the legislation into clear and effective policy.”

[53] DECC, Control Framework for DECC levy-funded spending, September 2011. http://www.decc.gov.uk/assets/decc/11/funding-support/fuel-poverty/3290-control-fwork-decc-levyfunded-spending.pdf

5.2.2. Renewables Obligation post-2009: New Bandings

In April 2009 banding was introduced under the Renewables Obligation which gave different levels of support to different technologies. RO will in due course be replaced by the Electricity Market Reforms (EMR) but will run until 2017.

The Department of Energy and Climate Change predicted that the new subsidy deal would stimulate £20 to £25 billion of investment in the green energy sector over the next four years.[54]

However the Banding Decision was only published in July 2012 after a long delay and in fact proved incomplete. The REA points out that it does not set out the support levels to 2017 for all renewable power technologies, but leaves key technologies such as onshore wind and solar power, with only one year's certainty, or less. The Banding Decision has resulted in eight new consultations.

For example, the ROC subsidy for onshore wind energy generation is to be cut by 10% under the banding review. There had been a campaign within government to reduce ROCs for onshore wind by 25% but its subsidy will now be cut by 10% as originally planned although future levels of support will be reviewed again in 2014.

However a report by the Electricity Networks Strategy Group (ENSG)[55], which looks at future wind energy production based on feedback from different parts of the industry, has reduced its estimate for how much onshore and offshore wind power will be built by 2020. It now estimates that 28.3GW of onshore and offshore wind power may be built by 2020 - this is 4GW down on the earlier estimate.

Outline of the banding decisions as explained by online publication Mondaq[56]

- Onshore wind subsidies are to be reduced by 10% and could be reduced further in April 2014.
- Offshore wind subsidies are to go down due to the expectation that costs are to go down. This technology will receive 2ROC/MWh in 2013/14 and 2014/15, dropping to 1.9ROC/MWh in 2015/16 and 1.8ROC/MWh in 2016/1.
- Wave and tidal stream projects up to a maximum size of 30MW are to receive 5ROC/MWh while projects over 30MW will get 2ROC/MWh for their capacity in excess of 30MW.
- Dedicated biomass will still have 1.5 ROCs, but there will be a cap on new projects.
- Large-scale solar PV installations should receive 1.5 ROCs/MWh from March 31, 2013. The proposed support level will then reduce by 0.2 every year and eventually dropping to 0.9 of a ROC in 2016/17.
- A call for evidence on onshore wind industry costs will report back in early 2013. This could lead to a further review of onshore wind ROC levels.

[54] DECC, Press notice: Renewable energy to bring £25bn of investment into uk economy – Davey, July 2012
http://www.decc.gov.uk/en/content/cms/news/pn12_086/pn12_086.aspx

[55] DECC by ENSG, Our electricity transmission network: A vision for 2020www.decc.gov.uk/assets/decc/11/meeting-energy-demand/future-elec-network/4264-ensg-summary.pdf, February 2012

[56]Mondaq
http://www.mondaq.com/x/190076/Renewables/UK+Renewables+Obligation+201317+Banding+Review+Decisions+Finally+Announced

- A consultation is being carried out on closing the RO to new wind, hydro, anaerobic digestion and solar projects under 5MW from 1 April 2013. This will force small-scale generators to switch to the FiT regime where they will receive lower levels of subsidy.

The uncertainty generated by the banding review comes despite eighteen months of consultation on RO support. A report in the Guardian newspaper highlighted the mixed response to the banding review. [57] The chief executive of the Anaerobic Digestion and Biogas Association, which represents 300 businesses, said the industry had been expecting a modest subsidy cut, but now most of the new plants are not eligible for the subsidy from April 2013. Meanwhile, the geothermal energy has been badly hit by the banding decisions. Gaynor Hartnell, chief executive of the Renewable Energy Association, said: "We are effectively left with no deep geothermal power industry in the UK, and inadequate incentive to capture methane from landfill sites." RWE npower, the generator, said that the support for hydroelectricity under the new plans was "not enough" to encourage developers. However, biomass energy was set to benefit. Dorothy Thompson, chief executive of Drax, the biggest coal-fired power station in the UK, told the newspaper that the new rules on subsidies could mean that the power station was burning more biomass than coal within five years.

5.2.3. Feed-in Tariffs

(FiTs for small-scale low-carbon electricity generation (under 5MW))

The most high-profile sign of the economic crisis affecting the renewable sector was the sudden cut to the FiTs for the solar photovoltaic sector in 2011– made with just six weeks notice and cutting the subsidy by half. The suddenness of the announcement caused outrage in the industry and resulted in a successful legal challenge.

DECC has now introduced a new cost control system– tariff rates are now assessed every three months, based on the number of panels installed in the last quarter.[58] The baseline degression rate (amount the feed in tariff is likely to decrease by) has been set at 3.5% every three months. The solar industry says that despite the large cut to the tariffs solar panels remain a good investment.

Changes to FiTs tariffs for all the non-PV technologies will be effective from December 2012 covering technologies such as onshore wind, anaerobic digestion and hydro. It is similar to the scheme for solar with regular tariff reductions introduced from April 2014. The minimum tariff reduction rate is 2.5% and the maximum 20% per year.

The government is consulting on removing support under the RO for all onshore wind, AD, hydro and solar PV projects with a capacity at or below 5MW. These projects would instead have to apply for FiTs which has a smaller budget: At the moment developers can choose between the RO and the Feed In Tariff . It is unclear if this shift in policy would be accompanied by an increase to the FiT budget and if not there will clearly be less money available to support these projects.

5.2.4. Renewable Heat Incentive

[57] The Guardian newspaper. “New subsidy rates for renewable energy announced.” July 2012 www.guardian.co.uk/environment/2012/jul/25/subsidy-rates-renewable-energy

[58] DECC: Feed-in Tariffs: Frequently Asked Questions. www.decc.gov.uk/assets/decc/consultations/fits-review/5902-feedin-tariffs--frequently-asked-questions.pdf

In July 2012 it was announced that the RHI would be suspended to new applicants once spending has reached 97% of the annual budget and only a week's notice will be given. However, as with the Contracts for Difference under the EMR, installations that are already accredited with the RHI would continue to receive support.

5.2.5. Green Investment Bank

The government has recently announced the launch of a Green Investment Bank (GIB). The GIB is meant to provide finance to help private sector investment in green projects. It will operate at arm's length from government and will be capitalised with £3 billion.[59] However there are reservations over how much difference it will make as it will operate with certain restrictions. According to the latest government guidance, the bank will not be able to start borrowing money until 2015 at the earliest, and not at all if public sector net debt does not fall as a percentage of gross domestic product.[60] The government also does not intend to apply for a banking licence from UK regulators which means it will in effect not operate as other banks as it will not be able to borrow from the capital markets.

5.2.6. Climate Change Levy

In 2011 the chancellor announced that Combined Heat and Power (CHP) would no longer be exempt from the levy. Tim Rotheray, policy manager for the Combined Heat and Power Association, told the green sector magazine BusinessGreen that last year's announcement had effectively put an end to any new CHP investments, and predicted this year's failure to introduce greater support could force existing operators to stop exporting power.[61]

5.2.7. Low Carbon Building Programme

The LCBP was closed to new applications on 24 May 2010, as part of a plan by the Department of Energy and Climate Change to cut £85 million from its budget as its contribution towards the Coalition Government's spending cuts. Cutting the programme was estimated to produce £3 million in savings. The programme was closed well ahead of schedule as the original intention had been for its closure to coincide with the start of the Renewable Heat Incentive (RHI) in spring 2011.

[59] Department for Business, Innovation and Skills, Green Investment Bank, 2012
[60] www.efinancialnews.com/story/2012-06-20/uk-green-investment-bank
[61] CHPA, www.chpa.co.uk/chp-firms-predict-sector-cool-down-after-osborne-ends-tax-break-_729.html

5.3. The future of the RE sector by 2020

The government's history of giving mixed messages on renewable energy has seen the country drop out of the top five most attractive countries for clean energy investment. The UK dropped to sixth out of 40 countries in Ernst & Young's quarterly report[62], published in August 2012 on the grounds that the "UK's plethora of policy announcements this quarter have garnered little clarity for investors".

While there is uncertainty about the prospects of the UK meeting its 2020 targets the UK's 2011 progress report to the EU on renewable energy sets how the government intends to meet interim targets and the 2020 target.[63]It states that financial support for low-carbon technologies will from 2014 come from the EMR, the new banding for the Renewables Obligation from 2013 while it transfers to the new EMR mechanism and the launch of the Renewable Heat incentive for industrial and commercial deployment.

In its roadmap document[64] the government also states that despite uncertainty about the contribution from individual technologies, the UK can deliver 234 TWh of renewable energy overall in 2020 – equivalent to the necessary 15% of projected energy consumption.

Its roadmap document explains that approximately 90% of the generation necessary to meet the 15% target can be delivered from a subset of 8 technologies: Onshore wind, offshore wind, biomass electricity, marine, biomass heat, air-source and ground-source heat pumps, renewable transport and a combination of hydro, geothermal, solar and domestic heat.[65]

Although the coalition government came to power pledging to be the greenest government ever its subsequent actions have not always supported this. In April an important foreign investor, Doosan Power Systems of Korea, decided against building a research centre and turbine factories that would have created 1,700 jobs in the wind sector– this is a year after giving the plan the go-ahead. The company said it withdraw because of the uncertainty surrounding the offshore wind sector.[66]

This is all against a backdrop of the chancellor George Osborne giving very clear support to future generation of gas: in the March 2012 budget he announced a new gas generation strategy and allocated over £3 billion in new tax breaks to fossil fuels. The government's gas strategy will be set out in full in December 2012 but a statement issued by the government said if gas proves cheap, the government expects gas to continue to play a key role through the 2020s. Most crucially it said: "We do not expect the role of gas to be restricted to providing back up to renewables, and in the longer term we see an important role for gas with CCS (Carbon Capture and Storage)."[67] The focus on gas has raised concerns that the UK could breach renewable energy targets.

Commenting on government policy in its report[68], the REA found that only offshore wind and marine technologies fare satisfactorily in terms of the policy framework. In

[62] Ernst and Young. Renewable Energy attractiveness indices 2012

[63] EU, 2011 enewable energy progress reports http://ec.europa.eu/energy/renewables/reports/2011_en.htm

[64] DECC, UK Renewable Energy Roadmap, July 2011. http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf

[65] DECC, UK Renewable Energy Roadmap, July 2011. f

[66] The Guardian. http://www.guardian.co.uk/environment/2012/apr/18/wind-industry-setback-doosan-plans

[67] DECC, Written minister statement on Renewables Obligation Banding Review. July 2012. www.decc.gov.uk/en/content/cms/news/wms_ro_lm/wms_ro_lm.aspx

[68] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012

contrast it describes biomass CHP, onshore wind, solar thermal, liquid biofuels, on-farm anaerobic digestion and deep geothermal as suffering from a lack of policy support. The report also points out that mid-sized investors, including the commercial and public sectors, do not feature enough in the policy framework as there is too much emphasis on big utility or micro domestic investors.

Meanwhile the report says the current climate for renewables has a knock-on effect when it comes to investing in skills: “For small and innovative companies staff turnover can be high and there can be a reluctance to invest scarce resources in personnel that may be poached by competitors. Where growth is strong, and it needs to be in renewable energy, staff are needed urgently – companies cannot afford for new recruits to undertake months of training.”

The Climate Change Committee, which advises the government on global warming, issued an annual progress report for 2012 that found that while greenhouse gas emissions fell by 7% only 0.8% of this can be linked directly to implementation of proactive carbon lowering measures. In other words this means that progress is only a quarter of what’s needed to meet future carbon budgets.[69] The Committee says that in order to remain on track for future carbon budgets, there is now an urgent need to move from policy planning to delivery, and to accelerate the pace at which measures are implemented.

The new Energy Bill is key to this change and has been seen as giving renewables a vital boost. It is expected that increasing the Levy Control Framework to £7.6 billion by 2020 will give energy companies the confidence to invest in renewable energy and help create much needed stability across the sector – although having to wait till 2016 for a final decision on the 2030 carbon cap will affect the long lead-ins needed for many renewable projects.

[69] Committee on Climate Change. http://www.theccc.org.uk/reports/2012-progress-report

6. Social debate about renewable energies

Personal interviews were carried out with Philip Pearson, senior policy officer focusing on climate change, energy and transport at the Trades Union Congress; Leonie Greene, head of external affairs at the Renewable Energy Association which describes itself as the largest renewable trade association in the UK, with over 900 members, ranging from major multinationals to sole traders; and a spokesman from the government's Department of Energy and Climate Change.

Renewable energy situation

The government spokesman explained that the government is determined to meet the 2020 targets even though he acknowledges that they are ambitious and the UK is starting from a low base. "We have set out in our Renewable Energy Roadmap exactly how we will achieve this across electricity, heat and transport," he said.[70]

The other interviewees are more cautious about whether this can be achieved. Philip Pearson says that with renewable energy accounting for just over 3% of total UK energy against a 15% target it currently cannot be described as well deployed although he adds that the situation has been improving rapidly. "There are no formal plans to change the target, but it is under pressure for the anti-regulation/anti-public spending right," he said.

He believes the targets are set at the right level given the circumstances: "Given our current renewable energy deployment, they are probably ambitious enough for 2020, but should go much further."

Leonie Greene is far from optimistic about the government's commitment to renewables and points out that at 3.8% the UK's reliance on renewable energy is one of the smallest in Europe. "This is why we have been given a lower target as we have performed so badly," she said.

She believes the situation has become much more complicated under the new coalition government. "I am very worried about the policy framework," she said. "Domestic use of solar power is actually the area most on track despite all the coverage in the press."

She finds what has happened to the Renewables Obligation (RO) most problematic in the current climate as half of the renewables technologies have no clarity over future funding beyond the coming year. She adds that Electricity Market Reform is a real worry as under the current proposals there is little in it to advantage medium size investors, such as farmers, who play a crucial role in the renewables market. In relation to heating she says the policies have been slow to deliver with very little take-up of the domestic Renewable Heat Incentive. Finally on transport policy, Greene believes there is no clear trajectory to 2020 and investment is dwindling.

But the government spokesman argues that that renewable energy is playing an increasingly significant role as part of a balanced energy mix. "The growth of renewable energy is accelerating despite difficulties in the wider economy, and we are clear that we want to meet our target of getting 15% of all energy (electricity, heat and transport) from renewables by 2020. We are also on track to meet our first interim target across all energy - 4.04% across 2011-12," he added.

However Greene remains unconvinced. She says the UK is very unlikely to meet its 2020 target. "We're not yet at a point of saying this publicly," she said. "This decade is

[70] DECC, UK Renewable Energy Roadmap July 2011.

a policy mess and there is resistance to fixing a post-2020 framework even though we really need this for momentum."

Support schemes and funding

The government spokesman said the Renewables Obligation and Feed in Tariff schemes have both enabled significant amounts of renewable energy and investment and jobs to come forward.

When asked if these schemes are the main driver for take-up of renewable energy he said that clearly subsidies help to bring forward technologies, but the key point is that they are there to help ensure that these technologies are viable.

"From 2017, changes to the electricity market will help deliver more low carbon energy at a lower cost to consumers. The Renewable Heat Incentive and Renewable Transport Fuel Obligation are also making progress in encouraging renewable heat and transport," he said.

In comparison both Pearson and Greene express their concerns about the reforms taking place. As highlighted earlier in this report the EMR (Electricity Market Reform) proposals involve replacing the Renewables Obligation (RO) as the key financial incentive for the deployment of larger scale renewable electricity generation.

Pearson agrees with other green campaigners such as Greene's organisation the REA that with an urgent need to dramatically increase production of renewable energy the current confusion surrounding RO and its replacement is very unhelpful for making progress in the sector. He quotes an REA document[71]citing how investment has stalled in biofuels manufacture because of lack of forward clarity over targets: "Renewables are meant to account for 10% of our transport energy consumption by 2020, yet we have no trajectory set out for achieving this target."

On Feed-in Tariffs Pearson refers to the solar industry and how cuts to this popular support scheme have had a knock-on effect across the renewable sector. Pearson believes that clear, stable policy is essential for the renewable sector as this is key to attracting investment.

Greene also speaks positively about the Feed-In Tariff scheme. "We campaigned for the Feed-in Tariffs and they have a strong track record of delivery," explained Greene. "It has opened up the electricity sector to new investors and has been very successful for solar."

She points out that fossil fuel generation has had billions of investment over decades and renewables need support too: "It's amazing what has been achieved – if you look at solar, it just needs a few more years." She says the schemes will act as barriers only if they are handled badly: "If the rules change, they will not be effective."

To demonstrate this she refers to what has happened since the introduction of the Levy Control Framework. Since 2011/12, the RO and FiTs have formed part of the Levy Control Framework, which allows government to control the total amount that can be levied on consumer electricity bills. Greene explains as a result of these two schemes operating under this capped mechanism it has created enormous uncertainty among investors about subsidy and at what point in planning a project they could lose their funding.

She said she also did not understand why the government now intended to prevent sub-5MW, FiT-eligible technologies from accessing the RO from next year. "It's absurd

[71] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012.

as RO has budgets that are ten times bigger so this dislocation of investment is really unfair and creates market distortion."

She added that despite the downsides of FiTs and RO that they are preferable to what the government is currently proposing with further consultations meaning there is no clarity for various renewable technologies. "Where is the public interest?" she asks. She says that although she understands the government's concern with market prices the priority should be to deliver the target and not snarl up the sector by losing investor confidence. She believes the renewable sector would benefit from the current Feed-in Tariff mechanism for small power increasing to at least 10MW – a suggestion made by the Commons Select Committee.

Pearson agrees that there is too much turbulence surrounding the future of schemes and says that short term political cycles work against sectors requiring a longer-term strategic focus. "The public interest is not served when short-term political pressures on costs combine with poor understanding of benefits to suppress investment offering better medium or long term value and security. The government should enforce a long-term perspective on infrastructure investment and report annually," he said.

In terms of the future of renewable energy Pearson refers to the assessments of progress towards climate targets made by the Committee on Climate Change (CCC), an independent body established under the Climate Change Act. It highlights the urgent need for more progress due to the slow headway achieved so far.

The CCC's latest assessment report from earlier this year[72] says there is a need to do more across almost the full range of measures but that there are major challenges sustaining and increasing the pace of investment in low-carbon power generation.

On the subject of the green investment bank Greene described it as window dressing. "First renewables have to be bankable to generate commercial returns," she said. "I would like to see the government be more creative and support high risk projects such as tidal. We need a public body to support high risk projects and then others will follow."

The government spokesman said it was vital that support for renewable energy strikes an appropriate balance between encouraging investment and ensuring value for money for consumers. "Clearly government has had to be more intelligent about how we provide financial support, but our overall enthusiasm for renewable energy has not waned," he said.

"We expect renewable energy to play a considerable role in a balanced energy mix in the decades to come. Clearly we want to see the costs of technologies come down and therefore subsidies to come down."

But Pearson expressed concern about announcements coming out of government. He is concerned that the chancellor has announced a new tax measure aimed at supporting billions of pounds of new investment in older oil and gas fields in the North Sea.

Greene is very much of the opinion that the economic crisis has had an impact on the renewables sector although she thinks that it could in fact be a real opportunity for renewables. She refers to analysis from Lord Stern and his colleagues at the Grantham Institute on Climate Change. Writing in REA News, Lord Stern and his colleagues stated: "costs are not saved and investment is not promoted by procrastination", and that the transition to a low-carbon economy, with good policy, could be "intensely creative and full of opportunity." [73]

[72] Committee on Climate Change: Meeting Carbon Budgets – 2012 Progress Report to Parliament http://www.theccc.org.uk/reports/2012-progress-report

[73] REA News http://issuu.com/newnorth/docs/rea_news_summer_2012/15?mode=window

Employment

The spokesman said that already renewable energy is supporting jobs and investment across the country pointing out that between April 2011 and July 2012, the Department has been made aware of investments worth almost £13 billion which could support around 22,800 jobs.

Greene says that the renewables sector offers a whole range of jobs from the low-skilled to the very highly skilled and everything in between. “We have waste sorting in bio-energy, coppicing to highly skilled engineers – the sector has something for everyone.” Correspondingly pay varies enormously with highly skilled engineers well paid due to their scarcity, she added.

She believes the government could be much more ambitious in this area and explains that when the coalition government came in to power the REA waited for an announcement for a comprehensive programme for jobs in the renewable sector but in the end when this did not happen the REA ended up commissioning their own study.[74] “It is bizarre that the government has no strategy: we have a problem with a skills shortage and the country is facing high levels of unemployment, this is a real opportunity,” she said.

Greene believes there could be a real skills shortage in the sector with some sectors such as wind and tidal already struggling and having to bring in workers from overseas. “Now the government is proposing migration caps so we will be hit again – there is already a well documented problem in the electricity sector with huge numbers of skilled people due to retire.”

She calls on the government to invest in renewable jobs: here Greene cites Sir David King, the former UK Government's chief scientific adviser who describes supporting the green economy as a “no brainer”. King told the Guardian newspaper that inertia is the big problem and the government needs to recognise that now is the time to invest.[75] She points out that much of the renewable sector is made up of small and medium sized businesses and that it is frustrating when the government focuses on big infrastructure.

Pearson supports projections made in the REA report[76] that the renewable sector could be employing 400,000 people by 2020. In terms of types of jobs Pearson describes the largest growth areas as operations and maintenance of onshore wind capacity and the design and manufacture of offshore capacity. He points out that jobs growth in the operation and maintenance of offshore capacity is also due to increase rapidly from around 2016.

Collective bargaining

In terms of collective bargaining Pearson cites as a positive example one of the biggest agreements in the UK which is between the GMB and solar manufacturer Sharp solar in Wrexham. Meanwhile Britain’s biggest trade union Unite signed an accord with the renewable energy association Renewable UK in February where both recognise the potential of green energy to generate tens of thousands of skilled jobs over the next 10 years and it is hoped that this alliance between industry and union will secure conditions for massive industry expansion. Unite also has existing agreements with the

[74] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012
[75] Guardian newspaper “Sir David King lambasts Treasury for preventing green economic recovery.” June 2012
[76] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012

big six energy companies that include their renewables portfolio and it also has specific agreements in the wind sector such as with developer Dong Energy.

The TUC has called for public policies to be established to encourage investment in low carbon industries and technologies and has called on the government to take the lead in ensuring the necessary supply of skills and training programmes to equip employees for a future in a low carbon, resource efficient economy.

Core to the TUC's environmental policy is the principal of "Just Transition". This is about recognising and planning fairly and sustainably for the huge changes that climate change policies will have for on the whole economy. For the TUC, this should involve having unions directly involved in consultations with government, business and community organisations on the green economy. It is also about ensuring investment in decent jobs and new low carbon technologies for the future and providing green skills: through strong government leadership to ensure that training providers, colleges and employers offer the right opportunities for new skills and adapting existing skills to the future economy.[77]

[77] TUC report, A Green & Fair Future, 2008.

7. Conclusions and key messages

The key challenge facing the renewable sector in the UK is dealing with the long-term uncertainty created by divisions in the government.. While the renewables sector has been very positive about the increased green budget announced in the Energy Bill the lack of a 2030 target will hamper investment. Critics warn that in order for the renewable sector to thrive it needs a stable environment with long-term funding commitments and cannot afford to be caught up in short-term political battles.

The renewable sector in the UK has clearly progressed in recent years albeit from a very low base. Government figures released at the end of September show that the UK's renewable energy sector is continuing to grow at a fast pace. Renewable generation in the last quarter was up 6% on the previous year and offshore wind generation for the same quarter increased by 46.7 %, while renewables share of electricity generation overall is now 9.6% up from 9%.[78]

A report by the Renewable Energy Association found that there are currently 110,000 people employed in the UK renewable energy sector, with the potential for a total of 400,000 if the 2020 renewable energy targets are met.[79] At a time of recession the sector is one of growth. The Confederation of British Industry said that one-third of the UK's economic growth in the last financial year came from green business. They also believe that by the end of this Parliament green business could reduce the trade deficit by half.[80]

Despite the vote of confidence from the business community some leading political figures have been less supportive. The newspapers have given extensive coverage to the Chancellor's comments that "We're not going to save the planet by putting our country out of business." Now the government has given the go-ahead to build 20 more gas-fired power stations – the green sector is asking what message does this give to potential renewables investors and what does it mean in terms of meeting renewable energy targets? The new chair of the Committee on Climate Change, Lord Deben, has written to the prime minister warning that the government was in danger of breaching its own commitments on climate change by supporting the new gas-fired power stations.

A letter from 170 green businesses sent to the prime minister in August voiced concern over how the perceived lack of government support for renewables is deterring crucial investment in the sector. They point to the confusion surrounding funding of the Renewables Obligation and the Feed-in Tariffs – the decision on funding was announced after a long delay and left many technologies without long-term certainty. For instance, although offshore wind subsidies are now set until 2017, those for onshore wind are to go to another consultation.

The sudden announcement to cut the subsidy rate for solar installations caused outrage in the industry. As a result the number of homes installing solar has reduced drastically since the start of August even though the solar industry points out that installing panels still makes good financial sense – ultimately the initial subsidy cut was very poorly handled by the government generating uncertainty among potential buyers.

[78] DECC.
[79] Renewable Energy Association. Renewable Energy: Made in Britain. April 2012.
[80] CBI report, The Colour of Growth: Maximising the Potential of Green Business July 2012.

The importance of the Energy Bill for renewables cannot be underestimated but news that the government is giving the green light for exploration for shale gas underlines the role that gas is also likely to play in the UK's future energy supply.

Annex

Source Table 1 DECC : Digest of UK Energy Statistics. Dukes Chapter 6 Renewable sources of energy www.decc.gov.uk/assets/decc/11/stats/publications/dukes/5956-dukes-2012-chapter-6-renewable.pdf

Table 1: Capacity of, and electricity generated from, renewable sources

Installed Capacity (MWe)	2011
Wind:	
Onshore	4,650.40
Offshore	1,838.00
Shoreline wave / tidal	3.1
Solar photovoltaics	975.8
Hydro:	
Small scale	204.7
Large scale	1,470.90
Bioenergy:	
Landfill gas	1,066.70
Sew age sludge digestion	197.5
Municipal solid waste combustion	577.4
Animal Biomass (non-AD)	110.5
Anaerobic digestion	55.2
Plant Biomass	159.5
Total bioenergy and wastes	166.8
Total	12,309.70
Generation (GWh)	
Wind:	
Onshore	10,372
Offshore	5,126
Shoreline wave / tidal	1
Solar photovoltaics	252
Hydro:	
Small scale	697
Large scale	4,989
Bioenergy:	
Landfill gas	4,979
Sewage sludge digestion	755
Biodegradable municipal solid waste combustion	1,739
Co-firing with fossil fuels	2,964
Animal Biomass	614
Anaerobic digestion	239
Plant Biomass	1,683
Total bioenergy	12,973
Total generation	34,410

Source: Table 2: Companies in supply chain and export value. Renewable Energy Association. Renewable Energy: Made in Britain. April 2012

Onshore wind
Number of onshore wind UK companies across supply chain: 730
Export value offshore and onshore wind: £500 million
Offshore wind
Number of UK companies across offshore wind supply chain: 790
UK export market value offshore and onshore wind: £500 million
Solar
Number of UK companies across supply chain: 2,200
UK exports value: £315 million
Hydro
Number of UK companies across supply chain: 260
UK export value: £57 million
Wave and tidal
Number of UK companies across supply chain: 33
UK export value: £8 million
Anerobic digestion
Number of UK companies across supply chain: 140
UK export value: £28 million
Mixed waste to energy technologies
Number of UK companies across supply chain: 330
UK export value: £99 million
Heat pumps
Number of UK companies across supply chain: 380
UK export value: £69 million
Biomass CHP
Number of UK companies across supply chain: 140
Export value today: £45 million
Solar thermal
Number of UK companies across supply chain: 340
UK export value: £215 million
Deep geothermal
Number of UK companies across supply chain: <25
UK export value today: <£1 million
Biomass energy
Number of UK companies across supply chain: 170
UK export value: £86 million
Solid biomass fuels
Number of UK companies across supply chain: 520
UK export value: £90 million
Liquid biofuels
Number of UK companies across supply chain: 200
UK export value today: £25 million

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