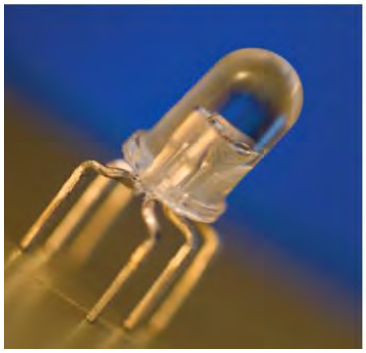

Assessment of climate change policies as part of the European Semester

Country Report United Kingdom

22 January 2015

A report submitted by ICF Consulting Services
in association with

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Contents

1 Short Summary

The British non-ETS target under the Effort Sharing Decision (ESD) is -16% (compared to 2005) and non-ETS emissions were reduced by 9.3% between 2005 and 2013 which is below the interim target. According to the latest national projections submitted to the Commission and taking into account existing measures, the 2020 target is expected to be exceeded by a relatively big margin of 3.4 % points.

The UK has set an internal target to reduce emissions by 31% from 2013 to 2027 (50% compared to 1990). With current projections, the UK will fall short of achieving this target and additional efforts are required to strengthen the current policy framework. This applies especially to residential and commercial energy efficiency, electrification of heat and transport, and power sector decarbonisation. This in turn could result in energy cost savings of 100 billion GBP (approx. 1.3 billion EUR).

The UK has put in place several funding schemes to encourage energy efficiency and renewable energy deployment in buildings. The domestic Renewable Heat Incentive (RHI) went live in 2014 to encourage homeowners to install renewable heating systems. Despite high levels of subsidy offered by RHI financial and non-financial barriers are stifling uptake. In addition, funding for the RHI is not been committed beyond 2016, and the RHI is due to end in 2020, which lead to uncertainty in the 2020s. The UK's scheme to encourage energy efficiency upgrades in homes, Green Deal and ECO, also went through a number of changes in 2014 which drew criticism from industry.

With the Electricity Market Reform (EMR) the UK hopes to incentivise up to £110 billion of further investment over the coming decade to replace the UK's ageing energy infrastructure with a more diverse and low-carbon energy mix. The EMR introduces two instruments to stimulate investment: the Capacity Market and Contracts for Difference. Details of both schemes have been finalised throughout 2014.

Generous funding schemes such as the Plug-in Car Grant are increasingly accelerating take-up of electric vehicles and new funding has been committed in 2014. The latter include 11 million GBP (approx. 13.9 million EUR) to support the roll-out of hydrogen fuel cell electric vehicles, 11 million GBP to accelerate research and development of carbon-cutting transport technologies, 64 million GBP (approx. 80.4 million EUR) is awarded through the Local Sustainable Transport Fund to 44 sustainable transport schemes of local authorities across England and the second phase of the Office for Low Emission Vehicles (OLEV)'s 5 million GBP fund (approx. 6.3 million EUR) went live in 2015 to promote the adoption of ultra-low emission vehicles in central Government and wider public sector fleets.

2 Climate and energy policy priorities

The legislated fourth carbon budget (2023-27) commits the UK to reduce emissions by 31% from 2013 to 2025 (50% compared to 1990). The fourth carbon budget is consistent with the target proposed by the European Commission (EC) to cut EU emissions by 40% in 2030 on 1990 levels (Change, 2014). Since the existing policy framework has been designed to deliver emissions reductions to 2020, additional efforts are required to meet the fourth carbon budget. Otherwise, the Committee on Climate Change (CCC), an independent government advisory body, projects emissions to be up to 60 $MtCO_2e$/year above the level of the fourth budget in 2025. The CCC thus recommends improving policy design, increasing the level of ambition, extending the time frame and in some cases extending funding in residential and commercial energy efficiency, electrification of heat and transport, and power sector decarbonisation (Ibid.). This in turn could result in energy cost savings of 100 billion GBP (approx. 1.3 billion EUR).

Several key policies have been launched in the UK in 2014. Among them is the domestic Renewable Heat Incentive which had been delayed for two years, but is now seen by industry as a key measure to increase deployment of low carbon heating technologies in buildings. In order to comply with the Energy Efficiency Directive, the UK introduced The Energy Savings Opportunity Scheme (ESOS) in 2014, a mandatory energy assessment and energy saving identification scheme for large businesses.

Also related to emissions from buildings, several updates and changes have been made to the UK Green Deal and ECO scheme which forms the primary tool to incentivise energy efficiency upgrades in homes. Notably, the Green Deal Home Improvement Fund (GDHIF) went live in July 2014, but was forced to close due to overspending only three weeks after its launch. On the one hand, the high demand for upgrades under the GDHIF was positive. At the same time, the grants offered were very high (i.e. €6,000 for solid wall insulation) which led to the increase in demand and thus meant that fewer people were able to profit from the scheme and support levels could not be sustained over a longer period of time. These sort of stop-and-go measures pose significant barriers to the development of a capable supply chain, deter trust in policy and thus threaten large scale take up of energy efficiency measures. This, however, is needed to reduce emissions from a sector which currently contributes a quarter of all UK GHG emissions (DECC, 2014r).

With the Electricity Market Reform (EMR) the UK hopes to incentivise up to £110 billion of further investment over the coming decade to replace the UK's ageing energy infrastructure with a more diverse and low-carbon energy mix. The EMR introduces two instruments to stimulate investment: the Capacity Market and Contracts for Difference. The first capacity auction took place in December 2014. Capacity is planned to be in place by 2018. As announced by the Government, two transitional auctions for demand side capacity will run in 2015 and 2016. Ageing fossil fuel generation dominated the mix of contracts awarded in the auction held on 18 December 2014 with many sustainable energy options outbid (Anon., 2015). The Contracts for Difference (CfD) replace the Renewables Obligation (RO) as the main policy incentive for renewables; the RO will be closed to new applicants in April 2017. CfDs are long-term, legally binding private-law contracts that are meant to encourage investment in low-carbon generation technologies such as renewables, nuclear and carbon capture and storage. The Government has introduced them in order to provide greater certainty to generation plant owners about future revenues by protecting them from fluctuations in the wholesale electricity price. The goals is that this will encourages investment in new electricity generation, as the certainty reduces risk and therefore helps lower the cost of capital. Low-carbon generation with a CfD will sell their electricity into the market in the normal way and remain active participants in the wholesale electricity market. Terms and conditions were set out in August 2014 and will be used in the first CfD Allocation Round.

Generous funding schemes such as the Plug-in Car Grant are increasingly accelerating take-up of electric vehicles and new funding has been committed in 2014. The latter include 11 million GBP (approx. 13.9 million EUR) to support the roll-out of hydrogen fuel cell electric vehicles, 11 million GBP to accelerate research and development of carbon-cutting transport technologies, 64 million GBP (approx. 80.4 million EUR) is awarded through the Local Sustainable Transport Fund to 44 sustainable transport schemes of local authorities across England and the second phase of the Office for Low Emission Vehicles (OLEV)'s 5 million GBP fund (approx. 6.3 million EUR) went live in 2015 to promote the adoption of ultra-low emission vehicles in central Government and wider public sector fleets.

3 GHG trends and projections

The United Kingdom reduced its total GHG emissions by 15% between 2005 and 2013. The share of GHG emissions not covered by the European Emission Trading Scheme (EU ETS) is around 60%, which is just above the EU28 average (see Table 1).[1]

Table 1 Key data on GHG emissions

		National data				*EU28*
		2005	**2011**	**2012**	**2013**	***2013***
Total GHG emissions	Mt CO_2eq	674.7	562.8	580.8	570.3	4 539
Non-ETS emissions	Share in total emissions	64%	61%	60%	60%	*58%*

Source: EEA 2014a; EEA 2014c

By 2020, the UK needs to reduce its emissions not covered by the EU ETS by 16% compared to 2005, according to the Effort Sharing Decision (ESD). The latest data for 2013 show that the UK emitted even 1.4 percentage points less than it was allowed under the annual allocation interim target under the ESD for the year 2013 (see figures in Table 2). National projections indicate that the country will not only meet but exceed its 2020 target by about 3.4 percentage points with existing measures (WEM) (EEA 2014a). Figures for projections with additional measures are not available.

Table 2 Non-ETS emission targets, trend and projections

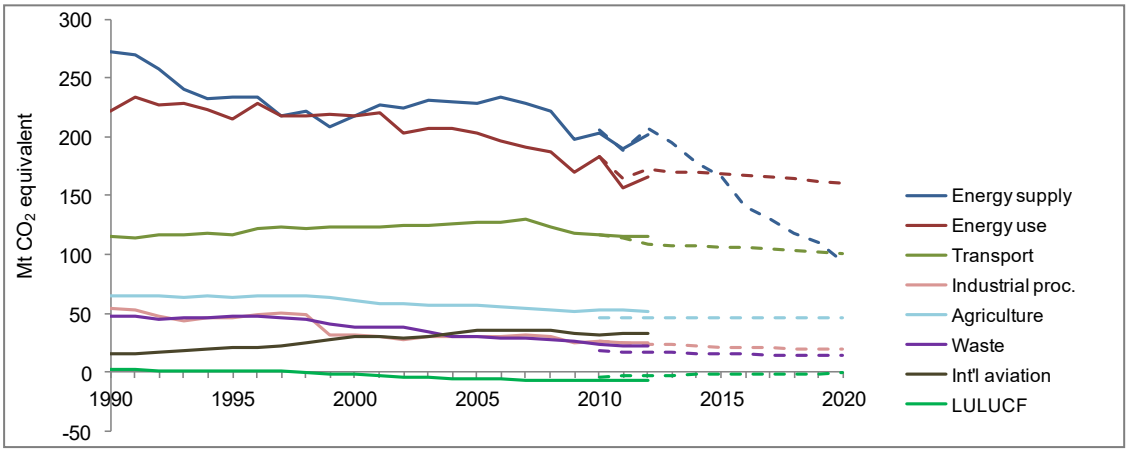
		Compared to base year
2013	ESD interim target	- 7.9%
	ESD emissions	- 9.3%
2020	ESD target	- 16.0%
	ESD projections WEM	- 19.4%
	ESD projections WAM	n. a.

Source: EEA 2014a. Green indicates target met or exceeded.

GHG emissions are mainly created by the energy industries, followed by direct fuel consumption (e.g. households for heat generation) and the transport sector (see figure below for historic and estimated emissions by sector). Projections indicate that by 2020 emissions from energy use and the transport sector will remain constant (with a very slow decline), while emissions from the energy industry will be significantly reduced.

[1] The European Environment Agency has developed a complex methodology to measure progress on the Non-ETS/ESD targets of all EU Member States. This report uses the figures derived on this basis. A detailed explanation and the underlying absolute amounts are contained in Annexes 1-3 of the EEA report No 6/2014 "Trends and projections in Europe 2014. Tracking progress towards Europe's climate and energy targets for 2020" available at http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2014/

Figure 1 GHG trends and projections by sector



Source: EEA 2014a. Actual data until 2012 and projections from 2010 onwards.

4 Policy developments

This section covers significant developments made in key policy areas between January and December 2014. It does so through two different perspectives:

1) progress on the policies communicated under the National Reform Programme, and
2) developments in the identified national priority sectors and policy areas.

4.1 Key policies as outlined in the National Reform Programme

Member States prepare National Reform Programmes (NRPs) each April outlining the country's progress and the key policies and measures to achieve targets under the EU 2020 Strategy. These key policies and measures are summarised in the following table and their current status.
The UK does not mention most of its key policies for climate and energy in its NPR despite the fact that many new funding schemes and policy changes have been implemented in 2014. The following table therefore only shows a small snapshot whereas the following sections introduce the schemes and elaborate on them in more detail.

Table 3 Key policies and measures as outlined by the NRP 2014

Electricity Market Reform	
Status in the NRP	Announced
Status as per Dec 2014	In force
Description of policy	Energy Act 2013 is to implement Electricity Market Reform (EMR), to incentivise up to £110 billion of further investment needed over the coming decade to replace the UK's ageing energy infrastructure with a more diverse and low-carbon energy mix. EMR introduces two key mechanisms to stimulate investment in new energy capital: the Capacity Market and Contracts for Difference

4.2 National policy priorities

Four carbon budgets, covering the period from 2008 to 2027, were introduced as part of the Climate Change Act 2008 to help the UK reduce its GHG emissions by at least 80% by 2050. On 4 February 2014, Secretary of State Edward Davey announced that the UK has met its first carbon budget limiting UK's GHG emissions to 3,018 $MtCO_2eq$ over 2008-2012 (DECC, 2014a). He said that "green investment has been booming in the UK, with renewable electricity generation doubling and £31bn of renewable energy investment announced since 2010" (approx. € 37.5 billion). Now with the Energy Act 2013, we can look forward not just to hitting our renewable targets for 2020, but beating them. (Ibid.)."

Going forward, however, the Committee on Climate Change (CCC), an independent body established under the Climate Change Act to advise the UK Government on reducing GHG emissions, warns that with existing policies the remaining carbon budgets will not be met. The legislated fourth carbon budget (2023-27) commits the UK to reduce emissions by 31% from 2013 to 2025 (50% from 1990). The fourth carbon budget is consistent with the target proposed by the European Commission (EC) to cut EU emissions by 40% in 2030 on 1990 levels (Change, 2014). Since the existing policy framework has been designed to deliver emissions reductions to 2020, additional efforts are required to meet the fourth carbon budget. Otherwise, the CCC projects emissions to be up to 60 $MtCO_2e$/year above the level of the fourth budget in 2025 (Ibid.). In order to prevent this, the CCC recommends improving policy design, increasing the level of ambition, extending the time frame and in some cases extending funding in residential and commercial energy efficiency, electrification of heat and transport, and power sector decarbonisation (Ibid.). This in turn could result in energy cost savings of 100 billion GBP (approx. 1.3 billion EUR) (Ibid.).

The below sub-sections provide updates on key existing and new policies in priority sectors and policy areas of relevance to the energy and climate targets under the Europe 2020 strategy[2]. Each sector or policy area contains information on the most important policy instruments in operation or development.

4.2.1 Environmental Taxation

In the United Kingdom, the implicit tax rate on energy is the second highest in the EU with EUR 276 per ton of oil equivalent in 2012 (compared to the EUR 173 average) (Eurostat, tsdcc360). Furthermore, the share of environmental tax revenues in overall tax revenue was at 7.4% in 2012, and therefore above the EU average of 6.1% (Eurostat, ten00064). The same holds true for a comparison of theses revenues with GDP, at 2.6% in 2012 (where the average is 2.4%) (Eurostat, ten00065). However, on 19 March 2014, Chancellor of the Exchequer George Osborne announced that the UK's carbon floor price will be frozen at 18 GBP (approx. 21.5 EUR) per tonne of CO_2 from 2016 until 2020 (HMRC, 2014). Originally, a carbon floor price rise to 35 GBP (approx. 41.8 EUR) per tonne of CO_2 was planned by 2020. The announced price freeze shall provide businesses concerned about rising electricity prices with more certainty.
The UK introduced the carbon floor price in year? to artificially raise CO_2 prices after the ETS price had collapsed. However, the floor price has been criticised as being too low and that it would do little to boost investment in renewable energy before at least 2017 (Europe, 2014). The carbon price floor is made up of the price of CO_2 from the EU Emissions Trading System (EU ETS) and the carbon price support (CPS) rate per tCO_2 which is the UK-only additional tCO_2 emitted in the power sector (HMRC, 2014). This CPS rate per tCO_2 is used as the basis for setting individual CPS rates for each of the taxable commodities. The CPS applies to fossil fuels used in electricity generation that are taxed under the Climate Change Levy regime (gas, solid fuels and liquefied petroleum gas). The CPS rates of fuel duty apply to oils and biofuels used in electricity generation.

Moreover, according to the annual budget, energy-intensive industries shall be compensated for the effect that green energy subsidies have on their electricity costs; industry using combined heat and power (CHP) will also receive tax relief. If this measure receives EU state aid approval, it will annually cost the Government around GBP 300 million (approx. € 358.2 million) from 2016/17 onwards (Ibid.). It is expected that UK budget will increase country's power generation by at least 4%, which in turn will increase its CO_2 emissions by 1% or more (ENDS Europe, 2014).

4.2.2 Energy Efficiency

Within the EU-28, the United Kingdom has the third least-energy-intensive economy. Energy intensity declined by 16% from 2005 to 2012 (Eurostat, tsdec360), while the final energy consumption dropped by 12% in that time frame due to reductions in all sectors (Eurostat, tsdpc320). The main reason for this was the economic recession. The United Kingdom is currently on track to meet its indicative EU energy efficiency target (EEA 2014a).

In its assessment of the current UK pathway towards emission reduction, the Committee on Climate Change stressed the need to strengthen policies in energy efficiency improvement in the commercial and industrial sectors.

In order to comply with the Energy Efficiency Directive, the UK introduced The Energy Savings Opportunity Scheme (ESOS) in 2014, a mandatory energy assessment and energy saving identification scheme for large businesses. The scheme mandates that all large businesses in the UK undertake comprehensive assessments of energy use and energy efficiency opportunities at least once every four years (DECC, 2014i). The scheme applies throughout the UK and the deadline for the first compliance period is 5 December 2015, by which time qualifying businesses will have to achieve compliance with the regulation and notify the UK Environment Agency (Ibid.).

The UK also developed its Building Renovation Strategy under its Energy Efficiency Action Plan (NEEAP), submitted for compliance with the Energy Efficiency Directive in April 2014 (Annex B of the NEEAP). It presents an overview of the UK's building stock and its energy efficiency performance, and

[2] The Consortium jointly with DG Clima identified these based on identified challenges in Country Profiles (EEA, 2014), share of sectors in total GHG emissions, and Country Specific Recommendations (2014). DG Clima has identified additional relevant issues to be reviewed for some or all Member States, including country specific energy challenges.

the existing policies that are designed to enhance the performance of the UK's building stock. The latter are used to comply with the EED; their projected savings are presented below and the policies with a focus on England are explained in the following.

Figure 2 Projected final energy consumption savings by year from UK domestic policies included for Article 7 policy plan (units: TWh)

TWh	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
DOMESTIC															
Carbon Emissions Reduction Target (1020-2012)*	2.7	5.7	9.1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	8.9	8.8	8.6	116
Community Energy Savings Programme (2010-2012)*	0.0	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5
Energy Company Obligation*				0.7	1.4	2.1	2.8	3.6	4.4	5.1	5.7	6.4	7.1	7.1	46
Green Deal – domestic					0.2	0.4	0.5	0.7	0.8	0.9	1.1				5
Building Regulations – domestic					4.7	9.4	14.1	18.9	23.6	28.3	32.9				132
Home Energy Efficient Programmes (Scotland)					0.2	0.5	0.7	0.9	1.0	1.0	1.0				5
Private and Social Sector Regulation (Scotland)					0.0	0.1	0.1	0.2	0.3	0.4	0.4				2
Sustainable Energy Programme (Northern Ireland)					0.1	0.1	0.2	0.2	0.2	0.2	0.2				1

Source: UK NEEAP, 2014

Green Deal and ECO

The Green Deal and ECO schemes are the UK's primary instruments for supporting energy efficiency measures in both owner-occupied, social housing and hard to treat homes[3]. They are intended to help overcome the barrier of high upfront capital costs. The government's Green Deal (GD) scheme tries to encourage building owners, tenants and landlords to invest in energy efficiency measures thereby reducing emissions and heating bills, and increasing comfort (DECC, n.d.). Launched in January 2013 the scheme tries to address a variety of issues surrounding the take-up of energy efficiency measures in the home (establishing consumer trust, overcoming high capital costs, increasing awareness etc.).

Finance provided through the GD is available where cost savings from the use of energy efficiency measures can pay for installation, operating and finance costs of these measures over specified periods – this conditionality is termed the Golden Rule in GD jargon. The plans consist of loans that cover the upfront cost of energy efficiency measures that are then paid back through energy bill savings. Interest rates of nearly 7% have been blamed for low uptake of the finance plans, as many householders preferred to fund installations themselves.

A cash-back scheme is priming the market by providing a supplementary cash contribution to early adopters. The Green Deal cashback scheme closed in June 2014 and was followed by another cashback scheme, the 120 million GPB (156 million EUR) Green Deal Home Improvement Fund (GDHIF), which the government was forced to close after just three weeks following a surge of applications for grants. Technologies covered under GD include air source heat pumps, ground source heat pumps, biomass and micro Combined Heat and Power, condensing boiler (gas or oil), fan-assisted storage heater, flue gas heat recovery device, heating controls, warm-air unit, hot water cylinder jacket, cylinder thermostat and waste water heat recovery devices for showers.

The purpose of the ECO Programme, the GD's sister programme, is to subsidise the use of energy efficiency measures in buildings where households cannot afford to take action themselves. The scheme places legal obligations on the larger energy suppliers to deliver energy efficiency measures to domestic energy users. This is achieved through three distinct obligations:

- where buildings are hard to treat (the Carbon Emission Reduction Obligation - CERO)
- where households are tenants in fuel poverty or are located in low income areas (Home Heating Cost Reduction Obligation (HHCRO) also known as Affordable Warmth) and

[3] Buildings are defined as hard to treat when conventional measures cannot be used to improve efficiency. These are measures such as cavity wall insulation, loft insulation etc.

- where energy is supplied through community schemes in low income areas (Carbon Saving Community Obligation).

ECO was introduced together with GD in January 2013 and replaced two previous schemes, the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP). ECO underwent a series of changes and DECC has since been criticised for introducing uncertainty about the scheme's future and hence delaying supply chain developments and take-up. In its July 2014 consultation about the future of ECO, the government came forth with changes to the scheme. One of the major changes is that it will be extended to March 2017 with new targets imposed for CERO, CSCO and Affordable Warmth (DECC, 2014f). However, while 2017 is phrased as an extension to the scheme, the original DECC impact assessment of ECO assumed it to run until 2022 at roughly the same levels of support (Mason, 2014).

The Government's target is to have one million homes being upgraded through both ECO and the Green Deal by April 2015. However, the rate of progress is not at the scale needed to achieve the carbon reductions needed (Energy, 2014). DECC's original Impact Assessment of the Green Deal and ECO scheme estimates that up to one million solid wall insulations will be completed by 2022 (DECC, 2014s). It also estimates that 1.2m easy to treat cavities will be filled out of the current potential of 2.6m. Including loft top-ups of around a quarter of the 6 million potential and the nondomestic sector's abatement, this would contribute savings of 25 $MtCO_2$ by 2020 (Ibid.). While by the end of October 2014, there had been 1,023,000 measures installed in around 829,000 properties (DECC, 2014t), these were largely single measures rather than the intended whole house upgrades and only 67,467 solid wall insulation measures have been installed so far (Ibid.).

In order to ramp up uptake of the Green Deal, the UK has introduced an area-based approach to the green deal. Six communities received funding as part of the Green Deal Communities of GBP 19.5 million (approx. 23.3 million EUR) and shall deliver over 5,500 Green Deal Plans to more than 7,000 homes (DECC, 2014o).

Private Rented Sector Energy Efficiency Regulations

The UK Energy Act 2011 places a duty on the Secretary of State to bring into force regulations to improve the energy efficiency of buildings in the residential and non-residential private rented sector (PRS) in England and Wales. The consultation on the proposed policies closed on 2nd September, 2014. The preferred policy option relating to PRS currently states (DECC, 2014g):

> "*From April 2018, landlords in the domestic and non-domestic PRS who are re-letting a property that requires an Energy Performance Certificate (EPC), and where the EPC rating is 'F' or 'G', must attempt to improve the rating to a minimum of an 'E'. They can do this by either: taking out a Green Deal (provided the package meets the 'Golden Rule'); using ECO funding (where available); or obtaining a local authority or government grant (or using a combination of these). The Regulations initially apply to PRS properties once they are let to a new tenant. However, a 'regulatory backstop' is proposed, which would come into effect several years after April 2018 to capture those PRS properties which have not been re-let since April 2018*." (Ibid, p.1)

The Energy Act introduces the Tenant's energy efficiency improvement regulations which will allow private residential tenants to request consent for energy efficiency measures that may not unreasonably be refused by their landlord (Ibid.). These regulations will be in force by 1 April 2016 (Ibid.). It also proposes the Minimum energy efficiency standard regulations that will require eligible properties in the sector to be improved to a specified minimum standard (Ibid.). These regulations will be in force by 1st April 2018 (Ibid.).

Building Regulations

The building regulations define the minimum standard that a new home in England and Wales has to be built to and Part L is the section that deals with the energy efficiency of the fabric and boiler. Part L is an energy performance based requirement mandating minimum performance standards of construction and insulation material.

For new homes (and other buildings), the government is committed to Building Regulations as the way to drive up energy performance standards (DCLG, 2013). It is clear that Building Regulations will need to play a strong role in the development of zero carbon policy (Ibid.) (see further below).

Following public consultation, the Government announced a strengthening of Part L of the Building Regulations on energy efficiency requirements for buildings. The new regulation came into force on 6 April 2014 and require average reductions of 6% in CO_2 emissions for new homes and 9% for new non-domestic buildings compared to Part L 2010 regulations (DECC, 2014h). These changes take the next step towards zero carbon buildings with an emphasis on improving fabric energy efficiency performance. They introduce mandatory minimum fabric performance standards (Target Fabric Energy Efficiency, TFEE) in addition to the original carbon emissions standard (Target CO_2 Emission Rate, TER) (Centre, n.d.).

Part L requirements for extensions to existing properties and for replacement windows and boilers have been strengthened considerably in recent years and no further changes are being introduced at present.

Zero carbon homes

In order to target the new-build sector, the government is committed to implementing zero carbon homes from 2016 onwards. In England, the requirement for zero carbon homes will be set out and enforced in the 2016 building regulations, specifically parts L (Conservation of Fuel and Power), F (Ventilation) and J (Heat Producing Appliances) and their approved documents (Anon., 2015). The zero carbon homes standard will require house builders to decrease all carbon emissions from energy arising from fixed heating and lighting, hot water and other fixed building services (e.g. ventilation) in new homes; it does not include carbon emissions from appliances or 'white goods' (DCLG, 2014a).

Since the launch of the 2016 target, there has been much debate as to the definition of a zero carbon home. The Zero Carbon Hub, which was set up by government and industry to help deliver this target, has been working to find the most technically achievable and cost-effective way to deliver the target[4]. The zero carbon target has been broken down into three parts (Association, 2015):

1. A high level of insulation and air tightness known as the Fabric Energy Efficiency Standard (FEES)
2. Efficient heating, hot water and lighting known as the Carbon Compliance Standard
3. The remaining emissions to be dealt with via "allowable solutions" (see below). These will probably include the option to go for higher standards of the FEES and Carbon Compliance Standard, as well as onsite and offsite renewables.

It was originally intended that new homes would meet the entire set of zero carbon standards 'on-site'. However, the government recently proposed that house builders can achieve the zero carbon standard by mitigating the remaining emissions 'off-site', in effect a kind of carbon offsetting or abatement in order to ensure cost effectiveness. **Allowable solutions** is the overarching term for the carbon offsetting process and the various measures which house builders may support to achieve the zero carbon standard from 2016. There is some concern that the standards will be watered down further before 2016 since the concept of allowable solutions remains still undefined and developing an operational scheme for allowable solutions until 2016 becomes increasingly challenging. The Queen's speech in July 2014 also exempted "small" housing developments from meeting the obligation whereby "small" has not been defined, yet. A consultation by DCLG on allowable solutions concluded in July 2014. It introduced potential exemptions for i.e. small house developers and the intention to develop a national (rather than regional) framework for allowable solutions (DCLG, 2014b).

The details of this framework, ergo which measures will fall under allowable solutions, remain unclear. The CCC considers that allowable solutions might deliver a more cost-effective outcome overall, but that it would be problematic and not cost-effective in the long-term if the proposal resulted in new homes not incorporating low-carbon heat generation and that "there should not be exemptions for

[4] http://www.zerocarbonhub.org/sites/default/files/resources/reports/ZCHomes_Nearly_Zero_Energy_Buildings.pdf

small developments unless there were clear evidence, not currently provided, that this would be cost beneficial (CCC, 2014).

The Government provided 1.6 billion GPB (approx. 2.1 billion EUR) to the Decent Homes programme for the period 2011 to 2015 in order to help local councils with the poor housing, a further £160 million has been allocated for 2015 to 2016 (DCLG, 2014b). Outside London this programme is run by the Homes and Communities Agency on the Government's behalf and £774 million (approx. 1 billion EUR) has been paid to 31 councils to repair and improve nearly 80,000 homes (Ibid.).
London allocated £50 million to improve the energy efficiency of more than 175,000 homes (McGlone, 2014). Properties that qualify for the scheme will receive a range of cost effective measures including boiler upgrades, insulation and heating upgrades. Support is expected to initially focus on large landlords, predominantly stock-owning London boroughs, and housing associations.

On 26 March 2014, Minister for Energy and Climate Change Greg Barker announced that 24 local authorities in England and Wales have been awarded more than 2.1 million GBP (approx. 2.5 million EUR) through the Government's Heat Network Delivery Unit (HNDU) (DECC, 2014p). HNDU was established in September 2013 with a 7 million GBP (approx. 8.4 million EUR) fund to support the development district heating networks. All successful projects are designed to provide more efficient heating to buildings (e.g. energy from waste or recovered heat taken from industry). The remaining funding will be allocated through subsequent funding rounds, which will run until March 2015.

On 28 January 2014, the Minister of Energy and Climate Change Greg Barker announced 10 million GBP (approx. 13 million EUR) funding for British small and medium size enterprises to support them in launching new and innovative energy efficient products that could reduce cost of consumer bills and carbon emissions (DECC, 2014d). Up to 2 million GBP (approx. 2.4 million EUR) funding will be made available to entrepreneurs from the energy efficiency, building technologies, power generation and energy storage sectors under the Government's Energy Entrepreneurs Fund. In addition, commercial experts will provide advice to the winning enterprises on how to attract investment in order to bring products to the market. This is the third stage of the Energy Entrepreneurs Fund. The first stage was launched in September 2012 and 31 companies were awarded grants totalling 16 million GBP (approx. 19 million EUR). During the second stage that was launched in June 2013 grants with total value of 9 million GBP (approx. 10.9 million EUR) were allocated to 20 companies.

On 2 September 2014, DECC launched a 20 million GBP (approx. 25.4 million EUR) Electricity Demand Reduction (EDR) pilot which will support businesses and organisations willing to install more energy efficient equipment (e.g. LEDs or improved motors and pumps) and thus cut their peak electricity demand (DECC, 2014e). Interested companies and organisations may submit their applications to DECC until 31 October 2014. Those qualified will take part in a competitive auction, to be held in January 2015, and bid in kilowatt (KW) savings from planned projects. Selected will be the projects showing the best value for money. Winners will be rewarded once the savings are delivered. Winners will then sign a Participant Agreement and install measures by October 2015, delivering contracted savings from 1 November 2015 to 29 February 2016 (Ibid.).

A total budget for the first EDR Pilot auction amounts to 10 million GBP (approx. 13 million EUR).

4.2.3 Renewable Energy

The share of renewables in gross final energy consumption was 4.2% in 2012 which is just above the indicative 2012 target of 4.0% set out by the Renewable Energy Directive (RED). The average annual growth rate was 15.9% between 2005 and 2012. A higher annual growth rate of 17.6% is needed between 2013 and 2020 to reach the 2020 target of 15% (EEA 2014a). The share of renewable electricity generation in final electricity consumption more than doubled from 4.1% to 10.8% from 2005 to 2012, while the share of renewable heating increased from 0.8% to 2.3% (Eurostat, SHARES 2014).

Feed-in-Tariffs are the UK's primary instrument to encourage investment of renewable capacity. However, Contracts for Difference (CfD) are the UK's new instruments to try to stimulate investment in renewable energy (among others). This scheme replaces the Renewables Obligation (RO) as the main policy incentive for renewables; the RO will be closed to new applicants in April 2017. CfDs are long-term, legally binding private-law contracts that are meant to encourage investment in low-carbon generation technologies such as renewables, nuclear and carbon capture and storage. The

government has introduced them in order to provide greater certainty to generation plant owners about future revenues by protecting them from fluctuations in the wholesale electricity price. The goals is that this will encourages investment in new electricity generation, as the certainty reduces risk and therefore helps lower the cost of capital. Low-carbon generation with a CfD will sell their electricity into the market in the normal way and remain active participants in the wholesale electricity market. Terms and conditions were set out in August 2014 and will be used in the first CfD Allocation Round (DECC, 2014j).

On 19 February 2014, the Offshore Wind Programme Board (OWPB)[5] launched its annual report revealing that maximising the economic benefit from offshore wind is a key priority of the UK Government. In its report, OWPB sets out number of proposals to enable the UK to maintain its position as the world leader in the field of offshore wind deployment. *Inter alia*, OWPB proposes acting as a hub where developers and supply chain companies could share experiences and best practice and thus drive cost reduction, continuing to engage with colleagues in other offshore wind markets (e.g. other players in the North Seas region) in the field of reduction of levelised cost of energy, as well as ensuring right objectives in light of the final design of Electricity Market Reform (DECC, 2014k).

The Department for Energy and Climate Change (DECC) published its first ever Community Energy Strategy in 2014 in order to meet its commitment to encourage community-owned renewable energy projects. The Community Energy Strategy describes the ways communities are already working together to generate power and heat, cut energy consumption, save money on their energy bills etc., and thus make their contribution in meeting UK's energy and climate changes challenges (DECC, 2014c). In addition, the strategy combines existing policies and measures with the new ones to a consistent support package in the field of community energy. Among other things it announces a new Urban Community Energy Fund that will provide finance to communities "at risk" for the early stages of projects with the aim to enable community power and heat projects to progress up to the point where they can attract further investment and generate income through the existing Feed in Tariff and Renewable Heat Incentive schemes.

The 10 million GBP fund (approx. 13 million EUR) was launched on 13 November 2014 and provides grants of up to 20,000 GPB to more speculative, early stages of project development, such as public consultation and preliminary viability studies as well as loans of up to £130,000 to develop planning applications and a robust business case to attract further investment to communities (DECC, 2014b). The first deadline for application was 22 December 2014. Technologies eligible for funding are:

- wind turbines
- hydropower
- solar photovoltaic
- solar thermal
- ground, water and air source heat pumps
- anaerobic digestion
- biomass
- low carbon/renewable heat networks
- gas combined heat and power (CHP) units.

The counterpart to the Urban Community Energy Fund is the Rural Community Energy fund. The 15 million GPB programme, jointly funded by the Department for Environment, Food and Rural Affairs (Defra) and DECC supports rural communities in England to develop renewable energy projects which provide economic and social benefits to the community (WRAP, n.d.). It had been launched a year earlier than the Urban fund, in June 2013. Furthermore, the Government also expects that until 2015 interested communities shall be offered a certain level of ownership of onshore renewables projects (DECC, 2014e); practical implications of this proposition are unclear as of yet.

The domestic Renewable Heat Incentive has been put in place in April 2014 (after long delays) to encourage homeowners to install low carbon heating systems. It is a financial incentive scheme

[5] The board brings together senior representatives from industry and the UK and Scottish government, The Crown Estate and Statutory Nature Conservation Bodies. See: http://www.thecrownestate.co.uk/energy-infrastructure/offshore-wind-energy/working-with-us/offshore-wind-programme-board/

designed to encourage uptake of renewable heating among domestic consumers. The domestic RHI is targeted at, but not limited to, homes off the gas grid. Under the RHI, homeowners will receive tariffs per unit of heat generated for seven years. Eligible technologies include air source heat pumps, ground and water-source heat pumps, solar thermal panels (flat plate and evacuated tube for hot water only) and biomass-only boilers and biomass pellet stoves with integrated boilers (DECC, 2014q). Support levels for technologies (commissioned on or after 9 April 2014) range from 7.3p/kWh (9.5c/kWh) for air source heat pumps to 19.2p/kWh (25c/kWh) for solar thermal installations.

The RHI is well placed to make an important contribution to the transition, though there are signs that financial and non-financial barriers are inhibiting uptake, and that uptake levels to date are below the ambition curve. The ambition of the RHI is described in the RHI impact assessment which estimates that the RHI could support around 700,000 installations (central value) of low carbon heat technologies between 2015 and 2020 (DECC, 2013). As of November 2014, 10,000 installations have been accredited onto the scheme. Funding for the RHI has not been committed beyond 2016, and the scheme is due to end in 2020. However, the Government is working to improve accessibility to the scheme. On 10 November 2014, DECC together with the Office of Gas and Electricity Markets (Ofgem) announced planned amendments to the domestic Renewable Heat Incentive (RHI) in order to facilitate eligibility (through reduced bureaucracy and costs) and thus increase uptake (DECC, et al., 2014l). According to the proposed amendments, from spring 2015 social landlords will no longer need to have a rigorous, payable assessment to apply for the domestic RHI scheme if they already have Energy Performance Certificates for their properties, which are less than two years old. In addition, the list of eligible technologies will be expanded to include cooker stoves (fuelled with biomass) from Spring 2015. They will receive a tariff of 12.2p/kWh (approx. 15c/kWh). These proposed amendments to the RHI scheme are subject to the regulations being agreed by Parliament.

4.2.4 Energy Networks

In the UK, the mass roll-out of smart gas and electricity meters is due to start in late 2015. By 2020, smart meters have to be installed in all UK households and small businesses. Estimated costs of the roll-out total £ 11 billion GBP (approx. 14 billion EUR), around 215 GBP (approx. 270 EUR) per home. This sum is the capital cost of installing the smart meter and will be borne by energy consumers between 2015 and 2030. According to the Public Accounts Committee within the Parliament, householders would save on average only 2% on the typical annual bill of 1,328 GBP (approx. 1,685 EUR) until 2020, rising to 3% by 2030 and the roll-out has been criticised on these grounds (Smithers, 2014)). Nevertheless, the smart meter roll-out also has a role to play in the development of a UK smarter grid.

The Smart Grid Vision and Routemap, published on 27 February 2014 by DECC[6], lists a number of benefits and opportunities that a smart grid can provide for consumers, enterprises, grid operators and the wider energy industry. Firstly, costs to consumers could be reduced because smart grids would allow them to have greater control over their energy consumption and benefit from using electricity during off-peak hours. Secondly, smart grids could support economic growth and jobs: according to the Routemap, an estimated potential of £ 13 billion (approx. € 15.8 billion) of Gross Value Added (GVA) and £ 5 billion (€ 6.1 billion) of potential exports up to 2050 as well as 8,000 to 9,000 new jobs up to 2030 are associated with the smart grid development. Finally, energy security and integration of low carbon technologies could be increased through improved monitoring and control of the grid that would allow network companies to more quickly identify problems and better manage supply and demand at a local level.

The Smart Grid Vision and Routemap highlight the significant progress that Great Britain has already made in deploying smart grid. This could partly be achieved through the Ofgem's new RIIO Price Control model, having greater emphasis on network innovation support, as well as the Low Carbon Networks Fund with the overall budget of £ 500 million (approx. € 606.1 million). The latter finances network company innovation projects, which test and trial new smart grid technologies and solutions.

[6] The Smart Grid Forum, created by the DECC and the Office of Gas and Electricity Markets (Ofgem), consists of representatives from electricity network companies, consumer groups, energy suppliers and wider industry who together work on diverse technical, commercial and regulatory issues concerning smart grid development.

On 19 March 2014, the Department of Energy and Climate Change (DECC) confirmed final aspects of the Capacity Market, which is one of the key elements of the Electricity Market Reform. Through the Capacity Market the Government hopes to ensure security of electricity supply by encouraging investment to replace older power stations and provide backup for more intermittent and inflexible low carbon generation sources (DECC, 2014m). The government hopes to achieve this by providing additional payment to power plants for reliable sources of capacity, alongside their electricity revenues, to ensure they deliver electricity when needed. DECC confirmed that 15-year capacity agreements will be available to new capacity. The existing capacity will be able to enter into rolling one year agreements. Three year agreements will be available to plants which need to undertake significant renovation. “Unreliable” capacity plants will be penalised with penalties amounting to 200% of their monthly income and 100% of their annual income. Finally, to protect consumers from excessive costs, the capacity auction will be capped at GBP 75/kW (approx. € 89/kW).

The first capacity auction took place in December 2014. Capacity is planned to be in place by 2018. As announced by the Government, two transitional auctions for demand side capacity will run in 2015 and 2016. Ageing fossil fuel generation dominated the mix of contracts awarded in the auction held on 18 December 2014 with many more sustainable energy options outbid (Anon., 2015).

On 13 February 2014, Energy and Climate Change Minister Greg Barker announced that two British companies, namely Viridor Waste Management Ltd and Highview Power Storage, have been allocated over 8 million GBP (approx. 9.7 million EUR) to encourage innovation in energy storage. Both companies will work in a partnership to develop a technology able to store air in a liquid format, which can then be used to supply electricity at times of high demand. The developed technology will be connected to the national grid, and will be used to test supply and demand balancing with stored energy (DECC, 2014n).

The two companies have been contracted as part of the DECC’s Energy Storage Technology Demonstration Competition that was launched in October 2012. In November 2013, three other winning demonstration projects had already been announced and awarded funds by the DECC (Ibid.).

4.2.5 Transport

GHG emissions from transport have increased between 1990 and 2007, but the downward trend since 2007 has absorbed this increase. Thus, emissions from transport are the same in 2012 as they were in 1990. Energy consumption from transport has developed similarly, however 2012 are still slightly above 1990 levels. In contrast, the proportion of these emissions among the UK’s total emissions has further increased, reaching 19% in 2012 (Eurostat, tsdcc210 and tsdpc320). Average emissions for newly registered cars are moderate in the UK with a level of 128.3 CO_2/km. Average emissions have decreased by 24%, which is at a higher rate than the EU average of 22% between 2005 and 2013 (Eurostat, tsdtr450). Fuel taxation in the UK is far above EU average. The road fuel excise duties on petrol are the third highest among EU MS and the excise duties on diesel are the highest in the EU (EEA 2014b).

While no registration tax applies, the ownership tax is based on CO_2 emissions and fuel type, and for the first tax year, different rates apply making a stronger differentiation between low and high emission cars (ACEA 2014).

Regarding Electric Vehicles, the Plug-in Car Grant reduces the price of ultra-low emission vehicles by up to 5,000 GBP (6,500 EUR) for cars and 8,000 GBP (10,400 EUR) for vans, making them more affordable for the public and businesses (Office for Low Emission Vehicles et al. 2014). Between July and September 2014, over 5,000 grants were provided, more than double the number than in the previous three months and almost a third of all grants since the scheme was launched in 2010. There are now over 17,000 grant funded ULEVs on UK roads (Ibid.).

On 9 October 2014, up to 11 million GBP (approx. 13.9 million EUR) of funding to support the roll-out of hydrogen fuel cell electric vehicles (FCEVs) was agreed. The greater share of this funding (7.5 million GPB, approx. 9.5 EUR million) will come from the UK government while industry will contribute with 3.5 million GBP (4.4 million EUR). The announced funding will mainly be used for the establishment of an initial network of up to 15 hydrogen refuelling stations by the end of 2015; 2 million GPB (approx. 2.5 million EUR) will be spent for the funding of public sector hydrogen vehicles to

encourage deployment of around 40 hydrogen FCEVs in focused geographical clusters (Department for Business, et al., 2014).

On 14 October 2014, the Government also committed 11 million GBP (approx. 13.9 million EUR) to accelerate research and development of carbon-cutting transport technologies (Ibid.). Thus UK companies will be able to bid for funding to develop a technology which will significantly cut CO_2 emissions of cars. This funding is part of a 500 million GBP (approx. 633.8 million EUR) investment for the development and use of ultra-low emission vehicles in the UK between 2015 and 2020 (Ibid.).

The Department for Transport (DfT) provided additional funds to introduce low carbon vehicles in local authorities. 17 local authorities have been awarded grants from a 5 million GBP (approx. 6.3 million EUR) Clean Vehicle Technology Fund (CVTF) for a wide range of cutting-edge, pollution reducing technologies which will now be installed in over 1,000 local authority vehicles (Transport & Kramer, 2014a). Additional 50,000 GBP (approx. 63,460 EUR) of funding will be allocated to support local authorities in monitoring the results of their clean technology projects. This is the first time that the CVTF funding has been available for a wider range of public service vehicles (Ibid.).

In addition, a separate scheme, managed by the Office for Low Emission Vehicles (OLEV) also has a budget of 5 million GBP (approx. 6.3 million EUR) from 2014 to promote the adoption of ultra-low emission vehicles in central Government and wider public sector fleets. It was announced in 2014 and its second phase went live in January 2015 in which up to 35 public sector organisations are being asked to bid for funding (DfT et al. 2015). Winners will be offered a fully-funded fleet review to identify how to introduce greener vehicles. The first phase saw 15 government departments launch reviews of their vehicle fleets and will see around 150 vehicles begin to enter fleets from February (Ibid.). The second phase is expected to see more than 200 plug-in vehicles introduced to the fleets of other public sector organisations (Ibid.).

On 11 July 2014, the Department for Transport announced that funding of up to 64 million GBP (approx. 80.4 million EUR) is awarded through the Local Sustainable Transport Fund to 44 sustainable transport schemes of local authorities across England. Successful projects include *inter alia* better-quality infrastructure for cyclists and pedestrians or new and improved transport interchanges that will allow easy switches between different modes of transport (Transport & Baroness Kramer, 2014b). Funding will be provided, e.g.., for the extension of Cycling Ambition programme in Birmingham and the Access 2 Education programme in Devon (encourages students to travel more sustainably to school and training) or for the cycling improvements in East Lancashire (includes enhanced strategic cycle network to provide links between housing, employment and town centres) (Transport & Hammond, 2014). In addition, local authorities will contribute their own funding totalling over 375 million GBP (approx. 471 million EUR). This means that his means that for every 1 GBP the Department for Transport will invest through the Local Sustainable Transport Fund in 2015 to 2016, local authorities will contribute 5.80 GBP over the 6 years to 2020/2021 (Ibid.).

Moreover, the Department for Transport also announced new government funding of 15 million GBP (approx. 19 million EUR) to improve cycling facilities across the UK. This is provided in addition to other transport funding schemes. The aim of the funding is to cut air pollution and reduce traffic congestion on roads by increasing the number as well as improving the quality of bike parking and providing other cycle-friendly facilities at railway stations (Transport, 2014a). Eligible for funding will be the train operating companies, which will have to bid for funding (Ibid.). The funding will be allocated through the Cycle Rail Working Group, composed of representatives from the rail industry and the cycling sector.

In addition, the Department for Environment, Food and Rural Affairs (Defra) announced that as part of the Air Quality Grant Programme for 2014-2015, 1 million GBP (approx. 1.3 million EUR) will be allocated to local authorities across England to support projects aiming to tackle nitrogen dioxide levels and mitigate emissions from road transport (Defra & Rogerson, 2014). Last year's successful projects include for example a 21,305 GBP (approx. 26,764 EUR) scheme to encourage cycling in Chichester or a 23,500 GBP (approx. 29,522 EUR) feasibility study for changing road layouts and routes for Heavy Goods Vehicle (HGV) in North Hertfordshirev (Ibid.).

5 Policy progress against Country Specific Recommendations (CSRs) issued 2013

The EU Commission provides Country Specific Recommendations (CSRs) for each MS for consideration and endorsement by the European Council. The recommendations are designed to address the major challenges in relation to the targets of the EU 2020 Strategy. No CSRs have been issued in the climate and energy area in 2014.

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