

28 April 2017: UK 2017 National Energy Efficiency Action Plan and Annual Report.

Background:

This report sets out the information that Member States must provide annually to the Commission under Article 24(1) of the Energy Efficiency Directive (“the Directive”), to report progress achieved towards national energy efficiency targets, in accordance with Annex XIV Part 1.

This report also includes the information that Member States must provide every three years to the Commission under the Article 24(2) requirement of the Directive to submit a National Energy Efficiency Action Plan. The below information addresses the requirements of a National Energy Efficiency Action Plan as set out in Annex XIV Part 2.

The UK Government’s action to tackle climate change is framed by the Climate Change Act 2008. We are already making good progress towards meeting our goal of reducing emissions by at least 80% by 2050 on 1990 levels, and we are looking ahead to our plan to reduce emissions through the 2020s. This will form an important signal to the markets, businesses and investors.

ANNEX XIV, Part 1 GENERAL FRAMEWORK FOR REPORTING

Overview of progress in reducing energy consumption

Table 1 reports the recent trends in energy consumption and the headline official statistics up to 2015.

Primary energy consumption in 2015 fell by 0.2% since 2014 but final energy consumption was 2% higher. Compared with 2007, consumption was 15% and 11% lower respectively. Overall, energy consumption in the UK has been on a downward trend.

Looking at the sub-sectors and the 2015 statistics:

- Industrial energy consumption fell by 1% since 2014 and by 23% since 2007.
- Household energy consumption rose by 4% since 2014 (but fell by 1% on a temperature adjusted basis) and has fallen by 12% since 2007 (a 14% reduction on a temperature adjusted basis).
- Service sector energy consumption rose by 1% since 2014 and by 1% since 2007. Real GVA (in national currency) has risen by 16% in this sector since 2007.
- Transport energy consumption for passenger transport rose by 1% since 2014 but has fallen by 8% since 2007. The fall in petrol and diesel prices of 13% and 14% respectively seen over 2015 will have slowed the reduction seen in previous years and passenger kilometres increased by 6% since 2014.
- Energy consumption for road freight transport increased by 1% since 2014 and has fallen by 3% since 2007. Continued growth in economic activity will have contributed to this together with a 10% increase in real GDP (measured in national currency) from 2007 to 2015.
- Since 2007 overall transport energy consumption has fallen by 7%.

A table reporting the latest UK statistical data required by point (a) of Annex XIV of the Directive.

Table 1 UK statistics for energy consumption and activity data¹

	Data for 2007	Data for 2014	Data for 2015	Units
(i) primary energy consumption;	212.2	181.1	180.8	mtoe (ncv)
(ii) total final energy consumption;	145.2	127.1	129.1	mtoe (ncv)
(iii) final energy consumption by sector				
— industry mtoe	28.9	22.5	22.3	mtoe (ncv)
— transport (passenger) ²	42.6	38.7	39.2	mtoe (ncv)
— transport (road freight transport)	12.9	12.5	12.6	mtoe (ncv)
— households	41.7	35.4	36.6	mtoe (ncv)
— services;	17.2	17.1	17.4	mtoe (ncv)
— agriculture;	0.9	0.9	1.0	mtoe (ncv)
(iv) gross value added by sector				
— industry	503	389	440	billion € 2015 prices ³
— services;	1,477	1,429	1,615	billion € 2015 prices
(v) disposable income of households;	1,697	1,495	1,721	billion € 2015 prices
(vi) gross domestic product (GDP);	2,481	2,267	2,568	billion € 2015 prices
(vii) electricity generation from thermal power generation;	32.9	25.3	23.0	mtoe (ncv)
(viii) electricity generation from combined heat and power;	2.4	1.7	1.7	mtoe (ncv)
(ix) heat generation from thermal power generation;	n/a	3.1	3.0	mtoe (ncv)
(x) heat generation from combined heat and power plants, including industrial waste heat;	4.2	3.3	3.2	mtoe (ncv)
(xi) fuel input for thermal power generation;	83.4	65.0	59.2	mtoe (ncv)
(xii) passenger kilometres (pkm), if available;	807.9	787.6	793.4	billion kms
(xiii) tonne kilometres (tkm), if available ⁴ ;	251.0	185.0	201.0	billion tonne-kms
(xiv) combined transport kilometres (pkm + tkm), in case (xii) and (xiii) are not available;	n/a	n/a	n/a	
(xv) population.	61.3	64.6	65.1	millions

¹ Energy statistics consistent with the Digest of UK Energy Statistics definitions, presented on a net calorific value basis. (excluding non-energy use) <https://www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2016-main-chapters-and-annexes>

² Includes freight activity for rail, aviation and shipping

³ Economic series are presented in real prices in euros converted using the exchange rate observed in the individual years.

⁴ From 2014 the UK statistics only include tonne-kms for vehicles over 3.5 tonnes.

Annex XIV, Part 2 – GENERAL FRAMEWORK FOR NATIONAL ENERGY EFFICIENCY ACTION PLANS

Annex XIV, Part 2 (1): Targets and strategies

The indicative national energy efficiency target for 2020 as required by Article 3(1)

2020 Energy Efficiency Target

In 2007 the European Union set an ambitious primary energy saving target of 20% by 2020, against a 2007 business-as-usual projection. This forms part of a wider package of targets – known as the “20-20-20 targets” – which make up the EU’s 2020 climate and energy package, which includes binding greenhouse gas emissions and renewable energy targets.

The UK’s target was set at the level of 129.2 million tonnes of oil equivalent (mtoe) for final energy consumption on a net calorific value (ncv) basis. This represented an 18% reduction in final energy consumption⁵, relative to the 2007 business-as-usual projection.

Estimates of energy consumption in 2020 can be broken down by sector based on the UK’s 2016 Energy and Emissions Projections⁶ (see table 2).

Table 2: Estimates of key national energy production and consumption figures in 2020
Estimate of energy consumption in 2020⁷

	Million tonnes of oil equivalent (NCV basis) ⁵
Total primary energy consumption in 2020	179.6
Electricity transformation input (public thermal power plants excluding nuclear)	29.7
Electricity generation output (public thermal power plants excluding nuclear)	9.4
CHP transformation input	5.9
CHP transformation output – thermal	3.4
CHP transformation output – electrical	2.4
Energy distribution losses (all fuels)	2.3
Total final energy consumption	132.2
Final energy consumption – Industry	22.9
Final energy consumption – Transport	52.0
Final energy consumption – Households	39.7
Final energy consumption – Services	16.5
Final energy consumption – Agriculture	1.1

Table 2 shows that the UK is projected to consume 132.2 million tonnes of oil equivalent (mtoe) of final energy consumption in 2020. These projections are subject to yearly fluctuations due to temperature, future growth, prices and actual policy impacts. The UK is projecting a rise of 13 per

⁵ Equivalent to a 20% reduction in primary energy consumption.

⁶ Source: BEIS Energy & Emissions Projections 2016 <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2016>

⁷ Excluding non-energy uses

cent in real GDP between 2014 and 2020⁸ driving some increased demand despite the impact of policies.

The national indicative energy savings target set in Article 4(1) of Directive 2006/32/EC

The Energy Services Directive (ESD) was adopted in May 2006. The ESD aims to enhance the cost-effective improvement of energy end use efficiency in EU Member States. Its provisions include a requirement for Member States to establish a national indicative energy saving target of 9% to be met by the end of 2016. This analysis represents the final reporting against this target.

Under Article 4 of the ESD the UK is required to meet an indicative national energy savings target for 2016 of 136.5 terawatt hours (TWh). This is calculated as 9% of the 2001-05 average final energy consumption excluding energy consumption within the EU Emissions Trading Scheme (EU-ETS)⁹. The detailed calculation is described in the UK 2011 National Energy Efficiency Action Plan (NEEAP)¹⁰.

Table 3 below summarises the key policies and measures for which energy and carbon savings have been calculated. The table shows that, based on latest projections, the UK expects to exceed the 9% target, delivering 165 TWh in savings by the end of 2016, equivalent to a saving of 11% over the target period. Savings estimates for 2020 are also included together with an estimate of the savings that were achieved by these measures in 2012. Savings have been reported in terms of final energy consumption relative to the baseline set for this target¹¹.

The household sector was the biggest contributor to these savings, contributing 50% of total expected savings by 2016, with private and public sector savings contributing 26% of total savings and transport 25%.

UK estimates of policy savings are reviewed regularly based on evidence of take up of installations, changes to the coverage, funding, and requirements of a policy together with inclusion of evaluation evidence. Savings for 2016 have been revised up from 162 TWh (11%) in the 2014 report to 165 TWh (11%).

Table 3 Estimates of observed and projected energy savings from UK policies, TWh

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target¹²	2012	2016	2020
Household sector	61.9	81.7	102.3
Building Regulations	33.1	46.3	55.7
Supplier Obligations	26.9	28.5	26.7
Regulation of energy-using products	2.0	6.2	12.9
Smart meters / In home displays		0.8	7.0

⁸ Real GDP growth rate projections from the Office for Budget Responsibility (OBR): economic and fiscal outlook November 2016; table 1.1

⁹ Military energy use is also excluded.

¹⁰ UK 2011 National Energy Efficiency Action Plan http://ec.europa.eu/energy/efficiency/end-use_en.htm

¹¹ Based on the projection pre the UK's Climate Change Programme 2000.

¹² The figures for Building Regulations differ to the policy savings published in the most recent Energy and Emissions Projections (March 2017). Because the demand equations in the model underpinning the baseline projections are based on historic energy consumption data, the impact of the progressive tightening of building regulations in the period 1970-2000 has a dampening effect on projections of energy demand post-2000. Published emission projection estimates of policy savings strip this effect out, which understates the expected future impact of building regulations when policy savings are assessed relative to the NEEAP baseline. This effect has therefore been added back into the policy savings for the purposes of this analysis.

Private and public sectors (organisations)	31.7	42.2	58.9
Building Regulations	13.3	14.8	18.6
Business Smart Metering		1.1	3.8
Carbon Trust programmes	10.6	5.0	1.7
Public sector loans (Salix)	0.4	0.7	1.4
Climate Change Agreements & Climate Change Levy	3.8	6.7	10.1
CRC Energy Efficiency Scheme	1.1	3.6	5.1
Energy Savings Opportunity Scheme		3.2	3.1
Regulation of energy-using products	2.5	7.2	15.2
Transport	28.3	40.6	56.3
EU Voluntary agreement to 2009	24.9	31.1	31.5
EU new car CO2 target plus complementary measures: 130gCO2/km in 2015 and 95gCO2/km in 2020	0.0	4.4	14.9
EU new van CO2 target: 147gCO2/km in 2020	0.0	0.2	2.3
HGV industry improvements and low rolling resistance tyres	0.0	0.4	2.1
Low carbon buses & SAFED driver training	0.1	0.2	0.4
Local sustainable transport fund	3.2	4.3	3.9
Rail electrification	0.0	0.0	1.2
Total energy and carbon savings	121.9	164.6	217.5

The Energy Savings Opportunity Scheme (ESOS) has been included in this package since the 2014 NEEAP where qualifying organisations were required to carry out energy audits (including those done under the implementation of energy management systems under Article 8(6)) by December 2015 and every four years thereafter.

There have been a limited number of revisions to policy savings since the 2014 NEEAP. These included changes to the policy, revised methodology for calculating savings and revisions made based on evaluation evidence of what measures save or the amount of up-take. The main changes to the 2014 estimate are explained in Table 4

Table 4 Summary of changes in energy savings since April 2014

Policy	Revised saving 2014-20 (TWh)	Change (TWh)	Reasons for change
Smart metering (domestic)	0.8	-1.2	Lower savings assumed in 2016 that reflects the latest available data on smart meters already installed as well as suppliers' plans for future smart meter installations
Public sector energy efficiency loans scheme	0.7	+0.4	A further £295m over 5 years was allocated for the scheme in the 2015 Spending Review. Revised modelling of the additionality has also been included
Climate Change Agreements (CCAs) & Climate Change Levy (CCL)	6.7	+3.7	There are three significant changes to the modelling: 1. A conservative price elasticity was assumed in the 2014 analysis of -0.20. More realistic price elasticities of -0.30 (service sector) and -0.47 (industrial sector) have now been assumed. 2. Revised projection of renewable energy that is within scope of CCL charges.

			3. There has also been an increase in the projected energy use of business / industrial use in scope of CCL.
Energy Savings Opportunity Scheme	3.2	+3.2	This policy was still in development in 2014 so was not included previously.
Vehicle emission standards (including Voluntary Agreement)	36.1	-4.9	Lower savings due to Real world emissions and a lower share of diesel allocated to HGVs

The first and second National Energy Efficiency Action Plans shall also include the measurement and/or calculation methodology used for calculating the energy savings

The energy savings presented in this report are taken from the UK's Energy & Emissions Projections 2016.

These annual energy and emissions projections explain how some specific issues around overlaps and additionality are handled. The energy savings from UK policies are deemed savings and have been calculated according to the UK policy appraisal guidelines¹³. This guidance provides a common methodology for key issues such as determining a baseline counterfactual, together with providing a common methodology for valuing energy and carbon savings. Baseline counterfactuals allow for known policy overlaps. The Department for Business, Energy & Industrial Strategy collates energy savings for measures across the UK Government and Devolved Administrations and where necessary applies a policy ranking to adjust pre-policy demand for lower ranked policies in the merit order to avoid double-counting of savings. The methodology for specific policies has been set out previously in the 2014 National Energy Efficiency Action Plan or Article 7 notification.

Other existing energy efficiency targets addressing the whole economy or specific sectors.

The Climate Change Act 2008 requires the UK to reduce greenhouse gas emissions by at least 80% from 1990 levels by 2050. The Act also requires the Government to set legally binding five-year caps on emissions ('carbon budgets') twelve years in advance. The Fifth Carbon Budget has now been set and we are looking ahead to our plan to reduce emissions through the 2020s..

¹³ <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

Annex XIV, Part 2 (2): Measures and energy savings

a) Primary energy savings

Information provided in previous section.

b) Final energy savings

Energy savings achieved through the national energy efficiency obligation schemes referred to in Article 7(1) or the alternative measures adopted in application of Article 7(9)

The UK target under Article 7 is 324 TWh of energy savings as measured on a Gross Calorific Value basis. This is calculated based on cumulative end-use energy savings equivalent to 1.5% of annual energy sales to final energy users relative to the average energy sales over the period 2010-12. A 25% reduction is applied based on the derogations available under Article 7(2) and Article 7(3). This annual assessment reports a total of 442 TWh.

The UK has one live Energy Obligation that has been operational since 2013 (covering Great Britain not Northern Ireland). Statistics reporting delivery of measures through the Energy Company Obligation are published monthly and summarised in the table below.

Table 5: Summary of measures installed under the Energy Company Obligation¹⁴ (excluding micro-generation)

	2013	2014	2015	2016
Boiler	167,602	115,456	73,472	102,549
Cavity Wall Insulation	166,210	316,644	149,359	90,282
Loft Insulation	126,391	206,182	100,242	66,647
Other Heating	30,130	52,938	50,910	69,299
Other Insulation	1,612	8,473	2,138	1,158
Solid Wall Insulation	27,551	48,835	32,519	29,943
Window Glazing	284	1,874	2,208	997
Total	519,780	750,402	410,848	360,875

The energy savings derived from these measures are reported in Table 7 alongside the savings from alternative measures.

The savings presented in this report are based on the latest savings assessments made based on the evidence available on the impact of measures. In addition to revisions to projected savings to reflect policy changes, the impact of the latest economic growth and price assumptions are also reflected in the updated figures. A summary of changes to policy savings of at least 500 GWh are provided below.

¹⁴ Source: BEIS Household energy statistics <https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics>

Table 6: Summary of changes in energy savings since April 2016

Policy	Revised saving 2014-20 (TWh)	Change (TWh)	Reasons for change
*Carbon Emissions Reduction Target (CERT)	119	-7	Revisions to the profile of deployment assumed under CERT
*Energy Company Obligation (ECO)	40	-1	The original proposal in consultation to extend the ECO Regulations by 12 months to March 2018 was changed to 18 months and Parliamentary approval was given to Regulations that now run to September 2018. Changes in forecast savings also arise because of downward revisions to the estimates of installing measures, particularly solid wall insulation, resulting in increased energy savings. Projections of savings beyond September 2018 can only be estimates that will change in accordance with future policy decisions.
Building Regulations (existing buildings domestic)	62	-3	Note – Building Regulation savings are now shown separately for new and existing buildings. Domestic savings for boilers have been revised downwards to reflect additionality with EU product standards.
Climate Change Levy (CCL)	27	-9	There are three significant changes to the estimation of savings: 1. There has been a downward revision of the CCL tax base included in the analysis due to removal of energy in scope of CRC and ESOS (from 2016) policies which could create double counting. 2. This has been partially offset by an overall projected increase in consumption for business / industrial energy use. 3. Revised projection upwards of renewable energy that is within scope of CCL charges.
Climate Change Agreements (CCA)	20	-2	CCA savings estimated based on impact of CCL so same reasons apply here. However, the impact of CCL is assumed to remain constant over time for the purposes of calculating CCA savings.
Smart metering (non-domestic)	8	-6	Lower savings assumed in the Article 7 period that reflects the latest available data on smart meters already installed as well as suppliers' plans for future smart meter installations.
Rail electrification	2	-1	Correction of a modelling error that had provided total diesel saving not net energy saving after offsetting the additional electricity use.
Low emission vehicles	2	-1	A shift to more plug-in hybrid vehicles than previously assumed and a change to assumptions of how long Electric Vehicles are charged for.

**Savings are Energy Obligations and therefore savings are counted 2010-2023 where applicable*

Table 7: Table of estimated savings by policy¹⁵

TWh (Gross Calorific Value)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
Carbon Emissions Reduction Target (2010-2012)*	2.8	5.9	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.2	9.1	8.9	8.7	119
Community Energy Savings Programme (2010-2012)*		0.1	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
Energy Company Obligation*				0.5	1.2	1.9	2.8	3.7	4.3	4.6	4.9	5.1	5.4	5.6	40
Private Rented Sector Regulation (England & Wales) - domestic					0.0	0.0	0.0	0.0	0.1	0.2	0.3				1
Private Rented Sector Regulation (England & Wales) - non-domestic					0.0	0.0	0.4	0.7	1.1	1.4	1.7				5
Private and Social Sector Regulation (Scotland)					0.0	0.1	0.1	0.2	0.3	0.4	0.4				2
Home Energy Efficient Programmes (Scotland)					0.2	0.5	0.7	0.9	1.0	1.0	1.0				5
Sustainable Energy Programme (Northern Ireland)					0.1	0.1	0.2	0.2	0.3	0.3	0.3				2
Building Regulations - domestic (New build)					1.0	1.9	2.9	3.8	4.8	5.7	6.6				27
Building Regulations - domestic (Existing build)					3.7	7.4	8.4	9.3	10.2	11.2	12.1				62
Building Regulations - non-domestic (New build)					0.7	1.4	2.1	2.7	3.4	4.0	4.7				19
Building Regulations - non-domestic (Existing build)					1.7	3.4	5.0	6.5	8.1	9.5	10.9				45
Climate Change Levy					1.9	2.2	3.3	3.3	3.2	5.7	7.3				27
Climate Change Agreements					2.0	2.3	3.4	3.3	3.2	3.0	2.8				20
CRC Energy Efficiency Scheme					2.0	2.7	3.6	4.5	5.1	5.1	5.1				28
Smart metering (Non-domestic)					0.1	0.1	0.2	0.5	1.4	2.4	2.9				8
Energy Savings Opportunity Scheme					0.0	0.0	3.2	3.2	3.2	3.2	3.1				16
Salix public sector finance					0.0	0.1	0.2	0.3	0.5	0.7	0.9				3
Greening Government Commitment					0.4	0.5	0.5	0.5	0.5	0.5	0.5				3
Re:Fit					0.0	0.0	0.1	0.1	0.1	0.1	0.1				1
Rail electrification					0.0	0.0	0.0	0.0	0.7	0.7	0.7				2
Low Emission Vehicle policies					0.0	0.1	0.3	0.4	0.4	0.5	0.6				2
ALL POLICIES	3	6	10	10	25	35	47	54	62	70	77	15	15	15	442

Policies marked () are Energy Obligation*

¹⁵ The energy savings are calculated using the latest calorific values set out in the Digest of UK Energy Statistics. Policies are evaluated and savings presented using gross calorific values: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/541006/Annex_A_web.pdf

Please see **Annex A** for a description of the relevant measures.

Annex XIV Part 2(3): Specific information related to this Directive

3.1 Public bodies (Article 5)

National Energy Efficiency Action Plans shall include the list of public bodies having developed an energy efficiency plan in accordance with Article 5(7).

Regulation 4 of the Energy Efficiency (Eligible Buildings) Regulations 2013 imposes a duty on the competent authorities to encourage public bodies to adopt an energy efficiency plan. The competent authorities are the Secretary of State, the Welsh Ministers, the Scottish Ministers and the Northern Ireland departments. A central list of public bodies with energy efficiency plans is not held, as public bodies are not required to inform the government when they adopt an energy efficiency plan. Below are frameworks that encourage public bodies at regional and local level to improve their energy efficiency.

Central Government

All central government departments and their agencies in the whole of the UK are required to meet greenhouse gas reduction targets under the Greening Government Commitments, and progress towards these and other sustainability indicators is reported in the GGC annual report.

England

All local authorities in England are required to assess and report biannually on measures to enhance energy conservation of all residential properties within their area under the Home Energy Conservation Act 1995.

Wales

The Welsh Government has an energy efficiency strategy for Wales, as well as for its own operations. The Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 both place duties upon Welsh public bodies to deliver future decarbonisation, including duties to publish reports annually on progress made with achieving all of the well-being goals. The Welsh Government is supporting Welsh public bodies to deliver through Re:fit Cymru, the energy performance contracting approach supported by the Intelligent Energy Europe programme of the EU, and Green Growth Wales investment support.

Scotland

The Climate Change (Scotland) Act 2009 places duties on public bodies relating to climate change. Further to the Act, in 2015 the Scottish Government introduced an Order¹⁶ requiring all 150 Public Bodies who appear on the Major Player¹⁷ list to report annually to Scottish Ministers on their compliance with the climate change duties. The first mandatory reports were submitted on 30 November 2016. Annual reporting supports compliance with the public bodies duties and consolidates climate change information from the public sector.

This Public Bodies Climate Change Duties Reporting mechanism provides a solid basis for tracking public sector action on climate change and driving continuous improvement. The reporting platform introduces standard methodology to improve data consistency. Reports and analysis are publicly available, increasing accountability and transparency, and making it easier for the public and other

¹⁶ <http://www.legislation.gov.uk/ssi/2015/347/contents/made>

¹⁷ <http://www.keepsotlandbeautiful.org/media/1556802/major-players-290816.pdf>

parties to understand an organisation's climate performance. This in turn is helping improve leadership and engagement, while raising awareness of the impact of climate change with senior management, ensuring climate change objectives are integrated in corporate business plans and action embedded across all departments.

The reporting framework also assists better decision making and strategic planning and helps identify opportunities for financial efficiencies and cost savings. A baseline from the 2016 reporting data will be established to identify future trends in performance.

The Scottish Government funds the Sustainable Scotland Network (SSN) to provide operational support for this reporting process. SSN acts as a single point of contact for all public bodies on reporting, providing training and support to bodies completing their reports, coordinating returns and analysing the data.

For the first year (2015/16) of mandatory public sector climate change reporting return of 146 climate change reports were received. These reports are publicly available at: <http://www.keepsotlandbeautiful.org/sustainability-climate-change/sustainable-scotland-network/major-players-and-climate-change-reports/>

Northern Ireland

In Northern Ireland, the Department of Finance monitors the energy use of central government estate in accordance with CRC and Article 5 commitments, as legislated for under the Energy Efficiency (Eligible Buildings) Regulations 2013. The Department encourages public bodies to adopt energy efficiency measures through a requirement to produce annual Display Energy Certificates on all public authority buildings frequently visited by the public over 250m² total useful floor area, with advisory reports required at least every seven years. These are based on energy use in operation and are required under the Energy Performance of Buildings (Certificates and Inspection) Regulations (Northern Ireland) 2008 (as amended). In addition, the Department's Public Sector Energy Campaign gathers reports on the energy use of buildings in use by public sector bodies, encourages public bodies via its manual "Energy management in public sector buildings," and promotes energy efficiency activity generally (via websites etc.) as empowered by the Energy Efficiency Order (Northern Ireland) 1999.

The Northern Ireland Housing Executive (NIHE) is required to assess and report annually on measures to enhance energy conservation of all residential properties in Northern Ireland under the Home Energy Conservation Act 1995.¹⁸ NIHE also produces an Energy Efficiency Good Practice Guide to encourage efficiency measures in dwellings and administers extensive programmes of improvement measures to social housing under its control in Northern Ireland. As part of the government's efforts to raise the energy efficiency of social housing stock, the Department for Communities in Northern Ireland provides additional grant funding for new dwellings which meet certain energy efficiency standards in excess of building regulations requirements.

3.2 Energy efficiency obligations (Article 7)

National Energy Efficiency Action Plans shall include the national coefficients chosen in accordance with Annex IV.

Information relating to this requirement is contained in footnote 15.

¹⁸ http://www.nihe.gov.uk/home_energy_conservation_2016_twentieth_annual_report.pdf

3.3 Energy audits and management systems (Article 8)

a) the number of energy audits carried out in the previous period;

To date, around 6800 'Energy Savings Opportunity Scheme (ESOS) assessments' have been completed.

b) the number of energy audits carried out in large enterprises in the previous period;

The ESOS assessments notified to date come from around 5800 Ultimate Parent Groups (UPG). Each UPG will contain at least 1 'large undertaking'. The precise number of large enterprises is difficult to determine because the ESOS Regulations do not require the participants to supply this data.

c) the number of large companies in their territory, with an indication of the number of those to which Article 8 (5) is applicable.

There are around 6300 UPG's in the UK which contain at least 1 'large undertaking' and we expect that these will form around 7,300 participants. The figures differ from those stated above because some organisations are yet to comply.

We are not aware of any large companies having entered into voluntary agreements (which involve the implementation of energy audits) with an appointed body, supervised by the UK or another body or by the Commission.

3.4 Promotion of efficient heating and cooling (Article 14)

National Energy Efficiency Action Plans shall include an assessment of the progress achieved in implementing the comprehensive assessment referred to in Article 14(1).

Since publication of the National Comprehensive Assessment in Feb 2016, the UK Government has consulted on the £320 million Heat Network Investment Project, which aims to support investment in up to 200 projects, leveraging in up to £2bn of wider investment. Winners of the £39m pilot phase of the scheme were announced in April 2017, with the main scheme aiming to launch by the end of 2017.

Analysis of impact of the funding is set out at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/560597/HNIP_consultation_response-Final.pdf .

3.6 Member States shall report on the measures undertaken to enable and develop demand response as referred to in Article 15

Member States shall report, as part of their National Energy Efficiency Action Plans, on the measures undertaken to enable and develop demand response as referred to in Article 15.

Last year the UK Government launched a Call for Evidence, jointly with the National Regulatory Authority, which presented a wide-ranging proposal for how to enable the transition to a smart energy system, harnessing the potential of demand side response (DSR), storage and other technologies, to create the most efficient, flexible and productive electricity system.

Last year, the UK Government committed to allocate at least £50 million for innovation in smart systems over five years. As part of this commitment, we have recently launched two energy storage competitions, with up to £9 million available to reduce the costs for energy storage technologies and a further £600,000 to support feasibility studies for a potential first-of-a-kind, large scale future storage

demonstrator. Alongside this we have also launched a competition with up to £7.6 million available for innovative demonstrations of DSR technologies in UK business or public sector organisations.

In addition, the UK Government is committed to ensuring that every home and small business in the country is offered a smart meter by the end of 2020. Smart meters are a critical building block towards a smart energy system, creating new opportunities for DSR and storage.

The UK's Capacity Market also offers targeted support to the DSR sector through two Transitional Arrangements auctions, which are designed to encourage growth in this emerging sector, and to enable DSR to participate fully in the Capacity Market in the future. The first TA secured 803MW of capacity for delivery in 2016/17, and the second and final TA secured a further 312MW of turn-down DSR for delivery in 2017/18. DSR is also showing an increasing presence in the main Capacity Market auctions, with a 1.4GW of DSR capacity securing agreements in the latest four-year ahead auction (in December 2016).

3.7 Availability of qualification, accreditation and certification schemes (Article 16)

National Energy Efficiency Action Plans shall include information on the available qualification, accreditation and certification schemes or equivalent qualification schemes for the providers of energy services, energy audits and energy efficiency improvement measures

Green Deal

The Green Deal enables consumers to take out loans to pay for energy efficiency improvements in their homes, with repayments made through their energy bill. Repayments are made on a "Pay As You Save" (PAYS) basis: after the improvement has been made, the consumer begins to save energy, their energy bills are less than they would have been without the improvement, and these savings are used to repay the loan.

The key certified/authorised scheme participants are:

Green Deal Assessor

An organisation certified by an accredited Green Deal Certification Body to carry out energy efficiency assessments of a property.

A Green Deal Advisor is an individual employed or contracted by an authorised Green Deal Assessor who visits a property to undertake a Green Deal assessment and make recommendations for energy saving improvements. They must meet the requirements set out in the National Occupational Standards for Green Deal Advisors.

Green Deal Provider

Providers arrange Green Deal Plans, provide finance and arrange for the installation of the agreed energy efficiency improvements through an authorised installer. They must be authorised by the Secretary of State.

Green Deal Installer

A person, certified by an accredited Green Deal Certification Body to install energy efficiency improvements under the Green Deal.

Green Deal Certification Body

An organisation authorised by the Secretary of State to certify Green Deal Assessors and/or Green Deal Installers.

Each Home Counts

Each Home Counts is an independent review of consumer advice, protection, standards and enforcement for home energy efficiency and renewable energy measures in the UK. The Review findings were published on 16 December 2016 and industry is now leading work to develop implementation plans.¹⁹

Energy certificates in relation to the Energy Performance of Buildings Directive

It is the responsibility of the Accreditation Scheme to ensure that their members (energy assessors) hold appropriate qualification to produce energy certificates. Energy assessors can be considered to be qualified if they hold an appropriate qualification that has been approved by Office of Qualifications and Examinations Regulation (OFQUAL) as consistent with the relevant National Occupational Standards (NOS).

Accreditation Schemes can also accept energy assessors who have gone through the Accreditation by Prior Experiential Learning (APEL) route so long as:

- a) The individual is not currently suspended by another Scheme of which they are a member.
- b) The individual has not had their membership revoked by another Scheme.
- c) They have lodged an EPC within the last 2 years.
- d) The Scheme who accepted the individual through the APEL route confirms their acceptance of the individual into membership through APEL. Schemes shall provide such confirmations on request.
- e) The individual can provide the receiving Scheme with a record of their Continuous Professional Development (CPD) record over the last year.

3.8 Energy Services (Article 18), and Article 18(1) requirement to provide a qualitative review of the energy services market

National Energy Efficiency Action Plans shall include an internet link to the website where the list or the interface of energy services providers referred to in point (c) of Article 18(1) can be accessible.

We are in the process of updating the previously established web-page listing registered energy services providers.

A qualitative review of the energy services market

The energy services market in the UK continues to develop as a route for organisations to implement energy efficiency projects and has been driven through action taken by both government and industry.

There are external reviews of the UK market available for example the review undertaken by the Transparens project available here: <http://www.transparens.eu/uk/uk-epc-databases/uk-market>

Evidence suggests that the market for energy performance contracts is most developed in the public sector, in part driven by procurement frameworks for energy performance contracts. The government has also made available Model Energy Performance Contract, accompanying guidance notes and guide to best practices for the public sector, available at <https://www.gov.uk/government/publications/energy-performance-contract-epc>

¹⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/578749/Each_Home_Counts_December_2016_.pdf

The Green Investment Bank, which was set up by the government to accelerate the UK's transition to a greener economy, has supported the development of the market, by investing in energy efficiency projects and developing financing products for project developers including energy service companies.

Trade bodies have also played a role in the market's development. The Energy Services and Technology Association (ESTA) Energy Performance Contracting Group (EPCG) is dedicated to support the EPC market and the Energy Managers Association (EMA) also provide support and are the Code Administrators for the European Code of Conduct for Energy Performance Contracting.

Annex A: Information on measures adopted or planned to be adopted in view of implementing the main elements of this Directive.

Public Sector Energy Efficiency Loans Scheme

The Department for Business, Energy and Industrial Strategy (BEIS) funds a scheme of interest-free loans to support wider public sector bodies in England (outside central government) to carry out energy efficiency works. The scheme is managed by Salix Finance Ltd, providing a revolving fund. The loan repayments Salix receives under the BEIS-funded part of the scheme are reinvested by Salix in new loans. This is a proven delivery model and has already helped over 1,400 clients to commit to 13,814 projects valued at £420.7 million.

Total BEIS funding for the scheme is currently over £130m. A further £255m (plus £40m in consequential funding for the devolved administrations in Scotland and Wales) was allocated in the Spending Review (SR) 2015 for the five year period to 2020.

Re:Fit

The Re:fit programme is a procurement initiative for public bodies wishing to implement energy efficiency and local energy generation measures on their buildings or estate. A joint venture between BEIS and Local Partnerships, the framework uses a robust, flexible and tested Energy Performance Contracting approach. Initially developed by the Greater London Authority in 2009, use of the framework is growing, with teams now supporting organisations across England and Wales. Over 250 organisations have already engaged Re:fit. Over £165 million of works has been procured across more than 700 buildings and the current pipeline is over £65 million and growing.

Products policy

Products policy ensures that relevant energy-using products placed on the EU market meet minimum energy performance standards (Ecodesign for Energy-related Products Directive 2009/125/EC), as well as in many cases providing consumers with a label to enable a more informed purchase (Energy Labelling Directive 2010/30/EU). Benefits are calculated relative to a 'business as usual' projection of consumption by energy-using products.

Greening Government Commitment

The Greening Government Commitments set out the actions UK government departments and their agencies will take to reduce their impacts on the environment from 2016 to 2020. They set targets for UK central government departments and their agencies to: reduce their greenhouse gas (GHG) emissions by at least 32% from a 2009/10 baseline by 2020 (in line with individual department targets); send less waste to landfill and reduce the overall amount of waste they produce; and reduce water consumption. They also set out commitments for departments to improve sustainable procurement and report transparently on key sustainability issues. They are applied to 22 central government departments, non-ministerial Government departments in England and many of their ALBs. All are responsible for meeting their own individually agreed targets that together compromise the 32% reduction.

Climate Change Agreements

Climate Change Agreements (CCAs) were introduced alongside the Climate Change Levy (CCL). They have the dual policy aims of mitigating the impact of the CCL on energy intensive industry, and delivering energy efficiency improvements at least equivalent to the savings that would have been achieved were sectors required to pay the full main rates of CCL. CCAs are voluntary agreements giving eligible sectors a discount on the main rates of CCL in exchange for agreeing to energy efficiency targets. CCAs cover 53 sectors, ranging from primary industries through to manufacturing

and service sector processes. This relief currently provides a 90% CCL discount on electricity and 65% discount on gas and other taxable fuels. Sites with CCAs are also exempt from the CRC Energy Efficiency Scheme as long as over 70% of the site's energy is eligible for the CCA scheme.

Climate Change Levy

The CCL was introduced in 2001. It is levied on the supply of energy to business and public sector consumers. Each of the four main groups of taxable commodities (electricity, gas, coal and liquefied petroleum gas) has its own main rate per unit of energy. The main rates of the CCL are intended to change business behaviour to reduce energy consumption and ensure the UK fulfils its EU obligations under the Energy Tax Directive (ETD).

CRC Energy Efficiency Scheme

The CRC Energy Efficiency Scheme is a UK government scheme. It's designed to improve energy efficiency and cut carbon dioxide (CO₂) emissions in private and public sector organisations that are high energy users.

Energy already covered under Climate Change Agreements and the EU Emissions Trading System is not included in CRC. Some public bodies must take part in CRC regardless of how much electricity they use. These are called mandated participants and they include all UK central government departments and devolved administrations.

CRC operates in phases. Phase 1 ran from April 2010 until the end of March 2014. We are now in phase 2 that runs from 1 April 2014 to 31 March 2019.

For each phase, there is a qualification year. Organisations that meet certain criteria during the qualification year will need to register for the next phase of CRC. The qualification year for phase 2 was between 1 April 2012 and 31 March 2013.

Organisations affected by CRC have to register with the Environment Agency at the start of a phase, for the whole phase.

In each compliance year, an organisation that has registered for CRC needs to do the following:

- collate information about its energy supplies
- submit a report about its energy supplies
- buy and surrender allowances equal to the CO₂ emissions it generated
- tell the Environment Agency about changes to its organisation that could affect its registration (designated changes)
- keep records about its energy supplies and organisation in an evidence pack

An annual report for the two most recent compliance years can be found

at: <https://www.gov.uk/government/publications/crc-annual-report-publication-201415-and-201516>

Energy Savings Opportunity Scheme

Government established the Energy Savings Opportunity Scheme (ESOS) to implement Article 8 (4 to 6) of the EU Energy Efficiency Directive (2012/27/EU)²⁰. The ESOS Regulations 2014²¹ give effect to the scheme. ESOS is a mandatory energy assessment scheme for organisations in the UK that meet the qualification criteria. The Environment Agency is the UK scheme administrator.

²⁰ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:EN:PDF>

²¹ <http://www.legislation.gov.uk/ukxi/2014/1643/contents/made>

Organisations that qualify for ESOS must carry out ESOS assessments at least every 4 years. These assessments include energy audits of the energy used by their buildings, industrial processes and transport to identify cost-effective energy saving measures (including those done under the implementation of energy management systems under Article 8(6)). Organisations must notify the Environment Agency by a set deadline that they have complied with their ESOS obligations.

Smart metering

The Government has put in place licence conditions requiring energy suppliers to take all reasonable steps to roll out smart meters to all domestic properties and smaller non domestic premises in Great Britain by the end of 2020. The roll out of smart meters will help consumers better manage their energy consumption, bring an end to estimated billing and in time make switching energy suppliers easier and faster. Energy suppliers are required to provide energy saving advice as part of the smart metering installation. Energy networks will have more granular information upon which to manage and plan current activities. The roll-out will also lay the foundations for a smarter, more efficient and decarbonised energy system.

The roll-out is making good progress. At the end of December 2016, there were more than 5.87 million smart and advanced meters operating across homes and businesses in Great Britain, by both large and small energy suppliers. The Data Communications Company (DCC), responsible for the national communications infrastructure that will send and receive information from smart meters to energy suppliers, energy network operators and energy service companies, began live services in November 2016, enabling the main installation stage of the Smart Metering Programme to begin.

Carbon Trust

The Carbon Trust, originally set up and funded by the UK Government from 2001 to 2012 (and now a self-financing private company), promotes its Carbon Trust Standard to businesses. Obtaining the standard requires the measurement, reduction and management of emissions/energy use.

Energy Company Obligation

The Energy Company Obligation replaced the Carbon Emissions Reduction Target (CERT) and Community Energy Saving Programme (CESP) from January 2013, and, like its predecessors, required domestic energy suppliers over a certain size²² to achieve carbon and notional bill savings by promoting and installing energy efficiency measures into domestic homes.

There have been two stages of ECO so far – the obligation between January 13 and March 15 (known as 'ECO1'), and one between April 15 and March 17 ('ECO2').

The 2015 Spending Review announced that ECO would be replaced with a new, cheaper obligation from April 2017 until March 2022, which will deliver the Government's commitment to insulate one million more homes between 2015 and 2020 in support of its commitment to tackle fuel poverty. The new supplier obligation would be implemented in two phases:

- The Energy Company Obligation has been extended by 18 months (to September 2018), with a greater focus on fuel poverty.
- From October 2018 – March 2022.

²² Over 250,000 customer accounts and delivering over 2000GWh of gas or 400GWh of electricity per year

Private Rented Sector Regulations – domestic and non-domestic

From the 1 April 2018 there will be a requirement for any properties rented out in the domestic and non-domestic private rented sector to have a minimum energy performance rating of E on an Energy Performance Certificate (EPC). The regulations will come into force for new lets and extensions and renewals of tenancies with effect from 1 April 2018 and for all existing domestic tenancies on 1 April 2020 (1 April 2023 for non-domestic properties). It will be unlawful to rent a property which breaches the requirement for a minimum E rating, unless there is an applicable exemption.

The PRS non-domestic regulations require landlords to install all improvements which will pay for themselves within a seven year period, while the domestic regulations as they currently stand state that landlords can apply for an exemption (which lasts for five years) from the regulations if they are unable to conduct work to improve their property's energy efficiency performance without incurring costs.

Historic supplier obligations

Carbon Emissions Reduction Target (2010-2012)

The Carbon Emissions Reduction Target (CERT) placed an obligation on all domestic gas and electricity suppliers with more than a certain number of domestic customers²³ to meet carbon targets by promoting qualifying actions to domestic households. The installation of these energy efficiency measures would help householders to reduce the carbon footprint of their homes.

The overall CERT target for the period 1 April 2008 to 31 December 2012 was 293 million lifetime tonnes of CO₂²⁴. This includes an amendment made to CERT to extend the programme until 2012, the removal of certain measures (such as CFL lightbulbs), an insulation target and a target for a Super Priority Group (low income households on certain qualifying benefits).

Suppliers were also required to:-

- achieve 40 per cent of these savings via measures promoted to the Priority Group – people over 70 or on certain qualifying benefits
- achieve 73.4 million lifetime tonnes of CO₂ via professionally installed insulation measures
- achieve 16.2 million lifetime tonnes of CO₂ via measures promoted to members of the Super Priority Group (defined above).

Suppliers were either required to meet their obligations themselves, or can contract out the delivery of the obligation to a third party; the obligated party still remained liable for the obligation, however, even if they chose to contract out the delivery to a third party.

Community Energy Savings Programme (2010-2012)

The Community Energy Saving Programme (CESP) placed an obligation to improve energy efficiency standards on all domestic gas and electricity suppliers with more than a certain number of domestic customers and all licensed electricity generators that had generated on average 10 TWh/yr or more in a specified three year period. The customer thresholds for suppliers were 50,000 customers for 2009 and 2010, and 250,000 customers from 2011. It thus fell on the Big 6 energy suppliers (British Gas, EDF Energy, E.ON, npower, Scottish Power, and SSE) and four independent electricity generators.

²³ 50,000 domestic customer accounts during 2008, 2009 and 2010 and 250,000 domestic customers during 2011 and 2012 with their share of the overall target based on their market share in each year of the obligation.

²⁴ The targets set under CERT are not directly comparable with those under ECO and Help to Heat, due to revisions in the assumed energy savings delivered from measures. These revised savings are accounted for in the energy savings presented to the Commission.

CESP targeted households across Great Britain, in low income areas, to improve energy efficiency standards, and reduce fuel bills. 4,500 areas were eligible for CESP.

In England, the lowest 10 per cent of areas ranked using the Index of Multiple Deprivation (IMD)²⁵ qualified and in Scotland²⁶ and Wales²⁷ the lowest 15 per cent of areas qualified.

The overall CESP target for the period 1 October 2009 to 31 December 2012 was 19.25 million lifetime tonnes of carbon dioxide (Mt CO₂). This comprised a target of 9.625 Mt CO₂ for suppliers and 9.625 Mt CO₂ for generators²⁸.

Suppliers were either required to meet their obligations themselves, or could contract out the delivery of the obligation to a third party; the obligated party still remains liable for the obligation, however, even if they chose to contract out the delivery to a third party.

Building Regulations

The Building Regulations set minimum energy performance standards for new buildings and when 'building work' is carried out to existing properties. Since 2002 Building Regulations have:

- 2002: strengthened insulation and window efficiency standards
- 2005: introduced requirements for high efficiency condensing boilers
- 2006: energy efficiency standards strengthened by 20% compared to the 2002 requirements for new homes, 25% for non-domestic buildings.
- 2010: energy efficiency standards strengthened by 25% compared to the 2006 requirements (for homes and non-domestic buildings).
- 2013: energy efficiency standards strengthened by 6% compared to the 2010 requirements for new homes, 9% for non-domestic.
- 2017: Review looking at the cost effectiveness of improving energy standards for new homes in England is now underway.

Scotland Building Regulations

Energy standards within Scottish building regulations were reviewed and improved in 2007, 2010 and most recently in October 2015. Most recently, 2015 standards for new homes and new non-domestic buildings deliver, respectively, a 21% and 43% aggregate reduction in greenhouse gas emissions in comparison to the 2010 regulations.

Northern Ireland Building Regulations

At present Northern Ireland's Building Regulations align with the standards applicable in England prior to April 2014. In practice this means that the energy efficiency requirements for works to existing buildings in Northern Ireland align with England's current building regulations (other than marginal differences in the permissible efficiency of certain cooling and lighting installations in non-domestic buildings). In relation to target carbon emissions ratings for new buildings and certain larger extensions, Northern Ireland's regulations lag some 6% behind England for new dwellings and some 9% (aggregate) in terms of buildings other than dwellings.

Wales Building Regulations

²⁵ Details of the English Index of deprivation can be found here: <https://www.gov.uk/government/collections/english-indices-of-deprivation>.

²⁶ Details of Scotland's index of deprivation can be found here: <http://www.scotland.gov.uk/Topics/Statistics/SIMD>

²⁷ Details of Wales's index of deprivation can be found here: <http://wales.gov.uk/statistics-and-research/welsh-index-multiple-deprivation/?lang=en>

²⁸ The targets set under CESP are not directly comparable with those under ECO and Help to Heat, due to revisions in the assumed energy savings delivered from measures. These revised savings are accounted for in the energy savings presented to the Commission.

In 2014 Welsh Government published improved CO2 emission rates of all new buildings in Wales. Performance of new homes is now required to be some 8% better than under the previous 2010 standards. In addition mandatory fabric u-value standards have been introduced and improved. New non-domestic buildings are now subject to a 20% reduction in CO2 levels in comparison to Part L 2010 levels. Furthermore, non-domestic buildings will also have to meet improved fabric standards for walls and roofs' and consequential energy performance improvements are required to all existing buildings that are extended.

Low Emission Vehicle policies

The UK Government has a broad range of measures in place to support the UK's growing ultra low emission vehicle (ULEV) market. This includes consumer grants of up to £4,500 towards the cost of ultra low emission cars, as well as up to £8,000 for ultra low emission vans, up to £7,500 for ultra low emission taxis and up to £1,500 for ultra low emission motorcycles.

The tax system provides further incentives for low emission vehicles, and for supporting infrastructure. This includes UK road tax (Vehicle Excise Duty), and company car tax – and enhanced capital allowances are in place for large investments in electric car charging infrastructure.

The Government provides direct support for electric vehicle (EV) charging infrastructure through various grant schemes. Through the Workplace Charging Scheme, £300 grants are available for each chargepoint installed at workplaces for the use of employees and company fleets. Grants of £500 are available towards the cost of a home chargepoint through the Electric Vehicle Homecharge Scheme. The On-Street Residential Charging Scheme supports local authorities with grants for public chargepoints on residential streets. In addition, Highways England have made a £15m fund to ensure there are EV chargepoints at least every 20 miles on the Strategic Road Network.

The Government's programme of support for ULEVs also includes: significant funding for research & development into new low emission vehicle technologies; schemes for low emission buses and taxis; dedicated funding for hydrogen fuel cell electric vehicles and associated refuelling infrastructure; and a joint industry-government campaign to raise public awareness and address misconceptions. Four Go Ultra Low cities in the UK have been granted special funding to accelerate ULEV uptake through innovative local measures.

Rail electrification

The Department for Transport has set out its policy for rail infrastructure investment, including electrification and the associated funding for nominated schemes through its Rail Investment Strategy.

This Strategy is produced every five years with the most recent one published in June 2012 covering rail investments in the period 2014 to 2019. Electrification schemes in this strategy included the Midland Main Line, Great Western Main Line and several schemes in the North of England.

Other EEP transport measures

Heavy Goods Vehicles

In February 2017 the Government published a Freight Carbon Review, which explored opportunities for and barriers to reducing emissions from the road freight sector. This work considered opportunities to reduce emissions through improving HGV fuel efficiency by retrofitting fuel saving devices, and driver training and monitoring.

In June 2016, the Office for Low Emission Vehicles, in conjunction with the Low Carbon Vehicle Partnership, launched an HGV technology accreditation scheme. This scheme has been designed to provide independent validation of fuel savings from a range of retrofit technologies such as low rolling resistance tyres and aerodynamic devices, providing transparency and greater certainty to operators. The scheme has been designed to accelerate the adoption of fuel saving technologies and thereby reduce fuel costs for fleet operators while delivering GHG savings.

In addition to Government support, the road freight sector is taking steps to increase its fuel efficiency. For example, the Freight Transport Association Logistics Carbon Reduction Scheme (LCRS) is a free voluntary industry initiative that provides industry leadership on the adoption of low carbon fuels and technologies. The LCRS encourages best practice by enabling members to record, report and reduce carbon emissions. LCRS participants are reducing their fuel consumption and carbon emissions through: driver training and performance monitoring; reduced empty running; improved routing and scheduling; and greater use of aerodynamic devices and low rolling resistance tyres to reduce drag, and more efficient engines. LCRS members have committed to a collective reduction of 8% in the carbon intensity of their freight operations by 2015 against a 2010 baseline*. In 2016, the LCRS began collecting data on the take up of Euro VI/6 commercial vehicles to improve air quality.

Local Sustainable Transport Fund

The Local Sustainable Transport Fund (LSTF) closed in 2016. Between 2011-2016, £678.5m of capital and revenue funding (including Bikeability training) was allocated to local councils to support sustainable travel projects run by local councils including promoting public transport, encouraging uptake of cycling and walking, and raising awareness of the alternative transport modes. Since then, Central Government has allocated £80m of revenue under the Sustainable Travel Transition Year competition in 2016/17 and the Access Fund, which builds on the legacy of the LSTF, by providing revenue funding through to 2019/20. Successful Access Fund local authorities were announced in January 2017.

Sustainable Energy Programme (Northern Ireland)

NISEP is a voluntary energy efficiency programme set up and overseen by the NI Authority for Utility Regulation (UR). The Energy Saving Trust (EST) acts as Programme Administrator to manage the programme on behalf of UR.

The NISEP works by way of a small sum of money being collected from electricity customers through a Public Service Obligation (PSO) element of use of system charges and is used to provide funding for energy efficiency schemes. The charge is a flat rate (around 0.113 pence) per kilowatt hour which means that customers who use higher volumes pay more than those who use less. A competition to bid for funds to run energy efficiency schemes is carried out on an annual basis. Applications for funding can be made to the Utility Regulator by any organisation that is either licensed by the Utility Regulator or has registered as a Primary Bidder with the NISEP. Applicants to become a Primary Bidder have to meet certain qualifying criteria (which is met by licensed suppliers by virtue of being licensed). Some, but not all, of the licensed energy suppliers in NI participate in the NISEP along with a number of other organisations.

NIE Ltd, the owner of the distribution network in NI, collects the fund and pays it out, to organisations running approved energy saving schemes, in accordance with a condition in its distribution licence. The NISEP Framework Document sets out the rules and procedures for undertaking schemes along with the roles and responsibilities of the different parties involved.

Private and Social Sector Regulation (Scotland)

Private Rented Sector Regulations, Scotland

Scottish Ministers have powers under Section 64 of the Climate Change (Scotland) Act 2009 to require the assessment of a property's energy performance, and for the owner to take action to improve the energy efficiency and environmental impact of a property. The Scottish Government published a consultation on 7 April 2017 on the introduction of minimum standards to improve the energy efficiency of the worst performing properties in the private rented sector, including a proposal that this standard be increased over time.

This consultation forms part of the wider development of Scotland's Energy Efficiency Programme (SEEP) which is the cornerstone of delivering the Scottish Government's designation of energy efficiency as a National Infrastructure Priority. SEEP is a 15 to 20 year programme that will significantly improve the energy efficiency and greenhouse gas emissions levels of our homes and buildings, to help tackle fuel poverty and meet Scotland's climate change targets in a way that is socially and economically sustainable. A consultation on the wider SEEP programme was published on 24 January 2017.

Social Sector Regulation, Scotland

In 2014, the Scottish Government launched the Energy Efficiency Standard for Social Housing (ESSH) which aims to improve the energy efficiency of social housing in Scotland. It will help to reduce energy consumption and fuel poverty and the emission of greenhouse gases and it will contribute towards the Scottish Government's ambitious climate change targets. Achievement of the first milestone set for 2020 will mean that approximately 600,000 social houses will be either an EPC band C or D by 2020. Social landlords are already making good progress with the Scottish Housing Regulator who has responsibility for monitoring compliance with ESSH, reporting in August 2016 that 69% of social housing met the standard at April 2016.

Home Energy Efficient Programmes (Scotland)

HEEPS consists of three programmes: HEEPS: Area Based Schemes (HEEPS: ABS), Warmer Homes Scotland (HEEPS: WHS) and Loans (HEEPS: Loans)

The Home Energy Efficiency Programmes for Scotland: Area Based Schemes (HEEPS: ABS) are designed and delivered by Local Authorities, in conjunction with utility companies and local delivery partners, targeting fuel poor areas to provide energy efficiency measures to a large number of Scottish households and help reduce fuel poverty.

The national fuel poverty scheme, HEEPS: Warmer Homes Scotland, was formally launched in September 2015 with the delivery contract being awarded to Warmworks Scotland (a partnership between Changeworks, the Energy Saving Trust and Everwarm). Warmer Homes Scotland is worth up to £224 million over a seven year period and is expected to help around 28,000 householders make their homes warmer and cheaper to heat. It has a strong focus on fabric measures, such as insulation, to improve the energy efficiency of the Scottish housing stock.

HEEPS: Loans launched in the summer of 2015 and are available to all private sector households in Scotland (both owner occupiers and private sector landlords) who wish to install energy efficiency

measures. The scheme offers an interest-free loan of up to £10,000 per household. Loan funding is also made available to Registered Social Landlords to assist them improve the energy efficiency of their stock. HEEPS: Loans can be combined with ECO and HEEPS: ABS.

Annex B: Annex XIV, Part 1: Annual report requirements not covered by the National Energy Efficiency Action Plan.

c) the total building floor area of the buildings with a total useful floor area over 500 m² and as of 9 July 2015 over 250 m² owned and occupied by the Member States' central government that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 5(1);

Member States are required to report the total building floor area of the buildings with a total useful floor area over 500 m² and as of 9 July 2015 over 250 m² owned and occupied by the Member States' central government that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 5(1).

To calculate floor area, data has been taken from the electronic Property Information Mapping Service database (ePIMS). ePIMS provides data on the floor area of buildings within the central civil estate. To gather data on the floor area of buildings within the rest of central government's estate, the following data has also been collected:

- Data on the floor area of buildings within the Ministry of Defence's estate.
- Data on the floor area of building within the Scottish government's estate.
- Data on the floor area of building within the Welsh government's estate.
- Data on the floor area of building within the Northern Irish government's estate.

These datasets have been combined in order to calculate the floor area of the entire central government estate. The datasets have then been filtered in order to remove buildings referred to in Article 5(2), so that only owned and occupied buildings are included and so that only buildings with a floor area greater than 250 square meters are included. This gives a figure of 13.4 million square meters.

To calculate the floor area of buildings which do not meet the energy performance requirements referred to in Article 5(1) it was then necessary to filter out any buildings which do meet the minimum energy performance requirements. The minimum requirements referred to in Article 5(1) are elemental (e.g. they specify a boiler of a particular efficiency, walls of a particular U-Value). They are taken to correspond to the specifications in Part L2B of the 2010 Building Regulations relating to refurbishments of existing buildings other than dwellings.

There has been a limited amount of time for the latest building regulation standards to take effect. Therefore, a cautious assumption has been made that all buildings referred to in Article 5(1) do not meet the minimum energy performance requirements.

Therefore, the total building floor area of buildings with a useful floor area over 250 square meters, which did not meet the energy performance requirements referred to in Article 5(1) is calculated to be 13.4 million square meters.

d) the total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in the previous year referred to in Article 5(1) or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6);

Member States are required to report the total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in the previous year referred to in Article 5(1) or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6).

The UK has adopted the approach referred to in Article 5(6). For the UK, relevant energy savings come from three separate policies. Those policies are the Greening Government Commitments, the Scottish Government's Carbon Management Plan and the Welsh Government's Climate Change Strategy. This is the same approach that was taken for the 2014 reporting.

In order to calculate energy savings, energy consumption data for buildings within scope of the above policies has been collected for 2015 and 2016. Energy savings in 2016 have then been calculated by subtracting energy consumption in 2016 from energy consumption in 2015. This calculation has been carried out at the most granular level possible. As a result, energy savings have been calculated for individual departments within the Greening Government Commitments.

Energy savings, from the above policies, have then been adjusted in order to calculate energy savings as referred to in Article 5(6). Energy savings have been adjusted using data on the floor area of central government buildings.

Floor area data have been collected using the ePIMS database, Ministry of Defence data, Scottish government data, Welsh government data and Northern Irish government data. These data sets have been combined in order to calculate the total floor area of each individual central government department.

For each central government department, the floor area of buildings meeting the requirements of Article 5(6) has then been calculated by removing data on:

- buildings referred to in Article 5(2),
- buildings that are not owned and occupied, and
- buildings with a floor area less than or equal to 250 square meters.

For each central government department, the floor area of buildings meeting the requirements of Article 5(6) has then been divided by the total floor area of that central government department. This calculation gives the proportion of floor area that meets the requirements of Article 5(6).

For each central government department, the proportion of floor area that meets the requirements of Article 5(6) has then been multiplied by the relevant energy savings from the Greening Government Commitments, Carbon Management Plan or Climate Change Strategy. These calculations give the energy savings meeting the requirements of Article 5(6) for each central government department.

The energy savings, meeting the requirements of Article 5(6), for all central government departments, have then been added together. This calculation gives a final result of 26.1 GWh of energy savings in 2016 in eligible buildings owned and occupied by central government as referred to in Article 5(6). Article 5(6) requires the United Kingdom to achieve an energy savings target of 163.6 GWh by 2020. With the 332.7 GWh of energy savings achieved up to 2015, the UK has so far achieved 358.8 GWh of energy savings in eligible buildings owned and occupied by central government. This exceeds the target that has been set for 2020 by 195.2 GWh.

Annex C: Building Renovation Strategy

Requirements

- a) an overview of the national building stock based, as appropriate, on statistical sampling;*
- b) identification of cost-effective approaches to renovations relevant to the building type and climatic zone;*
- c) policies and measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations;*
- d) a forward-looking perspective to guide investment decisions of individuals, the construction industry and financial institutions;*
- e) an evidence-based estimate of expected energy savings and wider benefits.*

Background

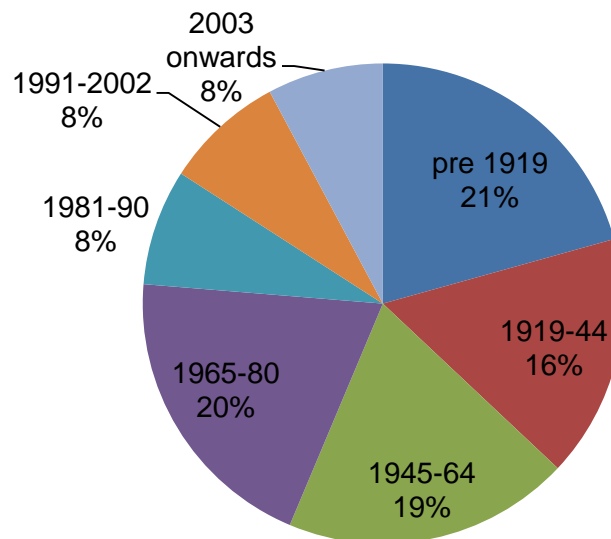
Information related to requirements b), c), d) and e) will be contained in the Government's plan to reduce emissions in the 2020s. Information relating to requirement a) of the building renovation strategy is below.

Profile of domestic building stock

The UK has 28 million homes²⁹ across a wide range of housing types, including a significant proportion of older buildings, as shown in Figure 1. Collectively these are responsible for 29% of final energy use in the UK³⁰ and 13% of direct greenhouse gas emissions³¹.

The UK has one of the oldest stocks of housing in Europe with over a third of homes built before 1945 and less than a quarter built since 1980.

Figure 1: Age profile of housing in England: 2015³²



In the domestic sector the dominant energy use is for heating with 70% of energy used for space heating and a further 12% for hot water.

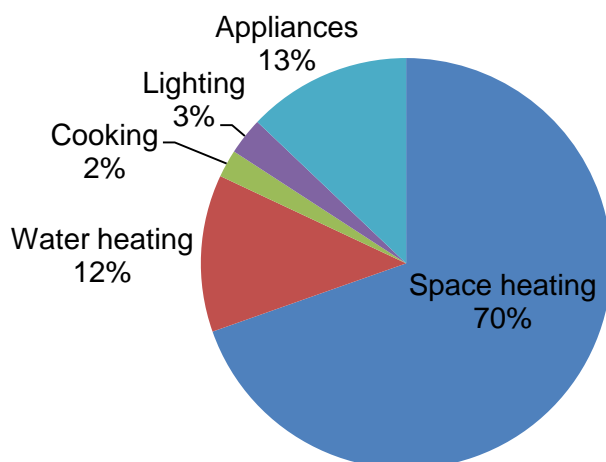
²⁹ DCLG Live table 101 <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants>

³⁰ BEIS Energy Trends, 2016 <https://www.gov.uk/government/statistics/total-energy-section-1-energy-trends>

³¹ UK Greenhouse gas emissions <https://www.gov.uk/government/collections/uk-greenhouse-gas-emissions-statistics>

³² Source: DCLG English Housing Survey 2015 (figures for England only) <https://www.gov.uk/government/collections/english-housing-survey>

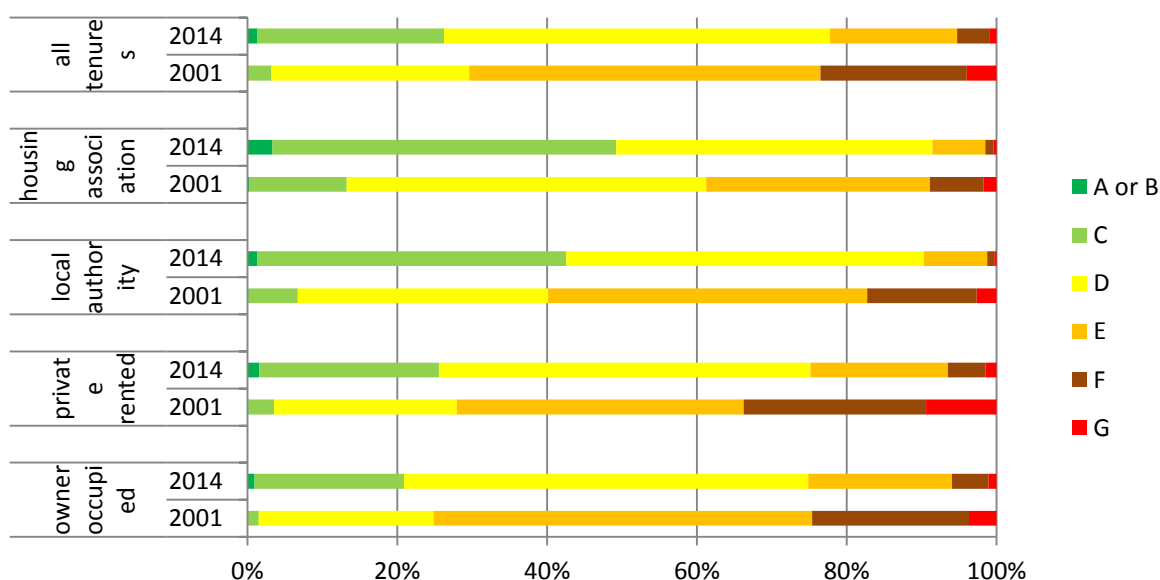
Figure 2: Share of energy consumption by end use in domestic buildings: 2015³³



The UK has been active in improving the insulation levels in homes. Since 2002 our Energy Supplier Obligations have delivered 7 million professional loft insulations³⁴, 6 million cavity wall insulations and 300 thousand solid wall insulations³⁵ in addition to replacing over 1 million boilers per year which since 2006 have been required to achieve an A rating.

Figure 3 shows how the distribution of homes as measured against the Energy Performance Certificates measurement for a representative sample of the build stock has improved with 78% of the stock now achieving a rating of D or higher in 2014 compared with 30% in 2001. Improvements have been observed across all tenures but with the lower ratings remaining in both rented and owned private housing.

Figure 3: Energy efficiency rating of English housing stock, 2001 & 2014³⁶



³³ Source: Energy Consumption in the UK table 1.04

³⁴ DIY loft insulation has also been subsidised through these schemes.

³⁵ Energy Consumption in the UK table 3.26 for Energy Efficiency Commitments and Carbon Emissions Reduction Target plus Energy Company Obligations

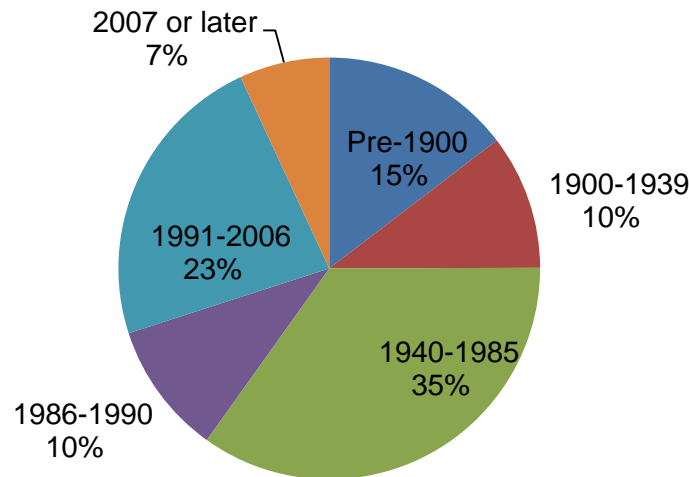
³⁶ DCLG English Housing Survey <https://www.gov.uk/government/collections/english-housing-survey>

Profile of the non-domestic building stock

There are around 2 million non-domestic premises in the UK, which are responsible for around 17% of total UK energy consumption and 4% of direct greenhouse gas emissions³⁷. As with the housing stock, these buildings are made up of many different building types, ages and use profiles; from small shops to high rise commercial office buildings, factories, hospitals and airports.

The non-domestic building stock in the UK also spans a wide range of ages but overall is more modern than the housing stock (see Figure 4). One quarter of the stock was built before 1940 but 40% of the stock has been built in the last 30 years.

Figure 4 Age of non-domestic buildings by build period: 2014-15³⁸



In the non-domestic sector heating is still the major energy use accounting for half the total energy use in non-industrial non-domestic buildings but a broader range of energy uses are significant including factors not specifically related to the building such as catering, computing and a range of sector specific uses, e.g. cooled storage. The Building Energy Efficiency Survey published in 2016³⁹ carried out detailed analysis of current energy use in non-domestic buildings and abatement potential.

³⁷ UK Greenhouse gas emissions <https://www.gov.uk/government/collections/uk-greenhouse-gas-emissions-statistics>

³⁸ Source: BEIS Building Energy Efficiency Survey 2014-15 (figures for England & Wales only)

<https://www.gov.uk/government/publications/building-energy-efficiency-survey-bees>

³⁹ Building Energy Efficiency Survey (England & Wales) <https://www.gov.uk/government/publications/building-energy-efficiency-survey-bees>

Figure 5: Share of energy consumption by end use in non-domestic buildings (excl industrial buildings): 2015⁴⁰

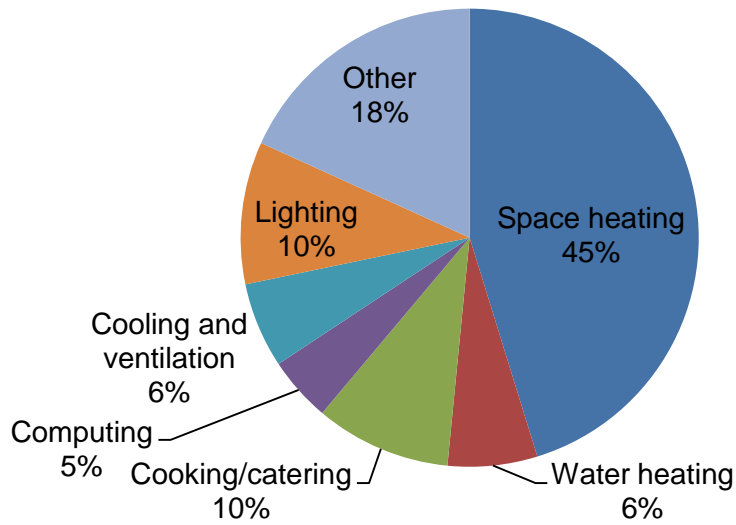
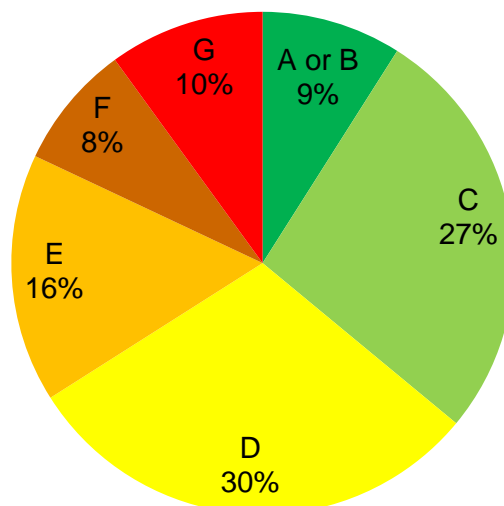


Figure 6 shows the distribution of homes as measured using non-domestic Energy Performance Certificates. It is important to note that the data is not fully representative of the whole building stock but the EPCs that have been carried out since 2008 as triggered by the regulations requiring an EPC in most cases when premises are sold or rented. 66% of the stock have a rating of D or higher.

Figure 6: Distribution of non-domestic Energy Performance Certificate ratings by building sector: All EPCs 2008 - 2015⁴¹



⁴⁰ Source: Energy Consumption in the UK table 1.04

⁴¹ Source: Energy Performance Certificate data