UK Annual Report against Article 24(1) of the Energy Efficiency Directive 2012: April 2016

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 provides an update to the detailed information reporting in the first Annual Report for the Directive submitted on 30 April 2015 which reported progress against these aspects together with wider developments.

Summary of specific delivery

a) Overview of progress in reducing energy consumption

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

Overall, energy consumption in the UK is on a downward trend. Primary energy consumption in 2014 was 7% lower than in 2013 and final energy consumption was 5% lower. Compared with 2007, consumption was 15% and 12% lower respectively.

Looking at the sub-sectors and the 2014 statistics:

- Industrial energy consumption fell by 1% since 2013 and by 21% since 2007.
- Household energy consumption fell by 14% since 2013 (1% on a temperature adjusted basis[1]) and by 15% since 2007 (13% fall on a temperature adjusted basis).
- Service sector energy consumption fell by 10% since 2013 (5% on a temperature adjusted basis) and by 1% since 2007 (1% rise on a temperature adjusted basis).
- Transport energy consumption for passenger transport was unchanged since 2013 but fell by 13% since 2007. The fall in petrol and diesel prices of 11% seen over 2014 will have slowed the reduction seen in this in recent years and passenger kilometres increased by 2% since 2013 having been flat since 2010.
- Energy consumption for road freight transport increased by 4% since 2013 and by 1% since 2007. Continued growth in economic activity will have contributed to this together with a 6% increase in real GDP (measured in national currency) since 2007.
- Since 2007 overall transport energy consumption has fallen by 9%.

[1] Temperature adjusted series from UK National Statistics, *Energy Trends* table 1.3c. Note the temperature adjusted trends are on a Gross Calorific Value basis.
https://www.gov.uk/government/statistics/total-energy-section-1-energy-trends

b) Major legislative and non-legislative measures implemented

The UK government continues to promote energy efficiency across all sectors of the economy. Since May 2015 we have announced a number of energy efficiency measures including further funding for the public sector, simplification of the business energy efficiency tax system and further investment in rail electrification.

The UK government is also committed to ensuring that we are not imposing unnecessary burdens on households and businesses, making household bills unaffordable or putting the UK at a competitive disadvantage. This is why the UK government is committed to supporting low-cost measures on energy efficiency, with the goal of insulating a million more homes over the next five years, supporting our commitment to tackle fuel poverty.

Public sector loans (Salix)

In November 2015 the government announced a further £295 million to promote public sector energy efficiency over the next 5 years. The money will support interest free loans for public sector organisations via the Salix Finance Company. These loans can be paid back through the savings made from energy efficiency measures or through increased recycling. Salix is a not-for-profit organisation and includes the Department of Energy & Climate Change, Department for Education, the Welsh Government, the Scottish government and Higher Education Funding Council for England as partners.

To date Salix has funded over 13,800 projects valued at £421 million which has saved the public sector over £108 million annually and £1.5 billion over the lifetime of the project.

Energy Company Obligation (ECO)

The Energy Company Obligation (ECO) was introduced in January 2013. Under ECO, energy suppliers are obligated to achieve carbon saving targets in the domestic sector and energy bills reductions in low income and vulnerable households.

Provisional figures show that by the end of January 2016 there were 1.7 million measures installed under ECO[2]. Of these, around 978,000 measures were installed in 767,000 low income and vulnerable households, or households in specified areas of low income. Measures installed included: cavity wall insulation (37 per cent), loft

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/508256/Headline_Release_-_HEE_stats_17_Mar_2016_FINAL.pdf

insulation (26 per cent), and boiler upgrades (21 per cent). There were over 110,000 solid wall insulations which accounted for six per cent of all measures.

The current obligation will end in March 2017. The government has announced a new domestic energy efficiency supplier obligation which will run for 5 years from April 2017 to March 2022, reducing the impact of the obligation by around £30 for the average household from 2017/18 compared to current projections. This will upgrade the energy efficiency of well over 200,000 homes per year, tackling the root cause of fuel poverty. The UK government will consult in Spring 2016 on this reformed supplier obligation.

Green Deal Finance Company (GDFC)

It was decided to end further financing to the Green Deal Finance Company (GDFC) in July 2015 in light of the low take-up and concerns around industry standards; this decision has no impact on existing applications.

The lessons learned from the Green Deal suggest that finance is not in itself a driver of demand. Non-fuel poor householders require a mix of complimentary policy measures to drive demand and enable action.

Business Energy Efficiency Tax Landscape

Following a consultation on the simplification of business energy efficiency tax landscape, the UK government announced:

- The closure of the CRC Energy Efficiency scheme following the 2018-19 compliance year, with no purchase of allowances required to cover emissions for energy supplied from April 2019.
- Increase to the main rates of the Climate Change Levy (CCL) from April 2019, to recoup revenue lost from abolishing the CRC in a fiscally-neutral reform and to incentivise further energy efficiency in CCL paying businesses.
- Update the CCL rates for electricity and gas to reflect the fuel mix used in electricity generation from April 2019, adjusting an outdated electricity to gas ratio from 2.9:1 to 2.5:1. In the long term, CCL rates between electricity and gas will be adjusted further towards gas, with the intention to reach a 1:1 ratio by 2025 to deliver greater carbon savings
- Consult later in 2016 on a simplified energy and carbon reporting framework for introduction by April 2019.

Greening Government Commitments (GGCs)

The UK continues in its commitment to reduce the government's environmental impacts and reports annually on progress[3]. The latest report shows that Greenhouse gas emissions have been reduced by 22% across the whole government and savings of £185 million have been made in 2014/15 compared to 2009/10.

The GGC remain a priority and departments are expected to close the gap where targets have not been met whilst continuing to improve those areas where targets have been met.

Rail electrification

As part of our long-term economic plan, we are investing heavily in our railways to give passengers a better service. Investing in electrification supports economic growth and provides better environmental outcomes. The Government is committed to an extensive rolling programme of electrification of over 850 route miles.

Electrification will deliver cleaner, faster more reliable trains for passengers and freight. Typically, electric trains emit between 20% and 35% less carbon per passenger mile than a diesel trains, and provide better value for money through lower train maintenance and energy bills.

Energy Savings Opportunity Scheme (ESOS)

ESOS is new piece of EU legislation which requires member states to introduce a mandatory programme of energy audits for 'large enterprises'. This means over 9000 of Britain's biggest companies will be required to comply.

The first phase of compliance (5 December 2015) has been reached. 70% of participants have complied with the scheme. Others have submitted an "intent to comply" notification. Although this still leaves a significant number of organisations who have not yet complied, this is a good compliance rate given the fact that the scheme covers a large number of previously unregulated organisations.

An evaluation of the process and impact of ESOS on businesses is being carried out. Findings will be reported in November 2016.

A number of participants have presented case studies following their ESOS assessments indicating the potential benefits in terms of carbon reduction and financial savings.

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487751/ggc-annual-report-2014-2015.pdf

c) Share of Central Government buildings not meeting the 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 m^2 and as of 9 July 2015 over 250 m^2 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 12.4 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 12.4 million square meters.

d) The amount of energy savings in Central Government buildings

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 2014 and 2015. Energy savings in 2015 have then been calculated by subtracting energy consumption in 2015 from energy consumption in 2014. 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 116.3 GWh of energy savings in 2015 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 272.2 GWh of energy savings achieved in 2014, the UK has so far achieved 388.5 GWh of energy savings in eligible buildings owned and occupied by central government. This exceeds the target that has been set for 2020 by 224.9 GWh.

e) 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 474 TWh.

The UK has one live Energy Obligation that has been operational since 2013. Statistics reporting delivery of measures through the Energy Company Obligation are published monthly and summarised in the table below.

Table 1: Summary of measures installed under the Energy Company Obligation[4]

	2013	2014	2015	ECO measures installed
Boiler	167,604	115,480	73,939	357,023
Cavity Wall Insulation	166,210	316,722	149,870	632,802
Loft Insulation	126,401	206,712	101,070	434,183
Other Heating	30,130	52,942	51,200	134,272
Other Insulation	1,612	8,473	2,140	12,225
Solid Wall Insulation	27,553	48,835	32,430	108,818
Window Glazing	284	1,874	2,210	4,368
Total	**519,794**	**751,038**	**412,859**	**1,683,691**

Source: ECO statistics Household Energy Efficiency National Statistics, Headline Release (Table 2.1.2), March 2016

[4] Source: DECC Green Deal and ECO statistics https://www.gov.uk/government/collections/green-deal-and-energy-company-obligation-eco-statistics#monthly-statistics

The energy savings derived from these measures are reported in Annex B 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.

Two changes have been prompted based on the feedback provided by the European Commission:

1. Savings to domestic Building Regulations have been reduced to account for additionality to Ecodesign following the increase to minimum boiler standards in 2015.

2. The elasticity used for analysis of the Climate Change Levy has been reduced from -0.47 to -0.30 which represents the overall non-domestic consumer rather than industrial use. No change has been made to the elasticity used for energy intensive industries with Climate Change Agreements.

Domestic Green Deal savings have been removed following the Government's decision in 2015 to no longer invest in the Green Deal Finance Company means we do not expect there to be further measures financed under Green Deal finance and a small amount of energy savings delivered that are independent of the Energy Company Obligation.

A summary of other changes of at least 500 GWh are provided below.

Table 2: Summary of changes in energy savings since April 2015

Policy	Revised saving 2014-20 (TWh)	Change (TWh)	Reasons for change
*Carbon Emissions Reduction Target (CERT)	126	+10	Suppliers failing to meet their CERT and CESP obligations by the end of the obligation period (December 2012) were given until mid-2013 to undertake 'mitigation actions' towards their obligation shortfall, which would be taken into account when deciding whether to open an investigation and, if appropriate, impose a penalty. Suppliers' 'mitigation actions' were not available at the time of the previous submission, but have been taken into account this time around.
*Community Energy Savings Programme (CESP)	6	+1	
*Energy Company Obligation (ECO)	41	-7	It was announced in the 2015 Spending Review that the level of ambition for ECO beyond 2017 would be reduced and these savings are reflected here.
Building Regulations (domestic)	93	-38	Savings have been reduced to account for additionality to Ecodesign following the increase to minimum boiler standards in 2015 (equivalent to a B rating). Since 2006 the UK has required all new boilers to be A-rated. These revised figures reflect only the marginal increase from B-rated to A-rated after 26 September 2015.
CRC Energy Efficiency Scheme	28	-3	It was announced in the 2016 Budget that the CRC would close in 2019. It is therefore assumed that some energy savings will be seen in 2019 and 2020 from the impact of previous deployment of energy efficiency technologies but these will be at a reduced level (these are 'legacy savings' of the scheme).
Climate Change Levy (CCL)	36	-9	The largest change is a reduction due to assuming a lower price elasticity of -0.30 rather than -0.47 in recognition that the levy covers organisations beyond the industrial sector. Savings have increased though due to the inclusion of energy consumption from renewable sources in 2016 (announced at summer Budget 2015) and higher rates of CCL from 2019 announced in the 2016 Budget.
Climate Change Agreements (CCA)	22	-4	The largest change is a reduction in the size of the energy consumption in our analysis against which participants are incentivised to make savings to better reflect the energy use covered by the targets under the Agreements. This is partially offset by the increased CCL rates used in the modelling.
Salix public sector finance	2	+1	Salix has been granted an additional £295m in the 2015 Spending Review. Due to how Salix operates the significant changes are only seen from 2018 onwards where the new funding has eventually led to the installation of energy efficiency measures.

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

ANNEX A: UK statistics

This annex reports the recent trends in energy consumption and the headline statistics for 2014[5].

	Data for 2007	Data for 2013	Data for 2014	Units
(i) primary energy consumption[6];	212.2	193.1	180.8	mtoe (ncv)
(ii) total final energy consumption;	145.2	134.6	127.3	mtoe (ncv)
(iii) final energy consumption by sector				
— industry mtoe	28.9	23.0	22.8	mtoe (ncv)
— transport (passenger)[7]	42.6	36.9	36.8	mtoe (ncv)
— transport (road freight transport)	13.9	13.6	14.1	mtoe (ncv)
— households	41.7	41.2	35.3	mtoe (ncv)
— services;	17.2	18.8	17.0	mtoe (ncv)
— agriculture;	0.9	1.0	1.0	mtoe (ncv)
(iv) gross value added by sector				
— industry	466	388	434	billion € 2014 prices[8]
— services;	1,559	1,467	1,658	
(v) disposable income of households;	1,569	1,312	1,433	
(vi) gross domestic product (GDP);	2,516	2,074	2,255	
(vii) electricity generation from thermal power generation;	32.9	27.6	25.3	mtoe (ncv)
(viii) electricity generation from combined heat and power;	2.4	1.8	1.7	mtoe (ncv)
(ix) heat generation from thermal power generation;	4.2	3.6	3.4	mtoe (ncv)
(x) heat generation from combined heat and power plants, including industrial waste heat;	4.0	4.0	4.0	mtoe (ncv)
(xi) fuel input for thermal power generation;	83.4	71.9	65.0	mtoe (ncv)
(xii) passenger kilometres (pkm), if available;	808	768	788	billion kms
(xiii) tonne kilometres (tkm)[9], if available;	251	203	185	billion tonne-kms
(xiv) combined transport kilometres (pkm + tkm), in case (xii), (xiii) are not available;				
(xv) population.	61.3	64.1	64.6	millions

[5] Energy statistics consistent with the Digest of UK Energy Statistics definitions, presented on a net calorific value basis. https://www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2014-printed-version

[6] Excluding non-energy use

[7] Includes freight activity for rail, aviation and shipping

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

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

ANNEX B: Table of estimated savings by policy

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)*	2.7	6.4	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.7	9.7	9.5	9.3	**126**
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	3.5	4.1	4.7	5.3	5.8	5.8	5.8	**41**
Private Rented Sector Regulation (England & Wales) - domestic					0.0	0.0	0.0	0.1	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	0.3	0.3	0.3	0.3				**2**
Building Regulations - domestic					4.7	9.4	11.4	13.5	15.7	17.9	20.2				**93**
Building Regulations - non-domestic					2.4	4.8	7.0	9.3	11.4	13.5	15.6				**64**
Climate Change Levy					3.5	3.9	4.5	4.4	4.6	7.7	7.6				**36**
Climate Change Agreements					2.3	2.8	2.6	2.5	2.5	4.7	4.5				**22**
CRC Energy Efficiency Scheme					2.3	3.1	3.9	4.7	5.5	4.5	4.5				**28**
Smart metering (Non-domestic)					0.2	0.5	1.1	1.8	2.6	3.4	3.9				**14**
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	0.4	0.6	0.8				**2**
Greening Government Commitment					0.4	0.5	0.5	0.5	0.5	0.4	0.4				**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	1.1	1.1	1.1				**4**
Low Emission Vehicle policies					0.1	0.2	0.3	0.6	0.7	0.9	1.0				**4**
	3	**6**	**10**	**11**	**28**	**38**	**49**	**57**	**66**	**76**	**82**	**16**	**16**	**16**	**474**

Policies marked (*) are Energy Obligations