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Analysis of the annual reports 2017 under the Energy Efficiency Directive

Summary Report

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Abstract

This report discusses the progress towards the 2020 Energy Efficiency targets and towards the implementation of the provisions of the Energy Efficiency Directive 2012/27/EU (EED), providing an overview of the main energy trends in the European Union with special focus on the period 2005-2015. It is based on the last EUROSTAT data available and on the analysis provided by Member States within their Annual Reports 2017, under the EED.

1 Introduction

The Energy Efficiency Directive 2012/27/EU (the EED or the Directive), adopted in 2012, forms a key part of the EU's overall climate and energy legislative package, laying down the foundation for actions to be taken in order to help realise the energy efficiency potential of the European economy. All EU Member States are required to implement policy measures that improve energy efficiency at all stages of the energy chain from production to final consumption. This effort is aimed at achieving the EU energy efficiency target by 2020. In particular, the EU target corresponds to a 20% reduction in the EU primary energy consumption by 2020 compared to the 2007 baseline primary energy consumption projections in 2020 (based on the model PRIMES 2007). In terms of primary energy, this target results in a reduction of 370 Mtoe and consumption levels of 1483 Mtoe in 2020 compared to 2007 projections of 1853 Mtoe in 2020.

In accordance with Article 3, Member States had to set indicative energy efficiency targets – based on either primary or final energy savings, primary or final energy consumption or energy intensity – in view of the overall target of 20% reduction in EU primary energy consumption by 2020. In accordance with Article 24, Member States are also requested to submit National Energy Efficiency Action Plans (NEEAPs) every three years as well as report on the progress achieved towards their national energy efficiency targets by 30 April each year as from 2013 in the form of the so-called Annual Reports (ARs). For the latter, Member States are required to specifically report on their last year's consumption trends as well as report on policy updates and progress towards implementing Articles 5 and 7 of the Directive.

As per the Directive's requirements, the European Commission's responsibilities include the assessment of the annual progress made by Member States towards achieving the national indicative energy efficiency targets and implementing the various provisions of the Directive. The Joint Research Centre has undertaken the task of evaluating the submitted annual reports and the results of the analysis of the Annual Reports of 2017 (AR2017) are presented in this Report.

2 Background

The annual reports referred to in Article 24(1) of the EED provide a basis for the monitoring of the progress towards national 2020 targets.

For the Annual Reports 2017, the following minimum information had to be provided by each Member State:

- (a) an estimate of various energy-related indicators (listed in **Table 1**) for the year 2015, including a discussion of the reasons behind the stable and growing energy consumptions;
- (b) updates on major legislative and non-legislative measures implemented in 2016 which contribute towards the overall national energy efficiency targets for 2020;
- (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 2017, did not meet the energy performance requirements referred to in Article 5(1);
- (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 2016 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);
- (e) energy savings achieved in 2016 through the national energy efficiency obligation schemes referred to in Article 7(1) or the alternative measures adopted in application of Article 7(9).

Table 1. Indicators to be included in the Annual Reports, as required by Annex XIV of EED.

(i) primary energy consumption (PEC)
(ii) total final energy consumption (FEC)
(iii) final energy consumption (FEC) of industry sector
(iii) final energy consumption (FEC) of transport sector
(iii) final energy consumption (FEC) of households sector
(iii) final energy consumption (FEC) of services sector
(iv) gross value added (GVA) of industry sector
(iv) gross value added (GVA) of services sector
(v) disposable income for households (DIH)
(vi) gross domestic product (GDP)
(vii) electricity generation from thermal power generation (thPG)
(viii) electricity generation from combined heat and power plants (CHPP)
(ix) heat generation from thermal power generation (thPG)
(x) heat generation from combined heat and power plants (CHPP), including industrial waste heat
(xi) fuel input for thermal power generation (thPG)
(xii) passenger kilometres (pkm)
(xiii) tonnes kilometres (tkm)
(xiv) combined transport kilometres (pkm + tkm), in case (xii) and (xiii) are not available
(xv) population

In the framework of the Administrative Agreement TSSEED¹ between DG Energy and JRC, in 2015 the European Commission has developed a reporting template in order to ensure a harmonised reporting approach and facilitate the data analysis. In 2017 12

¹ Technical and Scientific Support to the implementation of the EED and the EPBD, as well as contribution to the development of concepts for the strengthening of the overall EU legislative framework for energy saving.

Member States (Austria, Belgium, Cyprus, Estonia, Hungary, Ireland, Italy, the Netherlands, Portugal, Slovenia and Spain) filled out the template (see **Table 2**). Unfortunately this number is not increased compared to 2016, but the ability of this tool to avoid misunderstandings was confirmed by the analysis of the Annual Reports 2017.

Table 2. Reporting overview of Annual Reports 2017 (T: Template, R: Report).

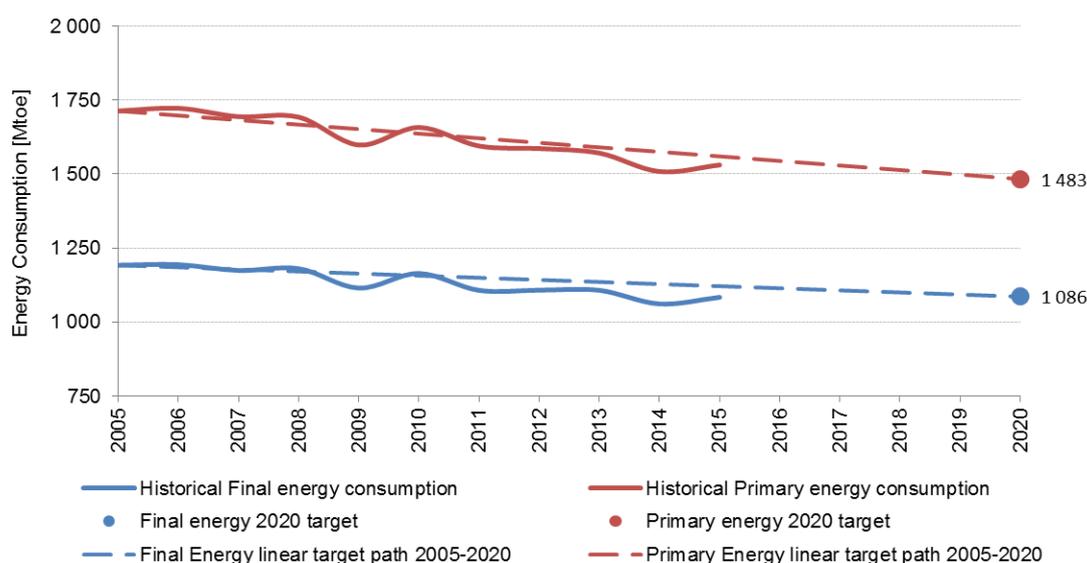
	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
T	✓	✓		✓				✓	✓	✓				✓	✓	✓					✓		✓			✓		
R			✓		✓	✓	✓		✓		✓	✓	✓			✓	✓	✓	✓	✓		✓		✓	✓		✓	✓

3 Progress towards the 2020 Energy Efficiency targets

Unless otherwise stated, the source of the data of presented in this chapter is EUROSTAT. The indicators used are listed in **Annex 1**.

In the period from 2005 to 2015, the European Union has reduced its energy consumption. This decrease has allowed reducing energy indicators such as energy intensity and energy consumption per capita, turning into a sign of higher competitiveness as global actor. In 2014, the EU had already met the target values set in the EED for 2020 in terms of final energy consumption (1061 Mtoe in 2014 vs 1086 Mtoe of the target) and it was on track to reach the target value for primary energy consumption (1505 Mtoe in 2014 vs 1483 Mtoe of the target; corresponding to a gap of 1.5%). As shown in **Figure 1**, in 2015 final energy consumption increases (1084 Mtoe) compared to the previous year, but still remains under the 2020 target. Primary energy consumption increases as well, by interrupting the decreasing trend started in 2010: in 2015 it is worth 1531 Mtoe, corresponding to a gap of 3.2% with the EU target. Over the 2005-2015 period, the financial and economic crisis has caused remarkable change in the dynamics and growth rates of the different economic sectors and in the EU Member States, and it has contributed to get the energy consumption back on track towards the EU energy and environmental targets for 2020. Distinguishing by economic sectors, only the tertiary sector has increased their final energy consumption over the analysed period (by 2%); whilst in the others (i.e. residential, industry and transport sectors) the final energy consumption has declined. The increasing trend in the tertiary sector is expected to continue as per the on-going tertiarization process in the EU. On the other hand, the decreasing trend in industry sector has been highly influenced, among others, by the financial and economic crisis and by the delocalisation of industry in emerging countries. In the residential sector, the energy demand is decreasing, but it strongly depends on weather and climate conditions, although there are multiple affecting factors in the energy consumption such as building characteristics (i.e. building envelope, insulation level, location, etc.) or social and cultural reasons (lifestyle, habits, etc.) among others.

Figure 1. Final and Primary Energy Consumption trends of the EU28 (the dotted line represent a linear trajectory between the 2005 actual consumption and the 2020 target consumption).



Source: Eurostat, JRC, 2017.

It's to be noted that, after the last updates of some Member States, the sum of national 2020 targets in terms of absolute consumption levels set by Member States is 1532 Mtoe

in terms of primary energy and 1079 Mtoe in terms of final energy (**Table 3**). While the last one is below the EU target (1086 Mtoe), there is a negative mismatch regarding the primary energy objective: the sum of the indicative national targets is 3% above the EU target (1483 Mtoe) and it corresponds to 17.4% savings (instead of 20%) compared to the PRIMES baseline projections.

Table 3. Indicative national energy efficiency target for 2020. The last changes are pointed up with a darker background.

MS	PEC Target [Mtoe]		FEC Target [Mtoe]	
	Up to 2016	Latest value (from NEEAP 2017 available)	Up to 2016	Latest value (from NEEAP 2017 available)
BE	43.7	43.7	32.5	32.5
BG	16.9	16.9	8.6	8.6
CZ	39.6	44.3	25.3	25.3
DK	17.4	17.2	14.4	14.4
DE	276.6	276.6	194.3	194.3
EE	6.5	6.5	2.8	2.8
IE	13.9	14.9	11.7	12.8
EL	24.7	24.7	18.4	18.4
ES	119.8	122.6	80.1	80.1
FR	219.9	219.9	131.4	131.4
HR	11.1	10.7	7	7.0
IT	158	158	124	124
CY	2.2	2.2	1.8	1.9
LV	5.4	5.4	4.5	4.5
LT	6.5	6.5	4.3	4.3
LU	4.5	4.5	4.2	4.2
HU	24.1	24.1	14.4	14.4
MT	0.7	0.8	0.5	0.6
NL	60.7	58.2	52.2	52.2
AT	31.5	31.5	25.1	25.1
PL	96.4	96.4	71.6	71.6
PT	22.5	22.5	17.4	17.4
RO	43	43	30.3	30.3
SI	7.3	7.3	5.1	5.1
SK	16.4	16.4	9.2	9.2
FI	35.9	35.9	26.7	26.7
SE	43.4	43.4	30.3	30.3
UK	177.6	177.6	129.2	129.2
Sum of indicative targets EU28	1526	1531.8	1077	1078.6
EU28 target 2020	1483		1086	

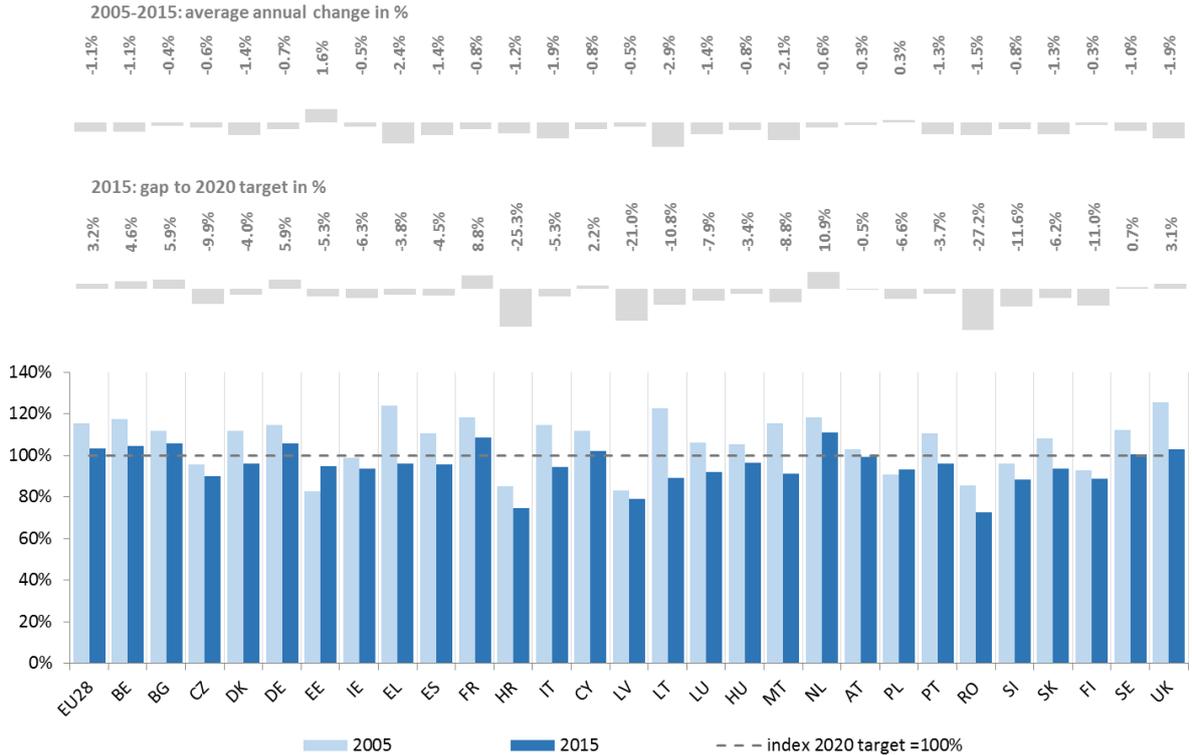
Source: NEEAP 2017, JRC, 2017.

At national level, the absolute primary energy consumption of all Member States except Estonia and Poland has declined since 2005 (**Figure 2**). Estonia experienced the largest primary energy consumption increase, which was equivalent to an average annual 1.5% rise in the period 2005-2015, but with a significant reduction in the last year (-6%). The average annual reduction 2005-2015 was more pronounced compared to EU28 in 15 Member States (Belgium, Denmark, Greece, Spain, Croatia, Italy, Cyprus, Lithuania, Luxembourg, Hungary, Malta, Portugal, Romania, Slovakia and the United Kingdom). However, nine countries (Belgium, Bulgaria, Czech Republic, Germany, Ireland, France, Malta, the Netherlands, Sweden and the United Kingdom) still have a positive gap towards their national indicative targets by 2020. This means that efforts to further

reduce the energy consumption in these countries are necessary in the remaining period up to 2020.

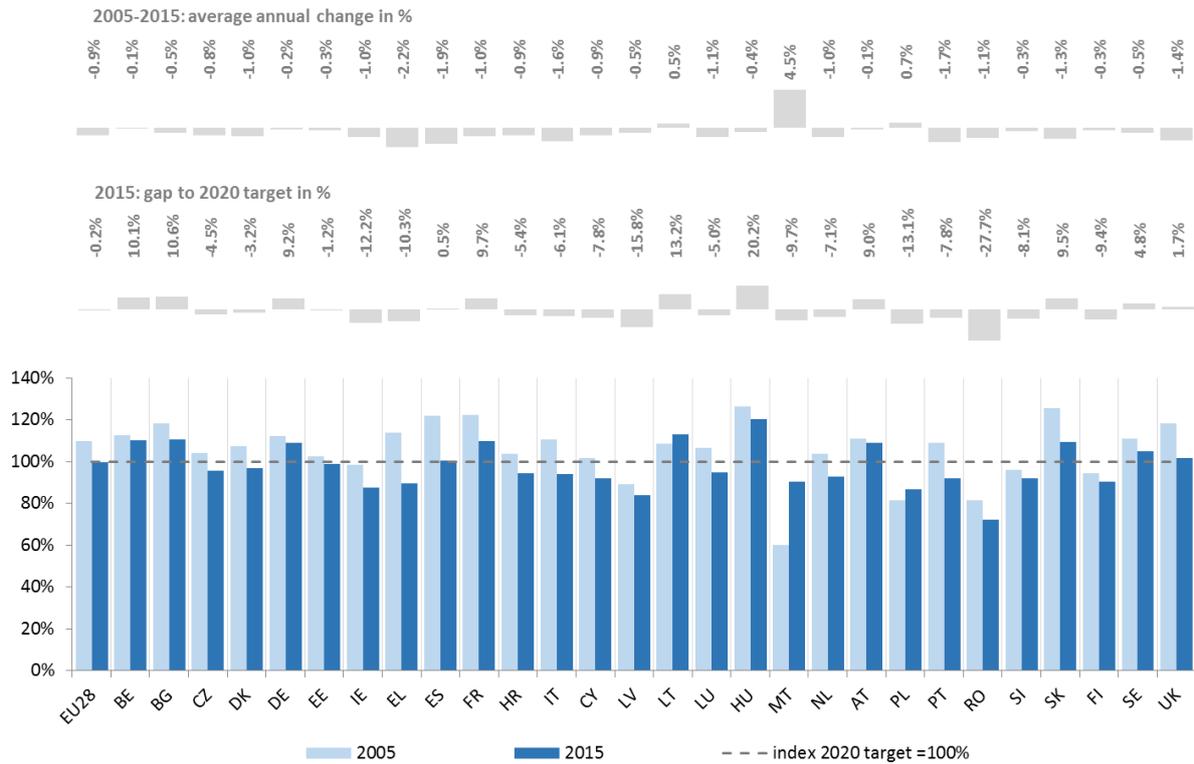
The absolute final energy consumption of all Member States has declined since 2005 except in Lithuania, Malta and Poland (Figure 3). 15 Member States achieved already a final energy consumption which is below their indicative 2020 final energy target in 2015 (Czech Republic, Denmark, Ireland, Greece, Croatia, Italy, Cyprus, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovenia and Finland).

Figure 2. Primary energy consumption trends (2005-2015), average annual change in 2005-2015 and comparison of current efforts with EU 2020 target.



Source: Eurostat, JRC, 2017.

Figure 3. Final energy consumption trends (2005-2015), average annual change in 2005-2015 and comparison of current efforts with EU 2020 target.



Source: Eurostat, JRC, 2017.

A quick overview of main energy trends is shown in **Table 4** and **Table 5**, where the green colour is used to indicate a good variation (e.g. decrease of energy consumptions) and the red for the opposite.

Table 4. Overview of variations of main energy indicators (part 1).

MS	Trend to reach the 2020 target		Short-term trend		Energy Intensity whole economy	Industry	Residential	
	PEC 2005-2015 trend compared to PEC 2005-2020 trend to reach the 2020 target	FEC 2005-2015 trend compared to FEC 2005-2020 trend to reach the 2020 target	Change of PEC 2015 compared to PEC 2014 [%]	Change of FEC 2015 compared to FEC 2014 [%]	2005-2015 average annual change of PEC energy intensity [%]	2005-2015 average change of FEC energy intensity in industry [%]	2005-2015 average annual change of FEC in residential per capita with climatic corrections [%]	2005-2014 average annual change of FEC in residential per m ² with climatic corrections [%]
EU28	+	+	1.5%	2.1%	-2.0%	-2.0%	-0.4%	-2.3%
BE	+	-	1.2%	4.6%	-2.2%	-1.1%	-2.3%	-3.1%
BG	-	-	3.9%	5.5%	-2.9%	-5.7%	2.4%	-2.6%
CZ	+	+	1.6%	2.4%	-2.5%	-4.9%	1.2%	-1.0%
DK	+	+	-0.2%	3.2%	-2.1%	-2.3%	-0.2%	-2.1%
DE	-	-	0.6%	1.6%	-2.1%	-1.3%	-0.6%	-2.3%
EE	-	+	-6.3%	-1.8%	0.1%	-4.6%	1.6%	-0.5%
IE	+	+	4.6%	4.2%	-3.7%	-4.9%	-3.1%	-4.3%
EL	+	+	0.4%	6.3%	-0.2%	2.9%	-1.1%	-3.8%
ES	+	+	4.0%	1.6%	-1.8%	-2.3%	1.9%	-1.2%
FR	-	-	2.0%	2.7%	-1.7%	-1.1%	-0.6%	-1.7%
HR	+	+	4.4%	5.5%	-1.2%	-2.0%	0.6%	-3.1%
IT	+	+	4.0%	2.7%	-1.4%	-2.7%	0.9%	-0.7%
CY	+	+	2.0%	2.7%	-1.2%	1.8%	0.7%	-4.5%
LV	+	+	-2.1%	-2.5%	-1.8%	2.1%	-0.2%	-3.6%
LT	+	-	1.9%	-0.5%	-5.1%	-2.6%	2.0%	-1.2%
LU	+	+	-1.0%	-0.3%	-4.0%	-1.0%	-1.6%	-1.5%
HU	+	-	5.9%	6.9%	-1.6%	2.1%	1.1%	-4.6%
MT	+	-	-14.9%	5.1%	-5.3%	na	7.6%	-2.7%
NL	-	+	3.8%	2.5%	-1.6%	-1.6%	-1.3%	-2.6%
AT	+	-	2.9%	2.3%	-1.4%	-0.3%	0.8%	-1.5%
PL	+	+	0.9%	1.1%	-3.4%	-5.1%	1.2%	-1.3%
PT	+	+	4.9%	1.7%	-1.2%	-0.9%	0.7%	-4.6%
RO	+	+	2.1%	0.8%	-4.1%	-6.3%	1.6%	-1.7%
SI	+	+	-0.9%	2.2%	-1.8%	-3.3%	0.9%	-1.0%
SK	+	-	0.8%	0.9%	-4.7%	-5.4%	-0.9%	-1.9%
FI	+	+	-4.8%	-1.3%	-0.7%	0.0%	-0.1%	-1.1%
SE	+	-	-5.5%	1.8%	-2.8%	-1.5%	-0.4%	-1.3%
UK	+	+	0.0%	1.3%	-3.0%	-2.3%	-2.9%	-3.8%
Source and extraction data	Eurostat 06/2017	Eurostat 06/2017	Eurostat 06/2017	Eurostat 06/2017	Eurostat 06/2017	Eurostat 09/2017	Eurostat 06/2017	Odyssee 07/2017

Source: Eurostat, Odyssee, JRC, 2017.

Table 5. Overview of variations of main energy indicators (part 2).

MS	Services	Transport			Generation	
	2005-2015 average change of FEC energy intensity in the service sector [%]	2005-2015 average annual change of total FEC in the transport sector in %	2015 vs. 2005 change of share of trains, buses and coaches for passenger transport [%]	2015 vs. 2005 change of share of railway and inland waterways for freight transport [%]	2005-2015 average annual change of heat generation from CHP [%]	2015-2005 average annual change of ratio Transformation output/Fuel input of thermal power generation [%]
EU28	● -0.9%	● -0.3%	● 0.2%	● -0.4%	● -1.0%	● 0.0%
BE	● 0.3%	● 0.5%	● -1.0%	● 0.8%	● 6.8%	● 1.6%
BG	● -1.0%	● 1.8%	● -11.6%	● 10.3%	● 0.6%	● 0.7%
CZ	● -2.6%	● 0.7%	● 1.4%	● -5.0%	● -0.8%	● 0.3%
DK	● -1.7%	● -0.7%	● -1.7%	● 0.1%	● -1.7%	● -0.1%
DE	● -0.5%	● 0.1%	● 0.0%	● -1.6%	● -1.0%	● 0.3%
EE	● 0.9%	● 0.3%	● -1.2%	● -27.6%	● 2.6%	● -0.1%
IE	● -4.7%	● -0.7%	● 1.7%	● -0.9%	● 0.0%	● 0.9%
EL	● 1.3%	● -1.9%	● -3.1%	● -1.1%	● 1.3%	● 1.0%
ES	● 0.4%	● -1.6%	● 0.6%	● 0.7%	● 0.0%	● -1.1%
FR	● -0.3%	● 0.0%	● 2.2%	● 0.2%	● -6.0%	● -0.5%
HR	● 0.0%	● 1.0%	● -2.1%	● 5.2%	● -0.8%	● 0.7%
IT	● 0.4%	● -1.2%	● 0.4%	● 3.4%	● 1.2%	● 0.4%
CY	● 1.5%	● -1.1%	● -2.1%	● 0.0%	● 0.0%	● 1.2%
LV	● -1.5%	● 1.0%	● -6.1%	● -4.4%	● 3.1%	● 3.6%
LT	● -2.1%	● 2.9%	● 0.5%	● -8.3%	● -4.1%	● 3.0%
LU	● -2.0%	● -1.3%	● 2.6%	● -13.8%	● -2.6%	● 0.1%
HU	● -5.1%	● 0.3%	● -4.2%	● 1.4%	● -6.6%	● -1.1%
MT	na	● 5.8%	● -1.9%	● 0.0%	● 0.0%	● 4.4%
NL	● -2.0%	● -0.6%	● 2.0%	● 2.5%	● -0.7%	● 0.5%
AT	● -3.0%	● 0.0%	● 1.6%	● -3.8%	● 2.8%	● -0.3%
PL	● -1.6%	● 3.4%	● -9.1%	● -11.1%	● -1.5%	● 0.1%
PT	● -1.6%	● -0.8%	● -0.1%	● 4.9%	● 4.6%	● -0.2%
RO	● -0.9%	● 2.8%	● -4.4%	● 18.5%	● -4.3%	● -0.4%
SI	● -1.0%	● 2.3%	● -0.5%	● 4.2%	● 0.2%	● 0.8%
SK	● -4.8%	● -0.4%	● -5.2%	● -9.3%	● 0.1%	● 0.5%
FI	● -0.1%	● 0.3%	● -0.2%	● 2.1%	● -0.7%	● -0.3%
SE	● -2.8%	● 0.1%	● 2.4%	● -3.0%	● 2.2%	● 0.9%
UK	● -1.5%	● -0.7%	● 2.3%	● 0.3%	● 0.0%	● -0.2%
Source and extraction data	Eurostat 06/2017	Eurostat 06/2017	DG MOVE Pocketbook 2017	DG MOVE Pocketbook 2017	Eurostat 05/2017	Eurostat 05/2017

Source: Eurostat, DG MOVE, JRC, 2017.

More details are provided and discussed in the following sub-chapters, and further elaborations will be published with the annual JRC Report "Energy Consumption and Energy Efficiency Trends in the EU-28" that will be available in early 2018.

² Symbol "+" is used if Member States decreased their primary and final energy consumption between 2005 to 2015 at a rate which is higher than the rate of decrease which would be needed in the period 2005 to 2020 to meet the 2020 primary and final energy consumption targets. Symbol "-" was used for the other cases.

3.1 Primary energy consumptions

Primary energy consumption (PEC) in the EU-28 in 2015 was 1531 Mtoe, i.e. 1.5% higher than in 2014. During the period 1990-2005 it increased by 9% and it decreased by 11% over the period 2005-2015. There was a consumption recovery by 2010, when primary energy consumption increased by nearly 4% in one year, followed by another relevant decrease in the period 2011-2014. After several years, PEC returns to increase in 2015.

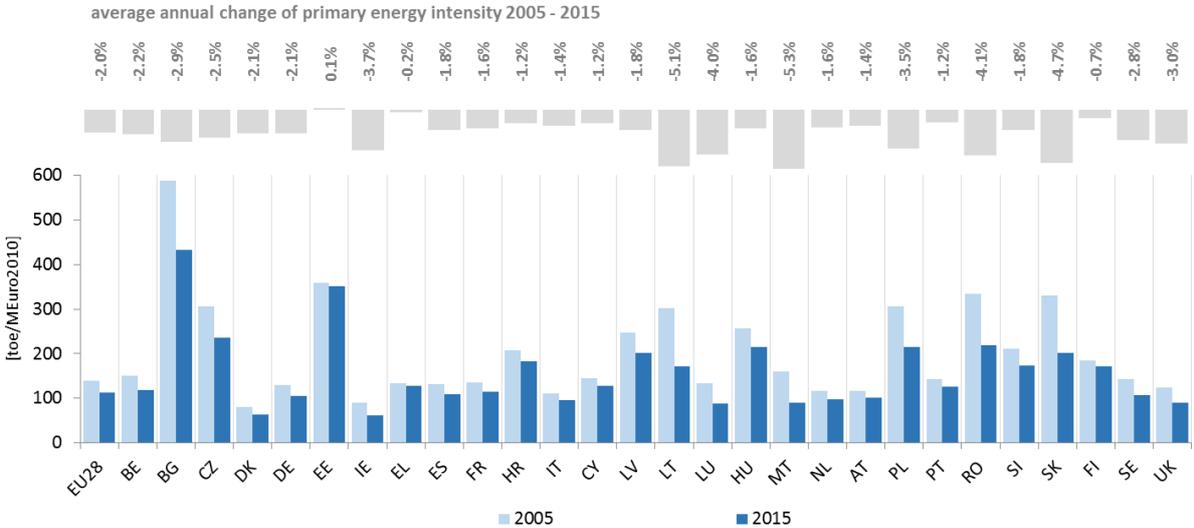
In 2015, 5 Member States (Belgium, Estonia, Finland, Luxembourg, and Sweden) had primary energy consumption over 4 toe per capita. In Croatia, Lithuania, Malta and Romania consumptions was under 2 toe per capita, while the EU average stood at 3 toe per capita.

The biggest increase in primary energy consumption per capita between 2005 and 2015 was observed in Estonia (+19%), followed by Latvia (+8%), while the biggest decrease (between -30% and -20%) was observed in Cyprus, Greece, Italy, Luxembourg, Spain, and UK.

In many countries, primary energy consumption per capita increased between 1990 and 2005 and then decreased between 2005 and 2015. The biggest difference was seen in Malta and Spain, where the consumption per capita increased by 45-46% between 1990 and 2005, then decreased by 20-25% in the period up until 2015. In other countries, the picture was reversed: there was a decrease in consumption per capita from 1990 to 2005, then rose until 2015 in Estonia, Latvia and Poland. The biggest difference in absolute terms was seen in Estonia, where the consumption per capita decreased by 36% between 1990 and 2005, then rose by 19% in the period up until 2015.

As shown in **Figure 4**, the EU primary energy intensity (PEC divided by GDP) has dropped by an average rate of 2% per year in the period 2005-2015. On average, all Member States significantly reduced their primary energy intensity in this period, except Estonia. Belgium, Bulgaria, Czech Republic, Denmark, Germany, Ireland, Lithuania, Luxembourg, Hungary, Malta, Poland, Romania, Slovakia, Sweden and the United Kingdom reduced their intensity on average by more than 2% per year. The highest annual average decrease of primary energy intensity over this period has been recorded in Lithuania, Malta and Slovakia (about -5%/ year). In 2015 the highest decreases compared to the previous year were observed in Ireland (-17%) and Malta (-21%).

Figure 4. Primary energy intensity trends and average annual change in 2005-2015.



Source: Eurostat, JRC, 2017.

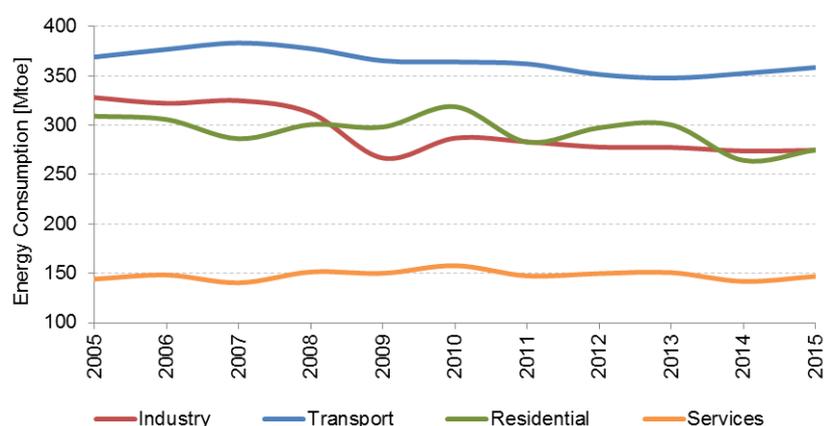
3.2 Final Energy consumption

Final energy consumption (FEC) in EU-28 in 2015 was 1084 Mtoe, slightly higher than in 2014 (+2.1%). Final energy consumption has increased slowly since 1994, reaching its highest value, 1194 Mtoe in 2006. After that, the level remained relatively steady, until the first strong decrease, by 6% (respect to the previous year), in 2009. The sharpest decrease was in the use of solid fuels, by 19%, followed by gas (7%), petroleum products (6%) and electricity (5%). Overall, there was a recovery in 2010, when final energy consumption increased by 4%, though in 2011, there was a decrease of nearly 5% while in the period 2012-2015 it remained almost at the same level, so final energy consumption in 2015 was slightly below the 2011 level.

Figure 5 shows the final energy consumption per sector from 2005 to 2015. It can be observed how the final energy in industry and residential sector has notably varied throughout the different years, while energy consumption of the transport and services sector has changed more gradually.

The structure of final energy consumption in 2015 by sector shows that transport accounted for the biggest share (33%), followed by residential and industry (25%). The service sector accounted for 14% whilst the other sectors were responsible for the remaining 3%.

Figure 5. Final energy consumption dynamics through main sectors in the EU-28, 2000-2015.



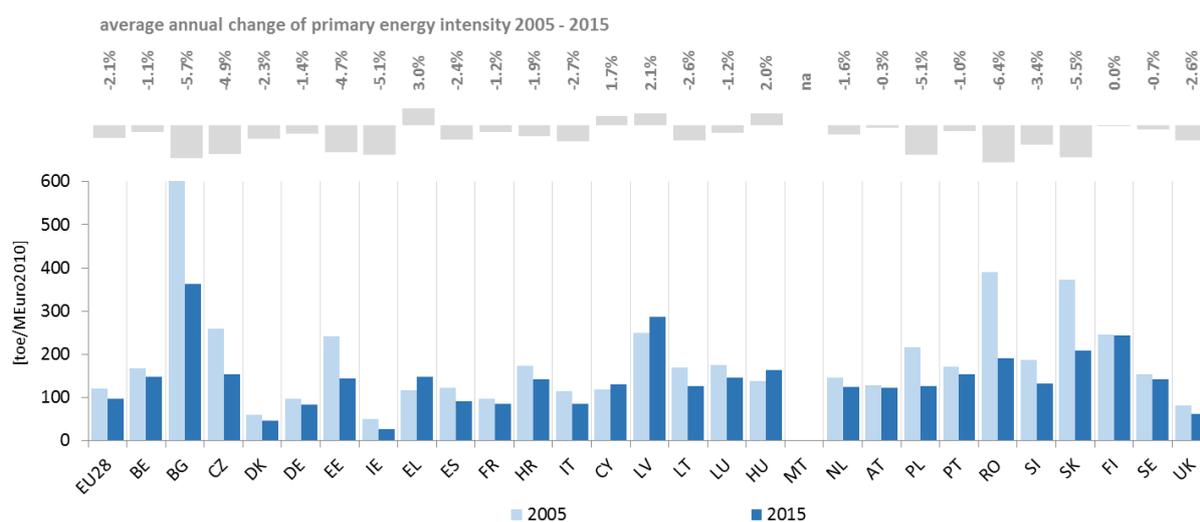
Source: Eurostat, JRC, 2017.

3.2.1 Industry

The decrease in 2009 was sharpest in industry (-15%), which was partially recovered in 2010 (+8%). After the decrease in the period 2011-2014 (-5%), the final energy consumption slightly increased in 2015.

In terms of final energy intensity of industry (**Figure 6**), in 2015 there is still a significant difference between the most energy intensive Member State, Bulgaria (270 toe/M€), and the least energy intensive one: Ireland (32 toe/M€). Whilst this is influenced by the share of energy-intensive industries, most Member States decreased energy intensity in industry in 2015 compared to 2005, the exceptions being Cyprus, Greece, Hungary, and Latvia. Almost no improvements in energy intensity can also be seen in Finland.

Figure 6. Final energy intensity trends in industry and average annual change in 2005-2015.



Source: Eurostat, JRC, 2017.

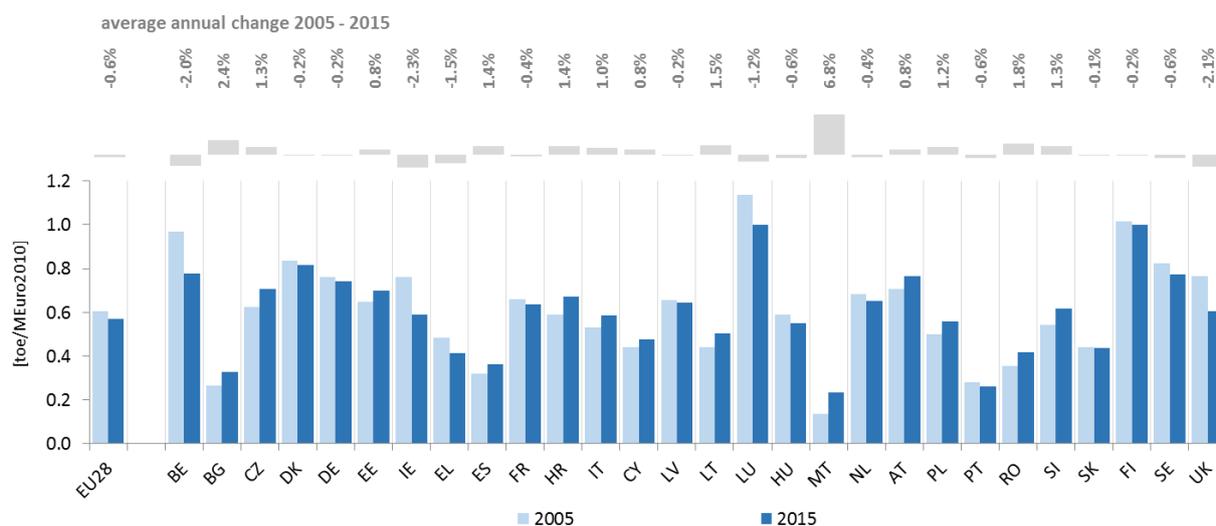
3.2.2 Residential

The final energy consumption of the EU28 residential sector decreased slightly in 2009, increased by nearly 7% in 2010, and decreased substantially in 2011 (-11%). In 2012 and 2013 a small recovery was registered (+6%), while in 2014 another significant decrease was recorded (-12%). The last data of 2015 shows an increase of 4%, but it remains abundantly below the figure of 2005 (275 Mtoe vs 309 Mtoe, representing a decrease of -11%). This demonstrates the efficiency improvements occurred in the last decade, but also the influence of the annual climatic variations on this indicator. In fact the reduction of the final energy consumption HDD normalised³ over the period 2005-2015 is only -2.2%.

Taking also account of population, it can be seen that EU28 decreased its final energy consumption per capita on annual average by 0.6% (see **Figure 7**). The biggest improvements (around -2%) are in Ireland, United Kingdom and Belgium.

³ For this calculation the average heating degree days of the past 25 years are taken into account.

Figure 7. Climate-normalised residential final energy consumption per capita and average annual change in 2005-2015.



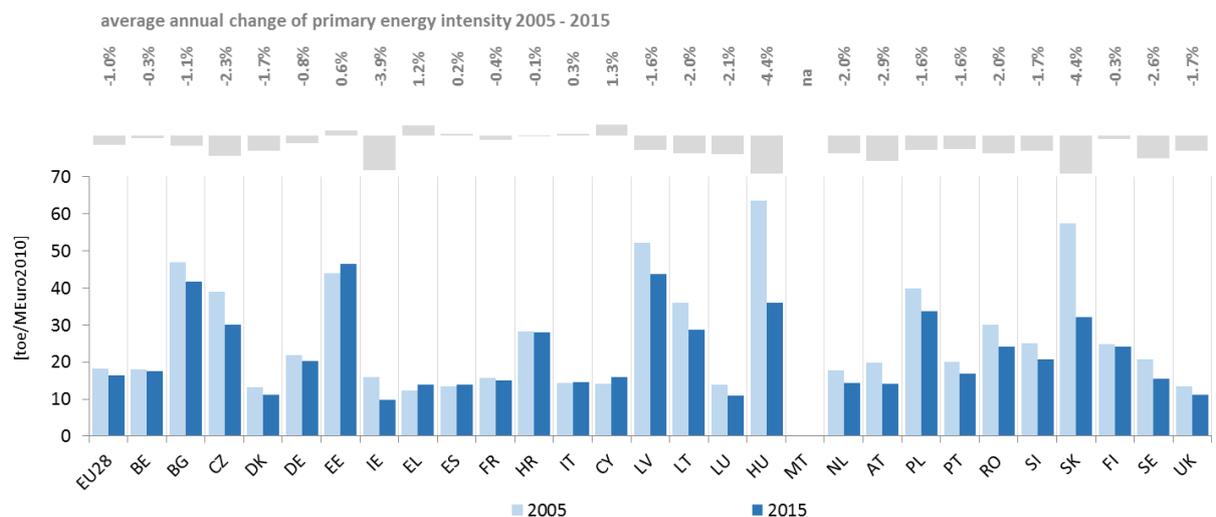
Source: Eurostat, JRC, 2017.

3.2.3 Services

Similarly with residential, the FEC of the EU28 service sector decreased in 2009, increased by nearly 7% in 2010, and then decreased again by 7%. In 2012 and 2013 a small recovery was registered (+3%), while in 2014 another decrease was recorded (-6%). The last data of 2015 shows an increase of 4%.

As shown in **Figure 9**, EU28 has improved the energy intensity of its service sector (FEC divided by GVA) annually on average by 0.97% over the period 2005-2015. The highest improvements (around -4%) happened in Slovakia, Hungary and Ireland, in this period.

Figure 8. Final energy intensity in the services sector and average annual change in 2005-2015.



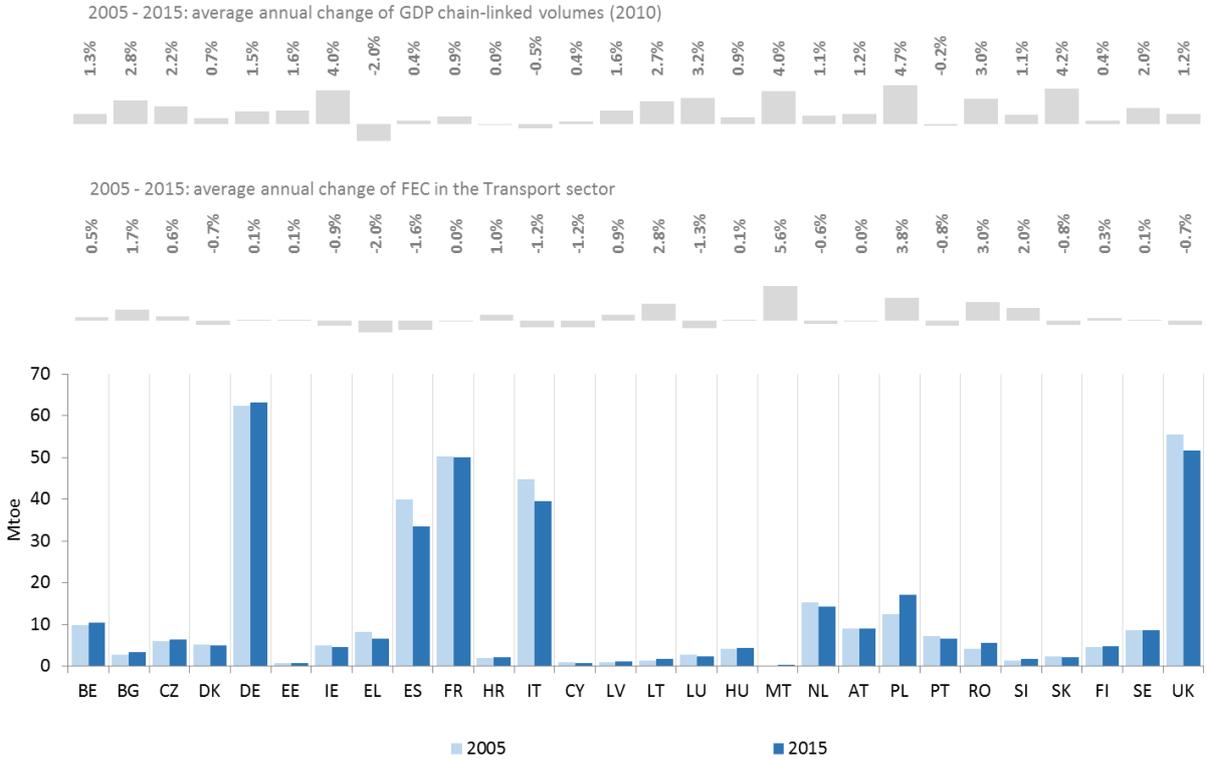
Source: Eurostat, JRC, 2017.

3.2.4 Transport

In the last year a slight increase of the FEC of the transport sector has been registered (+2%). However it declined from 369 Mtoe in 2005 by 3% to 359 Mtoe in 2015 (by average annual decrease 0.5% in 2005-2015).

Comparison between Member States should be undertaken with caution because final energy consumption is based on the fuels sold rather than on the fuel used on the territory of a country. Therefore, factors other than energy efficiency come into play (e.g. the degree to which a given Member State is a 'transit country' for road transport or a hub for aviation). As shown in **Figure 9**, 15 Member States increased their consumption in this sector on average in 2005-2015. The rest of the countries managed to slightly decrease their consumption. With a parallel increase in GDP and passenger transport activity (freight transport activity has not yet recovered to the 2005 level), a decrease in energy consumption could be a sign of increased energy efficiency. In particular, this is the case of 10 countries (Denmark, Ireland, Spain, France, Cyprus, Luxembourg, the Netherlands, Austria, Slovakia and the UK).

Figure 9. Final energy consumption in the transport sector and average annual change in 2005-2015.



Source: Eurostat, JRC, 2017.

4 Evolution in the short-term

Despite the positive trend over the period 2005-2015, in 2015 a general increase of energy consumption compared to the previous year was observed. **Table 6** shows the short-term trend of the energy consumption in 2015 with respect to 2014. A colour-code system was used to define these trends: red for an increase of at least 1% with respect to 2014, green for a decrease of at least 1% and light pink for stable trend (a change within the range of $\pm 1\%$). For comparability reasons, the data used to assess these trends are derived from EUROSTAT. It can be noted that this year no country has experienced a reduction in all sectors and only Finland hasn't seen any increasing trend. Only 6 Member States recorded a reduction in primary energy consumption (Estonia, Latvia, Luxembourg, Malta, Finland and Sweden). The largest increases are in Hungary (+6%), Portugal (+5%) and Ireland (+4%).

In terms of total final energy consumptions, only Latvia and Finland experienced a decrease. The largest increase was observed in Malta (+20%), Hungary (+7%) and Croatia (+6%).

Table 6. Trends in consumption in key sectors at national level in the period 2014-2015.

MS	Primary Energy	Final Energy				
		Total	Industry	Transport	Residential	Services
BE	↗	↗	→	↗	↗	↗
BG	↗	↗	↗	↗	↗	↗
CZ	↗	↗	↗	↗	↗	↗
DK	→	↗	→	→	↗	↗
DE	→	↗	→	→	↗	↗
EE	↘	→	↘	→	↘	↗
IE	↗	↗	↗	↗	↗	→
EL	→	↗	→	↗	↗	↗
ES	↗	↗	↘	↗	↗	↗
FR	↗	↗	↗	↗	↗	↗
HR	↗	↗	→	↗	↗	↗
IT	↗	↗	→	↘	↗	↗
CY	→	↗	↘	↗	↗	↗
LV	↘	↘	→	↗	↘	↘
LT	↗	→	↘	↗	↘	↘
LU	↘	→	→	↘	↗	↗
HU	↗	↗	↗	↗	↗	↗
MT	↘	↗	↗	↗	↗	↗
NL	↗	↗	→	↗	↗	↗
AT	↗	↗	→	↗	↗	↘
PL	→	↗	→	↗	→	→
PT	↗	↗	→	↗	↘	↗
RO	↗	→	→	↗	→	→
SI	→	↗	→	↘	↗	↗
SK	→	↗	→	→	↗	↗
FI	↘	↘	→	→	↘	↘
SE	↘	↗	↗	↗	↗	→
UK	→	↗	↘	↗	↗	↗

Source: Eurostat, JRC, 2017.

The sector with the most significant growing trend is noted as the residential sector with a 4% increase at the EU level. Only 7 Member States reported a drop in the final energy consumption of the residential sector. A significant 16% increase was noted in Greece, followed by 10% in Italy, Belgium and Malta. When corrected for climate variations, the overall picture improves, but a worsening is observed for 4 Member States: in Estonia, Finland, Lithuania and Portugal the variation over the 2014-2015 period goes from negative (without climatic correction) to positive (with climatic correction).

Energy consumption in the service sector experienced the second largest growth after the residential sector, with the EU average increase of 3.6% in 2015 compared to 2014. All countries experienced a growth except Austria, Finland, Latvia, Lithuania, Romania and Sweden which experienced a drop. It is more significant the growth in Spain (+13%), Luxembourg and Croatia (+10%), and Greece (+9%).

Also the transport and the industry sectors have experienced a rising trend this year (respectively +1.7% and +0.3% at EU level), with 14 countries reporting an increase of the final energy consumption of both sectors. The highest growths were observed in Bulgaria and Hungary for transports (around +8%), and Hungary and Ireland for industry (around 7%).

As requested by Annex XIV of EED, Member States shall analyse sectors where energy consumption remains stable or is growing year by year, and provide possible explanations for that. This has been done by almost all countries, but often without the support of in-depth analyses. The reasons mainly indicated for growing or stable consumptions are summarised in **Table 7** and **Annex 2** shows all the explanations provided in the Annual Reports 2017.

Table 7. Main reasons provided by Member States (sorted from high to low recurrences) to justify growing or stable final energy consumptions over the period 2014-2015.

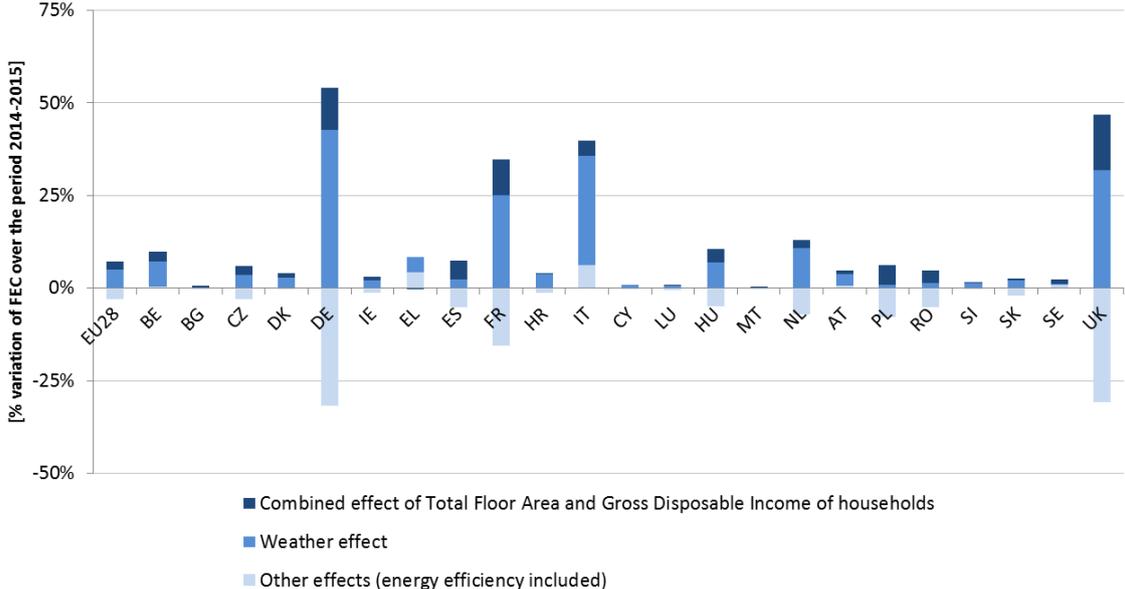
Sector	Reasons
Industry	Economic growth, established by an increase of the Gross Value Added (GVA) of industry or by the Gross Domestic Product (GDP). Increase of employment.
Transport	Activity growth, established by an increase of the total mileage, the flows of freight and passengers or the exports' amount. Decline of international fuel prices. Global economic growth (GDP). Increase of the number of vehicles.
Residential	Winter climatic conditions, established by an increase of the Heating Degree Days (HDD). Decline of international fuel prices. Increase of the population or the number of households. Growth of the disposable income of households.
Services	Winter climatic conditions, established by an increase of the Heating Degree Days (HDD). Economic growth, established by an increase of the Gross Value Added (GVA) of industry or by the Gross Domestic Product (GDP). Decline of international fuel prices. Increase of employment.

Source: AR2017, JRC, 2017.

To contextualise the explanations provided by Member States, JRC C.2 developed a decomposition analysis, which identifies the driving factors and their contributions behind the latest energy consumption trends in the EU.

For instance in **Figure 10** a breakdown is shown for all Member States who increased their residential consumptions in 2015 respect the year before. As indicated by large part of these countries, the weather (colder winter) was a relevant cause of increase, but also the growth of floor area and of disposable income of households did not a negligible effect. These two contributions have overcome the impact (often negative) of other factors that include also the improvement of energy efficiency in buildings.

Figure 10. Contribution of different effects on the variation of the residential FEC, in the countries where growth was observed over the period 2014-2015.



Source: JRC, 2017.

For further details, we refer to our decomposition report "Assessing the progress towards the EU energy efficiency targets using index decomposition analysis" (Economidou 2017).

5 Progress towards implementation of EED provisions

5.1 Overview of policy updates in year 2016

In compliance with the general framework for annual reports Annex XIV Part 1, Member States were required to report updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020.

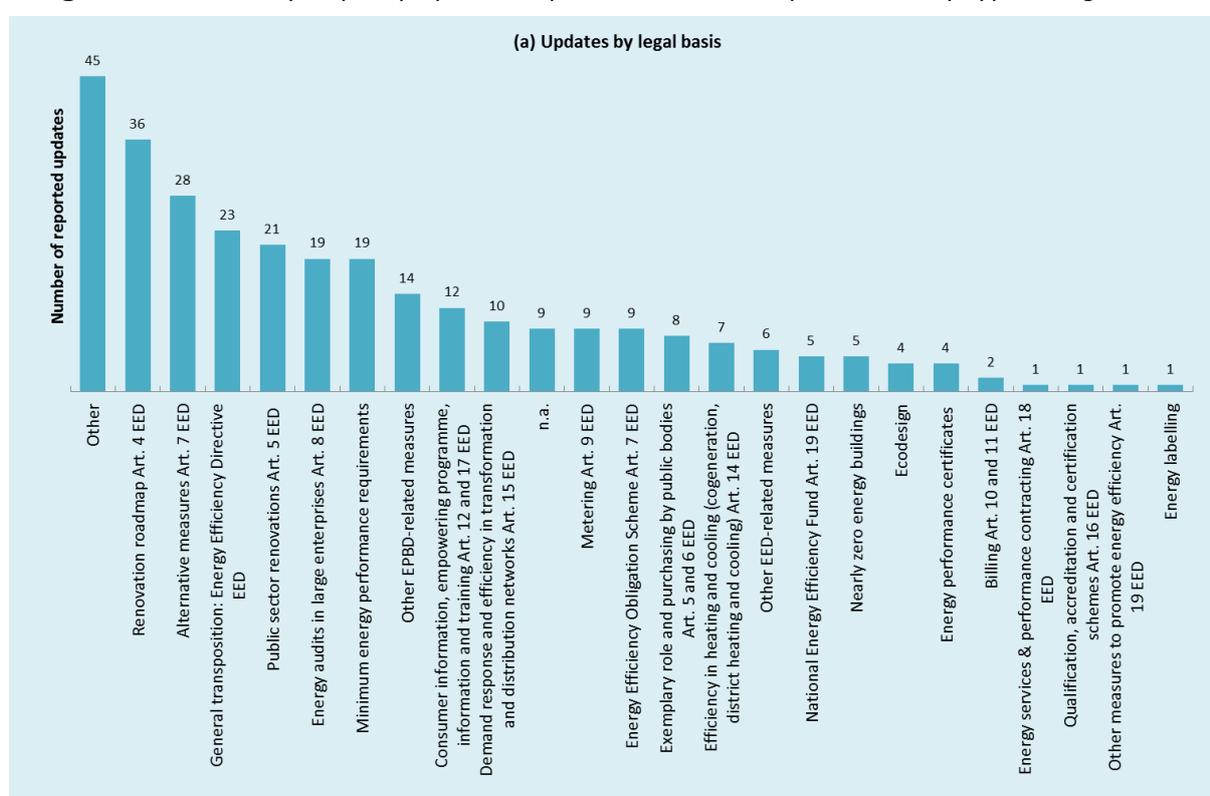
In 2017, 22 Member States communicated their updates in the Annual Reports. From this group Austria, the Netherlands, Croatia, Greece, Luxembourg and Sweden are missing.

In total 299 updates were reported, i.e. 9 more than the previous year, despite the lack of some countries. The majority of them concerned the transposition and implementation of the provisions of the Energy Efficiency Directive, above all focused on Article 4 and Article 7 (see **Figure 11**).

In terms of policy types, the vast majority of policies were "Regulations, supporting legal & other legislative measures" (42%) and "Funds, financial & fiscal measures" (33%). These were followed by updates in "Plans & strategies" and "Information, knowledge & advice". **Figure 12** provides more details.

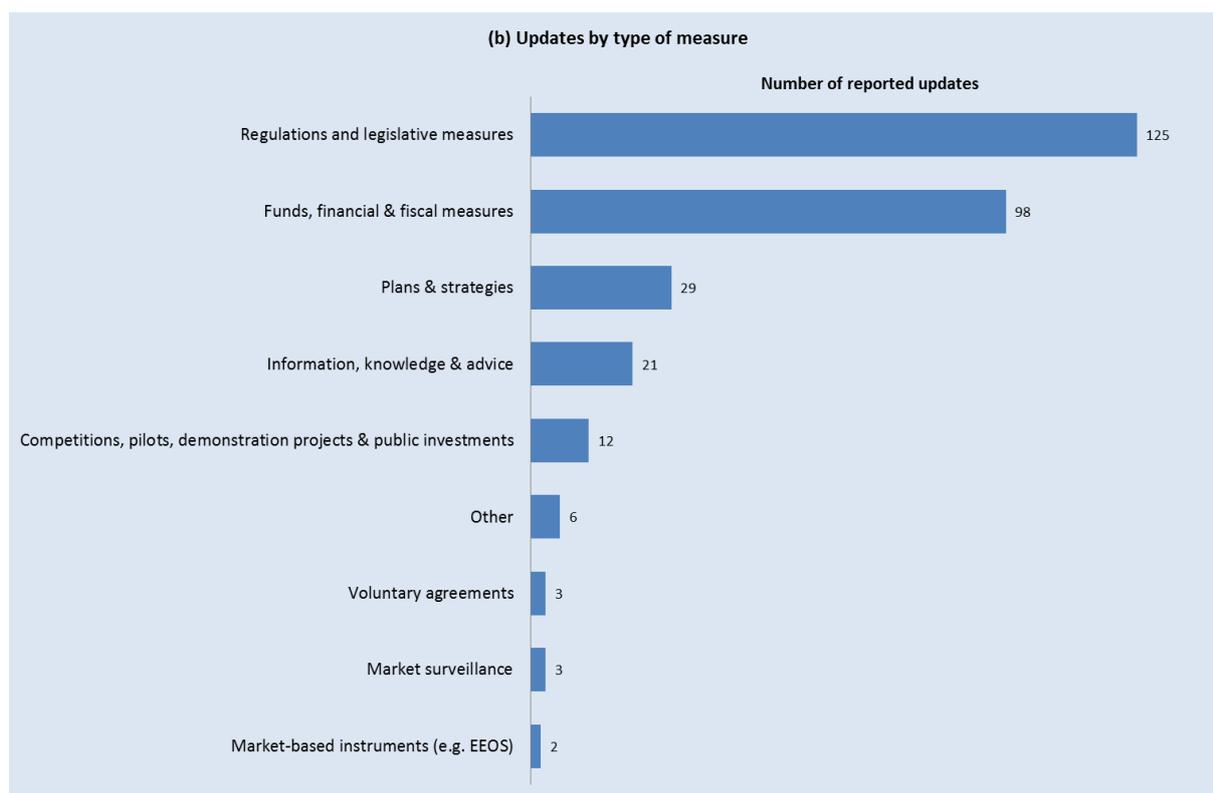
As shown in **Figure 13**, almost half of the measure updates (around 54%) concerned adoption of new measures, conclusion of agreements, publication of legislations, and commencement or enforcement of measures and programmes. Amendments, implementation or design changes and extension of on-going measures represented around a fifth of all updates (around 29%).

Figure 11. Summary of policy updates reported in Annual Reports 2017 by type of legal basis.



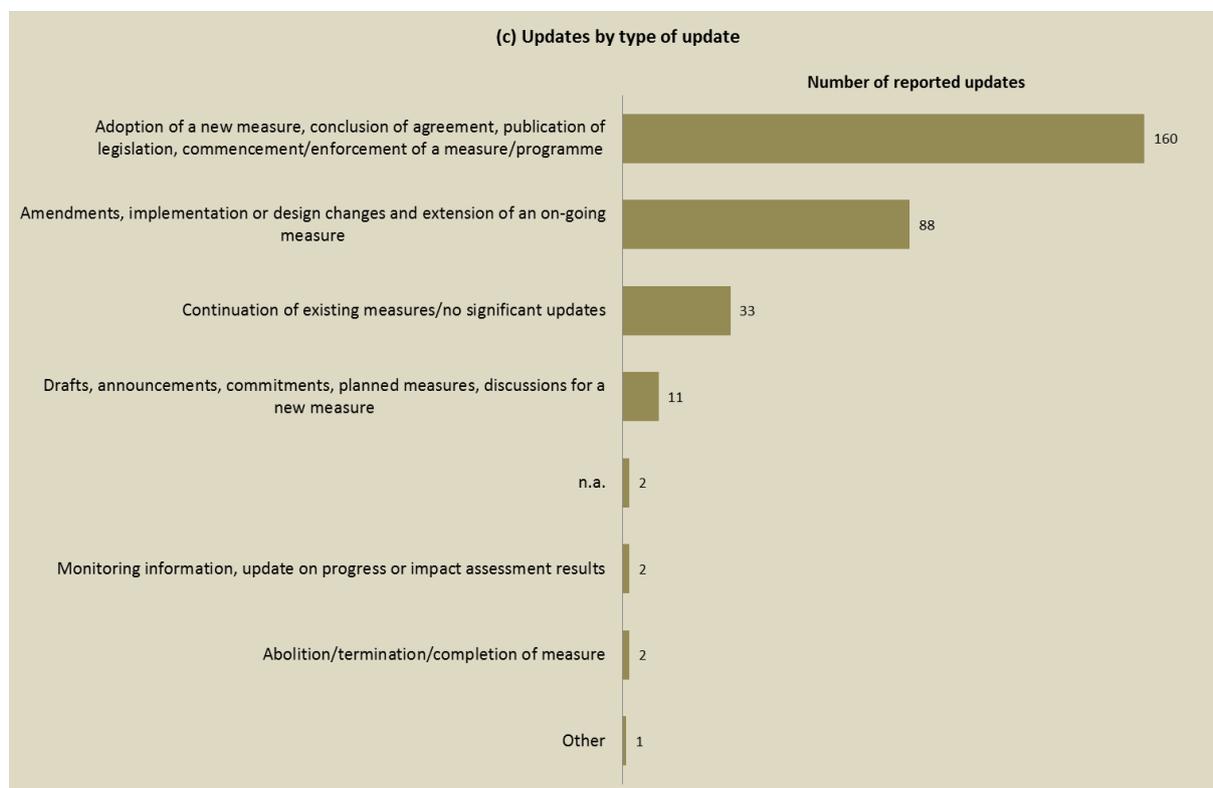
Source: AR2017, JRC, 2017.

Figure 12. Summary of policy updates reported in Annual Reports 2017 by type of measure.



Source: AR2017, JRC, 2017.

Figure 13. Summary of policy updates reported in Annual Reports 2017 by type of update.



Source: AR2017, JRC, 2017.

5.2 Progress towards Article 5 in 2016

In accordance with Article 5(1) of Directive 2012/27/EU, Member States were required to ensure that, as from 1 January 2014, 3% of the total floor area of heated and/or cooled buildings owned and occupied by their central government which does not meet minimum energy requirements is renovated each year, to meet at least the minimum energy performance requirements (MEPS) that it has set in application of Article 4 of Directive 2010/31/EU. Alternatively, Member States may opt for an alternative approach (Article 5(6)), and achieve by 2020, energy savings which are equivalent or greater than those which would be achieved through the application of the provisions of Article 5(1) in the same building stock.

A summary of the latest progress made by Member States in connection with Article 5 are presented in **Table 8** (default approach) and **Table 9** (alternative approach). This is based on the latest data⁴ reported by Member States on the central government building stock and the obligations calculated by Member States set to comply with the Article 5 provisions in terms of annual floor area to be renovated or annual energy savings to be reached. Even if the actual progress made in 2016 (in terms of renovated floor area or energy savings) is currently under review, it is also provided in the tables as it was reported by the Member States in their AR2017. Moreover in the last column it is displayed (if available) the actual obligation achievement for the year 2016, which is expressed as the:

- ratio of renovated floor area in 2016 to the respective annual renovation obligation for countries opting for the default approach (Article 5(1));
- ratio of achieved annual energy savings in 2016 compared to the annual energy saving obligation for countries opting for the alternative approach (Article 5(6)).

The following colour-code system was used to depict the level of obligation achievement: green circles indicate countries which fully reached or exceeded their obligation in 2016, while the red and yellow circles show countries which fell short of their 2016 obligation by up to 0-50% and 50-99%, respectively. The ratios were calculated based only on information declared by Member States in their Annual Reports 2017.

Table 8. Implementation status of Article 5 of Member States which chosen the default approach (Art. 5(1)), based on the reports of the Member States (data currently under review).

MS	Central government buildings with floor area > 250 m ²		Article 5. annual requirement	Article 5 progress in 2016	
	All [m ²]	Non-compliant with MEPS [m ²]		Floor area renovation obligation [m ²]	Renovated floor area [m ²]
BG	7 522 284	2 219 503	110 975	n.a.	n.a.
EE	n.a.	1 020 203	30 606	n.a.	n.a.
EL	309 712	n.a.	n.a.	n.a.	n.a.
ES	10 810 870	9 169 789	275 094	248 695	 90%
HU	488 506	413 072	12 392	n.a.	n.a.
IT	15 190 344	13 775 372	413 261	559 737	135%
LT	3 200 000	1 059 165	31 775	41 217	 130%
LU	128 870	101 170	3 108	9 569	 308%
LV	n.a.	1 999 337	59 980	66 175	 100%
SI	782 158	770 851	23 126	11 307	 49%

Source: AR2016, AR2017, NEEAP2017, JRC, 2017.

⁴ Where an updated figure was not available in the AR2017, we considered the value provided in previous notifications (i.e. Art. 5 Notifications of Mid-2014 or AR2016).

Table 9. Implementation status of Article 5 of Member States which chosen the alternative approach (Art. 5(6)), based on the reports of the Member States (data currently under review).

MS	Central government buildings with floor area > 250 m ²		Article 5. annual requirement	Article 5 progress in 2016	
	All [m ²]	Non-compliant with MEPS [m ²]	Annual energy savings obligation [ktoe]	Savings achieved [ktoe]	Obligation achieved in terms of energy savings [%]
AT	n.a.	788 283	0.59	0.17	29%
BE	1 682 802	576 997	0.47	n.a.	n.a.
CY	585 502	582 282	0.29	0.261	92%
CZ	2 211 344	1 563 941	0.57	0.43	75%
DE	4 800 000	3 200 000	n.a.	n.a.	n.a.
DK	8 700 000	6 800 000	0.38	n.a.	n.a.
FI	884 000	884 000	0.11	n.a.	n.a.
FR	35 200 000	22 200 000	35.55	n.a.	n.a.
HR	1 325 000	n.a.	0.12	0.70	602%
IE	350 787	350 786	0.16	0.054	34%
MT	158 701	31 509	n.a.	n.a.	n.a.
NL	6 730 000	n.a.	4.18	n.a.	n.a.
PL	1 087 964	855 637	0.37	0.47	125%
PT	7 329 150	82 284	n.a.	0.035	n.a.
RO	6 740 000	n.a.	3.26	n.a.	n.a.
SE	1 678 679	1 678 679	2.28	n.a.	n.a.
SK	n.a.	420 329	4.49	1.98	44%
UK	n.a.	13 400 000	3.51	2.24	64%

Source: AR2016, AR2017, NEEAP2017, JRC, 2017.

Compared to the last year a worsening of reporting capabilities of Member States is observed. In fact almost half of European Countries didn't deliver the requested update regarding Article 5 in their Annual Reports 2017, versus 7 in the previous year. Among these, Greece, Denmark and Malta didn't notify their achievements for two years following.

In addition, it should be noted that 10 Member States updated within the AR2017 their figures for the floor area which is non-compliant with the minimal energy performance standards. These are the Czech Republic, Denmark, Spain, Italy, Latvia, Luxembourg, Hungary, Malta, Slovenia and UK. While the Czech Republic and Slovenia didn't provide this data before, only 3 Countries notified a higher number of squared meters: Denmark (+10%), Italy (+9%) and UK (+8%).

5.3 Progress towards Article 7 in 2015

With regards to the obligation on energy companies to achieve yearly energy savings of 1.5% annual energy sales to final consumers (EED Article 7), a number of Member States notified updates on their Energy Efficiency Obligations Schemes (EEOSs)(Article 7(1)) and alternative policy measures (Article 7(9)) in their Annual Reports.

Table 10 provides a summary of the latest Article 7 implementation status. It provides an overview on the approach used by each Member State (i.e. obligation scheme and/or alternative measures) and the total amount of cumulative savings required by the end of 2020 per each Member State. The actual progress made is presented in terms of:

- A. savings achieved from new actions implemented in 2015;

- B. savings achieved in 2015, from new actions implemented in 2015 and from actions implemented in 2014 that continue delivering savings in 2015;
- C. cumulative savings achieved over the period 2014-2015.

Where applicable the progress is also expressed as a ratio of savings achieved from new actions implemented in 2015 (A) and of the cumulative savings achieved over the period 2014-2015 (C) against the expected annual savings on the basis of a linear delivery. In addition the last column provides the share of cumulative savings (C) against the national cumulative savings requirement due by the end of 2020. As represented in **Figure 14**, the linear delivery (taken as reference) assumes that the new actions implemented every year (from 2014) achieve 1/28 of the total savings requirements to be achieved by the end of 2020.

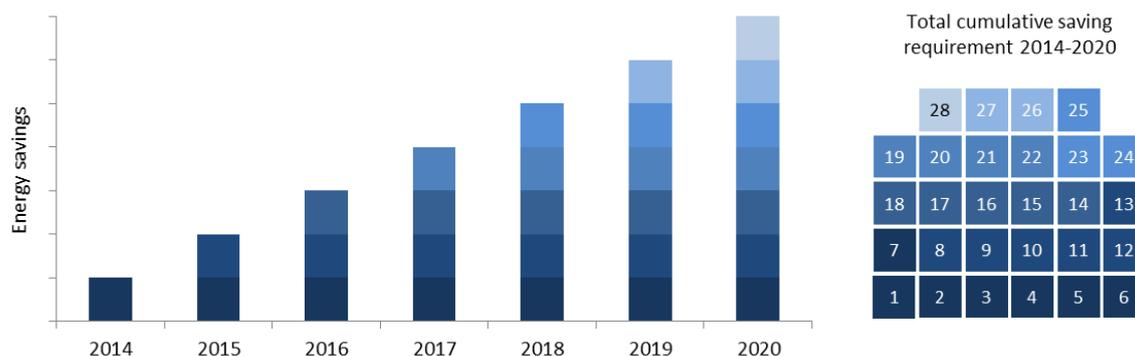
The same colour-code system as above was used to highlight the level of the achievement in 2015: green indicates countries which fully reached or exceeded their expected savings for 2015, yellow denotes countries which fell short of their 2015 expected savings by up to 50% and red indicate countries which fell short by more than half.

Table 10. Article 7 implementation status based on latest information available (reported values are in final energy).

MS	Implementation approach		Total cumulative savings requirement in 2014-2020 under Article 7 [ktoe]	Progress made in 2015					
	Obligation schemes	Alternative measures		Savings achieved from new actions implemented in 2015 [ktoe]	Savings achieved from new actions implemented in 2015 against expected annual average savings on the basis of linear delivery [%]	Savings achieved in 2015, from new actions implemented in 2015 and from actions implemented in 2014 that continue delivering savings in 2015 [ktoe]	Cumulative savings achieved over the period 2014-2015 [ktoe]	Cumulative savings achieved over the period 2014-2015 against expected average savings on the basis of linear delivery [%]	Share of savings achieved until 2015 against total cumulative savings requirement in 2014-2020 [%]
EU28			230486	n.a.	n.a.	17466	28041	124%	12%
BE		✓	6911	188	76%	545	875	118%	13%
BG	✓		1942	21	30%	50	79	38%	4%
CZ		✓	4882	56	32%	72	88	17%	2%
DK	✓		3841	n.a.	n.a.	238	443	108%	12%
DE		✓	41989	2685	179%	3334	5883	131%	14%
EE		✓	610	56	256%	58	100	153%	16%
IE	✓	✓	2164	130	168%	208	279	120%	13%
EL	✓	✓	3333	48	40%	134	208	58%	6%
ES	✓	✓	15979	523	92%	1079	1634	95%	10%
FR	✓	✓	31384	1027	92%	2233	3804	113%	12%
HR	✓	✓	1296	17	36%	21	26	19%	2%
IT	✓	✓	25502	n.a.	n.a.	1399	2697	99%	11%
CY		✓	242	2	23%	4	6	25%	3%
LV	✓	✓	851	7	25%	19	30	33%	4%
LT		✓	1004	49	136%	53	98	91%	10%
LU	✓		515	9	47%	9	9	16%	2%
HU		✓	3680	116	88%	274	349	89%	9%
MT	✓	✓	67	6	232%	7	11	149%	16%
NL		✓	11512	520	126%	1130	1796	146%	16%
AT	✓	✓	5200	392	211%	625	857	154%	16%
PL	✓		14818	1332	252%	1332	1550	98%	10%
PT		✓	2532	19	21%	65	111	41%	4%
RO		✓	5817	n.a.	n.a.	337	701	113%	12%
SI	✓	✓	945	52	154%	87	105	103%	11%
SK		✓	2284	113	138%	185	257	105%	11%
FI		✓	4213	19	13%	580	1140	253%	27%
SE		✓	9114	n.a.	n.a.	1264	1516	155%	17%
UK	✓	✓	27859	860	86%	2124	3388	114%	12%

Source: AR2016, AR2017, DG ENERGY, JRC, 2017.

Figure 14. Example of linear delivery of the total cumulative savings requirement under Article 7.



At EU level the cumulative savings achieved in the period 2014-2015 (C) are greater than expected⁵, and the good partial results achieved by Finland, Austria, Sweden, Estonia, Malta and the Netherlands are to be emphasised. On the other side, 7 Member States (Bulgaria, Czech Republic, Croatia, Cyprus, Latvia, Luxembourg and Portugal) are far away from their savings requirements.

A variety of different policy measures were used by Member States to generate the Article 7 energy savings in 2015. The breakdowns of the savings achieved from new actions both in 2014 and 2015 per type of policy measure is shown in **Figure 15**. Here the measures have been grouped into the following 6 categories:

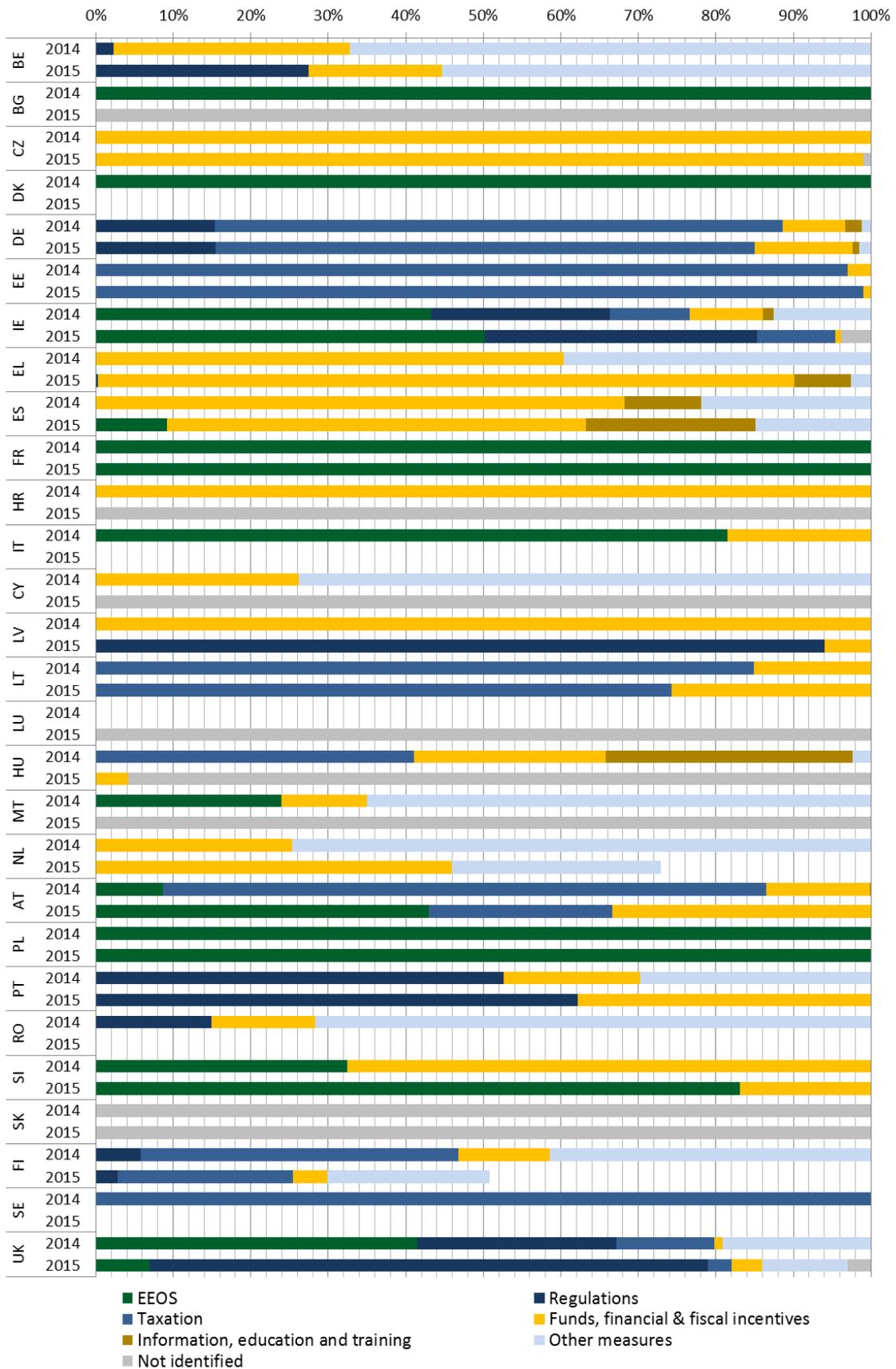
- energy efficiency obligation schemes (EEOS);
- regulations;
- taxation;
- funds, fiscal and financial incentives;
- information, training and education;
- other measures.

The figure about the savings achieved from new actions implemented in 2015 (A) is not available for 5 Member States (Bulgaria, Denmark, Italy, Romania and Sweden) and from AR2017 it is not possible to identify the policies' contributions of other 6 Countries (Croatia, Cyprus, Luxembourg, Hungary, Malta and Slovakia). Of the remaining 18 ones, 8 Member States either partially or fully generated their 2015 savings through the implementation of EEOS (EED Article 7(1)): Ireland, Spain, France, Italy, Austria, Poland, Slovenia and UK. In absolute terms, the savings generated by the EEOSs represent just over a third of the Article 7 savings at the EU level.

Looking the current (not exhaustive) picture, savings through alternative measures (EED Article 7(9)) play a relevant role for generating the new energy savings under Article 7 in 2015. The measures falling under the category "Taxation" covered a substantial share (22%) of the total achieved savings in 2015, as "funds, fiscal and financial incentives" as well (19%). New regulatory measures were adopted by 7 Member States (Belgium, Germany, Ireland, Latvia, Portugal, Finland and UK) generating the 11% of the total savings reported for 2015. "Information, education and training" measures used by Belgium, Germany, Greece, Spain and Austria, generated the 1.5% of the total saving achieved from new actions that were implemented in 2015. Instead, 8% was achieved through other measures, as voluntary agreements, public transport public development programmes, etc. The remaining 3% was not identified.

⁵ Considering as reference an average annual saving rate equal to the total cumulative saving requirement divided by 28.

Figure 15. Share of energy savings achieved in 2014 and 2015 from new actions that were implemented in 2014 and 2015, by type of policy measure.



Source: AR2016, AR2017, DG ENERGY, JRC, 2017.

6 Conclusions

Given that only five years remain before the milestone of 2020, the energy trends of EU can now be viewed alongside the overall targets. Both primary and final energy consumption levels are still below the theoretical linear target path 2005-2020, despite the reversal of the downward trend in 2015. As explained by the Member States in their latest Annual Reports, several contextual factors explained this 2015 trend reversal: the climatic conditions (colder winter), followed by economic growth and decline of fuel prices. Cold weather primarily affected the residential and services sectors, while economic growth and fuel price decline had an impact on industry and transport.

While the aforementioned factors are generally expected to drive up energy demand, continued commitment can ensure that the EU remains on track towards its 2020 targets. To this end, Member States should evaluate the latest trends and take actions with a view to introducing new policy measures or strengthening existing ones in the coming years.

In this context, the EED energy savings obligation related to Article 5 ("Exemplary role of public bodies' buildings") and Article 7 ("Energy efficiency obligation schemes") of the Energy Efficiency Directive are crucial. The first one has an important symbolic value, since it demonstrates public commitment on government properties and therefore lead-by-example approach. The second one is associated with a significant energy saving potential and represents one of the most important articles of the Directive in terms of measurable/verifiable energy savings.

The assessment of the Annual Reports submitted by Member States in 2017 has confirmed good progress with regards to the implementation of Article 7, but identified a general delay in the implementation of Article 5. This is exacerbated by the lack of information provided in the Annual Reports which does not enable to have a complete picture at EU level. Beyond the various information gaps, our analysis suggests that achieving the Article 5 requirements may be challenging and accelerated efforts are crucial in ensuring that sufficient progress is made in the coming years.

On the update process, it is important to emphasize the importance of using a common reporting format. The template introduced in 2015 and fine-tuned in 2016/2017 allowed Member States to harmonise the collection of main information and well-defined indicators, avoiding serious misinterpretations and subsequent need of requests for clarification. This aspect should be taken into account in the future reporting framework related to the requirements of the new Energy Union Governance.

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List of abbreviations and definitions

AR	Annual Report
CHPP	Combined Heat and Power Plants
EE	Energy Efficiency
EED	Energy Efficiency Directive
EPBD	Energy Performance of Buildings Directive
FEC	Final Energy Consumption
GDP	Gross Domestic Product
GVA	Gross Value Added
HDD	Heating Degree Days
MS	Member State
NEEAP	National Energy Efficiency Action Plan
PEC	Primary Energy Consumption
thPG	Thermal Power Generation
TSSEED	Technical and Scientific Support to the implementation of the EED and the EPBD, as well as contribution to the development of concepts for the strengthening of the overall EU legislative framework for energy saving

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Annex 1: EUROSTAT indicators

The table below lists the EUROSTAT indicators (and related information) associated to the indicators required by Annex XIV of the EED.

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
(i) primary energy consumption	Primary Energy Consumption	Energy saving - annual data [nrg_ind_334a]	B_100910	-	Mtoe	1990 - 2015
(ii) total final energy consumption	Final Energy Consumption	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101700	All products	ktoe	1990 - 2015
(iii) final energy consumption - industry	Final Energy Consumption - Industry	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101800	All products	ktoe	1990 - 2015
(iii) final energy consumption - transport	Final Energy Consumption - Transport	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101900	All products	ktoe	1990 - 2015
final energy consumption in pipeline transport	Consumption in Pipeline transport	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101945	All products	ktoe	1990 - 2015
(iii) final energy consumption - households	Residential	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_102010	All products	ktoe	1990 - 2015
(iii) final energy consumption - services	Services	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_102035	All products	ktoe	1990 - 2015
final energy consumption - agriculture	Agriculture/Forestry	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_102030	All products	ktoe	1990 - 2015
final energy consumption - other sectors	Other sectors	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_102000	All products	ktoe	1990 - 2015
(iv) gross value added - industry	- Industry (except construction) - Construction	Gross value added and income by A*10 industry breakdowns [nama_10_a10]	- B-E - F	Value added, gross	Million euro, chain-linked volumes, reference year 2005 (at 2005 exchange rates)	1995 - 2015
(iv) gross value added - services	- Wholesale and retail trade, transport, accommodation and food service activities - Information and communication - Financial and insurance activities - Real estate activities - Professional, scientific and technical activities; administrative and support service activities - Public administration, defence, education, human health and social work activities - Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies	Gross value added and income by A*10 industry breakdowns [nama_10_a10]	- G-I - J - K - L - M_N - O-Q - R-U	Value added, gross	Million euro, chain-linked volumes, reference year 2005 (at 2005 exchange rates)	1995 - 2015
(v) disposable income for households	Gross disposable income	Non-financial transactions [nasa_nf_tr]	- S14 (if available) or S14_S15	Households (if available) or Households; non-profit institutions serving households	Million euro (current prices)	2005 - 2015
(vi) gross domestic product (GDP)	Gross domestic product at market prices	GDP and main components - volumes [nama_gdp_k]	B1GM	-	Million euro, chain-linked volumes, reference year 2005 (at 2005 exchange rates)	1995 - 2015

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
(vii) electricity generation from thPG	<ul style="list-style-type: none"> - Gross electricity generation Main activity electricity only - Nuclear - Gross electricity generation Main activity CHP plants - Nuclear - Gross electricity generation Autoproducer electricity only - Nuclear - Gross electricity generation Autoproducer CHP plants - Nuclear - Gross electricity generation Main activity electricity only - Geothermal - Gross electricity generation Main activity electricity only - CombustibleFuels - Gross electricity generation Main activity electricity only - Other Sources - Gross electricity generation Main activity CHP plants - Geothermal - Gross electricity generation Main activity CHP plants - Combustible Fuels - Gross electricity generation Main activity CHP plants - Other Sources - Gross electricity generation Main activity electricity only - Solar Thermal - Gross electricity generation Autoproducer electricity only - Geothermal - Gross electricity generation Autoproducer electricity only - Combustiblefuels - Gross electricity generation Autoproducer electricity only - Heat from Chemicalsources - Gross electricity generation Autoproducer electricity only - Other Sources - Gross electricity generation Autoproducer CHP plants - Geothermal - Gross electricity generation Autoproducer CHP plants - Combustible Fuels - Gross electricity generation Autoproducer CHP plants - Heat from Chemical Sources - Gross electricity generation Autoproducer CHP plants - Other Sources - Gross electricity generation Autoproducer electricity only - Solar Thermal 	Supply, transformation, consumption - electricity - annual data [nrg_105a]	<ul style="list-style-type: none"> - 15_107030 - 15_107031 - 15_107032 - 15_107033 - 15_107038 - 15_107048 - 15_107054 - 15_107039 - 15_107049 - 15_107055 - 14_1070422 - 15_107040 - 15_107050 - 15_107052 - 15_107056 - 15_107041 - 15_107051 - 15_107053 - 15_107057 - 14_1070432 	Electrical energy	ktep	1990 - 2015
(viii) electricity generation from CHPP	<ul style="list-style-type: none"> - Gross electricity generation Main activity CHP plants - Nuclear - Gross electricity generation Autoproducer CHP plants - Nuclear - Gross electricity generation Main activity CHP plants - Geothermal - Gross electricity generation Main activity CHP plants - Combustible Fuels - Gross electricity generation Main activity CHP plants - Other Sources - Gross electricity generation Autoproducer CHP plants - Geothermal - Gross electricity generation Autoproducer CHP plants - Combustible Fuels - Gross electricity generation Autoproducer CHP plants - Heat from Chemical Sources - Gross electricity generation Autoproducer CHP plants - Other Sources 	Supply, transformation, consumption - electricity - annual data [nrg_105a]	<ul style="list-style-type: none"> - 15_107031 - 15_107033 - 15_107039 - 15_107049 - 15_107055 - 15_107041 - 15_107051 - 15_107053 - 15_107057 	Electrical energy	ktep	1990 - 2015
(ix) heat generation from thPG	<ul style="list-style-type: none"> - Gross heat production Main activity CHP plants - Nuclear - Gross heat production Main activity heat only plants - Nuclear - Gross heat production Autoproducer CHP plants - Nuclear - Gross heat production Autoproducer heat only plants - Nuclear - Gross heat production Main activity CHP plants - Geothermal - Gross heat production Main activity CHP plants - Combustible Fuels - Gross heat production Main activity CHP plants - Heat Pumps - Gross heat production Main activity CHP plants - Electric Boilers - Gross heat production Main activity CHP plants - Other Sources - Gross heat production Main activity CHP plants - Solar - Gross heat production Autoproducer CHP plants - Geothermal - Gross heat production Autoproducer CHP plants - Combustible Fuels - Gross heat production Autoproducer CHP plants - Heat Pumps - Gross heat production Autoproducer CHP plants - Electric Boilers - Gross heat production Autoproducer CHP plants - Heat from Chemical Sources - Gross heat production Autoproducer CHP plants - Other Sources - Gross heat production Autoproducer CHP plants - Solar - Gross heat production Main activity heat only plants - Geothermal - Gross heat production Main activity heat only plants - Solar - Gross heat production Main activity heat only plants - Combustible Fuels - Gross heat production Main activity heat only plants - Heat Pumps - Gross heat production Main activity heat only plants - Electric Boilers - Gross heat production Main activity heat only plants - Other Sources - Gross heat production Autoproducer heat only plants - Geothermal - Gross heat production Autoproducer heat only plants - Solar - Gross heat production Autoproducer heat only plants - Combustible Fuels - Gross heat production Autoproducer heat only plants - Heat Pumps - Gross heat production Autoproducer heat only plants - Electric Boilers - Gross heat production Autoproducer heat only plants - Heat from Chemical Sources - Gross heat production Autoproducer heat only plants - Other Sources 	Supply, transformation, consumption - heat - annual data [nrg_106a]	<ul style="list-style-type: none"> - 15_107060 - 15_107061 - 15_107062 - 15_107063 - 15_107064 - 15_107072 - 15_107076 - 15_107080 - 15_107086 - 15_107068 - 15_107066 - 15_107074 - 15_107078 - 15_107082 - 15_107084 - 15_107088 - 15_107070 - 15_107065 - 15_107069 - 15_107073 - 15_107077 - 15_107081 - 15_107087 - 15_107067 - 15_107071 - 15_107075 - 15_107079 - 15_107083 - 15_107085 - 15_107089 	Derived heat	ktep	1990 - 2015
(x) heat generation from CHPP	<ul style="list-style-type: none"> - Gross heat production Main activity CHP plants - Nuclear - Gross heat production Autoproducer CHP plants - Nuclear - Gross heat production Main activity CHP plants - Geothermal - Gross heat production Main activity CHP plants - Combustible Fuels - Gross heat production Main activity CHP plants - Heat Pumps - Gross heat production Main activity CHP plants - Electric Boilers - Gross heat production Main activity CHP plants - Other Sources - Gross heat production Main activity CHP plants - Solar - Gross heat production Autoproducer CHP plants - Geothermal - Gross heat production Autoproducer CHP plants - Combustible Fuels - Gross heat production Autoproducer CHP plants - Heat Pumps - Gross heat production Autoproducer CHP plants - Electric Boilers - Gross heat production Autoproducer CHP plants - Heat from Chemical Sources - Gross heat production Autoproducer CHP plants - Other Sources - Gross heat production Autoproducer CHP plants - Solar 	Supply, transformation, consumption - heat - annual data [nrg_106a]	<ul style="list-style-type: none"> - 15_107060 - 15_107062 - 15_107064 - 15_107072 - 15_107076 - 15_107080 - 15_107086 - 15_107068 - 15_107066 - 15_107074 - 15_107078 - 15_107082 - 15_107084 - 15_107088 - 15_107070 	Derived heat	ktep	1990 - 2015
(xi) fuel input for thPG	<ul style="list-style-type: none"> - Transformation input - Nuclear Power Stations - Transformation input - Conventional Thermal Power Stations - Transformation input - District Heating Plants 	Supply, transformation, consumption - all products - annual data [nrg_100a]	<ul style="list-style-type: none"> - B_101002 - B_101001 - B_101009 	All products	ktoe	1990 - 2015
(xii) passenger kilometres (pkm)	Railway TRA_COV: Total transport	Railway transport - Total annual passenger transport (1 000 pass., million pkm) [rail_pa_total]	- TOTAL	-	Millions of passenger-kilometres	2005 - 2015

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
	Road VEHICLE: Total	Passenger road transport on national territory, by type of vehicles registered in the reporting country [road_pa_mov]	- TOTAL	-	Millions of passenger-kilometres	1990 - 2013
(xiii) tonnes kilometres (tkm)	Railway TRA_COV: Total transport	Railway transport - Goods transported, by type of transport (1 000 t, million tkm) [rail_go_typeall]	- TOTAL	-	Millions of Tonne-kilometre	2005 - 2015
	Road TRA_OPER: Total - Total transport	Summary of annual road freight transport by type of operation and type of transport (1 000 t, Mio Tkm, Mio Veh-km) [road_go_ta_tot]	- TOTAL	Total	Millions of Tonne-kilometre	2005-2015
	Waterway TRA_COV: Total transport	Transport by type of good (from 2007 onwards with NST2007) [iww_go_atygo]	- TOTAL	Total	Millions of Tonne-kilometre	2007-2015
(xv) population	Population on 1 January - total	Demographic balance and crude rates [demo_gind]	JAN	-	Persons	2005-2016
Energy transmission and distribution losses (all fuels)	Distribution Losses	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101400	All products	ktoe	1990 - 2015
Heat generation from district heating plants	Transformation output - District Heating Plants	Supply, transformation, consumption - heat - annual data [nrg_106a]	B_101109	Derived heat	ktoe	1990 - 2015
Fuel input in district heating plants	Transformation input - District Heating Plants	Supply, transformation, consumption - all products - annual data [nrg_100a]	B_101009	All products	ktoe	1990 - 2015

Annex 2: Explanations provided by Member States

The table below collects all of the reasons provided by Member States in their Annual Reports 2017 to explain growth or stable final energy consumption in 2015. The indicator shown in the "Trend" column refers to EUROSTAT data. Eventual disagreements between this indication and the reason provided are due to the fact that some Member States refer to national statistics which can be different respect the EUROSTAT ones.

MS	Sector	Trend	Reasons
AT	Industry	→	The energy consumption increased about 0.3 %. The heating degree days (+11.6%), influenced the energy consumption for heating. Also the gross value added increased by 1.3%, which can also lead to increasing energy consumption.
	Transport	↗	Consumer prices of diesel and gasoline decreased by 10.4 %, population increased by + 1.0 %, GDP by + 1.1 %, The Consumer Price Index for traffic decreased by 3.0 %
	Households	↗	The energy consumption increased about 6.3 %. The heating degree days (+11.6%), which influence the heat energy consumption, had an increasing effect of approximately 7.98%. The disposable income of households also increased by 0.6%.
	Services	↘	Final energy consumption decreased – no explanation necessary.
	Agriculture		
BE	Industry	→	Industry consumption remained stable compared to 2014 but the gross value added grew in the same period (+4%), showing an improvement in EE.
	Transport	↗	Transport consumption grew slightly compared to 2014. This can be explained by the low prices of oil products.
	Households	↗	2015 was colder than 2014 (HDD : 1704 vs 1424)
	Services	↗	2015 was colder than 2014 (HDD : 1704 vs 1424)
	Agriculture		
BG	Industry	↗	GVA in the Industry sector rose by 4.1 % and surpassed the FEC growth (3.6 %). Energy intensity in the Industry sector has been decreasing at a slow rate. Nevertheless, this points to a slightly more efficient use of energy, which has equally constrained the growth in energy consumption. The share of the industries with traditionally high levels of energy intensity (ferrous and non-ferrous metallurgy, chemicals and production of minerals other metals) in energy consumption remained unchanged between 2014 and 2015, but considerably lower prices of fuels (such as natural gas and oil derivatives) were observed in 2015.
	Transport	↗	Respect the forecast for final energy consumption by 2020 by mode of transport, the road transport missed its target as it was called to account for 90.4 % of overall consumption in 2015, but its share actually climbed to 93%. In 2015 air transport increased its consumption by 6.1 % and its contribution to overall consumption fell marginally to 5.8 %. The main driver of the strong increase of fuel use in road and air transport in both 2014 and 2015 was the (almost three-fold) decline of international petroleum prices, which began in 2014 and continued in 2015. The next most important booster of fuel consumption in road transport in 2015 was the growth of GDP and accordingly of the demand for freight and passenger services to carry this growth. In addition transport is affected by certain long-term negative trends which have been driving fuel consumption up since 2001 or even before that year.
	Households	↗	The drivers which led to high energy consumption by households in 2015 were: an increase of financial expenditure by 5.5 %; winter temperatures on the average lower than in 2014; households possessing more electrical appliances—in particular, in just one year sales of air-conditioners increased by 6.4 % and of dish washing machines by 4.4 %; improved thermal conditions at homes both in wintertime and in summertime.
	Services	↗	The vastly negative increase of both energy consumption and energy intensity in Services in 2015 is due mainly to: the growth of the sector's GVA by 3.3 %; more than two-fold increase of the use of liquid fuels (from 17 ktoe in 2014 to 38 ktoe in 2015) encouraged by lower prices of the liquid fuels offered in the market in 2015; winter temperatures on the average lower than in 2014; public buildings offering better thermal conditions both in wintertime and in summertime.
	Agriculture		
HR	Industry	→	Energy consumption in industry declined by another 0.5% in 2015 compared to 2014. This was due to a decline in the consumption of liquid fuels, coal and coke, and steam and hot water. In the same period, the consumption of firewood, other biomass, natural gas and electricity increased. Between 2010 and 2015, energy consumption in industry declined at an average annual rate of 4.3%. There was a fall in consumption of most forms of energy during this period, except firewood and other biomass, which saw an average increase in consumption of 6.2% per year.
	Transport	↗	Energy consumption in transport increased by 4.5% in 2015 in comparison with 2014. More diesel fuel, liquefied gas, electricity and natural gas were used, while the consumption of other energy sources declined. There was a decline in the consumption of motor spirit (0.2%), jet fuel (2.9%) and liquid biofuels (18.4%). The consumption of diesel fuel, liquefied gas and electricity increased by 7.8%, 10.9% and 5.7%, respectively. Though still accounting for a meagre share of total energy consumption in transport, natural gas recorded an increase of 2.6%. Between 2010 and 2015, energy consumption in transport increased by 0.4% per year on average.
	Households	↗	In 2015 energy consumption in the general consumption sector increased by 7.9% against 2014. With the exception of a 16.9% decline in the consumption of coal, consumption of all other energy resources increased. Despite a small decline in energy consumption in agriculture and construction, total energy consumption in the general consumption sector increased by 7.9% in 2015 on account of households and the services sector, where it recorded growth rates of 8.6% and 9.5%, respectively. In comparison with 2014, energy consumption in agriculture and construction decreased by 0.6% and 0.1%, respectively.
	Services	↗	
	Agriculture	→	
CY	Industry	↘	
	Transport	↗	The final energy consumption in the transport sector in 2015 (867.4 ktoe) increased by 2.8% (24.5 ktoe) in comparison with 2014(842.9 ktoe). The number of vehicles of all types and categories on the register of the Road Transport Department at the end of 2015 totalled 781,843 compared to 770,430 at the end of 2014 (an increase by 11,413). In addition, in 2015 the average retail market prices of motor gasoline decreased by 11.1% (unleaded 98), 12.2% (unleaded 95) and 13.7% (gasoil low sulphur) in comparison to 2014. Therefore, the combination of the increase of the total country's vehicle stock and the decrease of the average retail market prices of motor gasoline is the main reason of the increase of the final consumption in the transport sector in 2015.
	Households	↗	The final energy consumption in the residential sector in 2015 (317.1 ktoe) increased by 8.6% (27.4 ktoe) in comparison with 2014 (289.7 ktoe). The increase in the final energy consumption is mainly due to: 1) in the climatic variations (colder winter), 2) in the decrease of the average retail market price of electricity and petroleum products used in that sector (LPG and gasoil) by 21.5% (electricity), 15.4% (LPG) and 18% (gasoil) respectively in comparison to 2014.
	Services	↗	The final energy consumption in the services sector in 2015 (214 ktoe) increased by 5.2% (11.2 ktoe) in comparison with 2014 (202.8 ktoe). The increase in the final energy consumption is mainly due to: 1) the increase in tourist arrivals (218,000 more tourists visited Cyprus in 2015 in comparison with 2014), 2) the climatic variations (colder winter), 3) the decrease of the average retail market price of electricity and petroleum products used in that sector: by 22.1% for electricity, 15.4% for LPG, 19.5% for kerosene and 18% for gasoil in comparison to 2014.
	Agriculture		The final energy consumption in the agriculture sector in 2015 (41.7 ktoe) increased by 11% (4.6 ktoe) in comparison with 2014 (37.1 ktoe). The increase in the final energy consumption is probably due to climatic variations, or/and the increase of the production or/and in the in the decrease of retail market price of gasoil for agriculture use in 2015 by 22% in comparison to 2014.

MS	Sector	Trend	Reasons
CZ	Industry	↗	This increase was due to an increase in the performance of Czech industry and an increase in the gross added value of the sector. In 2015, final energy consumption in industry increased by 0.3 % compared to 2013. By contrast, an increase of more than 9 % was seen in gross value added. Overall, it is possible to conclude that, despite an increase in final energy consumption in the industrial sector, the sector's energy intensity per unit of gross added value declined by 8 %.
	Transport	↗	This increase was due to the increase in industrial production over the period, the consequent increase of 20 % in exports of manufactured goods and the resulting increase in freight and rail transport requirements. In addition to the impact of industry on energy consumption in the transport sector, account must also be taken of the fact that the transport sector itself increased its contribution to gross domestic product creation over the period 2013–2015, which explains the increased energy consumption.
	Households	↗	The year-on-year increase in energy consumption in 2015 must be viewed in relation to the external influences affecting energy consumption, especially climatic conditions. Energy consumption in 2014 was affected by above-average temperatures in the heating season, which resulted in reduced consumption of heating energy.
	Services	↗	
	Agriculture		
DK	Industry	→	Final energy consumption between 2014 and 2015 in manufacturing industries remained approximately constant in spite of economic growth.
	Transport	→	Renewed increase in consumption for transport following several years of stagnation.
	Households	↗	Final energy consumption in households has only risen by around 3% since 2006 and by around 1.7% from 2014 to 2015, despite an increase in the number of households and heated area.
	Services	↗	Final energy consumption between 2014 and 2015 in the trade and services sector remained approximately constant in spite of economic growth.
	Agriculture		
EE	Industry	↘	Energy consumption decreased 5.9% compared to previous year.
	Transport	→	Energy consumption grew by 0.5% (4 ktoe) compared to the previous year. The prices of transport fuel decreased compared to 2014. The reasons behind increased energy consumption are: growth in fuel demand for road transport, structural changes in transport modes and decreased energy price. The fuel demand for road transport increased by 2.6% (19 ktoe) and in domestic navigation by 33% (3 ktoe). In international aviation fuel consumption decreased by 40% (-17 ktoe). Energy demand in rail transport decreased by 4.7% (-1 ktoe), mainly because of decreased freight volumes. According to the IEA data (Energy Prices and Taxes, 2017Q1), the gasoline price decreased by 13% and diesel fuel price decreased by 15% compared to year 2014 (comparison is given for households).
	Households	↘	Energy consumption decreased by 3.5% compared to the previous year.
	Services	↗	Energy consumption grew by 1.7% (8 ktoe) compared to the previous year. The main cause of this is structural changes in the economy - the share of services steadily grows in total economic activity. Compared to 2014, the share of services increased by 1.1% in terms of gross value added.
	Agriculture		Energy consumption grew 1.2% compared to previous year.
FI	Industry	→	According to Eurostat, energy consumption in industry remained at the 2014 level, while according to the corresponding data from Statistics Finland used in previous years, it continued to decrease in all branches of industry other than the metal industry, in which it remained unchanged. Fuel consumption varies annually due to several factors. The use of fuels is affected by the prices of fuels and emission allowances, availability, any changes in taxation, developments in each branch of industry, structural factors, etc. In 2015, the volume of industrial production dropped on the previous year, and the gross value added was 1.4% lower than in 2014.
	Transport	→	In the transport sector, the 0.7% increase in energy consumption is explained by increased mileage. In freight transport, the number of tonne kilometres grew by 0.6%, and in passenger transport, the number of passenger kilometres increased by 1.3%.
	Households	↘	
	Services	↘	
	Agriculture		
FR	Industry	↗	Corrected for climate variations, this final energy consumption has fallen.
	Transport	↗	In 2015, the final energy consumption of transport reached 49.4 Mtoe, which was significantly higher than 2014 (+1.0%), after +0.7% in 2013. These last two years marked a rebound on the trend seen in previous years (consumption declined gradually, by 0.3% a year on average between 2003 and 2013). Inland goods transport fell sharply in 2015 (4.8%) in the wake of road freight (6.9%), and despite a rise in rail freight (+5.6%). Inland waterway freight, which accounts for 4% of the total, shrank by 3.6%, mainly due to the reduction in the transport of construction materials. Transport in private vehicles, which accounts for around 80% of passenger-kilometres, increased by +2.0% within the national network. Like its proportion of goods and passenger transport, road transport accounted for nearly 83% of the transport sector's energy consumption in 2015, which has been stable for 10 years.
	Households	↗	The increase in consumption recorded in 2015 was mainly due to electricity, which accounted for 38 % of the sector's final energy consumption. The residential-tertiary sector as a whole therefore recorded an increase in electricity consumption in 2015 (+1.6%), which was more marked in the residential sector (+2.0%) than in the tertiary sector (+1.1%). These changes counterbalanced 2014, which saw a sharp reduction in electricity consumption in both sectors (3.9%).
	Services	↗	Corrected for climate variations, this final energy consumption has fallen.
	Agriculture		
DE	Industry	→	Final energy consumption for all the sectors shown in the table above stagnated or rose in 2015. The reasons for this include in particular a significant rise in economic output (increase in price-adjusted gross domestic product of 1.7 % compared to the previous year), population growth and less favourable weather than the previous year. Future reductions in final energy consumption are, however, expected, particularly as a result of the implementation of measures under the National Action Plan on Energy Efficiency and the 2020 Action Programme for Climate Protection.
	Transport	→	
	Households	↗	
	Services	↗	
	Agriculture		
EL	Industry	→	n.a.
	Transport	↗	n.a.
	Households	↗	This increase in both sectors is due mainly to the colder weather, since the heating degree days for 2015 increased by 20 % compared to 2014, as determined by analysing the data from 34 stations (http://www.degreedays.net/). The prices of the petroleum products used in both these sectors (heating oil and diesel), which remained low throughout the whole of 2015, also made a significant contribution.
	Services	↗	
	Agriculture		
HU	Industry	↗	The reason of increased energy consumption is the economic upswing and the growing employment rate. The statistical data correction too.
	Transport	↗	The reason of the higher consumption is the increased transport demand of growing industrial production, and the relative low fuel prices.

MS	Sector	Trend	Reasons
	Households	↗	The 75% of annual energy consumption of households is heating demand, therefore the weather in wintertime is determining effect. We have to mention the change in method of statistical data supply and the relatively low fuel prices.
	Services	↗	The reason of small-scale growth of annual energy consumption of services is caused by the growth of the number of employees (10 % growth 2013-2015).
	Agriculture		
IE	Industry	↗	The increase in energy use in 2015 over 2014 is attributed to economic growth. Increases were observed in the use of natural gas (12% year on year increase) and electricity consumption (4.8%), while coal and oil consumption fell. More information is provided in "Energy in Ireland 1990-2015" published by SEAI in 2016. http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2015.pdf
	Transport	↗	While transport energy use in 2015 was 16% below peak use in 2007 overall energy use in transport for 2015 increased by 5.9% over 2014. Historically transport energy growth has been linked to economic growth and the 2015 increase is attributable to the economic upturn. More detail is provided in "Energy in Ireland 1990-2015" published by SEAI in 2016. http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2015.pdf
	Households	↗	While overall energy consumption per dwelling decreased by 32% during the period 1990-2015 an increase was observed in 2015 compared to 2014. This is significantly attributable to an increase in household oil consumption of 11.5% in 2015 (the price of oil fell internationally by 47% in 2015 compared to 2014 and the price to Irish households fell in the region of 20% in that time). More detail is provided in "Energy in Ireland 1990-2015" published by SEAI in 2016. http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2015.pdf
	Services	→	Looked at in terms of commercial and public services, when corrections are made for weather effects, energy used in services fell by 0.8% in 2015. This is against the backdrop of economic activity of services, as measured by value added, increasing by 6.5%. More detail is provided in "Energy in Ireland 1990-2015" published by SEAI in 2016. http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2015.pdf Looking at the public sector alone data compiled by SEAI for 2015 shows that in pursuit of the higher 33% energy efficiency target set for it under the NEEAP and the new Strategy for Public Sector Energy Efficiency, public sector bodies reported 21% improved efficiency – amounting to 2,422 GWh (annual primary energy savings). Further information is provided in "Annual Report 2016 on Public Sector Energy Efficiency Performance" available at http://www.seai.ie/Publications/Your_Business_Publications/Public_Sector/Annual-Report-2016-on-Public-Sector-Energy-Efficiency-Performance.pdf
	Agriculture		
IT	Industry	→	
	Transport	↘	
	Households	↗	2015 winter was colder than the previous years as measured by heating degree days: 1632 in 2014, 1810 in 2015
	Services	↗	2015 winter was colder than the previous years as measured by heating degree days. Also the economic growth contributed for this increase.
	Agriculture		
LV	Industry	→	In 2015 industry saw a year-on-year increase of 0.004 Mtoe or 0.5% compared with 2014. An increase in consumption was observed in 2015 in four sectors: metal products, where consumption of energy resources increased from 0.001 Mtoe to 0.014 Mtoe, manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials, where consumption increased by 6.4%, a 6.25% increase observed in the manufacture of rubber and plastic products, manufacture of furniture and other products, and an 8.4% increase in the construction sector.
	Transport	↗	Consumption of energy resources (petroleum products, biofuel and electricity) in the transport sector grew by 0.06 Mtoe in 2015, representing a year-on-year increase of 5.5%. Road transport accounted for 84.2% of the total energy resources consumption in 2015, air transport for 9.2% and rail transport for 6.2%. The remainder was accounted for by inland waterways and pipeline transport. Road transport was the only sector to see a year-on-year increase in the consumption of energy resources (by 7.8 percentage points), other sectors of transport seeing a decrease, with air transport seeing a 2.4% fall and rail transport 4.3%. The road sector's y/y increase in consumption is attributable to a 7.5% increase in road haulage and a 3.2% rise in the number of cars registered.
	Households	↘	
	Services	↘	
	Agriculture		Energy consumption in the agriculture and forestry sector increased slightly in 2015 (+0.01 Mtoe) compared with 2014. This slight increase is attributable to the increase in diesel consumption in this sector (7.8%) and the 1.6% increase in areas under cultivation compared with 2014.
LT	Industry	↘	
	Transport	↗	Energy consumption in the transport sector grew because of the steady increase in flows of carriage of freight and passengers, the sector's improving value added and the effective policy of State institutions in tackling the influx from third countries of contraband fuel (diesel). In February 2014 an arrangement entered into force in Lithuania whereby Lithuanian customs officials were authorised to ask lorry drivers for a written declaration about the amount of fuel being brought into the country. Final consumption of fuel and energy in the sector increased by 18.9% between 2010 and 2015. This increase was largely the result of the increased use of diesel for road transport.
	Households	↘	
	Services	↘	
	Agriculture		
LU	Industry	→	
	Transport	↘	
	Households	↗	In the household sector, final energy consumption decreased by 6.5 % from 2013 to 2014, and then increased by 5.8 % from 2014 to 2015.
	Services	↗	In the services sector, the updated statistics show that final energy consumption decreased by 12.3 % from 2013 to 2014, and then increased by 10.8 % from 2014 to 2015.
	Agriculture		
MT	Industry	↗	Malta has since 2014 experienced sustained growth in its economy and population, also driven by more sustainable energy generation, delivering both cleaner power and lower tariffs. The 7.4 % growth in GDP and 1.2% population growth rate (without considering tourist arrivals which increased by 6% over 2014) has resulted in higher energy consumption in all sectors, especially in the services sector, where the gross added value increased by 10%. These figures, however, show an evident decoupling between GDP and energy consumption, as final energy consumption rose by 5.1% whereas GDP at constant prices increased by 7.4%.
	Transport	↗	
	Households	↗	
	Services	↗	
	Agriculture		
NL	Industry	→	
	Transport	↗	Increase of 2 PJ from shipping
	Households	↗	Increase of 18 PJ due to higher energy use for heating as the winter in 2015 was colder than in 2014

MS	Sector	Trend	Reasons
	Services	↗	Increase of 14 PJ due to higher energy use for heating as the winter in 2015 was colder than in 2015
	Agriculture		
PL	Industry	→	
	Transport	↗	Fuel consumption in road transport grew by 43% over the 2005-2014 period, with an average annual growth of 4.3%, whilst energy consumption decreased substantially (by 35%, or 4.2%/year) in rail transport over the same period. Overall, the average annual rate of increase of fuel consumption in transport (excluding air transport) was 3.2% in the 2005-2014 period and consumption was 37% higher in 2014 than in 2004. Fuel consumption per car equivalent has been falling since 2011; it stood at 0.428 toe in 2014. The main factors determining the level of this indicator are the economic situation of businesses and households, fuel prices and the increasing efficiency of new cars. The increase in energy consumption in transport was mainly due to an increase in activity and structural changes. Road transport accounts for by far the greatest share of the increase in consumption. Air transport, both domestic and international, was the second significant factor behind the increase in energy consumption; here, too, there was an increase in transport activity that was very much in line with the increase in energy consumption.
	Households	→	
	Services	→	
	Agriculture		
PT	Industry	→	A 1% increase in energy consumption is related to the growth of the economy that translates into greater industrial activity
	Transport	↗	A 2.6% increase in energy consumption is related to the growth of the economy
	Households	↘	A 1% decrease in energy consumption, despite the growth of the economy, is related to greater energy efficiency and an average climate year that did not require as much energy needs for heating and cooling
	Services	↗	A 3% increase in energy consumption is related to the growth of the economy
	Agriculture		
RO	Industry	→	Final consumption in industry remained virtually constant.
	Transport	↗	Energy consumption in transportation increased by 1.9% due to the increase in volume of activities carried out, as the volume of transported goods grew by 11.3%.
	Households	→	An important share in the increase of final energy consumption is due to an increase in electricity consumption (Table 2, row 2). It has become an established fact that the modernisation of the economy (including increased energy efficiency) implies the increase in electricity consumption, hence this increase (and implicitly the increased final energy consumption) has a positive significance.
	Services	→	Final consumption in services remained virtually constant.
	Agriculture		
SK	Industry	→	n.a.
	Transport	→	The chief factors fuelling long-term energy consumption growth in transport in the reporting period include: the ever-growing numbers of registered motor vehicles and the accompanying rise in the numbers of people travelling by car (a hike in private car use at the expense of public transport), along with an expansion in road haulage as the carriage of goods switches from less energy-intensive modes of transport to road transport. However, energy consumption in this sector has stabilised over the past five years.
	Households	↗	Year-on-year household energy consumption increased slightly (by 1.8 %).
	Services	↗	In 2015, energy consumption experienced a significant year-on-year decrease, in the region of 23.5%. This variation can be explained by the break-up and merger of undertakings, changes in their sectoral classification and the resulting changes in terms of where their consumption is classified in the energy balance, and by the calculation method used by the ŠÚSR for this item.
	Agriculture		Energy consumption in the agriculture sector does not exhibit such pronounced fluctuations as in other sectors.
SI	Industry	→	The energy consumption remained stable. After the growth of energy consumption in industry in 2014 by 2.8%, the energy consumption remained at the same level in 2015. In comparison to 2014 the economic growth in this sector has slowed down. Still, the GVA of the construction and manufacturing sector has grown by 1.4%.
	Transport	↘	Energy consumption reduction of 1.1%.
	Households	↗	Energy consumption increase of 9.2%. More than 90 % of the energy consumption increase is attributed to the space heating. As there is no climate adjustment included, the increase of almost 14% in energy consumption for space heating is due to a colder year 2015 (according to EUROSTAT data for Slovenia: 2342 HDD in 2014, 2700 HDD in 2015, which means a 15% increase in HDD). There was also some increase in the energy consumption for the space cooling, as well as for the lighting and electrical appliances; however those two areas have all together contributed to only 8% of all energy consumption increase in this sector.
	Services	↗	Energy consumption increased by 7%. Energy consumption for services is calculated as a residual and not statistically monitored. As a result, the factors, influencing this figure, are not exactly known.
	Agriculture		
ES	Industry	↘	
	Transport	↗	n.a.
	Households	↗	n.a.
	Services	↗	n.a.
	Agriculture		
SE	Industry	↗	Industry value added has increased, meaning that energy use in the sector has become more efficient.
	Transport	↗	In the housing and service sector and the transport sector, energy use increased slightly, partly as a result of increased transport.
	Households	↗	
	Services	→	
	Agriculture		
UK	Industry	↘	
	Transport	↗	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.
	Households	↗	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).
	Services	↗	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.
	Agriculture		

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