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#### COVER NOTE

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From: Secretary-General of the European Commission,  
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 1 February 2017

To: Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of  
the European Union

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Subject: REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT  
AND THE COUNCIL 2016 assessment of the progress made by Member  
States in 2014 towards the national energy efficiency targets for 2020 and  
towards the implementation of the Energy Efficiency Directive 2012/27/EU  
as required by Article 24 (3) of the Energy Efficiency Directive 2012/27/EU

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Delegations will find attached document COM(2017) 56 final.

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Brussels, 1.2.2017  
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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**2016 assessment of the progress made by Member States in 2014 towards the national  
energy efficiency targets for 2020 and towards the implementation of the Energy  
Efficiency Directive 2012/27/EU as required by Article 24 (3) of the Energy Efficiency  
Directive 2012/27/EU**

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## 1. INTRODUCTION

Increasing energy efficiency is key for addressing future challenges of the European Union. Lowering the demand for energy and '*putting energy efficiency first*' is therefore one of the five main objectives of the Energy Union. In 2015, Member States confirmed the imperative need to reach the 20% energy efficiency target for 2020<sup>1</sup>. Energy efficiency policies bring cost savings for consumers, in addition to benefits with respect to the reduction of greenhouse gas emissions, security of supply, competitiveness, sustainability of the European economy and job creation. In November 2016, the Commission therefore proposed to strengthen this crucial policy area beyond 2020 by aiming for a 30% EU binding energy efficiency target for 2030<sup>2</sup>.

This 2016 report provides an assessment of the progress made up to 2014 towards reaching the 20% energy efficiency target for 2020 and implementing the Energy Efficiency Directive (EED). It includes several recommendations for Member States<sup>3</sup>. Based mainly on Member States' 2016 Annual Reports and the latest 2014 data from Eurostat, it builds on the Energy Efficiency Progress Report 2015<sup>4</sup>.

The main findings of the report are as follows:

- The EU has made considerable progress over the last years. **In 2014, its primary energy consumption was only 1.6% above its 2020 primary energy consumption target. Final energy consumption was even 2.2% below the 2020 target<sup>5</sup>.** However, primary energy consumption increased by around 1.5% and final energy consumption by around 2% in 2015 compared to 2014 levels<sup>6</sup>. (This is because 2014 was an exceptionally warm year. The 2015 figures are a reversion to the trend.)
- Member States are committed to implementing ambitious energy efficiency policies and increased their efforts in recent years considerably in all sectors<sup>7</sup>.
- A decomposition analysis carried out for the EU-28 shows that the decrease in primary energy consumption from 2005 to 2014 was primarily due to an improvement in energy intensity<sup>8</sup>. The downturn in the economy, changes in the fuel mix and structural changes played a comparatively minor role.

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<sup>1</sup> The 2020 target is to lower the EU's final energy consumption to less than 1086 Mtoe, and its primary energy consumption to less than 1483 Mtoe. European Council Conclusions of 23 and 24 October 2014, EUCO 169/14.

<sup>2</sup> COM(2016) 860 final.

<sup>3</sup> Article 24(3) EED.

<sup>4</sup> COM(2015) 574 final. The indicator 'Heat from district heating plants' is no longer included in this report as the relevant data from Eurostat includes all heat produced. As a result, the indicator will no longer be used until specific data is available from the data collection under Article 24(6) EED.

<sup>5</sup> Eurostat data was extracted for all indicators of this report between 31.8.2016 and 20.10.2016.

<sup>6</sup> A detailed analysis of 2015 data will be undertaken in the 2017 Energy Efficiency Progress Report.

<sup>7</sup> The notified Member State targets represent up to 17.7 % primary energy consumption reductions in 2020 compared to 2007 baseline projections. However, for final energy consumption, Member State targets represent up to 20.6% final energy consumption reductions in 2020 compared to 2007 baseline projections.

<sup>8</sup> Ratio of national primary energy consumption to national GDP. This energy intensity effect accounts for changes in total energy consumption due to improvements in energy efficiency and other factors. Whereas a change of this intensity effect cannot be attributed to energy efficiency exclusively, another decomposition analysis performed by Odyssee-Mure confirmed that energy efficiency was the main driver of reduction in primary and final energy consumption in 2005-2014 (see Annex 5 of SWD(2016)405).

- Continued efforts are needed to renovate existing buildings in order to save energy and to reduce consumers' energy costs. For this reason, the financing conditions for energy efficiency investments need to be further improved in Member States. Information and communications technology (ICT) can play a major role in this respect by providing consumers useful toolkits to enhance their awareness and to manage their energy consumption in a smart way.
- Most Member States should make further improvements in energy efficiency in the transport sector to exploit remaining energy-saving potentials.

The Commission is optimistic that **the 20 % primary energy consumption target will be reached if Member States stick to their commitments** and continue to implement existing EU energy efficiency legislation and successful energy efficiency programmes.

## 2. PROGRESS TOWARDS REACHING THE 2020 EU ENERGY EFFICIENCY TARGET

**Final energy consumption**<sup>9</sup> in the EU dropped by 11% from 1191 Mtoe in 2005 to 1062 Mtoe in 2014, below the 2020 final energy consumption target of 1086 Mtoe. Absolute final energy consumption has declined in all Member States since 2005 except in Lithuania, Malta and Poland<sup>10</sup>.

In 2014, transport accounted for the biggest share (33%) of total final energy consumption, followed by industry (26%), the residential sector (25%), the services sector (13%) and other sectors (3%).

**Primary energy consumption**<sup>11</sup> in the EU dropped by 12% from 1712 Mtoe in 2005 to 1507 Mtoe in 2014. This consumption level is still slightly above the 2020 primary energy consumption target of 1483 Mtoe.

Absolute primary energy consumption has declined in all Member States since 2005 except in Estonia, Finland and Poland. Estonia experienced the largest annual increase (2.6%), while Finland's primary energy consumption remained broadly stable over the period 2005-2014. The annual reductions in Greece, Lithuania and the United Kingdom were substantial<sup>12</sup>.

## 3. NATIONAL TARGETS

Member States set their national indicative 2020 energy efficiency targets in 2013<sup>13</sup>. In 2014, the final energy consumption of 17 Member States was already below their indicative 2020

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<sup>9</sup> Final energy consumption is the energy supplied to industry, transport, households, services and agriculture, excluding deliveries to the energy transformation sector and the energy industries themselves.

<sup>10</sup> See also *SWD on the 2016 Monitoring progress towards the Energy Union objectives - Key indicators* and <http://iet.jrc.ec.europa.eu/energyefficiency/node/9145>.

<sup>11</sup> In addition to final energy consumption, primary energy consumption includes generation/ transformation losses, consumption of the energy transformation sector and network losses.

<sup>12</sup> *Idem* footnote 10.

<sup>13</sup> Member States have set themselves targets with different ambition levels, in most cases aiming to lower their absolute energy consumption by 2020. However, in the case of Croatia, Cyprus, Finland, Greece, Italy, Portugal and Romania the target allows an increase in final energy consumption. This is projected to be higher than the forecast GDP growth from 2014 to 2020. For Croatia, Finland, Greece, and Romania the indicative primary energy consumption targets for 2020 would allow an increase in primary energy consumption at a rate higher

final energy target<sup>14</sup>. Similarly, 19 Member States achieved a primary energy consumption below their indicative 2020 primary energy target already in 2014<sup>15</sup>.

The remaining Member States are still some way off their national indicative targets expressed in final and/or primary energy consumption for 2020.

#### **4. ENERGY CONSUMPTION TRENDS AND ASSESSMENT OF NATIONAL MEASURES BY SECTOR**

Most Member States decreased their primary and final energy consumption between 2005 and 2014 at a rate that, if maintained, is sufficient for them to meet their primary and final energy consumption targets by 2020. For primary energy consumption, the exceptions to this are Estonia, Malta and Sweden. For final energy consumption, the exceptions are Austria, Belgium, Germany, Lithuania, Malta and Slovakia<sup>16</sup>.

The largest reductions in primary energy consumption from 2013 to 2014 were in Belgium (8%), Denmark (7%) and the UK (7%). The Netherlands had the largest decrease (8%) in final energy consumption, followed by France (7%) and Belgium (6%). Only in the Netherlands and Luxembourg did final energy consumption decrease across all sectors. The largest increase in final energy consumption was observed in Malta (3%), Bulgaria (3%) and Lithuania (2%)<sup>17</sup>.

A first decomposition analysis was carried out to examine the impact of different drivers on historical trends in primary energy consumption at EU level over the last decade (2005-2014), based on EUROSTAT data. The analysis assessed the relative contribution of economic activity<sup>18</sup>, structure<sup>19</sup>, fuel mix<sup>20</sup> and energy intensity to the overall reduction of primary energy consumption over the period (206 Mtoe). In particular, the activity effect led to an

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than their expected average GDP growth from 2014 to 2020. The sum of national targets (17.6% reduction in primary energy consumption compared to forecasts) falls short of the 20% EU level target. See COM(2015) 574.

<sup>14</sup> The Czech Republic, Denmark, Ireland, Greece, Spain, Cyprus, Croatia, Italy, Latvia, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia, and Finland.

<sup>15</sup> Austria, the Czech Republic, Denmark, Ireland, Greece, Spain, Cyprus, Croatia, Italy, Latvia, Lithuania, Luxembourg, Hungary, Poland, Portugal, Romania, Slovenia, Slovakia and Finland.

<sup>16</sup> Since only 2014 data is available, this comparison cannot take into account the impact of recently implemented energy efficiency measures on meeting the new obligations under the EED, nor the impact of some of the measures recently adopted under the Ecodesign, Energy Labelling and Energy Performance of Buildings Directives. This comparison does not allow the carrying out of a conclusive assessment of whether Member States are on track to meet their indicative 2020 energy efficiency targets. This is because the future positive or negative effects of changes in the economy, changes in energy prices, fuel switching or climate variations cannot be forecasted for 2015-2020.

<sup>17</sup> Idem footnote 10.

<sup>18</sup> GDP, an indicator of EU-28 wealth, accounts for changes in energy consumption due to a change in economic activity. The activity effect is positive if energy consumption increases due to additional energy demand caused by increased economic activity.

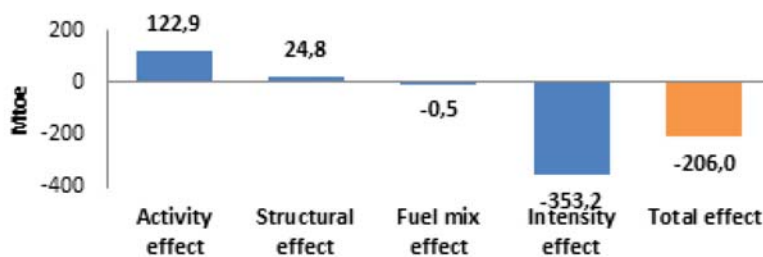
<sup>19</sup> Ratio of each Member State's GDP to total EU-28 GDP. It accounts for changes in energy consumption that would have been observed due to a change in the relative importance of countries with different energy intensities. The structural effect is positive if the GDP of countries with relatively high energy-intensive economies increases.

<sup>20</sup> Ratio of national primary energy consumption for each fuel to national primary energy consumption for all fuels together. It accounts for changes in energy consumption due to changes in the fuel mix of the economy, i.e. the impact of fuel mix composition. The fuel mix effect is negative if there is a shift towards cleaner fuels.

increase of 123 Mtoe in energy consumption. However, this was offset by an almost threefold decrease (-353 Mtoe) due to significant improvements in energy intensity<sup>21</sup>.

On the other hand, the impact of structural and fuel mix changes for EU-28 as negligible. The structural effect amounted to +25 Mtoe. This can be attributed to the relative growth of more energy-intensive national economies compared to that of less energy-intensive ones. There was a very small negative fuel mix effect (-0.5 Mtoe), suggesting a slight shift towards cleaner fuels. This suggests that significant energy efficiency improvements have been made in the past decade.

Figure 1: Decomposition of changes in EU-28 primary energy consumption change for 2005-2014 using the additive Logarithmic Mean Divisia Index approach (LMDI)



Source: JRC analysis

A first decomposition analysis of final energy consumption was carried out at Member State level for 2005-2014 for the productive sectors of the economy<sup>22</sup>. Preliminary results show negative activity effects in Greece, Croatia, Italy and Portugal. This led to lower final energy consumption, reflecting the economic downturn in these countries. The structural effect was negative in most Member States, indicating increased activity in less energy-intensive sectors. Only Estonia, Poland, Hungary and Austria experienced a slight shift towards more energy-intensive sectors. This resulted in higher energy consumption in this period than would otherwise have been the case.

Negative energy intensity effects reflecting improvements in energy intensity were recorded in all Member States except Latvia and Cyprus. Significant energy intensity improvements, which resulted in energy consumption reductions, were made in Bulgaria, the Czech Republic, Romania and Slovakia<sup>23</sup>. The Commission considers that public policy has been the key driver for energy efficiency improvements. This finding was recently confirmed by the International Energy Agency and the Odyssee-Mure decomposition analysis<sup>24</sup>.

#### 4.1. Industry

The **final energy consumption of industry** decreased in absolute terms from 328 Mtoe in 2005 to 275 Mtoe in 2014 (16%).

<sup>21</sup> These are the preliminary results of a first decomposition analysis performed by the Commission. The methodology is still being developed and will be discussed further with Member States and stakeholders.

<sup>22</sup> The following sectors were considered: Industry, construction, services, agriculture, forestry and fishing.

<sup>23</sup> These are the preliminary results of a first decomposition analysis performed by the Commission. The methodology is still being developed and will be discussed further with Member States and stakeholders.

<sup>24</sup> [https://www.iea.org/eemr16/files/medium-term-energy-efficiency-2016\\_WEB.PDF](https://www.iea.org/eemr16/files/medium-term-energy-efficiency-2016_WEB.PDF) and Annex 5 of SWD(2016)405.

In 2014, thirteen Member States registered a drop of final industrial energy consumption compared to 2013 levels. The countries with the largest increase in industrial energy consumption were Cyprus (19%), Greece (9%) and Hungary (6%). The main reasons some Member States gave for growth from 2013 to 2014 were the increase in industrial value added and the increased consumption of cement factories and factories producing wood chips.

In terms of the **final energy intensity of industry**, there is a significant difference between the most energy-intensive Member State, Bulgaria, and the least energy-intensive ones, Denmark and Ireland. Whilst this is influenced by the share of energy-intensive industries, the energy intensity in industry decreased in most Member States in 2014 compared to 2005, the exceptions being Cyprus, Greece, Hungary and Latvia. There were almost no further improvements in energy intensity in Austria and Finland<sup>25</sup>.

## 4.2. Residential sector

The **absolute final energy consumption of the residential sector** dropped by 15% from 309 Mtoe in 2005 to 263 Mtoe in 2014 due to several reasons including greater energy efficiency of appliances and energy performance improvements in the building stock following the gradual implementation of the Energy Performance of Buildings Directive and ecodesign minimum standards. Also information provided to consumers through energy performance certificates for buildings and metering of energy consumption contributed to this positive trend as this provided consumers with useful toolkits to enhance their awareness about their energy consumption.

None of the Member States reported an increase in the final energy consumption of the residential sector from 2013 to 2014. A significant 20% decrease was noted in the Netherlands, followed by 18% in Belgium.

2014 was an unusually warm year which should lead to a lower heating demand<sup>26</sup>. However, despite 2014 being a warmer year than the year 2013, climate corrected residential energy consumption data reveals rising consumption trends in 2014 compared to 2013 in 17 Member States. One of the reasons for this may be that climate corrections do not take into account cooling degree days. They should therefore be considered in future analyses, in particular as cooling will play an increasing role in energy needs in southern countries.

Climate-corrected **final energy consumption per capita** also decreased on annual average by 0.7% between 2005 and 2014. The largest improvements were made in Belgium, Ireland and the United Kingdom in this period<sup>27</sup>. **Energy consumption per square metre** also improved in all Member States between 2005 and 2014. The largest decreases were seen in Cyprus, Latvia and Portugal<sup>28</sup>.

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<sup>25</sup> Idem footnote 10.

<sup>26</sup> There were 2 809 heating degree days (HDD) on average in 2014 at EU-28 level compared to an average of 3 218 HDD in 2013 and an average 3 143 HDD in the reference period 1990-2014 [data source: Eurostat, Joint Research Center (IES/MARS Unit)]. The climate correction factor was calculated as a proportion of the heating degree days in a given year over the average heating degree days in the period 1990-2014. This correction factor was applied to the overall energy consumption of the residential sector. If disaggregated end-use consumption data is available in Eurostat, climate correction is applied to heat consumption data only.

<sup>27</sup> Indicators in the *SWD on the 2016 Monitoring progress towards the Energy Union objectives - Key indicators* are not climate corrected.

<sup>28</sup> See Odyssee-Mure database: <http://www.indicators.odyssee-mure.eu/online-indicators.html>.



### 4.3. Services sector

In the services sector, **final energy consumption** decreased by 2% from 144 Mtoe in 2005 to 141 Mtoe in 2014. This sizable decrease of 6% in 2014 compared to 2013 can be partly explained by the mild winter in 2014 as heating in the services sector is estimated to account for 62% of final energy consumption<sup>29</sup>.

All countries experienced decreasing or stable absolute energy consumption in their services sector in 2014 compared to 2013 except Estonia, Latvia, Malta, Portugal and Sweden. Rising or stable trends were explained by Cyprus and Malta with a surge in tourism and climate variations with higher energy consumption for heating, ventilation and air conditioning. Latvia linked the increase in consumption to the increase in the gross value added of services, while Portugal cited the rise in working hours in the public sector as a possible reason.

**Final energy intensity**<sup>30</sup> in the services sector improved annually on average by 1% in the period 2005-2014. The greatest improvements were made in Hungary, Ireland and Slovakia over this period. Cyprus, Estonia, Finland, Greece and Italy all registered stable or increasing final energy intensity in this period<sup>31</sup>. These latter Member States should focus on the services sector to increase energy efficiency. This will help improve the competitiveness of this sector, which is expected to grow in the future.

### 4.4. Public sector

Article 5 of the EED requires Member States to renovate 3% of the total floor area of heated and cooled buildings owned and occupied by central government that do not meet the minimum energy performance requirements of the Energy Performance of Buildings Directive. An alternative is to use other measures to achieve equivalent savings. To implement the requirements of Article 5, 18 Member States will adopt alternative measures, *i.e.* measures that create incentives for occupants to change their behaviour. The other Member States have opted for the default approach of renovating 3% of the total floor area.

Based on the 2016 Annual Reports, Member States that decided to implement the default approach reported that approximately 1 245 000m<sup>2</sup> of eligible building stock was renovated in 2014 and 995 000m<sup>2</sup> in 2015. Member States which adopted the alternative approach notified energy savings for the years 2014 and 2015 to the Commission, however, there are some uncertainties regarding the reporting (e.g. chosen units or missing data). Preliminary investigations support the conclusion that the adopted alternative approach in Austria, Croatia, Cyprus, the Czech Republic, Finland, Ireland, Netherlands, Poland, Sweden and the UK generated the required annual energy savings in the period 2014-2015. Croatia, Finland and Sweden reported an overachievement. In the case of the default approach, Member States that claim to have met their renovation requirements in 2014 and 2015 are Estonia, Spain, Hungary, Italy and Latvia. The Commission will continue to closely monitor the implementation of this provision.

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<sup>29</sup> COM(2016) 51 final.

<sup>30</sup> Indicator that specifies how much energy is needed to produce the values added of the services sector in a certain year.

<sup>31</sup> Idem footnote 10.

#### 4.5. Transport sector

The **absolute final energy consumption in transport**<sup>32</sup> of the EU-28 decreased by 4% from 369 Mtoe in 2005 to 353 Mtoe in 2014. In 2014, 13 Member States increased their energy consumption in this sector compared to 2005 levels<sup>33</sup>. Consumption increased considerably (by more than 20% since 2005) in Lithuania, Malta, Poland, Romania and Slovenia. By contrast, it fell by 21% in Greece and 20% in Spain in 2014 compared to 2005 levels.

The EU-28's final energy consumption in transport increased by 1% from 2013 to 2014, with 20 Member States reporting an increase compared to 2013. This represents a significant change from the previous year, when an upward trend was observed in only 11 Member States. Countries with the largest increase include Bulgaria (11%), Hungary (12%) and Lithuania (11%). The fall in energy prices was cited as one of the main reasons for the increase in transport energy consumption. Other reasons include the increase in the number of vehicles and in freight/passenger traffic. In Malta, the significant increase in tourist arrivals was associated with increased energy consumption in aviation and automotive transport.

The share of collective passenger transport ranged from 11% in Portugal to 35% in Hungary in 2014<sup>34</sup>. At EU level, collective passenger transport share remained stable at around 18% in 2014 compared to 2005. The biggest increase in 2014 compared to 2005 was reported in Belgium and the Czech Republic. In terms of freight transport, the modal share of road transport fell slightly from 76% to 75% of total inland freight transport between 2005 and 2014. At national level, the share of railways and inland navigation freight transport ranged from 0% in Cyprus and Malta to 81% in Latvia in 2014. Romania and Bulgaria reported the biggest increase of their shares in 2014 compared to 2005.

#### 4.6. Electricity and heat generation sector

Together with the EU Emission Trading System, targeted energy efficiency policies can increase energy efficiency in the power sector, e.g. promoting heat and electricity produced by high-efficiency combined heat and power (CHP), efficient district heating and cooling as well as renewable energies and the further deployment of ICT toolkits and dedicated software to better integrate variable energy sources. The heating and cooling sector plays a crucial role in this respect<sup>35</sup>.

The decrease in primary energy consumption over the last few years was due to a decrease in final energy consumption and a structural change in the power generation sector. In particular, structural changes from thermal power generation to more renewable energy sources took place in recent years. With a 16% share in the gross final energy consumption in 2014, the EU and the majority of Member States are on track and even above their indicative trajectory in

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<sup>32</sup> Including pipeline transport, contrary to the approach taken in COM(2015) 574 final as the 2020 energy efficiency targets do not exclude pipeline transport.

<sup>33</sup> A comparison of Member States should be undertaken with caution because final energy consumption is based on the fuels sold rather than the fuels used in the territory of a country. Factors other than energy efficiency therefore 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.

<sup>34</sup> The passenger and freight transport indicator changed compared to COM(2015) 574 final. Transport activity is now adjusted for territoriality (Source: <https://ec.europa.eu/transport/sites/transport/files/pocketbook2016.pdf>).

<sup>35</sup> COM(2016) 51 final.

terms of renewable energy deployment. RES-E can significantly contribute towards a reduction in primary energy consumption<sup>36</sup>.

Heat generation from CHP plants decreased in almost all Member States in 2014 compared to 2013<sup>37</sup>. This downward trend for heat generated from CHP plants can also be observed in 14 Member States in the period 2005-2014.

The output/input ratio of thermal power generation<sup>38</sup> decreased in 17 Member States in 2014 compared to 2013. The same applies to 13 Member States that decreased their output/input ratios in 2014 compared to 2005. The reasons for this can be manifold, e.g. a switch to other fuels.

A well-functioning EU ETS with a Market Stability Reserve as well as targeted energy efficiency policies can provide a complementary incentive to increase energy efficiency in the power sector. In addition, Member States should closely follow up on the implementation of the assessments of efficiency potentials in generation and transmission/distribution networks under Article 15 of the EED and the cost-benefit assessments for efficient CHP and district heating and cooling required under Article 14 of the EED.

#### **4.7. Status of transposition of the EED**

The EED has still not been fully transposed in some Member States. As a result, these countries cannot fully reap the benefits of this directive. The EED's contribution to reaching the 2020 and 2030 energy efficiency targets, the proper development of energy efficiency markets and the empowerment of consumers and market actors can only be achieved once it has been fully and effectively transposed.

To this end, the Commission continues to closely monitor the implementation of the EED. It closed 22 of the 27 infringement proceedings initially opened for missing or partial notification by the Member States of the national legislation necessary to transpose each of the EED requirements. The Commission is still in contact with some Member States on correct implementation of Article 7 of the EED. In 2017, it will launch a dialogue with all Member States to check the conformity of the national legislation with the Directive, in other words that all the obligations and requirements of the EED are correctly reflected in the national legislation.

The implementation of Article 7<sup>39</sup> shows that the Member States made good progress towards reaching the 2020 cumulative savings target<sup>40</sup>. In fact, energy savings of 12 Mtoe were achieved by EU-28 in 2014, which amounts to 5% of the sum of total savings requirements reported by the Member States. In addition, the reported savings by eight Member States –

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<sup>36</sup> See the *2016 Renewable Energy Progress Report*.

<sup>37</sup> Another data set was used here compared to COM(2015) 574 and SWD(2015) 245. For this report, CHP data reported under Article 24(6) EED to Eurostat was used: <http://ec.europa.eu/eurostat/web/energy/data>. There was an increase only in Belgium, Cyprus, Estonia, Latvia, Malta, Portugal and the United Kingdom.

<sup>38</sup> Measures such as the ratio of transformation output of thermal power generation to fuel input.

<sup>39</sup> Article 7 requires Member States to set up Energy Efficiency Obligation Schemes to achieve new 1,5% end-use annual savings, or adopt alternative measures with the same result.

<sup>40</sup> The sum of the cumulative end-use savings requirements reported by Member States is 230 Mtoe, which should be achieved by 31 December 2020.

France, Hungary, Italy, Malta, the Netherlands, Romania, Slovakia and the United Kingdom – reached or exceeded the expected annual savings for 2014<sup>41</sup>.

In 2014, Belgium, Denmark, Estonia, Germany, Greece, Ireland, Latvia, Portugal, and Slovenia reported to have achieved at least 50% of their expected annual savings for that year under Article 7. Bulgaria, Croatia, Cyprus, Luxembourg and Sweden achieved less than 50% of their expected savings for 2014. Additional efforts would be needed in these Member States in the coming years to meet their overall cumulative saving requirements by 2020.

Latvia and Luxembourg reported no Energy Efficiency Obligation Scheme (EEOS) savings in 2014 as there were no schemes in place yet. Greece initially reported only alternative measures, but now intends to set up an EEOS as of 1 January 2017<sup>42</sup>. Lithuania and Estonia recently announced<sup>43</sup> that they no longer plan to set up an EEOS. Overall, eight Member States<sup>44</sup> reported updates to their measures in their 2016 Annual Reports. The Czech Republic updated its savings requirement.

## 5. CONCLUSION

As highlighted in the Communication on *Clean Energy for all Europeans*<sup>45</sup>, energy efficiency should be the *first energy source* as it plays a key role in speeding up the clean energy transition and boosting growth and job creation, and contributes to the EU's security of supply. Energy efficiency saves money and has become a sustainable business model. Most Member States have recognised the multiple benefits of energy efficiency and committed themselves not only to reaching ambitious energy efficiency targets for 2020, but have also put many energy efficiency programmes and measures in place.

These efforts have had profound impacts: a decomposition analysis by JRC showed that EU-28 primary energy consumption dropped by 206 Mtoe in 2005-2014 mainly due to an improvement of energy intensity<sup>46</sup>. In other words, primary energy consumption would have been 23% higher in 2014 without the energy intensity improvements made since 2005. This level of energy saving has reduced consumer energy bills and is estimated to have reduced greenhouse gas emissions by around 800 million tonnes of CO<sub>2</sub> in 2014.

To further unlock private and public investments in energy efficiency, the Commission presented its initiative *Accelerating clean energy in buildings* in 2016<sup>47</sup>. It focuses on the challenges and opportunities that sustainable energy building investments represent for the construction sector and also contains the *Smart finance for smart buildings* initiative. The latter initiative will support more effective use of public funds, the development of bankable project pipelines based on aggregation and assistance mechanisms and the de-risking of energy efficiency investments for project promoters, financiers and investors. Together with

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<sup>41</sup> No annual split of expected savings for policy measures was reported for Latvia, Finland, Lithuania and Poland. For Austria, Belgium, the Czech Republic and Spain, annual expected savings in 2014 were reported for some policy measures only.

<sup>42</sup> The obligation scheme will therefore form part of Greece's Article 7 policy package together with alternative measures.

<sup>43</sup> In the structured dialogue as part of the EU pilot process.

<sup>44</sup> Austria, Belgium, the Czech Republic, Estonia, Greece, Malta, Spain and the United Kingdom.

<sup>45</sup> COM(2016)860 final.

<sup>46</sup> See chapter 4.

<sup>47</sup> Annex 1 of COM(2016)860 final.

these initiatives, the Commission has also adopted a dedicated *strategy on accelerating clean energy innovation*<sup>48</sup>. This Communication lays out a comprehensive strategy for the three main policy levers the EU can deploy to boost clean energy innovation and focuses its Horizon2020 funding on decarbonising the EU building stock as one of the four priorities. The Commission will put all initiatives in place immediately. The direct impact of these initiatives will help to close the gap towards the energy efficiency targets in the short term.

The EU has already achieved considerable reductions in energy consumption and reduced its final energy consumption below the 2020 target. Even with the slight increase in primary energy consumption in 2015 compared to 2014, the Commission is optimistic that the EU is on track to reach its target. This is because primary energy consumption in 2014 was only 1.6% higher than the absolute primary energy consumption target for 2020.

As in the 2015 Energy Efficiency Progress Report, the performance indicators in this report show variations between Member States for 2005-2014. However, most indicators have improved at EU level.

The majority of Member States **improved their final energy intensity in industry and the service sector** which is encouraging.

As the analysis shows, most Member States reduced energy consumption per square metre on average in the **residential sector** in the period 2005-2014. However, climate corrected final energy consumption per capita increased for many Member States. As highlighted in the *Clean Energy for all Europeans* package<sup>49</sup>, Member States should continue to focus on renovating existing buildings. This helps households to achieve the same or better levels of comfort for less money. ICT will play a crucial role in this respect by providing consumers useful toolkits to enhance their awareness about energy consumption, allowing them a smart management of their energy-consuming appliances in real time and preventing unnecessary energy consumption. In addition, more focused measures are needed to address fuel poverty effectively.

The **transport sector** was the only one to experience an increase in final energy consumption in 2014 compared to 2013, with 20 Member States reporting an increase with respect to 2013 and 13 Member States experiencing an increase compared to 2005. All Member States should draw upon positive examples from other Member States to reverse the upward trend. Active travel (cycling, walking), greater use of collective passenger transport and more sustainable modes for freight transport (i.e. railways and inland waterways) should be encouraged as well as the use of low-emission alternative energy for transport, efficient vehicles/vessels and the deployment of the related infrastructure, for example the installation of recharging points for electric vehicles as proposed by the Commission<sup>50</sup>.

The Commission will continue to closely monitor the progress of Member States towards reaching their indicative national energy efficiency targets for 2020 and the implementation of the EED. It will also update its assessment as part of the State of the Energy Union.

The Commission invites the European Parliament and Council to express their views on this assessment.

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<sup>48</sup> COM(2016)763 final.

<sup>49</sup> COM(2016)860 final.

<sup>50</sup> Ibid.

**Table 1: Overview indicators**

Indicators	Trend to reach the 2020 target		Short term trend		Energy Intensity whole economy	Industry	Households	
	PEC 2005-2014 trend compared to PEC 2005-2020 trend to reach the 2020 target*	FEC 2005-2014 trend compared to FEC 2005-2020 trend to reach the 2020 target*	Change of PEC 2014 compared to PEC 2013 in %	Change of FEC 2014 compared to FEC 2013 in %	2005-2014 average annual change of PEC energy intensity in % (PEC in Mtoe/GDP in M€'10)	2005-2014 average change of energy intensity in industry in % (FEC industry in toe/GVA industry in M€'10)	2005-2014 average annual change of final energy consumption residential per capita (HDD normalized) in %	2005-2014 average annual change of energy consumption per m2 with climatic corrections in koe/m2 in %
Source and extraction date	Eurostat 31/08/2016	Eurostat 31/08/2016	Eurostat 31/08/2016	Eurostat 31/08/2016	Eurostat 31/08/2016 and 02/09/2016	Eurostat 31/08/2016	Eurostat 31/08/2016	Odyssee 05/10/2016
EU28	+	+	🟢 -4.0%	🟢 -4.1%	🟢 -2.2%	🟢 -1.8%	🟢 -0.7%	🟢 -2.3%
BE	+	-	🟢 -7.5%	🟢 -5.8%	🟢 -2.4%	🟢 -0.9%	🟢 -2.2%	🟢 -0.3%
BG	+	+	🔴 5.7%	🔴 2.7%	🟢 -3.0%	🟢 -6.3%	🔴 2.2%	🟢 -2.6%
CZ	+	+	🟢 -2.7%	🟢 -3.5%	🟢 -2.6%	🟢 -5.0%	🔴 0.7%	🟢 -0.8%
DK	+	+	🟢 -7.2%	🟢 -3.9%	🟢 -1.8%	🟢 -2.5%	🔴 0.0%	🟢 -1.9%
DE	+	-	🟢 -3.9%	🟢 -4.0%	🟢 -2.2%	🟢 -1.3%	🟢 0.0%	🟢 -3.5%
EE	-	+	🔴 1.3%	🟢 -1.9%	🔴 0.9%	🟢 -4.5%	🔴 1.1%	🟢 -1.0%
IE	+	+	🟢 -0.4%	🔴 0.3%	🟢 -2.2%	🟢 -0.6%	🟢 -2.6%	🟢 -1.6%
EL	+	+	🔴 0.3%	🔴 1.5%	🟢 -0.3%	🔴 3.2%	🟢 -2.1%	🟢 -1.0%
ES	+	+	🟢 -1.5%	🟢 -1.9%	🟢 -2.2%	🟢 -1.6%	🟢 -0.3%	🟢 -0.2%
FR	+	+	🟢 -4.4%	🟢 -6.7%	🟢 -1.9%	🟢 -1.4%	🔴 4.0%	🟢 -2.2%
HR	+	+	🟢 -4.9%	🟢 -5.0%	🟢 -1.7%	🟢 -1.8%	na	🟢 -2.1%
IT	+	+	🟢 -6.1%	🟢 -4.3%	🟢 -1.9%	🟢 -2.7%	🔴 0.5%	🟢 -2.5%
CY	+	+	🔴 1.9%	🔴 0.1%	🟢 -1.4%	🔴 3.2%	🔴 1.2%	🟢 -4.1%
LV	+	+	🟢 0.0%	🔴 0.8%	🟢 -1.5%	🔴 2.5%	🔴 0.1%	🟢 -4.4%
LT	+	-	🟢 -1.0%	🔴 2.0%	🟢 -5.6%	🟢 -2.2%	🔴 1.8%	🟢 -0.8%
LU	+	+	🟢 -2.8%	🟢 -3.1%	🟢 -3.8%	🟢 -1.4%	🟢 -0.3%	🟢 -1.9%
HU	+	+	🟢 -0.5%	🔴 0.7%	🟢 -2.5%	🔴 3.6%	🟢 -0.7%	🟢 -1.4%
MT	-	-	🔴 1.7%	🔴 3.5%	🟢 -3.1%	na	🔴 11.1%	🟢 -3.7%
NL	+	+	🟢 -5.2%	🟢 -8.3%	🟢 -1.9%	🟢 -1.7%	🟢 -0.4%	🟢 -3.0%
AT	+	-	🟢 -3.8%	🟢 -3.9%	🟢 -1.8%	🟢 -0.2%	🔴 0.3%	🟢 -3.2%
PL	+	+	🟢 -4.2%	🟢 -2.7%	🟢 -3.5%	🟢 -5.2%	🔴 1.4%	🟢 -1.0%
PT	+	+	🟢 -1.8%	🟢 -0.3%	🟢 -1.7%	🟢 -1.0%	🔴 0.3%	🟢 -4.0%
RO	+	+	🟢 -0.6%	🟢 -0.6%	🟢 -4.3%	🟢 -6.4%	🔴 1.7%	🟢 -0.7%
SI	+	+	🟢 -3.3%	🟢 -4.0%	🟢 -1.7%	🟢 -3.5%	🔴 1.9%	🟢 -1.4%
SK	+	-	🟢 -4.3%	🟢 -5.2%	🟢 -4.9%	🟢 -5.1%	🟢 -0.1%	🟢 -0.6%
FI	+	+	🔴 1.4%	🟢 -1.1%	🟢 -0.3%	🟢 -0.1%	🟢 -0.2%	🟢 -1.4%
SE	-	+	🟢 -1.8%	🟢 -1.2%	🟢 -2.0%	🟢 -1.4%	🟢 -1.2%	🟢 -2.3%
UK	+	+	🟢 -6.5%	🟢 -5.4%	🟢 -3.2%	🟢 -2.1%	🟢 -2.7%	🟢 -3.3%

Source: Eurostat, DG ECFIN, Odyssee-Mure

\* Symbol "+" is used if Member States decreased their primary and final energy consumption between 2005 to 2014 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.

Table 2: Overview indicators

	Service sector	Transport sector			Generation	
Indicators	2005-2014 average annual change of energy intensity in the service sector in %	2005-2014 average annual change of total FEC in the transport sector in %	Change of share of trains, motor coaches, buses and trolley buses for passenger transport in 2014 vs. 2005 in percentage points (territorialized passenger activity)	Change of share of railway and inland waterways for freight transport in 2014 vs. 2005 in percentage points (territorialized freight activity)	2005-2014 average annual change of heat generation from CHP	Ratio transformation output thPG/Fuel input for thPG 2014 vs. 2005 change in percentage points
Source and extraction date	Eurostat 31/08/2016 and 05/09/2016	Eurostat 31/08/2016	DG MOVE Pocketbook 2016	DG MOVE Pocketbook 2016	Eurostat 06/12/2016	Eurostat 31/08/2016 and 02/09/2016
EU28	● -1.3%	● -0.5%	● 0.1	● 1.1	● -1.2%	● -0.1
BE	● -0.4%	● 0.2%	● 3.1	● 0.8	na	● 4.3
BG	● -1.2%	● 0.9%	● -11.5	● 10.2	● -3.7%	● 2.3
CZ	● -2.5%	● 0.3%	● 3.3	● -3.3	● -3.5%	● 0.1
DK	● -1.6%	● -0.8%	● -0.7	● 0.6	● -2.9%	● 3.8
DE	● -0.9%	● 0.2%	● -0.1	● -1.4	● 0.0%	● 0.7
EE	● 0.5%	● 0.2%	● -4.1	● -24.7	● 1.8%	● -5.1
IE	● -4.6%	● -1.1%	● 2.3	● -0.8	● 2.7%	● 4.2
EL	● 0.3%	● -2.3%	● -3.1	● -1.0	● -7.7%	● -0.2
ES	● -0.9%	● -2.4%	● -0.9	● 0.9	● -3.3%	● -4.2
FR	● -0.8%	● -0.2%	● 1.6	● -0.8	● 462.3%	● -1.3
HR	● -0.3%	● 0.6%	● -1.2	● 5.3	na	● 1.4
IT	● 0.0%	● -1.2%	● 1.0	● 3.1	● 0.7%	● 1.0
CY	● 1.3%	● -1.6%	● -2.6	● 0.0	● 46.8%	● 4.4
LV	● -1.1%	● 0.6%	● -5.3	● -2.9	● 6.0%	● -4.1
LT	● -1.7%	● 2.7%	● 1.5	● -6.1	● -3.9%	● 46.5
LU	● -2.7%	● -1.1%	● 2.0	● -13.6	● 15.5%	● 3.6
HU	● -5.2%	● -0.6%	● -3.0	● 3.1	● -6.0%	● -2.6
MT	na	● 5.8%	● -2.8	na	na	● 11.2
NL	● -2.3%	● -1.0%	● 0.7	● 3.3	● -1.1%	● -0.3
AT	● -2.9%	● -0.4%	● 1.6	● -2.2	● 1.1%	● 3.9
PL	● -1.3%	● 3.1%	● -10.6	● -10.1	● -1.6%	● -0.9
PT	● -1.9%	● -1.1%	● -0.4	● 3.5	● 1.8%	● -0.9
RO	● -0.4%	● 2.9%	● -6.1	● 15.7	● -5.4%	● -3.8
SI	● -1.6%	● 2.7%	● -0.7	● 5.2	● -4.1%	● -0.3
SK	● -5.2%	● -0.5%	● -7.0	● -6.4	● -10.8%	● -2.0
FI	● 0.6%	● 0.3%	● -0.3	● 5.8	● 0.1%	● -0.2
SE	● -1.5%	● -0.1%	● 1.3	● -2.1	● 1.4%	● 1.0
UK	● -1.7%	● -0.9%	● 2.6	● 1.5	● -2.7%	● 0.1

Source: Eurostat