



Council of the  
European Union

128999/EU XXV. GP  
Eingelangt am 16/01/17

Brussels, 16 January 2017  
(OR. en)

14342/1/15  
REV 1

ENER 396  
CLIMA 134  
AGRI 606  
COMPET 523  
TRANS 369  
ENV 716  
ECOFIN 886  
RELEX 946  
TELECOM 216  
CONSOM 196

#### COVER NOTE

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No. Cion doc.:	COM(2015) 574 final/2
Subject:	REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Assessment of the progress made by Member States 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 Energy Efficiency Directive 2012/27/EU

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Delegations will find attached a **new version** of document COM (2015) 574 final.

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Encl.: COM(2015) 574 final/2



Brussels, 13.1.2017  
COM(2015) 574 final/2

## CORRIGENDUM

This document corrects document COM (2015) 574 final of 18 November 2015. Clarifications and correction of factual mistakes requested by MS. It concerns all language versions.

## **REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL**

**Assessment of the progress made by Member States 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 Energy Efficiency Directive 2012/27/EU**

{SWD(2015) 245 final}

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## 1. INTRODUCTION

The Energy Union Strategy<sup>1</sup> called for a fundamental rethinking of energy efficiency, to treat it as an energy source in its own right, representing the value of energy saved. Focusing on energy efficiency as a way of moderating energy demand delivers on the objectives of security of supply, competitiveness and sustainability, and results in cost savings for consumers and industry.

The Energy Union Strategy confirmed the energy efficiency target of 20 % by 2020, which means less than 1086 Mtoe of final energy consumption or less than 1483 Mtoe of primary energy consumption. This is the basis for moving forward to a reduction of at least 27 % by 2030 to be reviewed by 2020, having in mind a figure of 30 %.

In 2014, the Commission concluded in its Energy Efficiency Communication (COM(2014) 520 final) that the EU would achieve energy savings of around 18-19 % in 2020. Since then Member States have made improved efforts to implement EU energy efficiency legislation and have set more ambitious energy efficiency targets (now adding up to 17.6 % primary energy saving in 2020, last year the targets added to only 16.4 %). On this basis the Commission remains optimistic that the 20 % target will be achieved provided existing EU legislation is fully implemented, Member States increase their level of ambition and the investment conditions for energy efficiency continue to improve across Europe.

This report gives an assessment of progress made towards this target as well as the implementation of the Energy Efficiency Directive 2012/27/EU. It includes some recommendations for Member States<sup>2</sup> and is based on Member States' Annual Reports and the National Energy Efficiency Action Plans. This report is accompanied by a staff working document<sup>3</sup> which contains a detailed description of the used performance indicators.

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

There has been significant progress in reducing energy consumption at EU level. Overall, final energy consumption decreased by 7 % between 2005 and 2013. Primary energy consumption decreased by 8 % in the same period and preliminary estimates show a continuation of this declining trend to 1516 Mtoe in 2014.<sup>4</sup>

**Final energy consumption**<sup>5</sup> in the EU-28 dropped from 1186 Mtoe in 2005 to 1102 Mtoe in 2012, but increased to 1105 Mtoe in 2013. The increase in 2013 was mainly due to increases

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<sup>1</sup> COM(2015) 80 final.

<sup>2</sup> As required by Article 24(3) Energy Efficiency Directive 2012/27/EC.

<sup>3</sup> SWD(2015) 245 final. The data used for the graphs in Annex II of SWD(2015) 245 final was extracted from the Eurostat website in February 2015 mainly.

<sup>4</sup> See European Environmental Agency (2015): Trends and projections in Europe 2015 (<http://www.eea.europa.eu>).

<sup>5</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.

in Belgium, the Czech Republic, Germany, Ireland, France, Hungary, the Netherlands, Austria, Slovakia and the United Kingdom.<sup>6</sup>

- ✓ The energy consumption of **industry** decreased in absolute terms from 327 Mtoe in 2005 to 275 Mtoe in 2012 (16 %). Overall, the economic crisis, restructuring effects of the European economies and energy efficiency measures contributed considerably to this downward trend. Nevertheless, the energy consumption of industry increased to 277 Mtoe in 2013. This was due to an increase in several industrial subsectors, the highest of which was a 6 % increase in the mining and quarrying sector.
- ✓ In the **residential** sector, final energy consumption decreased by 3 % in 2013 compared to the level of 2005.
- ✓ In the **services** sector, final energy consumption increased by 6% from 2005 to 2013, but the added value created in this sector increased by 11 % over the same time which resulted in an improved energy intensity.
- ✓ Final energy consumption in **transport** decreased by 6 % over this period. In 2013, transport accounted for the biggest share of final energy consumption (32 %). It was followed by the residential sector with 27 %, industry with 25 % and the services sector with 14%. Other sectors were responsible for the remaining 2 %.

**Primary energy consumption**<sup>7</sup> in the EU-28 dropped from 1709 Mtoe in 2005 to 1567 Mtoe in 2013. Preliminary estimates show that primary energy consumption continues declining in 2014 to 1516 Mtoe<sup>8</sup>. However, Belgium, Denmark, Germany, Estonia, France, Poland, Portugal and Slovakia showed an increase in primary energy consumption in 2013 compared to 2012.

- ✓ Overall, the decrease in primary energy consumption in the EU-28 from 2005 to 2013 was primarily due to a drop in final energy consumption and was also influenced by the structural change in the power generation sector towards more renewable electricity. The energy consumption of the energy sector decreased by 13 % and distribution losses fell by 8 % in this period.
- ✓ The heat produced by CHP plants in the EU-28 decreased by 9 % from 46 Mtoe in 2005 to 42 Mtoe in 2013.

### 3. NATIONAL TARGETS

In 2013, Member States identified national indicative targets for energy efficiency.<sup>9</sup> Since then, Austria, Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Slovakia and Spain have set more ambitious targets in their 2014 National Energy Efficiency Action Plans for **final** energy consumption, focusing on a larger decrease of demand in the residential, services, industrial and transport sectors. Only Malta and Poland have notified less ambitious final energy consumption targets to the Commission. The objective of energy efficiency is to decouple

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<sup>6</sup> Member States are required by Annex XIV of the EED to explain the reasons for an increase in energy consumption by sector in their Annual Reports, e.g. economic growth, weather. However, not all Member States provided information on this. The energy consumption data has not been normalized with heating degree days to take into account climate variations over time. Only in figures 17, 18 and 20 of SWD(2015) 245 final heating degree days were taken into account.

<sup>7</sup> In addition to final energy consumption, primary energy consumption also includes generation and transformation losses, the consumption of the energy transformation sector and network losses.

<sup>8</sup> See European Environmental Agency (2015): Trends and projections in Europe 2015 (<http://www.eea.europa.eu>).

<sup>9</sup> Under Article 3 of the Energy Efficiency Directive 2012/27/EU (EED).

energy consumption from economic growth due to efficiency gains. In this context, the level of the indicative targets set by Croatia, Cyprus, Finland, Greece, Italy, Portugal and Romania are not ambitious enough as final energy consumption is projected to be higher than the forecast GDP development from 2014 to 2020.<sup>10</sup>

As regards **primary** energy consumption, Cyprus, France, Greece, Hungary, Ireland, Malta, Spain and Sweden have set more ambitious indicative targets in their 2014 National Energy Efficiency Action Plans compared to their initial targets. In particular Austria, Belgium, France, Germany, Malta, the Netherlands, Sweden and the United Kingdom have set themselves ambitious targets in light of the GDP growth expected in 2014-2020. Bulgaria, Croatia and Slovakia have reduced their level of ambition. For Croatia, Finland, Greece and Romania the indicative primary energy consumption targets for 2020 would allow an increase of primary energy consumption, at a rate higher than their expected average GDP growth in 2014-2020.<sup>11</sup>

Collectively, Member States have failed to set national energy efficiency targets ambitious enough to add up to the 20% EU level target. The sum of the national indicative targets corresponds to 17.6 % primary energy savings compared to projections for 2020. While this represents a welcome improvement compared to the first set of notified targets, it still falls short of the EU target to save 20 % of primary energy compared to projections in 2020. However, data on recent progress suggest that a more optimistic conclusion can be drawn.

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

To assess Member States' progress towards their indicative energy efficiency targets, the Commission analysed their National Energy Efficiency Action Plans (NEEAPs), Annual Reports and the set of indicators described in more detail in the accompanying staff working document<sup>12</sup>. The analysis shows that most Member States decreased their primary and final energy consumption between 2005 to 2013 at a rate that was higher than the rate of decrease which would be needed in the period 2005 to 2020 for them to meet their primary and final energy consumption targets by 2020. The exceptions are: Belgium, Estonia, France, Germany, the Netherlands, Poland and Sweden (for primary energy consumption) and Austria, Belgium, Estonia, France, Germany, Lithuania, Malta and Slovakia (for final energy consumption).<sup>13</sup>

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<sup>10</sup> The detailed analysis can be found in SWD(2015) 245 final.

<sup>11</sup> The detailed analysis can be found in SWD(2015) 245 final.

<sup>12</sup> SWD(2015) 245 final.

<sup>13</sup> As only 2013 data are 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 Ecodesign, energy labelling and the Energy Performance of Buildings Directive (2010/31/EU). In addition, this comparison does not make it possible to carry out a conclusive assessment of whether Member States are on track to meet their indicative 2020 energy efficiency targets. This is because the future effects (positive or negative) of changes in the economy (e.g. an increase/decrease of economic activity or a shift from energy intensive industries to the service sector), changes in energy prices, fuel switching or climate variations cannot be foreseen until 2020. See: European Environment Agency (2014): Trends and projections in Europe 2014 (<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2014>) and Staff Working Document (2015) 245 final.

Primary energy intensity<sup>14</sup> for the whole economy decreased in all Member States on average between 2005 and 2013, except in Estonia.

#### **4.1. Industry**

The final energy consumption of industry decreased in absolute terms from 327 Mtoe in 2005 to 277 Mtoe in 2013 (-15 %). The decrease between 2008 and 2012 can be explained by a decrease of industrial activity and changes in the structure of the industry. However, energy efficiency improvements contributed most to this positive trend with an almost three times bigger impact.<sup>15</sup>

As economic growth is expected in most Member States in the coming years, more efforts will be needed to ensure the decoupling of energy consumption from economic growth. In addition, lower oil and gas prices could reduce the incentive for energy efficiency investments in this sector as the payback period gets longer.

There is a significant difference between the energy intensity of industry in different Member States, with a sevenfold difference between the most energy-intensive Member State, Bulgaria and the least energy-intensive ones: Denmark and Ireland. Most Member States decreased energy intensity in the industry and construction sectors from 2005 to 2013, with the exceptions being Greece, Hungary, Ireland and Latvia.

The European emission trading system has been an important driver of energy efficiency investments in the energy-intensive industry sectors. Furthermore, most Member States support the energy efficiency of industry through financial incentives and fiscal measures. Voluntary agreements are another common policy instrument for the industry sector. Nine Member States have set up such agreements with industry actors: Belgium, Denmark, Finland, Ireland, Luxembourg, the Netherlands, Portugal, Sweden and the United Kingdom. Energy savings in the industry sector are also achieved with the help of market-based instruments, e.g. in Italy through the white certificate scheme and in Denmark through the energy saving obligation scheme.

The implementation of Article 8(4) of the EED, which requires large companies to carry out energy audits from 2015 onwards, can help the industrial sector to identify cost-efficient energy efficiency measures. However, around half of the Member States have not yet notified the Commission of national legislation transposing this EED requirement; the Commission has therefore started infringement procedures against these countries.

Member States should also address their policies towards small- and medium-sized companies to remove market barriers and enable them to exploit any remaining energy efficiency potential.

#### **4.2. Residential sector**

The final energy consumption of the residential sector decreased in absolute terms from 306 Mtoe in 2005 to 296 Mtoe in 2013 (-3 %), although it slightly increased from 2012 to 2013.

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<sup>14</sup> Energy intensity is defined as primary energy consumption divided by GDP. An analysis of drivers for energy intensity improvements can be found in 'Member States' Energy Dependence: An Indicator-Based Assessment', ECFIN Occasional Papers 196, June 2014.

<sup>15</sup> PwC/Fraunhofer ISI/TU Wien (2014): Study evaluating the current energy efficiency policy framework in the EU and providing orientation on policy options for realising the cost-effective energy efficiency/ saving potential until 2020 and beyond, Figure 18 ([https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_report\\_2020-2030\\_eu\\_policy\\_framework.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_report_2020-2030_eu_policy_framework.pdf)).

The overall decrease was mainly due to energy efficiency measures, especially in relation to space heating energy consumption.<sup>16</sup>

Energy consumption per square metre decreased in all Member States between 2005 and 2013 except in Italy, where it increased by 10 %, and Estonia, where it was constant.<sup>17</sup> The lower energy consumption per square metre could be explained by more stringent energy efficiency requirements for buildings, appliances and heating technologies, partly due to the progressive implementation of the Energy Performance of Buildings Directive.

Member States recently prepared a first long-term renovation strategy for their entire building stock, as required by Article 4 of the EED.<sup>18</sup> Although some strategies were missing certain information, for example on non-residential buildings, investment costs and sources of funding, the quality of the long-term renovation strategies is expected to improve in the next update which is due in 2017.

To improve the quality of renovation, installers and craftsmen need to be trained and their skills in new and more efficient technologies that could replace existing equipment and processes in construction and renovation needs to be increased. The implementation of national qualification and training roadmaps developed under the EU 'BUILD UP Skills' project have started in 21 Member States in 2013 and 2014 already.<sup>19</sup> In addition, other national training measures have been described in the NEEAPs but further, targeted efforts are needed in this area.

Energy efficiency in the residential sector benefits from a wide range of policy actions, such as regulatory and financial/fiscal measures, as well as information- and awareness-raising measures, voluntary agreements, infrastructure investment (smart-metre roll outs), market-based instruments, and others. Regulatory measures mostly relate to the implementation of the Energy Performance of Buildings Directive, including minimum energy performance requirements and certificates for new and existing buildings and inspections of water boilers and air conditioning systems, and the Ecodesign Directive, including energy efficiency standards for appliances and equipment.

Financial and fiscal measures that support energy efficiency improvements include grants and subsidies. A few Member States (France, Germany, Greece, the Netherlands and Portugal) offer loan programmes. Tax relief on energy efficiency upgrades for households is reported for Denmark, Finland, France, Germany, Greece, Italy, the Netherlands and Portugal. Six Member States (Austria, Denmark, Estonia, Germany, the Netherlands and Sweden) have put in place energy taxes that aim to change behavioural and investments in energy efficiency. According to the NEEAPs in 2014, smart metres are being rolled out to residential customers in Austria, Cyprus, Denmark, Finland, France, Greece, Ireland, Latvia, Malta and the United Kingdom.

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<sup>16</sup> See Odyssee-Mure <http://www.odyssee-mure.eu/publications/efficiency-by-sector/household/household-eu.pdf>.

<sup>17</sup> See Odyssee-Mure database: <http://www.indicators.odyssee-mure.eu/online-indicators.html>. The increase in Italy is due to a revision of the biomass consumption in recent years according to the Odyssee-Mure (2015): Energy Efficiency Trends and Policies in Buildings.

<sup>18</sup> The long-term renovation strategies of Member States are published under <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>.

<sup>19</sup> See [www.buildupskills.eu](http://www.buildupskills.eu).



The energy efficiency obligation schemes focus mostly on the residential sector to achieve the 1.5 % annual end-use energy savings required by Article 7 of the EED. In total, 16 countries have adopted or plan to adopt an energy efficiency obligation scheme. Most Member States have chosen to apply the allowed exemptions to achieve the maximum permitted reduction of 25 % (except for Denmark, Portugal and Sweden).<sup>20</sup> This reduces the amount of energy savings which will be achieved by 2020. The Commission also recognises a weak implementation of this article in some countries as many Member States rely on old measures, the implementation of the notified measures are delayed, expected savings are overestimated or overlapping effects of different policies are not taken into account correctly. Therefore, the Commission will follow the further implementation of this article closely.

Member States need to better inform consumers about energy efficiency options and to further improve the investment conditions for private consumers to accelerate the currently very low renovation rates for the existing building stock in Europe. Targeted measures are needed in this sector as households have a lower responsiveness to increasing energy prices than e.g. energy-intensive industry. In addition, more focused measures are needed for vulnerable consumers to address fuel poverty effectively and to improve living standards, for example, measures such as interest-free loans and addressing the tenant-landlord dilemma would be beneficial.

#### **4.3. Services sector**

The final energy consumption of the service sector increased in absolute terms from 144 Mtoe in 2005 to 153 Mtoe in 2013 (6 %). However, energy consumption grew more slowly than the added value over the same period (11 %). Overall, the energy intensity of the EU services sector (normalised with heating degree days) decreased by 4 % between 2005 and 2013, mainly in Austria (20 %), Hungary (26 %), Ireland (37 %) and Portugal (21 %) which is a very positive trend. However, Bulgaria, Croatia, Finland, Greece, Italy, Luxembourg and Spain increased their energy intensity in 2013 compared to 2005 levels.

Most of the regulatory measures applied in the residential sector also apply in the services sector.

As the services sector is expected to grow, Member States will need to tackle its challenges further with appropriate measures to continue the positive trend of its decreasing energy intensity across the EU.

#### **4.4. Public sector**

Article 5(1) 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, or to achieve equivalent savings per year. 18 Member States will implement the requirements of Article 5 through alternative measures (such as measures that create incentives for occupants to change their behaviour); the others have opted for the default approach of renovating 3 % of the total floor area. Member States are obliged to report in their Annual Reports the total building floor area of buildings which did not meet the requirements of Article 5(1) of the EED and the renovated floor area or the amount of energy savings achieved under Article 5(1) and 5(6) of the EED in the previous year. Most Member States provided some information on this in their

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<sup>20</sup> The EED allows for certain exemptions to lower the required amount of 1.5 % of annual end-use energy savings, to exclude the energy used in industrial activities listed in Annex I to Directive 2003/87/EC from the calculation of the baseline, to count savings from early actions or savings in the energy transformation, distribution and transmission sector under Article 7(2) EED.

2015 Annual Reports; Greece, France, Hungary, the Netherlands and Slovenia did not provide any information on this.<sup>21</sup> Data on the total building floor area of the buildings which did not meet the energy performance requirements under Article 5 were provided in most of the times but data on the savings through the renovations (or alternative measures) of buildings owned by the central government which are obligatory from 1 January 2014 on were missing or unclear in most of the Annual Reports. Therefore, it is not possible yet to assess if Member States fulfilled their obligations in 2014 in line with Article 5 EED but the Commission will follow the proper implementation closely.

Under Article 6 EED, Member States must ensure that central governments purchase only products, services and buildings that have a high energy-efficiency. All Member States have presented the measures needed to ensure that this happens, but measures to encourage other public bodies to do likewise were missing in the NEEAPs for Belgium and Italy. The Commission has launched a study to assess the effectiveness of this provision. Interim results show that energy efficiency requirements in public procurement are not fully understood by all procurement agents and that the transposition of the requirements of Article 6 EED is not yet finalised in some countries. According to Member States, other barriers include: authorities' lack of skills and practical know-how on energy efficient public procurement; lack of clear guidance and a shortage of practical toolkits; and unclear criteria for public procurement assessments. The Commission will therefore look into ways to better assist Member States in implementing this provision.

#### **4.5. Transport sector**

The final energy consumption in transport<sup>22</sup> of the EU-28 decreased from 370 Mtoe in 2005 to 349 Mtoe in 2013 (-6 %). This reflects an increase of 4 % during 2005-2007 but a rapid decrease since then (-9 % for 2007-2013).

About 40 % of the 2007-2013 reduction is estimated to be due to the economic crisis, with stabilisation of passenger traffic and a fall in freight traffic. The remaining 60 % mostly originates from improvements in the energy efficiency of passenger cars, driven by stricter CO<sub>2</sub> standards and targeted transport policies in Member States (which were also notified in some cases as transport measures under Article 7 EED to reduce final energy consumption).<sup>23</sup>

The highest reductions in final energy consumption in the transport sector were registered in Greece, Ireland and Spain in the period 2005-2013. Consumption increased slightly in Croatia, Finland and Germany and a considerable increase was recorded in Lithuania, Malta, Poland, Romania, Slovakia and Slovenia.<sup>24</sup>

In 2013, the share of collective passenger transportation increased in half of the Member States: Austria, Belgium, Croatia, Czech Republic, Finland, Greece, Hungary, Luxembourg,

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<sup>21</sup> See <http://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>.

<sup>22</sup> Excluding pipeline transport.

<sup>23</sup> Odyssee-Mure (2015): Trends and policies for energy savings and emissions in transport (available at: <http://www.odyssee-mure.eu/publications/br/energy-efficiency-in-transport.html>).

<sup>24</sup> Most of the increase originated from the road transport. Comparison between Member States have to 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. Official statistics (e.g. on the split of final energy by passenger and freight transport) are not available at this stage for providing meaningful energy intensity indicators but data availability will be further explored in the future.

the Netherlands, the United Kingdom, Portugal, Slovenia, Spain and Sweden. In the rest of the Member States the share of passenger cars increased.<sup>25</sup> Regarding freight transport, Austria, Belgium, Denmark, Finland, Germany, Italy, the Netherlands, Portugal, Romania, Sweden and the United Kingdom increased the share of railway and inland waterways freight transport in 2013 compared to 2005 levels.

Member States support efficiency in both private and public transport through improvement of vehicle efficiency and reduced CO<sub>2</sub> emissions compliant to the EU CO<sub>2</sub>-standards, shift towards more environmentally friendly means of transport (e.g. rail or other means of public transport), consumer information and behaviour.

For public transport, Bulgaria, Czech Republic, Denmark, France, Italy, Latvia, Portugal, Sweden and the United Kingdom reported measures targeting rail transport in their NEEAPs. Energy efficiency requirements for taxis have been established in Denmark. The extension of metro transport has been reported by Bulgaria, Czech Republic, Denmark, Greece and Italy. The promotion of modal shift and encouragement to use public transport or cycling and walking has been mentioned by Belgium, Ireland and Portugal. Private transport measures include improvements in car fleet efficiency, measures supporting the use of electric, hydrogen or more fuel-efficient cars, developing bicycle lanes etc. Financial incentives to buy energy efficient vehicles are provided by Croatia, Luxemburg and Spain (for electric cars) and the Netherlands, while Denmark offers tax incentives for electric and hydrogen car owners and owners who change to lower fuel consumption vehicles. Behaviour measures are also mentioned for Finland, the Netherlands (driver training) and the United Kingdom. The shift of freight transport towards more environmentally friendly modes such as rail, maritime transport and inland waterways is also planned in France.

#### **4.6. Generation sector**

The decrease of primary energy consumption during the past years was due to a decrease in final energy consumption, the implementation of the European emission trading system and a structural change in the power generation sector. In particular, structural changes from thermal power generation towards more renewable energy sources took place in the last years.

Efficiency in the generation sector is key to achieving the 2020 energy efficiency targets. Energy efficiency in the generation sector contributes strongly to security of supply and decarbonisation. Besides the European emission trading system targeted energy efficiency policies can increase energy efficiency in this sector e.g. through the increase of the share of heat and electricity produced with high-efficiency combined heat and power plants (CHP), district heating and cooling, as well as renewable energies.

Member States have increased their efforts with regard to renewable energy in recent years. In 2013, the combined EU share of renewable energy reached 15 % and the estimate for 2014 indicates a 15.3 % share which contributed to a reduction in primary energy consumption as most sources of renewable energy have 100 % transformation efficiency.<sup>26</sup>

Article 24(6) of the EED requires Member States to provide information on heat and electricity produced from thermal power plants and, in particular, from CHP. For EU-28, the heat produced from CHP plants decreased from 46 Mtoe in 2005 by 9 % to 42 Mtoe in 2013. Given the efficiency gains and contribution to industrial productivity, additional effort is

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<sup>25</sup> No data was available for Cyprus and Malta.

<sup>26</sup> See Renewable energy progress report COM(2015) 293 final.

needed from Member States to increase the share, in particular, of high-efficiency CHP plants.

Article 14 of the EED sets a framework to trigger investment in efficient district heating and cooling. A positive trend can be observed in nine Member States, where the transformation output from district heating plants increased on average between 2005 and 2013. Nevertheless, in the remaining 12 Member States with district heating, a decreasing trend can be observed.<sup>27</sup> Therefore, to fully exploit the energy-efficiency potential in the generation sector, the full implementation of Article 14 and the comprehensive assessments Member States are required to undertake by end 2015 (analysing their potential for applying high-efficiency cogeneration and efficient district heating and cooling) are of major importance.

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<sup>27</sup> No data is available for Cyprus, Greece, Ireland, Italy, Malta, Portugal and Spain.

#### Box 1: Good examples in Member States

- Some Member States have embedded their ambitious national energy efficiency targets in comprehensive long-term strategies like the *German National Action Plan on Energy Efficiency (NAPE)* or the recently adopted bill on the *transition énergétique* in France.
- The *National Fund for Environmental Protection* created in Poland successfully supports many energy efficiency projects in various sectors and includes training aspects and the involvement of local and regional authorities which helps create broad support for energy efficiency at all levels.
- Romania has implemented an '*Improving Energy Efficiency in Low-Income Households and Communities programme*' in recent years to address fuel poverty effectively. This has helped some 160 000 people in Romania to live in more energy efficient apartment blocks, with lower heating bills. A similar programme '*Better Energy Warmer Homes*' has been established in Ireland.
- Many Member States have established successful strategies to reduce in particular their primary energy consumption: Malta is improving its generation sites and invests in new efficient generation capacities; the British government supports through its heating strategy the deployment of new district heating in cities that currently lack it; and Italy, Belgium and Germany have developed broad support-schemes for highly-efficient CHP.
- Belgium, Denmark, Finland, Ireland, Luxembourg, the Netherlands, Portugal, Sweden and the United Kingdom have already established voluntary energy efficiency agreements to reduce energy consumption and increase the competitiveness in the industry sector. Austria has created a successful '*Green Building Cluster*' to increase productivity, competitiveness and innovation of companies in the buildings sector in Lower Austria. In Sweden, for example, companies can receive a five year tax exemption on electricity, if they participate in the voluntary scheme, which requires them to carry out an energy audit, to implement an energy management system and to implement the measures identified in the audit with a repayment period less than three years.
- Bulgaria, Czech Republic, Denmark, France, Italy, Latvia, Portugal, Sweden and the United Kingdom have already reported measures, for example, which target rail transport through improvements in the rail infrastructure, electrification of railways and increasing the use of passenger railway systems.

#### 4.7. State of transposition of the EED

Legal transposition of the EED is still not completed in many Member States, which prevents some from reaching their indicative national 2020 targets, stops energy efficiency markets from developing properly and prevents consumers and market actors from exploiting the full benefits of energy efficiency. The full and proper implementation of the existing energy efficiency legislative framework is key for achieving the EU-28's energy and climate targets for 2020. To this end, the Commission has launched infringement procedures to ensure full and correct transposition. Stronger efforts are required in this respect.

The Commission has so far sent 27 letters of formal notice and 20 reasoned opinions to Member States for not notifying to the Commission all the national legislation necessary to transpose each of the EED requirements. In addition, the Commission initiated bilateral contacts with all 28 Member States requesting a substantial level of information on the implementation of Article 7 of the EED.

## 4.8. Financing

The energy efficiency market has strong investment potential, but is still small, fragmented, (deemed) risky, and (in particular as regards deep building renovations or efficiency investments going beyond 3 years payback) relies predominantly on direct or indirect subsidies.

The European Structural and Investment Funds (ESIF) are the largest EU financing source in this area. In the last multi-annual financial framework (2007-2013), the EU allocated around EUR 6.1 billion (2 % of the total European Regional Development Fund (ERDF)/Cohesion Fund (CF)) to the '*Energy efficiency, co-generation, energy management*' priority theme. More than half of this EU funding (EUR 3.4 billion) was earmarked for energy efficiency in public and residential buildings. In 2007-2013, 90 % of ERDF and CF support for energy efficiency was provided through grants, with loans representing only 8 % of EU support<sup>28</sup>.

Energy efficiency also represents a high share of the available funding for the financial period 2014-2020. In particular, EUR 13.3 billion from the ERDF and CF will be used to support energy efficiency in public and residential buildings, helping almost 1 million households. In addition, EUR 3.4 billion will be allocated to support energy efficiency in businesses, with a focus on small and medium firms, leading to over 50 000 companies with improved energy performance. However, implementing these funds will require high quality projects and the mobilisation of private finance to address the investment needs for energy efficiency (over EUR 100 billion a year<sup>29</sup>). Therefore, the ESIF come with a new narrative: Grants should be used only to finance the funding gap, i.e. project investment costs that cannot be covered by the expected energy savings within a reasonable timeframe, or to address social issues, e.g. energy poverty. Rather than grants, financial instruments should be used to reduce financing costs for projects that are close to being bankable. Public and private funds must work together – to attract private capital and deliver more and larger energy efficiency investments.<sup>30</sup> In 2014-2020, the EU is aiming to double the use of financial instruments for ESIF in the form of loans, guarantees or equity. This change is expected to encourage private financing and to help small-scale projects that predominate in the area of energy efficiency.

Moreover, the creation of the European Fund for Strategic Investments (EFSI) in 2015 provides additional funding for Member States and project promoters to upscale and tune up energy efficiency schemes (including those co-financed by the ESIF) – in particular by pooling projects under larger investment operations.

The overall market framework has improved for consumer loans and mortgages, but key issues related to energy efficiency financing still persist. In the EU, investment is influenced by macro-economic conditions and the low-interest rate policy of the European Central Bank (ECB). Since most European banks do not offer specific products for energy efficiency investments, it can be assumed that the interest rates applied for loans that also finance energy efficiency measures are following the downward trend of bank interest rates, as pursued by the ECB. For instance, the latest ECB statistics shows that loans to households for

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<sup>28</sup> Ex post evaluation of Cohesion Policy programmes 2007-2013 focusing on the European Regional Development Fund (ERDF) and the Cohesion Fund (CF), Work package 8 on "Energy efficiency in public and residential buildings", [http://ec.europa.eu/regional\\_policy/en/policy/evaluations/ec/2007-2013/#1](http://ec.europa.eu/regional_policy/en/policy/evaluations/ec/2007-2013/#1).

<sup>29</sup> See [www.eefig.eu](http://www.eefig.eu).

<sup>30</sup> Grants should be only used where commercial financing would not work (low income groups, social housing, energy poor). Grants should be combined with commercial finance so that final financing products are attractive for the market.

consumption (with collateral and/or guarantees) in August 2015 are rated in the range 3,30 % – 4,53 % (depending whether it is a floating or fixed rate). These rates have decreased by around 22 % over the last year. There is a lack of market confidence in up-scaled energy efficiency investment, as a specific ‘asset class’. Such investment and its financing needs to be based on wider fundamentals, including the ‘freed’ cash flow of operators (due to lower energy costs) and increased asset value (due to its higher energy performance), and underpinned by a predictable long-term investment framework.

#### **4.9. Final energy savings in 2016 required by the Energy Services Directive 2006/32/EC**

Directive 2006/32/EC required Member States to set – and aim to achieve – a national indicative energy savings target of at least 9 % of final energy savings in 2016. Most of the provisions in this Directive have been replaced by more precise provisions in the EED. However, the requirements related to the 9 % target will not be repealed until 2017. So Member States were required to provide information on their 2016 saving target in their 2014 NEEAPs: 19 Member States state that the required savings will be achieved by 2016; for 7 Member States it is not clear from the NEEAPs if the saving target will be achieved.<sup>31</sup>

## **5. CONCLUSION**

The report demonstrates that Member States, in addition to a range of EU policy measures (e.g. eco-design, labelling, EU ETS, car standards), have introduced energy efficiency measures in the industry, residential, service, transport and generation sectors. The NEEAPs show that most Member States have increased their effort and either strengthened existing energy efficiency measures or introduced new ones.

Having in mind that the EU-28 needs to reduce primary energy consumption annually on average by 11.9 Mtoe (2.7 Mtoe expressed in final energy consumption) from the 2013 level to achieve its 2020 targets, it can be concluded that – despite the achievements of previous years – additional efforts are needed in particular in the buildings, transport and generation sectors. The performance indicators 2005-2013 used in this report to analyse progress on energy efficiency show big variations between Member States – nevertheless, most have improved at European level. The main exceptions are an increase in final energy consumption from 2012 to 2013 and a decrease in heat generated by CHP plants between 2005 and 2013.

Even though some Member States increased their indicative energy efficiency targets expressed in **primary energy consumption** recently (to a combined total of 17.6 %), the EU-28 as a whole falls short of the required 20 % level. To close the remaining gap towards the 2020 target expressed in primary energy consumption, Member States should accelerate their efforts in order to achieve their national energy efficiency targets for 2020 or to go beyond them. It is worth noting that some Member States – Austria, Belgium, France, Germany, Malta, the Netherlands, Sweden and the United Kingdom – have already set themselves particularly ambitious targets. Croatia, Finland, Greece and Romania, which have set less ambitious targets for 2020 in light of expected GDP growth in 2014-2020, could benefit from assessing again how an increased level of energy efficiency could increase their security of supply, competitiveness and sustainability.

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<sup>31</sup> The final NEEAPs of Hungary and Romania were notified in 2015 only. Therefore, a detailed analysis has not yet taken place.

Many Member States have established successful strategies to reduce their primary energy consumption. However, Belgium, Estonia, France, Germany, the Netherlands, Poland and Sweden will all need to reduce their primary energy consumption at a higher rate in 2014-2020 than in the period 2005-2013 to meet their indicative primary energy consumption targets by 2020.

For **final energy consumption**, the analysis in this report shows a decreasing trend in most Member States from 2005 onwards. Besides energy efficiency policies the economic crisis has of course contributed to this trend. Austria, Belgium, Estonia, France, Germany, Lithuania, Malta and Slovakia have set themselves final energy consumption targets in 2020 that require rates of final energy consumption reduction in 2014-2020 which are higher than the reduction rate achieved in 2005-2013. These countries will depend on a strong implementation of their Article 7 EED obligation schemes or alternative measures that enable consumers to save final energy and money in the short and long term.

Looking at the sectors on Member State level, the overall positive trend in final energy intensity in **industry** in most Member States is encouraging. However, with regard to energy intensity, there is a seven-fold difference between the Member State with the highest and lowest energy intensity in industry. There could be scope for Cyprus, Ireland, Greece, Hungary and Latvia to draw on positive examples in other Member States to reverse their own increasing trend in final energy intensity in industry.

In the **residential sector**, most Member States reduced energy demand in recent years by implementing energy efficiency measures targeting this sector. This helps households to achieve the same comfort level for less money. Consumers could benefit from a stronger focus on policies to reduce the energy consumption in the residential sector in Belgium, Estonia, Italy, Latvia, Malta, Poland, Romania and Slovenia where the energy consumption per capita increased on average over the past years. In general, to empower consumers to reduce their energy consumption, all Member States need to better inform them about energy efficiency options and further improve investment conditions for them to accelerate the currently very low renovation rates for the existing building stock in Europe. In addition, more focused measures are needed for consumers to address fuel poverty effectively.

As the **services** sector is expected to grow, targeted energy efficiency measures could help counterbalance the increase of final energy consumption in this sector and continue the sector's positive trend of decreasing energy intensity at EU level. In particular, Cyprus, Belgium, Finland France, Greece, Italy, Luxembourg and Spain could try to set up or increase the intensity of appropriate measures to counterbalance the recent increase in energy intensity in their services sector.

The shift towards a higher use of collective transportation for passengers and share of railway and inland waterways for freight transport needs to be encouraged through further efforts in the **transport sector**. Despite recent progress on energy efficiency and the reduction in transport energy demand, transport's overall high share in final energy consumption at EU-28 level makes further energy efficiency action needed to meet the 2020 objectives. Therefore, the Commission recommends that Member States implement forcefully the transport measures described in their NEEAPs and take further action to decrease energy consumption in the transport sector. Member State action for promoting alternative fuels, vehicles/vessels and deploying the related infrastructure (following the requirements of the Directive 2014/14/EU) should further support energy efficiency improvements in transport. A Communication on actions needed to decarbonise the transport sector has been announced by



the Commission in the Energy Union Roadmap and will further complement Member States efforts.

In general, Member States need to increase their energy efficiency efforts to ensure that they achieve their indicative targets by 2020 or go even beyond them to ensure that the European Union meets its 20 % reduction target by 2020. This underlines the need to fully implement the European legislative framework for energy efficiency. This enables energy efficiency service markets to develop and the removal of existing market barriers for energy efficiency investments. But also the implementation of the legislative framework related to greenhouse gas reductions e.g. in the non-ETS sector or the recently adopted Market Stability Reserve for the ETS sector are key as the two policy areas are interlinked and are reinforcing each other.

With a view to the 2030 targets, the Commission will assess in 2016 how the energy efficiency framework can be further improved, building on the already-reviewed product efficiency framework and with a view to the significant contribution of (i) the Energy Performance of Buildings Directive and (ii) the Energy Efficiency Directive (especially its Article 7). This review should help all stakeholders (national governments, regions, local authorities, energy efficiency companies, financial institutions, consumers, etc.) exploit cost-efficient energy saving potentials in the long-term with regard to the 2030 and 2050 EU climate and energy targets and objectives.

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

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

## ANNEX I

Table 1: Indicative national energy efficiency target for 2020

Member State	Absolute level of energy consumption in 2020 [Mtoe] as notified by Member States in 2013, in the NEEAP 2014 or in a separate notification to the European Commission in 2015	
	PRIMARY energy consumption	FINAL energy consumption
Austria	31.5	25.1
Belgium	43.7	32.5
Bulgaria	16.9	8.6
Croatia	11.5	7.0
Cyprus	2.2	1.8
Czech Republic	39.6	25.3
Denmark	17.8	14.8
Estonia	6.5	2.8
Finland	35.9	26.7
France	219.9	131.4
Germany	276.6	194.3
Greece	24.7	18.4
Hungary	24.1	14.4
Ireland	13.9	11.7
Italy	158.0	124.0
Latvia	5.4	4.5
Lithuania	6.5	4.3
Luxembourg	4.5	4.2
Malta	0.7	0.5
Netherlands	60.7	52.2
Poland	96.4	71.6
Portugal	22.5	17.4
Romania	43.0	30.3
Slovakia	16.4	9.0
Slovenia	7.3	5.1
Spain	119.8	80.1
Sweden	43.4	30.3
United Kingdom	177.6	129.2
Sum of indicative targets EU-28	1526.9	1077.5
<b>EU-28 target 2020</b>	<b>1483</b>	<b>1086</b>

Status: 07/10/2015

## ANNEX II

Table 2: Overview indicators

Member State	2020 Ambition level		Trend to reach the 2020 target		Intensity whole economy	Industry	Households		Service Sector	Transport			Generation		
	Ambition level of 2020 PEC target compared to GDP estimations for 2014-2020	Ambition level of 2020 FEC target compared to GDP estimations for 2014-2020	PEC 2005-2013 trend compared to PEC 2005-2020 trend to reach the 2020 target	FEC 2005-2013 trend compared to FEC 2005-2020 trend to reach the 2020 target			Change of PEC 2013 compared to PEC 2012 in %	Change of FEC 2013 compared to FEC 2012 in %		2005-2013 average annual change of energy intensity in industry in %	2005-2013 average annual change of final energy consumption residential per capita in %	2005-2013 average annual change of energy consumption per km <sup>2</sup> with climatic connections in % (Source: Odyssee)	2005-2013 average annual change of energy intensity in the service sector in %	2005-2013 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 2005 vs. 2013 in percentage points
EU28	+	+	-1.1%	0.1%	-1.7%	-1.9%	-0.8%	-1.4%	-0.4%	-0.7%	0.0	1	-1.0%	0.10	0.7%
BE	+	+	2.6%	2.9%	-1.9%	-1.7%	-3.5%	-3.2%	1.2%	-0.2%	2.4	8	7.8%	2.74	38.3%
BG	+	+	-8.3%	-5.1%	-3.7%	-7.1%	2.7%	-1.7%	-0.9%	-0.2%	-10	-5	2.1%	2.07	-4.2%
CZ	+	+	-1.3%	0.8%	-2.4%	-5.4%	-0.2%	-1.5%	-1.2%	-0.1%	1.9	-5	-0.9%	-1.06	-4.2%
DK	+	+	0.7%	-1.2%	-1.0%	-1.7%	-1.0%	-2.4%	-0.7%	-1.2%	-0.9	5	-0.6%	3.19	6.8%
DE	+	+	1.9%	2.4%	-1.9%	-1.3%	-1.1%	0.0%	-0.6%	0.2%	0.1	2	-0.5%	1.32	1.4%
EE	+	+	8.4%	0.0%	0.8%	-3.0%	1.7%	0.1%	-0.4%	0.0%	-8.2	-21	2.4%	-5.69	-3.6%
E	+	+	-0.5%	0.9%	-1.4%	0.9%	-2.9%	-4.1%	-4.6%	-2.1%	-1.1	-1	n.a.	4.21	n.a.
EL	-	+	-11.9%	-10.4%	-0.8%	3.6%	-2.9%	-4.1%	0.9%	-2.8%	-3	-1	-0.9%	0.29	n.a.
ES	+	+	-6.6%	-2.4%	-2.3%	-1.3%	-0.2%	-2.3%	0.1%	-2.7%	1.3	0	n.a.	-2.79	n.a.
FR	+	+	0.7%	3.2%	-1.3%	-0.8%	-1.0%	-1.9%	0.2%	-0.3%	0.5	0	-9.1%	-1.09	49.5%
HR	-	+	-3.9%	-1.6%	-1.3%	-1.8%	n.a.	-2.7%	-0.4%	0.8%	-1.6	0	-0.8%	2.50	-3.3%
IT	+	+	-3.0%	-2.8%	-1.2%	-2.8%	1.5%	1.3%	0.9%	-1.8%	1.4	3	1.5%	1.66	n.a.
CY	-	+	-12.7%	-8.4%	-2.1%	0.0%	-1.4%	-3.5%	1.1%	-1.4%	n.a.	n.a.	n.a.	4.59	n.a.
LV	+	+	-1.8%	-4.3%	-1.4%	2.6%	0.0%	-1.2%	-1.5%	0.3%	-3.8	-10	3.3%	-6.31	-8.2%
LT	+	+	-3.2%	-2.2%	-5.7%	-1.7%	2.1%	-0.9%	-1.7%	1.6%	-1.6	-10	-2.1%	41.53	-0.5%
LU	+	+	-2.7%	-1.2%	-2.7%	-2.4%	-4.0%	-7.7%	-1.8%	-1.0%	2.6	-2	0.8%	3.55	11.8%
HU	+	+	-3.3%	1.3%	-2.3%	2.4%	-1.8%	-3.1%	-4.8%	-1.9%	-3.3	-6	-6.3%	-1.12	2.6%
MT	+	+	-13.8%	-0.2%	-3.6%	n.a.	12.3%	-3.4%	n.a.	5.9%	n.a.	n.a.	n.a.	10.92	n.a.
NL	+	+	-1.7%	0.0%	-1.1%	-1.3%	-1.0%	-1.9%	0.0%	-0.5%	1.1	8	-3.3%	-1.63	-1.0%
AT	+	+	-0.1%	1.6%	-1.6%	-0.3%	-0.8%	-1.0%	-2.6%	-0.4%	2.2	11	2.9%	6.12	8.3%
PL	+	+	0.4%	-1.7%	-3.0%	-6.0%	0.9%	-1.0%	-0.3%	3.4%	-10.3	-14	-1.6%	-0.81	-0.7%
PT	+	+	0.5%	-2.4%	-1.5%	-0.8%	-1.5%	-4.8%	-2.9%	-1.4%	0.2	1	8.8%	1.50	n.a.
RO	-	+	-8.2%	-4.6%	-4.4%	-7.3%	1.8%	-0.7%	-0.7%	2.6%	-6.8	10	-4.4%	-3.07	-6.5%
SL	+	+	-1.7%	-1.0%	-4.4%	-3.8%	-0.4%	-1.3%	-0.1%	3.3%	-0.6	-3	0.3%	0.53	-3.4%
SK	+	+	2.9%	5.0%	-4.4%	-5.9%	-0.8%	-1.5%	-0.9%	2.5%	-8.5	-6	2.2%	-1.30	-8.3%
FI	-	+	-2.6%	-2.1%	-0.7%	0.0%	-0.3%	-0.1%	0.6%	0.6%	0	5	0.4%	-0.90	1.5%
SE	+	+	-1.9%	-2.4%	-2.0%	-1.4%	-1.3%	-1.4%	-1.3%	-0.4%	0.8	2	3.2%	1.29	-2.7%
UK	+	+	-1.0%	1.1%	-2.2%	-1.8%	-3.1%	-3.5%	-0.5%	-1.2%	2.4	2	n.a.	-0.78	1.1%

Source: Eurostat, DG ECFIN, Odyssee-Mure