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COM(2020) 326 final

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

2019 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 as required by Article 24(3) of the Energy Efficiency Directive 2012/27/EU

1. Introduction

In December 2019, the Commission adopted a communication on the European Green Deal¹, which sets a path towards climate-neutrality by 2050 and calls for increased decarbonisation efforts by 2030. Given that 75% of the greenhouse gases emitted in the EU derive from the supply and use of energy, further progress in energy efficiency is essential to deliver on our commitments towards carbon neutrality and more ambitious climate objectives in the coming decade. Energy efficiency is as a priority in the Green Deal. Of even greater importance in moving forward, is implementing the existing energy efficiency legislation and commitments, together with the widespread application of the energy efficiency first principle.

Much as the attention is now focused on the next decade and the longer time perspective until 2050, it is equally important to keep in mind the progress towards the 2020 targets. These goals are the starting point for any increase in ambition. Any gaps and delays in 2020 would affect the pathways for achieving the 2030 and 2050 objectives. Furthermore, the impact of the COVID-19 crisis will also play its role. It is estimated that it will reduce energy demand in 2020, potentially allowing achieving the 2020 targets, while rebounds are expected afterwards. It should, however, not be forgotten that this reduction will not be due to structural changes.

This progress report is presented by the Commission in line with Article 24(3) of Directive 2012/27/EU on energy efficiency, as amended by Directive (EU) 2018/2002 (‘the Energy Efficiency Directive’). This report is the last of the series of reports in such format under the Energy Efficiency Directive, as this approach will need to be aligned with Article 35 of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (Governance Regulation).

This report provides the latest insights into progress made up until 2018 to meet the EU energy efficiency 20% targets for 2020.² It does not yet take into account the potential impact of the COVID-19 crisis on the achievement of the 2020 target. The official European statistics³ on energy were used as the primary data source, applying the methodology for calculating energy balances used up to 2018⁴ (in order to maintain consistency with the previous reports and the methodology used for setting energy efficiency targets). The report also builds on the 2018 energy efficiency progress report,⁵ the annual reports submitted by Member States in 2019⁶, and complementary analysis carried out during 2019 and early 2020.

¹ COM(2019) 640 final.

² The 2020 target involves lowering the EU-28’s final energy consumption to at most 1086 Mtoe, and its primary energy consumption to at most 1483 Mtoe.

³ Published by Eurostat up to January 2020.

⁴ The detailed datasets used for the report are available at <https://ec.europa.eu/eurostat/documents/38154/4956218/Energy-Balances-April-2020-edition.zip/69da6e9f-bf8f-cd8e-f4ad-50b52f8ce616>

⁵ COM(2019) 224 final.

⁶ https://ec.europa.eu/energy/content/annual-reports-2019_en

To better understand the factors behind recent energy trends, a breakdown analysis developed by the Joint Research Centre (JRC)⁷ and the Odyssee-Mure project⁸ was used.

2. Summary of the findings

The report looks at the EU-28 and covers data up to 2018.

The main findings are as follows:

- Primary energy consumption declined by 0.7% in 2018 compared to 2017. Final energy consumption increased by 0.1% year-on-year. Even so, both indicators are above the fixed trajectory for the 2020 targets.
- Weather fluctuations continue to affect the level of energy consumption⁹. The warmer winter in 2018 moderated energy demand for space heating, but this impact was offset by increases in energy consumption in the transport and industry sectors. Weather-corrected figures actually show a bigger increase in final energy consumption in 2018 (see Figure 1).
- Growth in activity continues to push energy consumption up and the new policies and measures implemented by the Member States in 2018 were not sufficient to offset it.
- The 2019 annual energy efficiency reports findings indicate that some Member States achieved much lower savings than what would be needed for 2018 to reach their cumulative savings requirements for 2014–2020.

The reduction in primary energy consumption might be interpreted as a positive development. However, its pace, if continued, would be insufficient to meet the target set for 2020 under normal economic conditions, and is lower than the average annual reduction of a linear trajectory from 2005 to the 2020 target (1% per year). Given the limited time to implement new policies, it seems increasingly unlikely that the 2020 targets could be reached without a strong impact of external factors, such as the COVID-19 crisis. However, it is still important that efforts are quickly stepped up, as any remaining delivery gap to the 2020 targets, or a rebound of energy demand after the COVID-19 crisis would also make reaching the 2030 targets more challenging.

To better assess the growing energy consumption trend and identify a possible way forward, in July 2018 the Commission set up a task force on mobilising efforts to reach the EU energy efficiency targets for 2020.¹⁰ During the task force meetings in 2019, Member States highlighted the need to fully implement existing legislation, to better mobilise EU structural and cohesion funding, and to undertake additional measures that would deliver quick savings. In addition, the need to put a stronger focus on ensuring that buildings undergoing major

⁷ Economidou, M. and Romàn Collado, R. (2020) Assessing energy efficient trends in the EU productive sectors: monetary- and physical-based index decomposition analysis

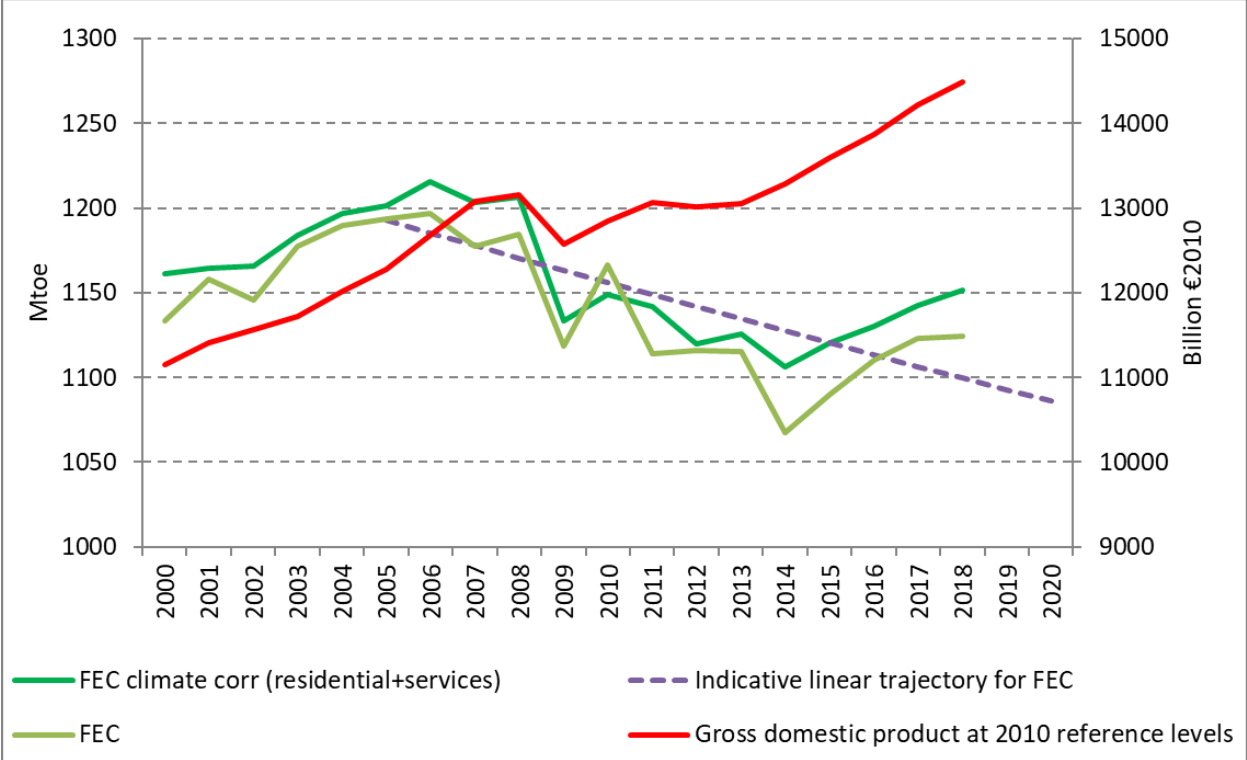
⁸ <http://www.indicators.odyssee-mure.eu/decomposition.html>

⁹ Winter temperatures affect heating needs (higher temperatures reduce heating demand) accounting for some 65% of the residential and 45% of the service sector energy consumption. Based on DG ENER estimates and Eurostat data.

¹⁰ European Commission (2019), [Report of the work of the Task Force on mobilising efforts to reach the EU Energy efficiency targets for 2020](#)

renovations achieve minimum energy performance standards was recognised. However, this would not ensure the energy savings required in the short term, but would rather contribute to the 2030 target.

Figure 1: GDP and weather-corrected final energy consumption (FEC), 2000-2018¹¹.



Source: Own calculations based on ESTAT and Odyssee data, AMECO (GDP).

3. Progress towards the EU’s 2020 energy efficiency target

Final energy consumption¹² in the EU-28 fell by 5.8%, from 1194 Mtoe in 2005 to 1124 Mtoe in 2018. This is 3.5% above the 2020 final energy consumption target of 1086 Mtoe. It decreased at an annual average rate of 0.42% between 2005 and 2018, but since 2014 (when heating demand was much lower due to an exceptionally warm winter), it rose by 5.3% in 2018 compared to 2014. In 2018, it increased by 0.1% compared to the previous year.

In 2018, higher energy consumption was mainly observed in the transport (+1.3% year-over-year increase compared to 2017) and industry sectors (+0.6%). By contrast, energy consumption declined in the residential sector (-1.6%) and in the services sector (-1.4%).

¹¹ The weather correction factor was calculated as a proportion of heating degree days (HDD) in a given year over the average HDD between 1980 and 2004. This correction factor was applied to the energy consumption used for space heating in the residential and services sector. The calculation of the HDD follows the JRC methodology, as published by Eurostat (https://ec.europa.eu/eurostat/cache/metadata/en/nrg_chdd_esms.htm)

¹² Indicators from the Eurostat’s energy balances in line with the methodology up to 2018 (FEC 2020-2030 and PEC 2020-2030) are used to monitor progress towards achieving the Europe 2020 energy efficiency targets.

The transport sector accounted for 34% of final energy consumption in 2018 followed by industry and the residential sectors (both 25%), the services' sector (13%) and other sectors including, agriculture, fishing and forestry (3%).

Primary energy consumption¹³ in the EU-28 dropped by 9.8%, from 1721 Mtoe in 2005 to 1552 Mtoe in 2018. This is 4.65% above the 2020 target of 1483 Mtoe. It dropped on average by 0.8% per year between 2005 and 2018. Following three years of increase, a year-over-year drop of 0.7% was recorded in 2018.

4. National targets

Until 2018, 12 Member States managed to reduce or keep the final energy consumption level below their hypothetical linear trajectory for reaching their indicative targets by 2020.¹⁴ For primary energy consumption, 15 Member States were below their hypothetical linear trajectories in 2018.¹⁵ Overall, the final energy consumption of 11 Member States (a decrease from 17 in 2017) was below the indicative 2020 final energy target in 2018.¹⁶ Similarly, 13 Member States (a decrease from 14 in 2017) reached or managed to keep their primary energy consumption level below their indicative 2020 target in 2018.¹⁷

In 2018, no Member State revised its energy efficiency target resulting in national targets still do not adding up to the EU targets. For final energy consumption, the national indicative targets add up to a total of 1085 Mtoe, *i.e.* 1 Mtoe below the target set for the EU; for primary energy consumption, they add up to 1533 Mtoe, *i.e.* 50 Mtoe above target set for the EU.¹⁸

5. Developments in Member States and sectors

Between 2005 and 2018, final energy consumption (FEC2020-2030) rose in nine Member States: Austria, Cyprus, Estonia, Finland, Latvia, Lithuania, Malta, Poland and Slovenia. Compared to 2017, final energy consumption rose in 18 Member States in 2018, with the highest increases recorded in Malta (+6.1%), Ireland (+4.7%) and Latvia (+4.1%). The biggest reductions were observed in Greece (-4.8%), Austria (-2.5%) and Germany (-1.5%).

Between 2005 and 2018, primary energy consumption (PEC2020-2030) fell in all Member States except Estonia, Cyprus, Latvia and Poland. Countries with the sharpest drops in primary energy consumption include, Greece (-25.7%), Lithuania (-23.4%) and the United Kingdom (-21.1%). Compared to 2017 primary energy consumption dropped further in 14 Member States, with the sharpest drops observed in Belgium (-4.6%), followed by Austria (-3.1%) and Greece (-3.0%). By contrast, the sharpest increases were recorded in Estonia (+9.4%), Latvia (+5.1%) and Luxembourg (+4.0%).

¹³ Idem 12

¹⁴ Czechia, Greece, Spain, Croatia, Italy, Cyprus, Latvia, the Netherlands, Portugal, Romania, Slovenia, Finland.

¹⁵ Czechia, Estonia, Greece, Croatia, Italy, Latvia, Lithuania, Luxemburg, Malta, Portugal, Romania, Slovakia, Slovenia, Finland, the United Kingdom.

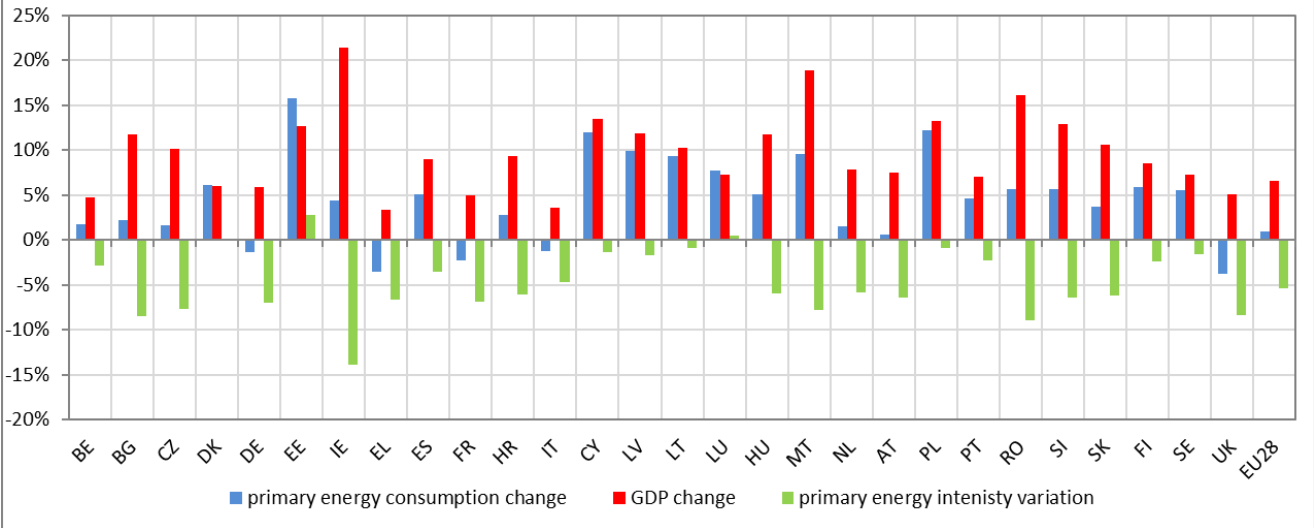
¹⁶ Greece, Spain, Croatia, Italy, Cyprus, Latvia, the Netherlands, Portugal, Romania, Slovenia, Finland.

¹⁷ Czechia, Estonia, Greece, Croatia, Italy, Latvia, Lithuania, Luxemburg, Romania, Slovakia, Slovenia, Finland, the United Kingdom.

¹⁸ The difference can be even bigger given that the levels of primary energy consumption and final energy consumption for some national targets do not follow the right methodology.

Primary energy intensity fell in all Member States in 2018 compared to 2005. However, between 2015 and 2018 it rose in Denmark, Estonia and Luxemburg.

Figure 2: Relative change in primary energy consumption, primary energy intensity¹⁹ and GDP, 2015-2018.



Source: Eurostat.

The task force on mobilising efforts to reach the EU energy efficiency targets for 2020 held a meeting in July 2019. The discussion focused on assessing progress based on Eurostat energy consumption estimates for 2018, and on sharing good practice to deliver further savings. Given the limited time until the end of 2020, Member States did not introduce many new measures in 2018, and the focus seemed to be more on the plans for 2030. Member States also pointed out that, at this stage, there was no incentive to invest in technical measures and that it was better to wait until 2021 so that the measures could be counted under Article 7 of the Energy Efficiency Directive.

In the 2019 annual reports²⁰, Member States identified economic and activity growth as the main factors that drove the increase the energy consumption in 2017. The factors behind the year-on-year decline in primary and a minor increase in final energy consumption in 2018 are yet to be analysed. As indicated above, the latest growth in final energy consumption could be mainly driven by increases in the transport and industry sectors. Energy consumption in the residential and services’ sectors decreased year-on-year, which was in part due to the warmer weather in 2018. The decline in primary energy consumption may be more an outcome of changes in energy mix (e.g. shift to renewable energy) and imports (both affecting the calculation rather than having a real impact on the current level of consumption) or efficiency improvements in energy transformation.

¹⁹ Primary energy consumption in relation to GDP.
²⁰ https://ec.europa.eu/energy/content/annual-reports-2019_en

Unofficial preliminary data on electricity consumption for 2019²¹ give some partial indication on the projected developments for last year. In 2019, electricity consumption in the EU fell by 2% year-on-year bringing demand back to 2015 levels, while GDP grew by 1.4% that year. The weather seems to play a role in this respect. The 2019 summer heatwaves, with highs above 40°C in northern Europe, caused a surge in power consumption because of air conditioning. However, the warm winter months of early and late 2019 lowered power consumption, which on balance more than compensated for that summer's high energy demand. Furthermore, a shift from industrial production as a source of GDP growth also had an impact on electricity consumption - industrial production fell in 2018 and 2019, particularly in the steel sector.²²

The breakdown analysis will allow for a more quantitative analysis of the different factors behind the changes in energy consumption.

The JRC analysis for 2005-2017²³ indicates that the improvements in energy intensity were the main factor behind reduction in energy consumption in productive sectors (industry, services and agriculture). This impact was reinforced by structural changes. However, higher labour productivity (gross value added per hour worked) and employment effect drove energy consumption up. In the same period, the drop in energy consumption was also driven by improvements in energy efficiency and the knock-on effects of the weather. Half of these impacts were offset by the wealth effect and increase in population, which drove up consumption. In both passenger and freight transport, growth in activity more than offset improvements in energy intensity, driving energy consumption up between 2005 and 2017.

The Odyssee-Mure analysis for 2005-2017²⁴ confirms that energy savings played a major role in reducing final energy consumption. Structural effects and climate effects were also leading to additional energy savings. These impacts were largely offset by growth in activity and to a lesser extent by changes in lifestyles and other effects. The drop in primary energy consumption was mainly due to variations in the power sectors' consumption (changes in electricity consumption, thermal efficiency of power mix) as well as the impacts of changes in final energy consumption and to a lesser extent the variation in the consumption of other energy transformations.

5.1. Industrial sector

The final industry energy consumption (calculated with the old methodology of energy balances) in the EU-28 decreased in absolute terms from 332 Mtoe in 2005 to 285 Mtoe in 2018 (-14%). However, in some countries industry increased its energy consumption during this period, namely in Hungary (+43%), Latvia (+29%), Poland (+14%), Malta (+11%), Germany (+6%), Lithuania, Belgium, Austria and Slovakia (by less than 5% each). Compared to 2017, the EU's final industry energy consumption increased by 0.6% in 2018, however six Member States recorded a decline. The countries with the highest increases were Latvia

²¹ Agora Energiewende (2020), The European Power Sector in 2019, https://www.agora-energiewende.de/fileadmin2/Projekte/2019/Jahresauswertung_EU_2019/172_A-EW_EU-Annual-Report-2019_Web.pdf

²² Ibid.

²³ Economidou, M. and Romàn Collado, R. (2020), *op. cit.*

²⁴ <http://www.indicators.odyssee-mure.eu/decomposition.html>

(+14.0%), Slovenia (+7.3%) and Estonia (+6.6%). In the three year period between 2015 and 2018, the gross value added of industrial production rose by 8% (4% in 2018 year-on-year). However, this growth in activity was only partially reflected in changes in energy consumption, which rose by 2.3% in since 2015.

For energy intensity,²⁵ almost all Member States managed to improve their industry performance between 2005 and 2018, leading to an overall reduction in energy intensity of 22% in the EU-28. The industrial sector's energy intensity increased only in Hungary (+20%), Latvia (+20%) and Greece (+1%). However, Romania, Estonia, Ireland and Bulgaria recorded the biggest improvements (50% or more). Looking at annual developments compared to 2017, nine Member States (Latvia +6.8%, Finland +3.5%, Romania +2.6%, Belgium +1.6%, France +1.3%, Spain +1%, Hungary +0.8%, Croatia +0.6%, Bulgaria +0.1%) recorded a rise in the industry's energy intensity in 2018, while all other Member States continued to improve their performance.

5.2. Residential sector

The final residential sector's energy consumption (calculated using the old energy balances methodology) sharply fell by 10.4% from 310 Mtoe in 2005 to 278 Mtoe in 2018 (but only by 4.6% when applying the weather correction). However, energy use rose by 0.1% between 2015 and 2018 (with a -1.6% year-on-year fall in 2018). This three-year increase was to some extent a result of the colder winter weather in 2016 and 2017 (partially offset by a warmer winter in 2018) as space heating energy consumption accounts for around two thirds of residential energy consumption. Weather-corrected heating energy consumption has been slowly declining since 2010. In 2018, the number of heating degree-days was 3% lower than in 2017, but energy consumption in the residential sector increased by 0.5% year-on-year (based on estimates). Although residential space cooling still accounts for a rather limited proportion of energy consumption, it has been growing fast in some countries.

In their annual reports, Member States identified several factors driving their energy consumption in 2017:

- Increase in the population or the number of households;
- Increase in the disposable income of households;
- Economic growth;
- Deterioration in winter climatic conditions; and
- Deterioration in summer climatic conditions.²⁶

The first three factors, which could be put down to the wealth effect, probably continued to push energy consumption up in 2018. However, their impact was more than offset by the weather factor leading to a year-on-year decline of energy consumption (-1.6%) in the residential sector in 2018.

²⁵ Energy consumption relative to gross value added.

²⁶. Tsemekidi-Tzeiranaki, S., Economidou, M., Cuniberti, B. and Bertoldi, P. (2020), *Analysis of the annual reports 2019 under the Energy Efficiency Directive*, Luxembourg, JRC120194.

Residential sector intensity in terms of EU-28 energy consumption per population dropped by 13.5% between 2005 and 2018 (it also fell by 1% in 2018 compared to 2017). However, performance was not the same across the Member States. In five countries, performance had deteriorated since 2005: Lithuania, Bulgaria (both +16.5 %), Estonia (+9%), Romania (+6%) and Malta (+1.7%). By contrast, Greece (-29.5%), Luxemburg (-27.4%), Belgium (-26%), the United Kingdom (-22%), Ireland (-20.5%) and Slovakia (-20%) managed to reduce their intensity the most.

The increasing trend in energy consumption may be linked to the average energy renovation rate, which still remains very low: only about 1%, ranging from 0.4% to 1.2% across the Member States. Even in those Member States with relatively high rates, most of the savings come from light or medium renovations, while the number of substantial renovations is still very low. This presents the added risk of lock-in-effect, as renovated buildings will not undergo renovations again for a number of years²⁷.

5.3. Services sector

The services sector recorded a small increase in energy consumption (calculated using the old energy balances methodology) between 2005 and 2018 (+1.5%). This increase is partly due to the high growth in activity levels — the services sector's gross value added (GVA) rose by 23% between 2005 and 2018. The relationship between rising employment and energy consumption in the services sector is more evident, with energy consumption rising during the period of relatively strong employment growth until 2008 and again since 2014. However, the drop in energy consumption in 2018 by 1.4% that was accompanied by an increase in GVA and employment was caused by the warmer winter in 2018.

Final services energy intensity improved by 17% in 2005-2018. The biggest improvements were observed in Ireland, Hungary, Slovakia, Ireland, Austria and Slovenia. Compared to 2017, the EU's energy intensity improved further in 2018. Energy consumption declined, while the sector's GVA rose by 2.3%.

5.4. Transport sector

The EU's final transport energy consumption (calculated using the old energy balances methodology)²⁸ increased by 3.6% from 368 Mtoe in 2005 to 381 Mtoe in 2018. In 2018, only seven Member States decreased their energy consumption in this sector²⁹ compared to 2005 levels: Greece (-14%), Italy (-12%), Spain (-7%) and to a lesser extent the United Kingdom, Luxemburg, the Netherlands and Sweden. By contrast, it rose significantly in Poland (+87%), Lithuania, Malta and Romania (by over 50%). The positive trend continued in 2018 in 21 Member States with the highest increases year-on-year recorded in Malta (+13%), Hungary, Lithuania and Hungary (all above 7%) and Poland (+6%).

Considering the developments in the years following the adoption of the Energy Efficiency Directive (*i.e.* 2013-2018), transport energy consumption rose by 33 Mtoe explaining 87% of

²⁷ <https://ec.europa.eu/energy/en/studies/comprehensive-study-building-energy-renovation-activities-and-uptake-nearly-zero-energy>

²⁸ Including pipeline transport, contrary to the approach taken in COM(2015) 574 final as the 2020 energy efficiency targets do not exclude pipeline transport.

²⁹ Comparing Member States should be approached with caution since final energy consumption is based on the fuels sold rather than the fuels used in a country.

the gap (38 Mtoe) to the EU final energy consumption target in 2020. Aviation, accounting for a growing proportion of overall EU energy consumption (over 5%), alone would explain over 27% of this gap. In other words, had road and air transport energy consumption stayed close at its 2013 levels, the EU would be much closer to reaching its final energy consumption target.

Transport activity growth and the limited number of alternative fuel vehicles on the market continue to be the main factors for rising energy consumption. Another important factor in the recent years is vehicle stock fuel efficiency. In 2018, specific emissions from newly registered cars (which are linked to energy consumption) increased for the second consecutive year, after a steady decline between 2010 and 2016. The growing share of new registrations for petrol cars, in particular sport utility vehicles (SUVs), seems to be the main factor for the increasing emissions from new cars in 2018. In 2018, petrol cars were the best-selling vehicles in the EU, accounting for almost 60% of sales (up from 53% in 2017), while SUVs accounted for one in three new cars sold³⁰. More energy efficient diesel cars made up 36% of new car registrations.³¹

On aviation, world demand for air transport has more than doubled since 2000. In 2018, the EU recorded the second highest growth (after Asia/Pacific region) at 6.7% in revenue passenger-kilometres compared to 2017.³² It is worth noting that the growth in aviation energy consumption would be much higher without energy efficiency improvements. While policy and industry's efforts have shown concrete improvements over the past years (for example fuel burn per passenger has dropped by 24% from 2005 to 2017), these benefits have been outpaced by the sustained growth in traffic.³³

6. Energy Efficiency Directive – Current situation

The Commission continues, in close cooperation with Member States, to monitor how the Energy Efficiency Directive is transposed and implemented.

In 2018, the Commission concluded the structured dialogue (EU pilot information requests) initiated with the Member States the previous year to ensure that all the obligations and requirements under the Energy Efficiency Directive were correctly turned into national legislation and policy. Following an assessment of replies from EU pilots, the Commission between July 2018 and January 2019 launched infringement proceedings under Article 258 of the Treaty on the Functioning of the EU against all Member States for their failure to comply with obligations under the Energy Efficiency Directive. These proceedings progressed at different speed, but Member States clarifications and commitments resolved most of the concerns the Commission raised.

³⁰ Petrol SUV have on average 10% higher CO₂ emissions than the average emissions of other new petrol cars (see <https://www.eea.europa.eu/highlights/average-co2-emissions-from-new>).

³¹ <https://www.eea.europa.eu/publications/transport-increasing-oil-consumption-and>

³² <https://www.icao.int/Newsroom/Pages/Solid-passenger-traffic-growth-and-moderate-air-cargo-demand-in-2018.aspx>

³³ EEA, EASA and Eurocontrol (2019), European Aviation Environmental Report, <https://www.easa.europa.eu/eaer/downloads>

All Member States submitted their 2019 annual reports as required under Article 24 of the Energy Efficiency Directive. However, yet again many reports were submitted late, were of poor quality or lacked some important information. The JRC analysed these annual reports in a separate document.³⁴

6.1. Progress under Article 7 (energy savings obligation)

Under Article 7, Member States have reported achieved energy savings for 2014-2017 in view of delivering the national energy savings obligation for 2014-2020.

The analysis shows that several Member States risk not meeting their national energy savings obligation by December 2020. Taking into account achieved energy savings from 2014-2017 and projected energy savings until 2020 from the implemented policy measures, it appears very unlikely (< 75% likelihood) that Bulgaria, Croatia, Lithuania, Luxembourg, Portugal, Romania and Spain will meet their national obligation. For Czechia, Estonia, Greece, Hungary, Italy and Sweden, it appears unlikely (>75% and < 95% likelihood). On the other hand, it is very likely (> 105% likelihood) that Austria, Cyprus, Denmark, Finland, Ireland, Latvia, Malta, the Netherlands, Poland, Slovakia and the UK will achieve more energy savings than required by 31 December 2020. For Belgium, France, Germany and Slovenia, it appears likely (> 95% and <105% likelihood) that they will meet their 2020 national energy savings target.

By comparing the reported energy savings between 2014 and 2017 to the cumulative energy savings for 2014-2017 estimated by each Member States based on average yearly delivery, it appears that Bulgaria, Croatia, Czechia, Greece, Lithuania, Luxembourg, Portugal, Romania and Spain achieved less than 80% in 2017.

In their 2019 annual reports, nine countries³⁵ reported that they had introduced new policy measures. Furthermore, some countries updated their estimates of expected and/or actual energy savings for 2014 and 2015.

In 2019, a total of 58 new measures have been reported under Article 7. Of which, twelve (or 20.7%) were implemented by Hungary, eleven (19.0%) by Latvia, ten (17.2%) by Lithuania, followed by Cyprus, the UK and Spain³⁶ (10.3% each of them).³⁷

Most energy savings (36%)³⁸ have been achieved through energy efficiency obligation schemes, 16% due to energy or CO₂ taxes, and 20% due to financing schemes or fiscal measures. Only a minor proportion of energy savings (0.02%) was achieved due to labelling schemes and national funds (see Figure 3).

³⁴ Tsemekidi-Tzeiranaki, et al. (2020), *op. cit.*

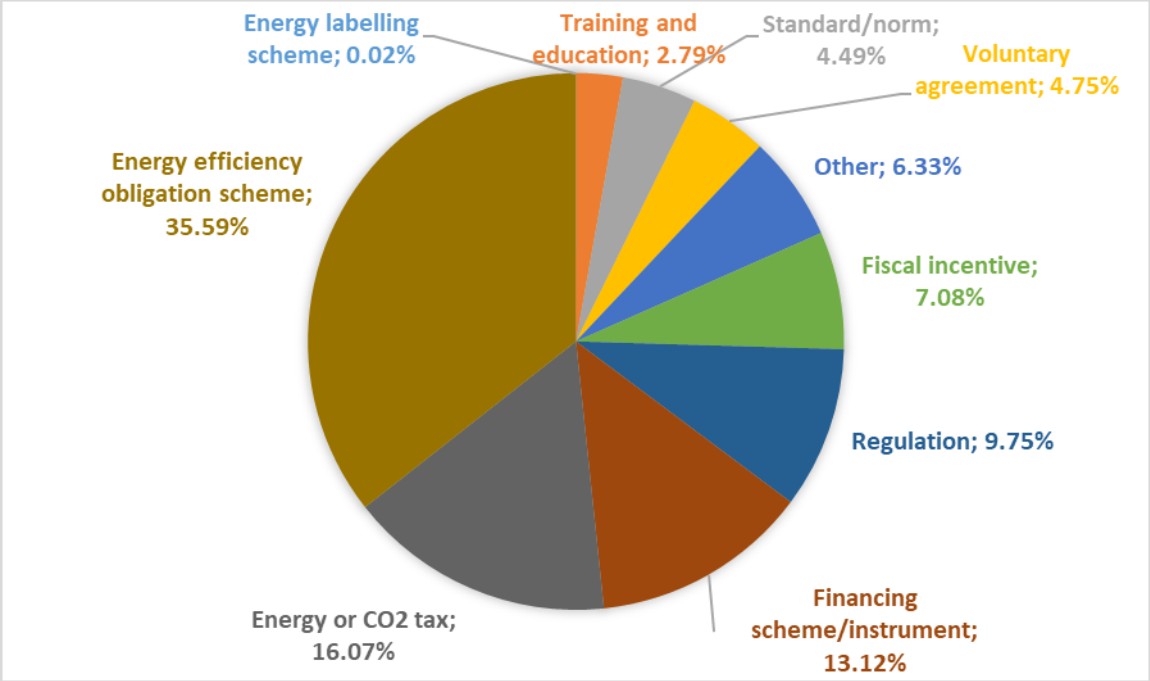
³⁵ Spain, Czechia, Greece, Latvia, Hungary, Italy, Lithuania, UK, Cyprus

³⁶ Some new measures listed by Romania have been included in previous version of Annual Reports (i.e. Annual Report of 2017 but not in Annual Report of 2018).

³⁷ Tsemekidi-Tzeiranaki, et al. (2020), *op. cit.*

³⁸ Achieved cumulative energy savings in 2017 from national measures that are additional to the EU level measures

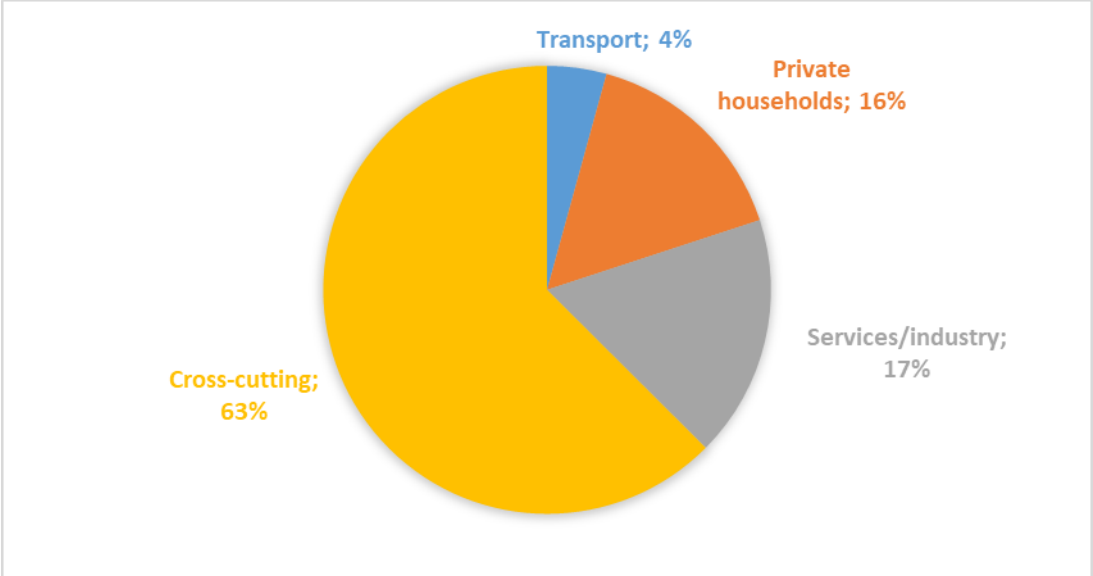
Figure 3. Distribution of cumulative energy savings in 2014-2017 eligible under Article 7 per policy measure type



Source: Own calculations based on the 2019 national annual reports.

Almost two thirds of achieved savings (63%) were due to cross cutting measures that target different sectors, including buildings. The remaining energy savings were achieved thanks to measures targeting households (16%), industry and services (17%), followed by transport (4%).

Figure 4. Distribution of cumulative energy savings in 2014-2017 eligible under Article 7 per sector type



Source: Own calculations based on the 2019 national annual reports.

6.2. Progress under Article 5 (exemplary role of buildings used by public bodies)

In 2018, a higher level of compliance with reporting obligations was observed in comparison to the previous year, but still six Member States did not provide the requested update regarding Article 5. Among these, Belgium, Malta, the Netherlands, and Romania did not report their achievements to the Commission for the last two years.

Among the Member States that have chosen the default approach,³⁹ four achieved their annual targets in terms of renovated floor area in 2018. These were Bulgaria, Estonia, Italy, and Luxembourg. Among the Member States that have implemented the alternative approach, five Member States achieved their annual energy saving targets. These are Austria, Ireland, Poland, Slovakia and the United Kingdom. For the remaining countries, the information was either missing or the reported data were below what is required to reach the annual goal.

Besides annual progress, it is also important to look at the achievements made between 2014 and 2018, taking into account that extra savings achieved in one year can be used to fulfil the requirement over a period of three years. According to the available data, 16 Member States have fulfilled or overachieved their cumulative targets under Article 5 for 2014-2018. This is a significant improvement in comparison to the assessment made in the previous year, but further efforts are needed in the countries lagging behind (Czechia, Hungary) or for which information is missing for some years (Bulgaria, Croatia, Denmark, Estonia, Greece, Portugal, Romania, Slovenia, Malta, and Sweden).

6.3. Products

For product energy efficiency, the Commission adopted in March and October 2019, 14 ecodesign and energy labelling regulations following several years of preparation with stakeholders. These regulations amend requirements for seven product groups ((i) refrigerators, (ii) washing machines, (iii) dishwashers, (iv) lighting products, (v) electronic displays, (vi) electric motors and (vii) external power supplies) and address a new product group (refrigerating appliances with a direct sales function). A major change in the new ecodesign rules is the need to further improve the reparability and recyclability of appliances. For these energy labelling regulations, it is the new QR code energy labels that will enable consumers to get more (non-commercial) information from 1 March 2021. To speed up the process to sustainability end energy efficiency, the QR code could provide, among others, information about the “product passport” including information about materials, etc. as well as the plug-and-play readiness for the smart home (e.g. support for European specifications such as SAREF). These 14 energy labelling regulations, in addition to two more regulations on ecodesign, constitute the ecodesign and energy labelling package, which is expected to deliver annual final energy savings of 167 TWh in 2030⁴⁰.

7. Conclusion

The upward trend in energy consumption observed since 2014 was interrupted in 2018, partially due to warmer winter temperatures. Nevertheless, positive developments in 2018

³⁹ The default approach refers to measures taken to renovate 3 % of the total floor area of heated and/or cooled buildings over 250 m² owned and occupied by central government which do not meet minimum energy requirements while the alternative approach to other cost-effective measures taken to achieve equivalent energy savings.

⁴⁰ Non-compliance and consumer behaviour may reduce the actual savings achieved by these measures.

were not sufficient to put the EU back on track to reach the 2020 energy efficiency targets, before the advent of the COVID-19 crisis. It shows that rising economic activity, unaccompanied with new and additional energy efficiency policies, can result in higher energy demand. This will remain an issue, when energy demand recovers after the COVID-19 crisis, with a view on achieving the 2030 energy efficiency targets.

However, the situation varies across sectors. Since the adoption of the Energy Efficiency Directive in 2012, transport has experienced a continuous growth in energy consumed and greenhouse gas emissions despite efficiency improvements. The Commission's Communication on a European Green Deal highlights this issue and indicates the Commission's plan to bring forward a new strategy for smart and sustainable transport later in 2020. There will also be other specific measures, such as the review of the Energy Taxation Directive, which will look closely at the role of taxation in the transport sector, as well as the current exemptions for aviation and maritime activities. Moreover, the use of electric vehicles needs to be further promoted and the policy to transfer passenger and freight to rail is to be continued and further enhanced, taking into account the superior energy-efficiency of rail transport.

Without the onset of the COVID-19 crisis, it would have been unlikely that new policies could change the situation sufficiently to achieve the 2020 target for energy efficiency. However, some delayed impacts of current policies might still occur, while weather and other external factors might also play an important role in extending or limiting the gap. As all these are, however, temporary or specific events, subsequent changes in energy consumption cannot be considered structural or long lasting.

The current delivery gap gives no space for complacency. It is very likely that the national energy efficiency contributions for 2030 – described in the National Energy and Climate Plans submitted to the Commission by end 2019 according to the Governance Regulation – will be cumulatively short in ambition to reach the EU 2030 energy efficiency targets. This delivery gap in energy efficiency efforts for 2020 and the ambition gap for 2030 require robust action at national and at EU level. The Commission is presently preparing an impact-assessed plan to increase the EU's greenhouse gas emission reductions target for 2030 to at least 50% and towards 55% compared with 1990 levels in a responsible way. This includes the possible need for energy efficiency to substantially contribute to the achievement of this higher GHG emissions reduction target in 2030. It needs to be recalled that the Commission Communication "A Clean Planet for All"⁴¹ foresees a strong role for energy efficiency in all scenarios to reach the climate change targets.

The Commission's 2020 Annual Sustainable Growth Strategy⁴² indicates the importance of energy efficiency to avoid a trade-off between climate policy and rising energy prices. Indeed, achieving the existing 2030 climate and energy targets will require EUR 260 billion of additional investment in the energy system annually in 2021-2030. The biggest investment push will be required to improve energy efficiency in the residential and tertiary sectors.

The Commission will also continue focusing on the enforcement of EU legislation. Article 7 of the amended Energy Efficiency Directive improves monitoring and checking provisions for energy savings. In addition, to obtain a higher GHG emissions reduction target, the next

⁴¹ COM(2018) 773

⁴² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019DC0650&from=EN>

review of the Energy Efficiency Directive has been brought forward and is due by June 2021. The whole Energy Efficiency Directive will be evaluated. If decided, the subsequent revision would be expected to focus on new areas where energy efficiency could be strengthened and/or pushed. In addition, the application of the energy efficiency first principle will be more prominently applied across policy areas, taking into account additional benefits of energy savings and supporting just transition.

On buildings, the upcoming ‘Renovation wave’ initiative aims at boosting renovations and contributing to the recovery from the economic impact of the COVID-19 in line with the principle of just transition. Moreover, the review of the cost-optimal minimum energy performance requirements for new and existing buildings undergoing major renovations⁴³ and the implementation of the nearly zero-energy building standards⁴⁴ are expected to improve the energy performance of the building stock in the short term. Enforcement and compliance at local level needs to improve and for this reason the Commission stepped up its well-established cooperation with the Covenant of Mayors and other local channels. In addition, the work on energy performance standards and product labelling will continue and the new 2020-2024 Ecodesign working plan is under preparation and new fast-growing areas could be considered, such as datacentres and telecommunication networks.

Apart from legislative efforts the Commission will work on mobilisation of the funding instruments at its disposal to deploy digital solutions and apply smart digitalisation (AI, automation, Big Data, Internet of Things, etc.) to help speed up the improvement process, where benefits are demonstrated, and drive energy efficiency to the next level. Furthermore, the Commission will include in future reviews reports on the energy performance of the ICT sector (including data centres) as a considerable and fast-growing final energy consumer.

To ensure there is no accumulated delivery gap for the 2030 targets, the task force dedicated to mobilising efforts in reaching the EU energy efficiency targets will continue to assist Member States in pursuit of this goal.

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

⁴³ Member States reviewed their cost-optimal calculations to set up minimum requirements in March 2018.

⁴⁴ As of 2021 all new buildings must meet the requirements for nearly zero-energy performance buildings as defined in Member States (for new public buildings this obligation is required since 2019).

Table 1: Overview of indicators⁴⁵

MS	Trend to reach the 2020 target		Short-term trend		Energy Intensity whole economy	Industry	Residential	
	PEC 2005-2018 trend compared to PEC 2005-2020 trend to reach the 2020 target	FEC 2005-2018 trend compared to FEC 2005-2020 trend to reach the 2020 target	Change of PEC 2018 compared to PEC 2017 [%]	Change of FEC 2018 compared to FEC 2017 [%]	2005-2018 average annual change of PEC energy intensity [%]	2005-2018 average change of FEC energy intensity in industry [%]	2005-2018 average annual change of FEC in residential per capita with climatic corrections [%]	2005-2017 average annual change of FEC in residential per dwelling with climatic corrections [%]
EU28	-	-	● -0.6%	● 0.2%	● -2.0%	● -1.9%	● -0.4%	● -1.2%
BE	-	-	● -4.6%	● 0.6%	● -2.2%	● -0.3%	● -1.7%	● -1.6%
BG	-	-	● 0.1%	● 0.2%	● -2.8%	● -4.5%	● 2.3%	● 0.4%
CZ	+	+	● 0.1%	● -0.7%	● -2.9%	● -4.3%	● 1.4%	● 0.0%
DK	-	-	● 0.4%	● 0.6%	● -2.0%	● -2.1%	● 0.1%	● -0.6%
DE	-	-	● -2.1%	● -1.5%	● -2.2%	● -1.4%	● -0.1%	● -0.2%
EE	+	-	● 9.6%	● 3.4%	● -1.0%	● -5.5%	● 1.4%	● 0.8%
IE	-	-	● 1.1%	● 4.7%	● -4.1%	● -4.9%	● -2.1%	● -2.9%
EL	+	+	● -2.8%	● -2.9%	● -0.6%	● 0.6%	● -0.8%	● -1.0%
ES	-	+	● -0.5%	● 3.8%	● -1.6%	● -1.5%	● 0.6%	● -1.0%
FR	-	-	● -0.1%	● -1.3%	● -1.7%	● -1.1%	● -0.4%	● -1.1%
HR	+	+	● -1.8%	● -1.1%	● -1.7%	● -1.3%	● 0.6%	● -1.1%
IT	+	+	● -1.1%	● 1.1%	● -1.3%	● -2.6%	● 0.9%	● -0.3%
CY	-	+	● 0.5%	● -0.3%	● -1.4%	● -0.6%	● 4.7%	● -1.6%
LV	+	+	● 5.1%	● 4.1%	● -1.8%	● 2.1%	● 0.5%	● -0.9%
LT	+	-	● 2.8%	● 3.8%	● -4.7%	● -2.0%	● 2.1%	● -0.9%
LU	+	-	● 4.0%	● 4.0%	● -3.0%	● -1.7%	● -1.2%	● -3.1%
HU	-	-	● -0.1%	● 0.1%	● -1.8%	● 2.0%	● 0.5%	● -0.2%
MT	+	-	● 1.8%	● 6.1%	● -4.8%	● -1.5%	● 10.9%	● 1.4%
NL	-	+	● -0.6%	● -0.1%	● -2.1%	● -1.7%	● -0.8%	● -1.6%
AT	-	-	● -3.1%	● -2.5%	● -1.3%	● -1.2%	● 1.1%	● -0.1%
PL	-	-	● 1.9%	● 1.4%	● -2.7%	● -3.6%	● 2.9%	● 0.2%
PT	+	+	● -0.7%	● 2.1%	● -1.0%	● -1.2%	● -0.2%	● -1.7%
RO	+	+	● 0.4%	● 1.1%	● -4.3%	● -5.4%	● 1.9%	● -0.6%
SI	+	+	● -0.8%	● 0.6%	● -2.0%	● -2.7%	● 0.7%	● -0.4%
SK	+	-	● -2.2%	● -0.1%	● -4.0%	● -4.2%	● -0.1%	● -1.5%
FI	+	+	● 2.0%	● 2.3%	● -1.7%	● -0.3%	● -0.2%	● -0.7%
SE	-	-	● 1.3%	● -0.6%	● -2.5%	● -1.4%	● -1.0%	● -0.9%
UK	+	-	● -0.3%	● 0.7%	● -3.0%	● -2.9%	● -1.9%	● -2.1%
Source and extraction data	Eurostat 04/2020	Eurostat 04/2020	Eurostat 04/2020	Eurostat 04/2020	Eurostat 04/2020	Eurostat 04/2020	Eurostat 04/2020	Odyssee 01/2020

The ‘+’ symbol is used if Member States decreased their primary and final energy consumption between 2005 and 2018 at a rate which is higher than the rate of decrease which would be needed in 2005-2020 to meet the 2020 primary and final energy consumption targets. The ‘-’ symbol is used for the other cases. FEC stands for final energy consumption, PEC for primary energy consumption.

Source: Eurostat (old methodology of energy balances), JRC, Odyssee.

⁴⁵ The energy intensity of industry is calculated as the ratio between final energy consumption and gross value added in chain linked volumes (2010). Due to data limitations, the denominator of gross value added at current prices has been used for Malta.

Table 2: Overview of indicators⁴⁶

MS	Services		Transport			Generation	
	2005-2018 average change of FEC energy intensity in the service sector [%]	2005-2018 average change of FEC in the transport sector [%]	2017 vs. 2005 change of share of trains, motor coaches, buses and trolley buses for passenger transport [%]	2017 vs. 2005 change of share of railway and inland waterways for freight transport [%]	2005-2018 average annual change of heat generation from CHP [%]	2005-2018 average annual change of ratio Transformation output/Fuel input of thermal power generation [%]	
EU28	● 5.7%	● 0.3%	● -0.4%	● -0.5%	● -0.8%	● 1.7%	
BE	● -0.5%	● 0.6%	● -2.2%	● 7.0%	● 4.1%	● 2.5%	
BG	● -0.8%	● 1.9%	● -14.2%	● -8.2%	● -2.3%	● 0.9%	
CZ	● -2.1%	● 1.2%	● 1.6%	● 0.8%	● -1.0%	● 0.6%	
DK	● -1.4%	● 0.2%	● -2.5%	NA	● -1.0%	● 2.9%	
DE	● -2.3%	● 0.4%	● 0.1%	● 0.8%	● 0.0%	● 2.4%	
EE	● 0.0%	● 1.3%	● -3.5%	NA	● 3.3%	● 0.1%	
IE	● -3.8%	● 0.3%	● -0.5%	NA	NA	● 3.8%	
EL	● 0.9%	● -1.0%	● -4.2%	NA	● 1.3%	● 2.3%	
ES	● 0.3%	● -0.4%	● -3.3%	NA	NA	● 2.0%	
FR	● -0.6%	● 0.2%	● 1.6%	● 0.6%	● -3.5%	● 0.8%	
HR	● -0.2%	● 1.5%	● -0.5%	● -1.4%	● 1.1%	● 4.4%	
IT	● 0.7%	● -0.9%	● -0.9%	● 5.4%	● 1.0%	● 2.6%	
CY	● 1.0%	● 0.3%	NA	NA	● 67.4%	● 1.6%	
LV	● -1.8%	● 1.5%	● -7.9%	NA	● 1.7%	● -0.7%	
LT	● -1.8%	● 3.7%	● -1.4%	● -9.9%	● -3.9%	● 9.2%	
LU	● -0.6%	● -0.1%	● 2.6%	NA	● 2.2%	● 7.7%	
HU	● -5.3%	● 1.5%	● -5.8%	● -2.0%	● -6.6%	● 0.4%	
MT	● -2.6%	● 3.5%	NA	NA	NA	● 4.8%	
NL	● -1.7%	● 0.0%	● 2.4%	● 8.2%	● -2.5%	● 0.5%	
AT	● -2.9%	● 0.1%	● 1.7%	● 9.8%	● 2.0%	● 3.0%	
PL	● -2.2%	● 1.7%	● -8.9%	● -13.5%	● -0.9%	● 0.7%	
PT	● -1.7%	● 0.1%	● 0.7%	NA	● 3.8%	● 5.2%	
RO	● -1.6%	● 3.3%	● -4.2%	● 0.3%	● -4.9%	● 0.5%	
SI	● -2.1%	● 2.6%	● -0.8%	NA	● 0.8%	● 1.9%	
SK	● -4.4%	● 1.6%	● -3.6%	● -7.8%	● -0.6%	● 0.3%	
FI	● 0.2%	● 0.6%	● 0.7%	NA	● -0.7%	● 1.3%	
SE	● -2.3%	● 0.0%	● 2.2%	NA	● 2.3%	● 0.7%	
UK	● -1.4%	● -0.2%	● 2.1%	● -1.6%	NA	● 3.7%	
Source and extraction data	Eurostat 04/2020	Eurostat 04/2020	DG MOVE Pocketbook 2019	DG MOVE Pocketbook 2019	Eurostat 04/2020	Eurostat 04/2020	

Source: Eurostat⁴⁷, DG MOVE, JRC, Odyssee

⁴⁶ Eurostat's energy balances based on the methodology up to 2018 have been used with the exception of "Heat generation from CHP" and "Transformation output (Conventional Thermal Power Stations + Nuclear Power Stations) / Fuel input for thermal power generation".

⁴⁷ Eurostat's energy balances based on the methodology up to 2018 have been used with the exception of "Heat generation from CHP" and "Transformation output (Conventional Thermal Power Stations + Nuclear Power Stations) / Fuel input for thermal power generation".

Table 3: 2017 reported energy savings overview under Article 7 (ktoe)

	2017			Progress towards the target			
	New savings	Total annual savings	Cumulative savings in 2014-2017	Total cumulative savings required by 2020 (target)	Progress towards total cumulative savings required by 2020	Estimated annual savings required for 2014- 2017	2014-2017 compared to estimated annual savings
BE	286	1024	2691	6911	39%	2468	109%
BG	40	139	318	1942	16%	694	46%
CZ	167	470	1104	4565	24%	1630	68%
DK	212	872	2142	3841	56%	1372	156%
DE	2754	5157	15217	41989	36%	14996	101%
EE	92	97	279	610	46%	218	128%
IE	90	379	942	2164	44%	773	122%
EL	321	489	881	3333	26%	1190	74%
ES	436	1665	4318	15979	27%	5707	76%
FR	1281	4120	11038	31384	35%	11209	98%
HR	9	71	175	1296	13%	463	38%
IT	879	3183	8172	25502	32%	9108	90%
CY	64	69	78	242	32%	86	91%
LV	79	245	557	851	65%	304	183%
LT	90	135	365	1004	36%	359	102%
LU	10	34	69	515	13%	184	38%
HU	122	415	1156	3680	31%	1314	88%
MT	5	11	31	67	46%	24	128%
NL	668	2088	5503	11512	48%	4111	134%
AT	332	1071	2725	5200	52%	1857	147%
PL	1039	2646	5914	14818	40%	5292	112%
PT	29	124	329	2532	13%	904	36%
RO	56	421	1097	5817	19%	2078	53%
SI	34	134	314	945	33%	338	93%
SK	78	369	969	2284	42%	816	119%
FI	561	1119	3276	4213	78%	1505	218%
SE	1702	1702	3218	9114	35%	3255	99%
UK	966	4471	13500	27859	48%	9950	136%
Total	12401	32720	86378	230169	38%	82203	105%

Source: Information reported by Member States and complemented by the Commission's calculations and estimations where necessary.